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. 67

[Period from 1 to 31 March 2018]

(April 2018)

Verified by: Fredrick Leong

Position: Independent Environmental Checker

Date: 12 April 2018

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. 67

[Period from 1 to 31 March 2018]

(Apr 2018)

Certified by: Lisa Poon

Position: Environmental Team Leader

Date: 12 April 2018

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. 67

[Period from 1 to 31 Mar 2018]

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

Version:	A	Date: 12 April 2018

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

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1 INTRODUCTION

1.1 Background

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

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

1.1.3 The Environmental Impact Assessment (EIA) Reports for SCL (TAW-HUH) (Register No.: AEIAR-167/2012), SCL (MKK-HUH) (Register No.: AEIAR-165/2012) and SCL (HHS) (Register No.: AEIAR-164/2012) were approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Reports, two Environmental Permits (EPs) were granted on 22 March 2012, one covers SCL (TAW-HUH) and SCL (HHS) (EP No: EP-438/2012) and the other covers SCL (MKK-HUH) and SCL (HHS) (EP No.: EP-437/2012), for their construction and operation. Variations of environmental permit (VEP) were subsequently applied for EP-438/2012 and EP-437/2012. The latest Environmental Permits (EP Nos.: EP-438/2012/K and EP-437/2012/A) were issued by Director of Environmental Protection (DEP) on 4 October 2016 and 28 November 2017, respectively.

1.2 Project Programme

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

Table 1.1 Summary of Awarded Works Contracts

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
1101[(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[(4)]	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
11240[3]	Excavation, Sorting and Disposal of Stockpiled Spoils to Approved Receptor Site	October 2017	Crown Asia Engineering Limited (CAEL)	MTR Co. Limited

Notes:

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

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

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

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

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 sixty-seventh EM&A Report for the Project which summarises the EM&A works undertaken by the respective Contractor's ETs during the period from 1 to 31 March 2018.

2 ENVIRONMENTAL MONITORING AND AUDIT

2.1.1 The construction of SCL has been divided into different civil construction works contracts which are covered by EP No. EP-437/2012/A and/or EP-438/2012/K. As per the EP Conditions, EM&A Reports for the works contracts as shown in the table below have been prepared by the respective Contractor's ETs.

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

Works Contract	Contract Title	Works Covered in Environmental Permit No.
1108A	Kai Tak Barging Point Facilities	EP-438/2012/K
1109	Stations and Tunnels of Kowloon City Section	EP-438/2012/K
1111	Hung Hom North Approach Tunnels	EP-437/2012/A & EP-438/2012/K
1112	Hung Hom Station and Stabling Sidings	EP-437/2012/A & EP-438/2012/K
11240	Excavation, Sorting and Disposal of Stockpiled Spoils to Approved Receptor Site	EP-438/2012/K

2.1.2 The EM&A Reports for Works Contracts 1109, 1111, 1103, 1106, 1112, 1108 and 1102 prepared by the respective Contractor's ETs are provided in Appendices A to G, respectively. The EM&A Reports provide details of the project information, EM&A requirements, impact monitoring and audit results for the corresponding Contracts.

2.1.3 The construction works of Works Contract 11240 and 1107 were substantially completed in January and February 2018 respectively. The Final EM&A Review Reports for Works Contract 11240 and 1107 summarising the waste management details, site inspections findings, environmental complaint records and investigations, and any notification of summons, prosecutions and corrective actions throughout the respective construction periods are provided in Appendices H to I.

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

Table 2.1 Summary of Major Construction Activities in the Reporting Period

Works Contract	Site	Construction Activities
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; • E&M Works; and • Backfilling Works
1103	Hin Keng Area	• Site Formation
	Fung Tak Area	• ELS Works and ABWF Works
	Ma Chai Hang Area	• C&S Works and ABWF Works
	Shui Chuen O	• Storage Area
1106	Diamond Hill Station Area	• Superstructure works of SCL-DIH station; • ABWF works at SCL-DIH station area; • Foundation works, TTA for site access and temporary footpath diversion at Choi Hung Road and A2; • Construction of Interchange Adit, West Unpaid Link Adit and East MOE; • Alteration works for Entrance A2; • Backfilling works; • General site clearance;

Works Contract	Site	Construction Activities
		• Modification of utilities and drainages at Lung Cheung Road; and • Drainage works
1108	Kai Tak Station	• Open cut tunnel: General cleaning, defect rectification and SUA EVA construction • Cut and cover tunnel: General cleaning and defect rectification. • Station: Leveling to F.F.L. in Area 3, installation of roof cladding and reflected ceiling at Entrance A, B & D, installation of glass canopy at DEE and SEE, installation of aluminum fins and external cladding at NVS and SVS, and installation of metal screen wall at DEE and SEE.
1109	Works in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW))	• Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and EEP construction.
	Works in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))	• Olympic Garden – Construction of station entrance and ABWF works; • SUW Station – Construction of SUW station, backfilling and ABWF works; • Tam Kung Road – Adit construction; and • Nam Kok Road – Construction of station entrance and ABWF works
1111	Ho Man Tin	• Steel mesh, planter works, hoarding removal
	NSL (South)	• Concreting works, form work erection, reinforcement fixing, backfill, road & drainage construction, excavation, hoarding removal, bar fence and planting
	OB2 / TB1	• Maintenance access, abandoned watermain removal and bar fence
	OB2A / TB2	• Maintenance access, bar fence and slope reinstatement
	NSL 9 & Oi Sen Path	• Defect rectification and minor steel work
1112	South Approach Tunnels (SAT)	• Modification of Hong Wan Path Ramp
	Hung Hom Station (HUH)	• Drainage works/ Building Service works at G.L J • Platform ABWF and E&M works
	North Approach Tunnels (NAT)	• Roadworks
	Concourse level & Mid-level walkway	• Modification works

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

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

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

2.1.7 One complaint under Works Contract 1106 regarding dust nuisance was received on 14 March 2018. Investigations were conducted and reported in the respective EM&A Report. No exceedance of limit level, notification of summons or successful prosecutions was received during the reporting period. Log for environmental complaints, notification of summons and successful prosecutions are provided in Table 2.4.

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

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

Monitoring Station ID	Location	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Exceedance due to the Project Construction (Yes/No)
Works Contracts 1102 and 1103					
DMS-1	C.U.H.K.A.A. Thomas Cheung School	23.8 – 63.0	148.7	260	No
Works Contract 1103					
DMS-2	Price Memorial Catholic Primary School	24.5 – 79.2	167.4	260	No
Works Contracts 1103 and 1106					
DMS-3	Hong Kong S.K.H Nursing Home (1)	100.6 – 145.2	159.1	260	No
Works Contract 1106(10)					
DMS-4	Block 1, Rhythm Garden	40.6 – 87.3	160.4	260	No
Works Contract 1108 (5)					
Works Contract 1109					
DMS-6	Katherine Building (2)	48 – 70	156.8	260	No
DMS-7	Parc 22 (3)	46 – 72	166.7	260	No
DMS-8	SKH Good Shepherd Primary School	45 – 72	152.2	260	No
DMS-9	No. 12 Pau Chung Street (4)(9)	52 – 74	160.9	260	No
DMS-10	Chat Ma Mansion	49 – 67	170.4	260	No
Works Contract 1111					
AM1(6)	No. 234 – 238 Chatham Road North (7)	23.4 – 63.0	183.9	260	No
Works Contract 1112					
AM2	Site Boundary of Finger Pier Adjacent To Harbourfront Horizon (8)	35.1 – 51.7	182	260	No
Works Contract 11240 (5)					

Notes:

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

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

Monitoring Station ID	Location	Noise Level ($L_{Aeq,30mins}$, dB(A))			Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
		Measured	Baseline	Corrected [7]		
Works Contracts 1102 and 1103						
NMS-CA-1	C.U.H.K.A.A. Thomas Cheung School	56.4 – 61.3	57.0	< Baseline – 59.3	70 (65 during examination period)	No
Works Contract 1103						
NMS-CA-2	Price Memorial Catholic Primary School	54.9 – 63.9	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]	55.0 – 72.4	73.0	< Baseline	70	No
Works Contracts 1106[11]						
NMS-CA-4	Block 1, Rhythm Garden (north-eastern façade)	70.0 – 72.3	71.0	< Baseline – 66.4	75	No
NMS-CA-5	Block 1, Rhythm Garden (northern façade)[2]	69.8 – 70.7	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]	61.0 – 62.1	76.1	< Baseline	75	No
NMS-CA-7	Skytower Tower 2	64.6 – 65.1	70.0	< Baseline	75	No
NMS-CA-8	SKH Good Shepherd Primary School	71.8 – 72.3	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]	68.5 – 69.6	69.2	< Baseline – 59.0	75	No
NMS-CA-10	Chat Ma Mansion	75.6 – 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 – 67.8	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]	65.1 – 74.4	79.0	< Baseline	75 (77) [10]	No
Works Contract 1112 [6]						
Works Contract 11240 [6]						

Notes:

(1) Alternative monitoring location to Shek On House.
(2) Alternative monitoring location to Canossa Primary School (San Po Kong).
(3) Alternative monitoring location to Prosperity House.
(4) Alternative monitoring location to Lucky Building.
(5) Alternative monitoring location to Wing Fung Building.
(6) No construction noise monitoring is required under this contract.
(7) The measured noise levels are corrected against the corresponding baseline noise levels.
(8) The Limit Level of 79 dB(A) was updated on 22 Aug 2013 as per the latest Construction Noise Mitigation Measures Plan (CNMMP) and Continuous Noise Monitoring Plan (CNMP) which were approved by EPD.
(9) The Limit of 68 dB(A) was updated on 20 Jan 2014 as per the latest CNMMP and CNMP which were approved by EPD.
(10) Daytime noise Limit Level of 77 dB(A) applies during the continuous noise monitoring period.
(11) The construction noise monitoring works would be taken up by Works Contract 1106 since the completion of Works Contract 1107 in February 2018.

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

Works Contract	Environmental Complaints	Notification of Summons	Successful Prosecutions
1102	0	0	0
1103	0	0	0
1106	1	0	0
1108	0	0	0
1109	0	0	0
1111	0	0	0
1112	0	0	0

3 IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS

3.1.1 The respective Contractors have implemented all mitigation measures and requirements as stated in the EIA Reports, EM&A Manuals and EPs (EP-437/2012/A and EP-438/2012/K). The status of required submissions under the EPs as of the reporting period are summarised in Tables 3.1 and 3.2.

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

EP Condition (EP-438/2012/K)	Submission	Submission date
Condition 1.12	Notification of Commencement Date of Construction of the Project	1 Aug 2012
Condition 2.3	Notification of Information of Community Liaison Groups	13 Jul 2012 (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 Jul 2013 (Approved) 26 Jul 2013 (8th submission) 22 Aug 2013 (Approved) 23 Aug 2013 (9th submission) 13 Sep 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 Jul 2013 (Approved) 26 Jul 2013 (8th submission) 22 Aug 2013 (Approved) 23 Aug 2013 (9th submission) 13 Sep 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 Jul 2013 (6th submission) 26 Jul 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 Jun 2013 (7th submission) 12 Jul 2013 (Approved) 23 Mar 2017 (8th submission) 7 Mar 2018 (9th 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) 7 Apr 2017 (Batch 4 Version A approved) 7 Jun 2017 (Final) 20 Jul 2017 (Approved)
Condition 2.28	As-built Drawings for Operational Ground-borne Noise Mitigation Measures	10 Aug 2017 (1st submission)
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) 20 Mar 2018 (3rd submission)
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. 1-65 Monthly EM&A Report No. 66	Reported in previous Monthly EM&A Reports 14 Mar 2018

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

EP Condition (EP-437/2012/A)	Submission	Submission date
Condition 1.11	Notification of Commencement Date of Construction of the Project	30 Nov 2012
Condition 2.3	Notification of Information of Community Liaison Groups	30 Nov 2012
Condition 2.5	Management Organisation of Main Construction Companies	19 Dec 2012 (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) 12 May 2017 (5th submission)
Condition 2.16	Operational Ground-borne Noise Mitigation Measures Plan	23 Mar 2017 (1st submission) 17 May 2017 (2nd submission) 28 Jun 2017 (3rd submission) 20 Jul 2017 (Approved)
Condition 3.3	Baseline Monitoring Report (Works Contracts 1103, 1106 and 1111 – Hin Keng to Diamond Hill Tunnels, Diamond Hill Station, and Hung Hom North Approach Tunnels)	19 Oct 2012
Condition 3.4	Monthly EM&A Reports No. 5-65 Monthly EM&A Report No. 66	Reported in previous Monthly EM&A Reports 14 Mar 2018

Appendix A

67th Monthly EM&A Report for Works Contract 1109 – Stations and Tunnels of Kowloon City Section

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report No. 67

[Period from 1 to 31 March 2018]

Works Contract 1109 - Stations and Tunnels of Kowloon City Section

(12 April 2018)

Certified by: Mandy To

Position: Environmental Team Leader

Date: 12 April 2018

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.67

March 2018

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

Samsung-Hsin Chong JV

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

Monthly EM&A Report No.67

March 2018

Reference 0171181

For and on behalf of
ERM-Hong Kong, Limited

Approved by: Frank Wan

Signed:

Position: Partner

Date: 12 April 2018

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EXECUTIVE SUMMARY

The construction works of **MTR Shatin to Central Link Works Contract 1109 – Stations and Tunnels of Kowloon City Section** commenced on 1 September 2012. This is the sixty-seventh monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 March 2018 to 31 March 2018 in accordance with the EM&A Manual.

Summary of the Construction Works undertaken during the Reporting Month

The major construction works undertaken during the reporting month include:

Construction Activities undertaken
Works in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW))
• Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and EEP construction.
Works in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))
• Olympic Garden – Construction of station entrance and ABWF works; • SUW Station – Construction of SUW station, backfilling and ABWF works; • Tam Kung Road – Adit construction; and • Nam Kok Road – Construction of station entrance and ABWF works.

Regular Construction Noise and Construction Dust Monitoring

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

- Regular construction noise monitoring during normal working hours
  - *NMS-CA-6* *4 times*
  - *NMS-CA-7* *4 times*
  - *NMS-CA-8* *4 times*
  - *NMS-CA-9* *4 times*
  - *NMS-CA-10* *4 times*
- Construction dust (24-hour TSP) monitoring
  - *DMS-6* *5 times*
  - *DMS-7* *5 times*
  - *DMS-8* *5 times*
  - *DMS-9* *5 times*
  - *DMS-10* *5 times*

Continuous Noise Monitoring

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

Cultural Heritage

A License to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance has been obtained from Antiquities and Monuments Office (AMO) on 29 October 2012. The archaeological survey-cum-excavation and additional investigation at the Sacred Hill (North) commenced

on 1 November 2012 and was conducted in accordance with the License and the approved Archaeological Action Plan (AAP). An updated AAP was submitted to AMO for renewal of the 1 year archaeological license. The license was renewed and granted by AMO on 24 October 2013. The updated AAP was submitted to EPD for approval on 11 October 2013 and it was approved on 1 November 2013. The fieldworks of the archaeological survey-cum-excavation and additional investigation were completed on 27 December 2013. The Interim Archaeological Report was provided to AMO in April 2014. The Final Archaeological Report was accepted by AMO in June 2017.

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. 3,746 m^3 of inert C&D material was generated from the Project during the reporting month. 450 kg of plastics was generated and sent to recyclers for recycling during the reporting period. About 468 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. No paper/cardboard packaging was generated and sent to recyclers for recycling during the reporting period. No chemical waste was generated during this reporting month.

Landscape and Visual

Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted on 5 and 19 March 2018. 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 5, 12, 19 and 27 March 2018. The representative of the IEC joined the site inspection on 12 March 2018. Details of the audit findings and implementation status are presented in *Section 6*.

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

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

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

No complaint was received during reporting period.

No summon or prosecution was received in this reporting period.

Future Key Issues

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

Construction Activities to be undertaken
Work in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW))
● Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and EEP construction.
Work in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))
● Olympic Garden – Construction of station entrance and ABWF works; ● Tam Kung Road –Adit construction; ● SUW Station – Construction of SUW station, backfilling, and ABWF works; and ● Nam Kok Road – Construction of station entrance and ABWF works.

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 sixty-seventh EM&A report which summarises the monitoring results and audit findings during the reporting period from 1 March to 31 March 2018.

1.2 STRUCTURE OF THE REPORT

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

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

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

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

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

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

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

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

Section 9 : **Conclusions**

2 PROJECT INFORMATION

2.1 BACKGROUND

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

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

2.2 GENERAL SITE DESCRIPTION

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

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

2.3 CONSTRUCTION PROGRAMME AND ACTIVITIES

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

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

Construction Activities undertaken
Works in To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW))
• Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and EEP construction.
Works in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))
• Olympic Garden – Construction of station entrance and ABWF works; • SUW Station – Construction of SUW station, backfilling and ABWF works; • Tam Kung Road – Adit construction; and • Nam Kok Road – Construction of station entrance and ABWF works.

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 MTW Road E1-E6*	*GW-RE0908-17*	*5 December 2017 – 4 June 2018*	*Superceded by GW-RE0148-18*
- *PME at SUW works Area (TBM)*	*GW-RE0799-17*	*23 October 2017 – 22 April 2018*	-
- *PME at SUW works Area*	*GW-RE0772-17*	*5 October 2017 – 4 April 2018*	-
- *PME at Olympic Garden*	*GW-RE0870-17*	*22 November 2017 – 21 May 2018*	-
- *PME at TKW Opening (1-8)*	*GW-RE0079-18*	*23 February 2018 – 22 August 2018*	*Superceded by GW-RE0148-18*
- *PME at TKW works area*	*GW-RE0148-18*	*9 March 2018 8 September 2018*	-
- *PME at Lok Shan Road and Kiang Su Street*	*GW-RE0841-17*	*7 November 2017 – 6 May 2018*	-
SP-Licence for TBM operation	L-3-249(1)	19 May 2015 – 18 May 2018	Notification for the cancellation of the Specified Process Licence has been given to EPD in Nov

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

3 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. 10786708) Sound Level Meter: NL 52 (Serial No. 00131627)

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. The Final Archaeological Report was accepted by AMO in June 2017.

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	Sixty-sixth Monthly EM&A Report	14 March 2018

5 MONITORING RESULTS

5.1 REGULAR CONSTRUCTION NOISE MONITORING

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

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

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

5.2 CONTINUOUS NOISE MONITORING

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

5.3 CONSTRUCTION DUST MONITORING

A total of 25 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	58	48 – 70	156.8	260
DMS-7	62	46 – 72	166.7	260
DMS-8	62	45 – 72	152.2	260
DMS-9 (a)	63	52 – 74	160.9	260
DMS-10	59	49 – 67	170.4	260

Note:

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

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

5.4 CULTURAL HERITAGE

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

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 2018	3,746 m^3	0 kg	468 m^3	0 kg	450 kg	0 kg

Notes:

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

(b) 3,746 m^3 of inert C&D materials was generated from the Project during the reporting month.

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

5.6 LANDSCAPE AND VISUAL MITIGATION MEASURES

Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted on 5 and 19 March 2018. Most of the mitigation measures given in ***Annex H*** have been implemented. Required Actions that were found are listed below:

5 March 2018

- No observation was reported during the site inspection.

19 March 2018

- 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 5, 12, 19 and 27 March 2018. The representative of the IEC joined the site inspection on 12 March 2018. No non-compliance was recorded during the site inspections.

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

5 March 2018

- There was no major observation during site inspection.

12 March 2018

- There was no major observation during site inspection.

19 March 2018

- The Contractor was reminded to maintain site runoff control measures at Entrance A of TKW Station.

27 March 2018

- There was no major observation during site inspection.

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

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 SUMMARY OF MONITORING EXCEEDANCE

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

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

7.2 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

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

7.3 SUMMARY OF ENVIRONMENTAL COMPLAINT

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

7.4 SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION

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

8 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 To Kwa Wan (TKW) (formerly named as Ma Tau Wai (MTW))
● Along Ma Tau Wai Road and TKW/MTW Road Garden – Station construction; ABWF works; and EEP construction.
Work in Sung Wong Toi (SUW) (formerly named as To Kwa Wan (TKW))
● Olympic Garden – Construction of station entrance and ABWF works; ● Tam Kung Road – Adit construction; ● SUW Station – Construction of SUW station, backfilling, and ABWF works; and ● Nam Kok Road – Construction of station entrance and ABWF works.

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 67th monthly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 March 2018 to 31 March 2018 in accordance with the EM&A Manual and the requirement under EP-438/2012/K.

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

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

No complaint was received during reporting period.

No summon or prosecution was received during the reporting period.

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

Annex A

The Alignment and Works Area for Works Contract

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)

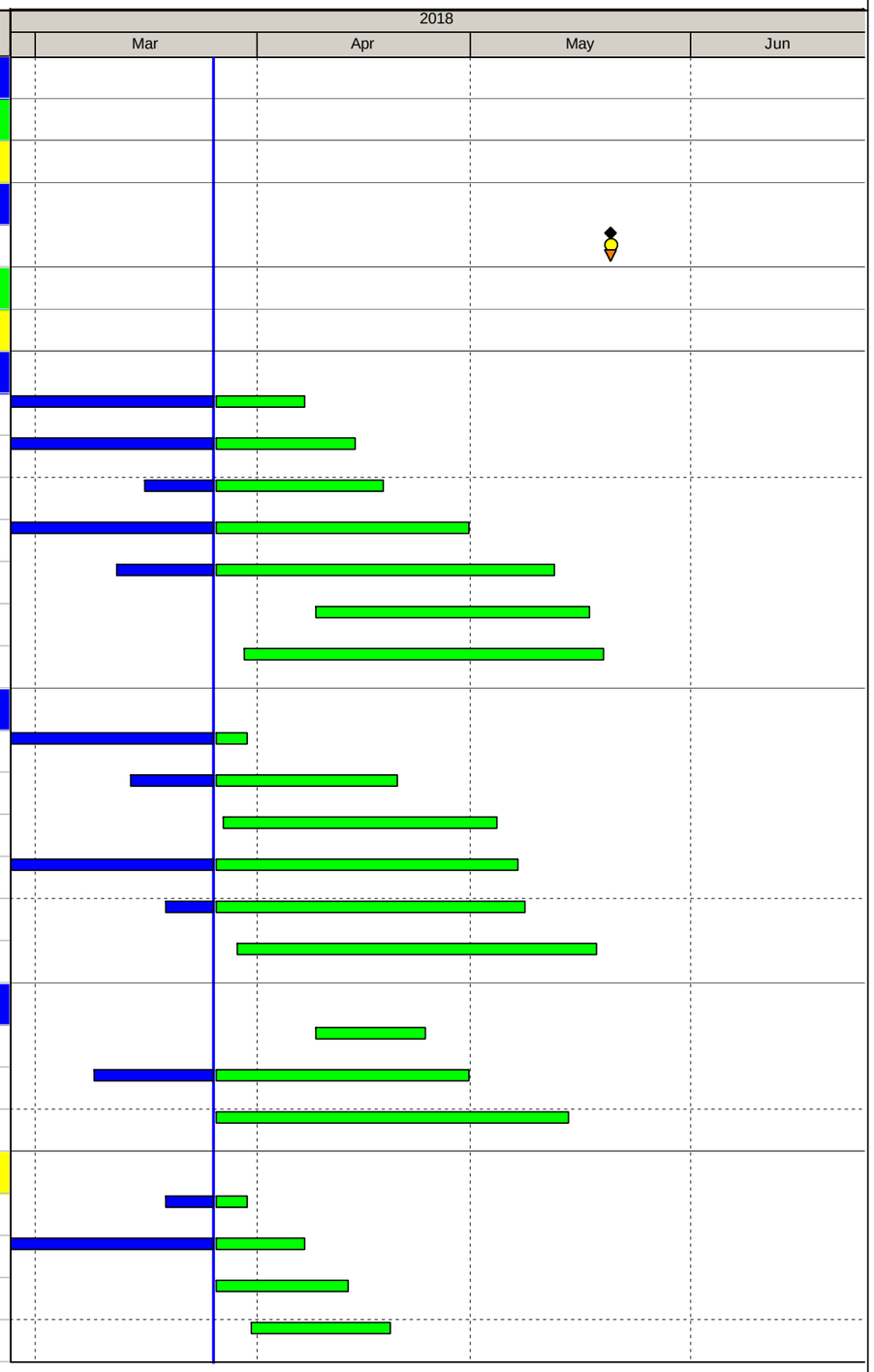
(1) Sung Wong Toi and To Kwa Wan Stations in the programme mean To Kwa Wan and Ma Tau Wai Stations in the Monthly EM&A Report respectively.

Data Date: 25-Mar-18

SAMSUNG - HSIN CHONG JOINT VENTURE

THREE MONTH ROLLING PROGRAMME - Mar 2018

Activity ID	Activity Name	Remaining Duration	Physical % Complete	Start	Finish
1109 - SUW & TKW Stations and Tunnels Mar 2018 (MPR2)					
PROJECT DATES					
Specified Milestone Dates (Revised)					
CC-A Milestones					
01109.MSA24-P	A24 - Engr's confirm satisfact implementation of Sys Ass & Risk Mgmnt & Des for Safety & Construct (20 May 2018)	0	0%		20-May-18*
CC-B - SUW STATION, ENTRANCES AND ADITS					
SUW Station Construction Works					
SUW ABWF Concourse					
01109.3MS10310	SUW Concourse - Ceiling Panel Installation including Sub- Frame at GL D/8-12	10	0%	25-Jan-18 A	07-Apr-18
01109.3MS10370	SUW Concourse - Smoke Barrier Installation	16	0%	05-Feb-18 A	14-Apr-18
01109.3MS10330	SUW Concourse - Floor Stone Installation at GL GL D/8-12 (1st Phase)	19	0%	16-Mar-18 A	18-Apr-18
01109.3MS10360	SUW Concourse - Glass Moasic Tile Installation	29	0%	04-Dec-17 A	30-Apr-18
01109.3MS10320	SUW Concourse - Ceiling Panel Installation at GL A-C	38	0%	12-Mar-18 A	12-May-18
01109.3MS10350	SUW Concourse - Wall Panel Installation	32	0%	09-Apr-18*	17-May-18
01109.3MS10340	SUW Concourse - Fire Rated Ceiling Installation	40	0%	30-Mar-18*	19-May-18
SUW ABWF Platform					
01109.3MS10410	SUW Platform - Horizontal Ceiling Member Installation	5	0%	09-Oct-17 A	30-Mar-18
01109.3MS10440	SUW Platform - Glass Mosaic Tile Installation at Walls	21	0%	14-Mar-18 A	20-Apr-18
01109.3MS10420	SUW Platform - Flat Ceiling Panel Instalaltion	31	0%	27-Mar-18*	04-May-18
01109.3MS10430	SUW Platform - Floor tile Installation	34	0%	31-Jan-18 A	07-May-18
01109.3MS10460	SUW Platform - Fire Rated Ceiling Installation	35	0%	19-Mar-18 A	08-May-18
01109.3MS10450	SUW Platform - Ceiling Panel Installation	40	0%	29-Mar-18*	18-May-18
SUW ABWF Adit B					
01109.3MS10530	SUW Adit B - Floor Stone Installation at GL 12-13	14	0%	09-Apr-18*	24-Apr-18
01109.3MS10520	SUW Adit B - Floor Stone Installation at GL B1 - B9 (1st Phase)	29	0%	09-Mar-18 A	30-Apr-18
01109.3MS10510	SUW Adit B - Plastering Work at 700mm height wall (North Side)	39	0%	26-Mar-18*	14-May-18
Entrance A					
01109.3MS10230	Seam roof enclosure	5	0%	19-Mar-18 A	30-Mar-18
01109.3MS10130	SUW Entrance A Roofing Decking Installation	10	0%	02-Jan-18 A	07-Apr-18
01109.3MS10140	SUW Entrance A Internal Wall Stone Installation	15	0%	26-Mar-18*	13-Apr-18
01109.3MS10240	Alum panels installation	20	0%	31-Mar-18	19-Apr-18



SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

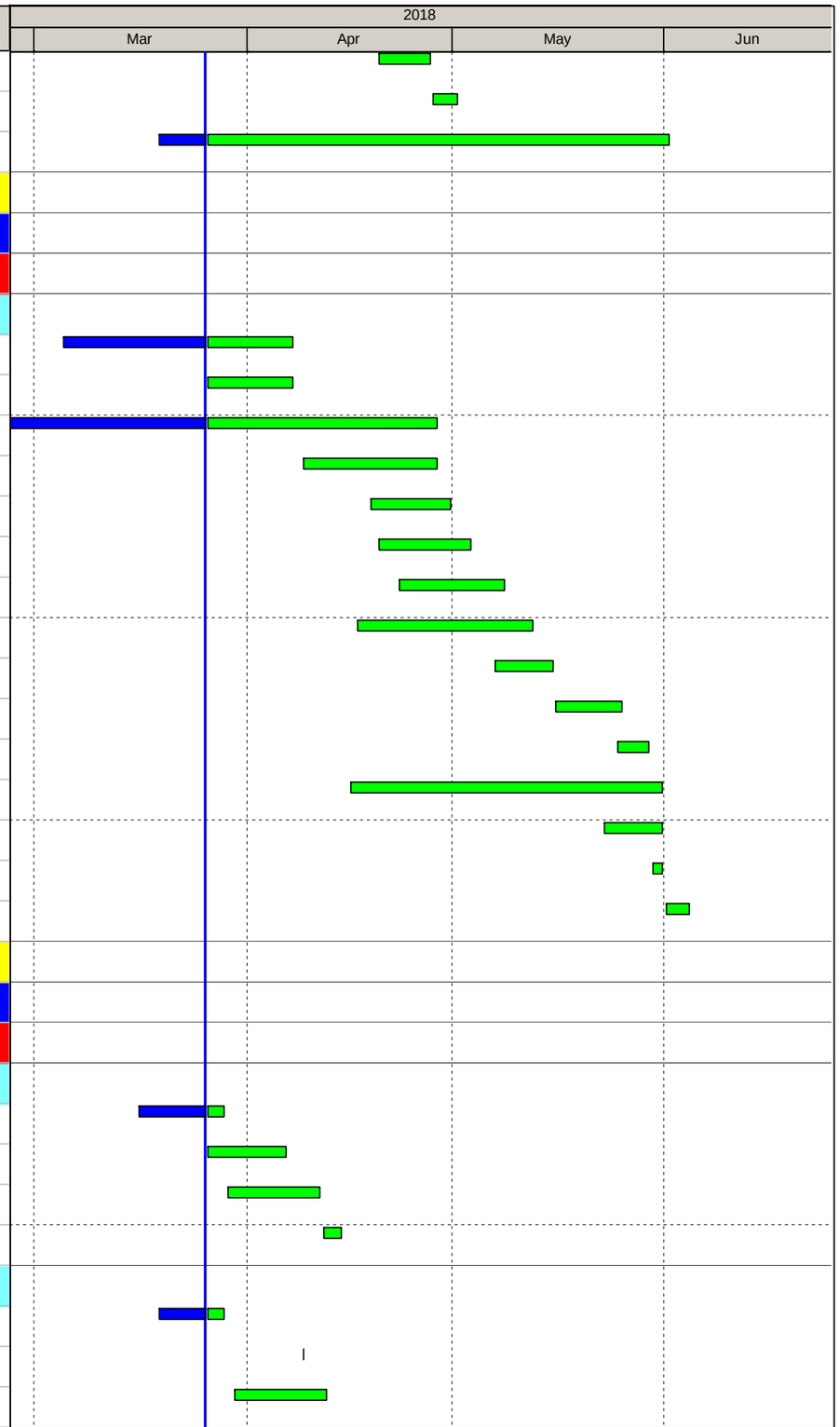
Shatin to Central Link Contract 1109

3MRP - Mar 2018 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP, No activity shall have a duration exceeding 2 weeks.

Printed:05-Apr-18

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

Activity ID	Activity Name	Remaining Duration	Physical % Complete	Start	Finish
01109.3MS10250	Glass Installation	8	0%	20-Apr-18	27-Apr-18
01109.3MS10260	Removal of scaffolding	4	0%	28-Apr-18	01-May-18
01109.3MS10220	SUW Entrance A External Stone Cladding Installation	55	0%	19-Mar-18 A	01-Jun-18
Entrance D					
Entrance D - Concrete Structural Works (GL 8-10/F-F2)					
Entrance D- Concrete Walls ,Staircases and Roof					
Entrance D- Steel Works between UG/F to R/F					
01109.3MS10560	Seam Roof - Welding for Sub frame	10	0%	05-Mar-18 A	07-Apr-18
01109.3MS10570	Seam Roof - Seam Roof System including decking insulation and roof panels	10	0%	26-Mar-18*	07-Apr-18
01109.3MS10110	SUW Entrance D Roofing Frame Installation	28	0%	15-Jan-18 A	28-Apr-18
01109.3MS10120	SUW Entrance D Roofing Installation	18	0%	09-Apr-18*	28-Apr-18
01109.3MS10580	Seam Roof - Gutter Installation	10	0%	19-Apr-18*	30-Apr-18
01109.3MS10610	Skylight - Sub frame	11	0%	20-Apr-18*	03-May-18
01109.3MS10620	Skylight - IGU Glass installation	13	0%	23-Apr-18*	08-May-18
01109.3MS10590	Canopy - Sub frame installation	21	0%	17-Apr-18*	12-May-18
01109.3MS10630	Facial Glass - Sub frame and glass channel	7	0%	07-May-18*	15-May-18
01109.3MS10640	Facial Glass - Glass Installation	9	0%	16-May-18*	25-May-18
01109.3MS10660	Removal of scaffolding (Above Gantry)	4	0%	25-May-18*	29-May-18
01109.3MS10600	Canopy - Glass Installation	38	0%	16-Apr-18*	31-May-18
01109.3MS10650	Internal interfacing finish - Alum. Panel and SS cover finish	8	0%	23-May-18*	31-May-18
01109.3MS10670	Removal of Gantry	2	0%	30-May-18*	31-May-18
01109.3MS10680	Removal of scaffolding (Below Gantry)	3	0%	01-Jun-18*	04-Jun-18
Entrance B & Adit B					
Entrance B & Adit B - External Works					
Portion 3					
SUW Entrance B2					
01109.3MS10270	Application of 2 HRS fire rated paint	3	0%	16-Mar-18 A	28-Mar-18
01109.3MS10280	Seam Roof Installation	12	0%	26-Mar-18*	06-Apr-18
01109.3MS10290	Alum panels installation	14	0%	29-Mar-18*	11-Apr-18
01109.3MS10300	Removal of scaffolding	3	0%	12-Apr-18*	14-Apr-18
SUW Entrance B2 - SUW LT06					
01109.3MS10380	Zinc Roof installation	3	0%	19-Mar-18 A	28-Mar-18
01109.3MS10400	Handover to DC 1159	0	0%	09-Apr-18*	09-Apr-18
01109.3MS10390	Stainless steel cover	14	0%	30-Mar-18*	12-Apr-18



SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

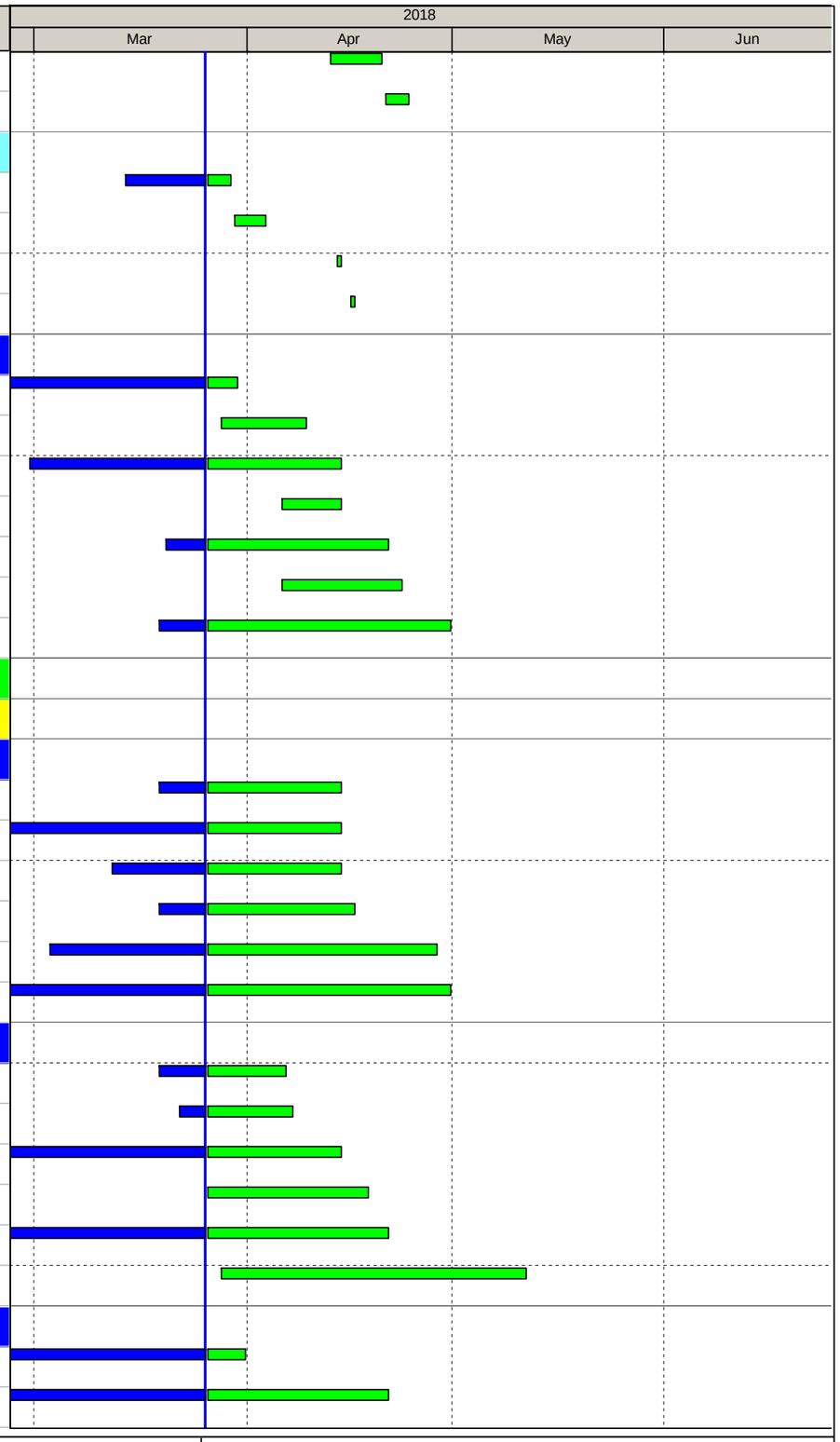
Shatin to Central Link Contract 1109

3MRP - Mar 2018 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP, No activity shall have a duration exceeding 2 weeks.

Printed:05-Apr-18

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

Activity ID	Activity Name	Remaining Duration	Physical % Complete	Start	Finish
01109.3MS10470	Application of 2 HRS fire rated paint	8	0%	13-Apr-18*	20-Apr-18
01109.3MS10480	Removal of scaffolding	4	0%	21-Apr-18*	24-Apr-18
SUW Entrance B3					
01109.3MS10490	Alum panels/Skylight installation	4	0%	14-Mar-18 A	29-Mar-18
01109.3MS10500	Removal of scaffolding	5	0%	30-Mar-18*	03-Apr-18
01109.3MS10540	Completion of B2 and B3 Work	1	0%	14-Apr-18*	14-Apr-18
01109.3MS10550	H/O to Civil Team	1	0%	16-Apr-18*	16-Apr-18
Entrance B & Adit B - Works for Degree 2 Finish					
01109.3MS10150	SUW Entrance B3 Roofing Decking Installation	5	0%	23-Jan-18 A	30-Mar-18
01109.3MS10210	SUW Entrance B2 Lift 6 Roofing Installation	9	0%	28-Mar-18*	09-Apr-18
01109.3MS10180	SUW Entrance B2 Roofing Decking Installation	16	0%	28-Feb-18 A	14-Apr-18
01109.3MS10190	SUW Entrance B2 Aluminium Cladding Installation	8	0%	06-Apr-18*	14-Apr-18
01109.3MS10160	SUW Entrance B3 Aluminium Cladding	22	0%	20-Mar-18 A	21-Apr-18
01109.3MS10170	SUW Entrance B3 Sky Light Installation	15	0%	06-Apr-18*	23-Apr-18
01109.3MS10200	SUW Entrance B2 Lift 6 Glass Panel Installation	29	0%	19-Mar-18 A	30-Apr-18
CC-C - TKW STATION, ENTRANCES AND ADITS					
TKW Station					
Station - ABWF Works (Concourse Level and Above)					
01109.3MT10110	TKW Concourse - Glass Moasic Tile Installation at 700mm height wall (Adit D)	16	0%	19-Mar-18 A	14-Apr-18
01109.3MT10120	TKW Concourse - Ceiling Sub-frame Installation	16	0%	01-Dec-17 A	14-Apr-18
01109.3MT10140	TKW Concourse - Smoke Curtain Sub-frame Installaton	16	0%	12-Mar-18 A	14-Apr-18
01109.3MT10160	TKW Concourse - Glaze Wall Panel Installation	17	0%	19-Mar-18 A	16-Apr-18
01109.3MT10150	TKW Concourse - Wall Panel Installation at Generic Area	28	0%	03-Mar-18 A	28-Apr-18
01109.3MT10130	TKW Concourse - Ceiling Panel Installation (Overall)	29	0%	15-Jan-18 A	30-Apr-18
Station - ABWF Works (Upper Platform Level)					
01109.3MT10250	TKW Upper Platform - Floor Stone Installation (Rest Area)	9	0%	19-Mar-18 A	06-Apr-18
01109.3MT10230	TKW Upper Platform - Glass Moasic Tile Installation (Escalator Void ESC-02 & 03)	10	0%	22-Mar-18 A	07-Apr-18
01109.3MT10210	TKW Upper Platform - Ceiling Sub-frame Installation	16	0%	03-Jan-18 A	14-Apr-18
01109.3MT10220	TKW Upper Platform - Ceiling Panel Installation	19	0%	26-Mar-18*	18-Apr-18
01109.3MT10240	TKW Upper Platform - Glass Moasic Tile Installation (Back Wall)	22	0%	15-Jan-18 A	21-Apr-18
01109.3MT10260	TKW Upper Platform - Fire Rated Ceiling Installation	35	0%	28-Mar-18*	11-May-18
Station - ABWF Works (Lower Platform Level)					
01109.3MT10330	TKW Lower Platform - Floor Stone Installation	6	0%	18-Jan-18 A	31-Mar-18
01109.3MT10310	TKW Lower Platform - Glass Moasic Tile Installation	22	0%	11-Dec-17 A	21-Apr-18



SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

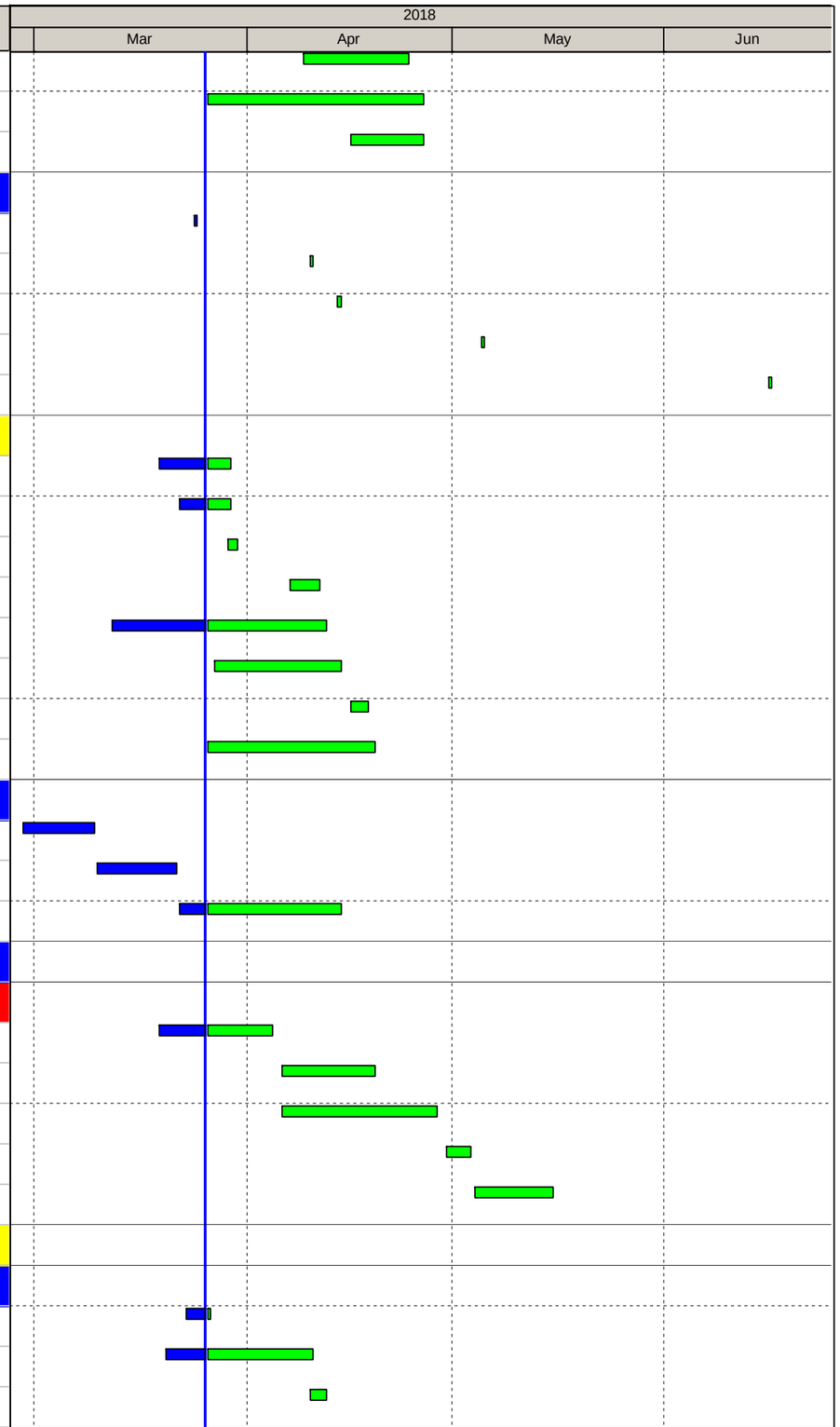
Shatin to Central Link Contract 1109

3MRP - Mar 2018 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP, No activity shall have a duration exceeding 2 weeks.

Printed:05-Apr-18

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

Activity ID	Activity Name	Remaining Duration	Physical % Complete	Start	Finish
01109.3MT10340	TKW Lower Platform - Smoke Barrier Installation	14	0%	09-Apr-18*	24-Apr-18
01109.3MT10320	TKW Lower Platform - Ceiling Panel Installation	26	0%	26-Mar-18*	26-Apr-18
01109.3MT10350	TKW Lower Platform - Sump Tanks Finishes Works (GL-27)	10	0%	16-Apr-18*	26-Apr-18
Watermain Reinstatement					
01109.PDC30050	S3P5 - LSRd bell out	0	100%	24-Mar-18 A	24-Mar-18 A
01109.PDC30070	S3P5B - LSRD	1	0%	10-Apr-18*	10-Apr-18
01109.PDC30060	S3P5A - KSS	1	0%	14-Apr-18*	14-Apr-18
01109.PDC30080	Implement TTMS S3P6 - 2+2 lane system TTMS (partial TTMS for Watermains connection at NB, southern and northern end)	1	0%	05-May-18*	05-May-18
01109.PDC30090	Implement TTMS S3P6A - West 2+2 lane system (along full station)	1	0%	16-Jun-18*	16-Jun-18
Entrance A & Vent Shaft A					
01109.3MT10080	Installation of Alum Cladding	4	0%	19-Mar-18 A	29-Mar-18
01109.3MT10090	Glass Installation	4	0%	22-Mar-18 A	29-Mar-18
01109.3MT10100	Removed of the external scaffolding for UU works	2	0%	29-Mar-18*	30-Mar-18
01109.3MT10030	TKW Vent Shaft - Scaffolding Erection	4	0%	07-Apr-18*	11-Apr-18
01109.3MT10050	TKW Internal Wall Stone Installation at Entrance A	14	0%	12-Mar-18 A	12-Apr-18
01109.3MT10170	Seam Roof and Gutter works	15	0%	27-Mar-18*	14-Apr-18
01109.3MT10180	Removal of scaffolding	3	0%	16-Apr-18*	18-Apr-18
01109.3MT10040	TKW Entrance A - Glaze Plan Installation	20	0%	26-Mar-18*	19-Apr-18
Vent Shaft A					
01109.3MT10490	VS Between Sub station and VS - UU detection and trial trench	0	100%	27-Feb-18 A	09-Mar-18 A
01109.3MT10500	VS Between Sub station and VS - Pipe pile cutting	0	100%	10-Mar-18 A	21-Mar-18 A
01109.3MT10510	VS Between Sub station and VS - Catchpit exc. And construction	20	0%	22-Mar-18 A	14-Apr-18
Entrance A					
Utility Reinstatement					
01109.3MT10440	Entrance A - Footpath between Ent A and School - install DSD manhole and pipe	10	0%	19-Mar-18 A	04-Apr-18
01109.3MT10460	Entrance A - Footpath between Ent A and School - Install MTRC foul drain	14	0%	06-Apr-18*	19-Apr-18
01109.3MT10450	Entrance A - Footpath between Ent A and School - Install MTRC storm drain	23	0%	06-Apr-18*	28-Apr-18
01109.3MT10470	Entrance A - Footpath between Ent A and School - Backfill for watermain	4	0%	30-Apr-18*	03-May-18
01109.3MT10480	Entrance A - Footpath between Ent A and School - Install watermain to Ent A	12	0%	04-May-18*	15-May-18
Entrance B					
Entrances - ABWF Works					
01109.3MT10190	Removed of the external scaffolding for UU works	1	0%	23-Mar-18 A	26-Mar-18
01109.3MT10200	Seam Roof and Gutter works	12	0%	20-Mar-18 A	10-Apr-18
01109.3MT10270	Removal of scaffolding	3	0%	10-Apr-18*	12-Apr-18



SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

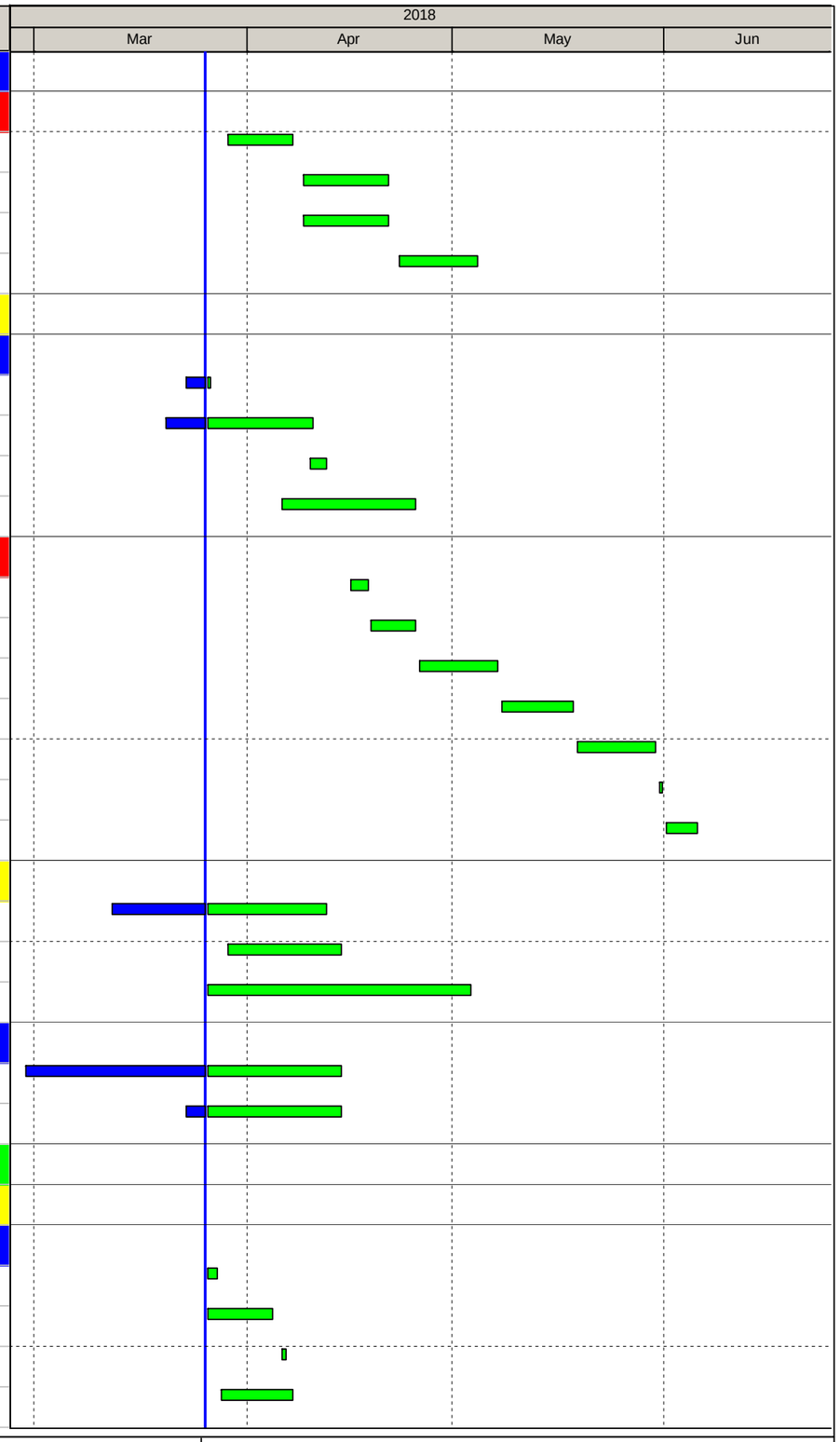
Shatin to Central Link Contract 1109

3MRP - Mar 2018 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP, No activity shall have a duration exceeding 2 weeks.

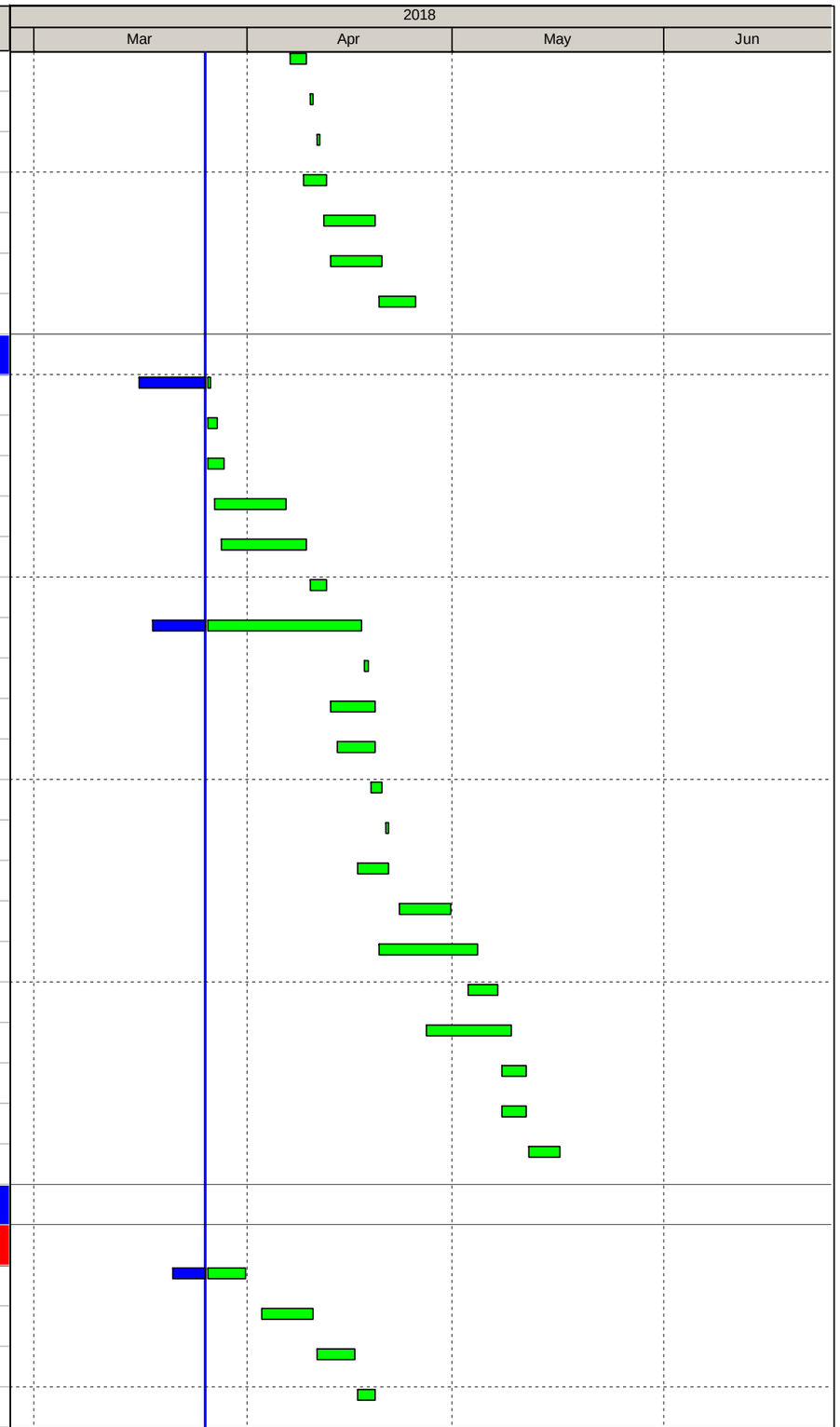
Printed:05-Apr-18

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

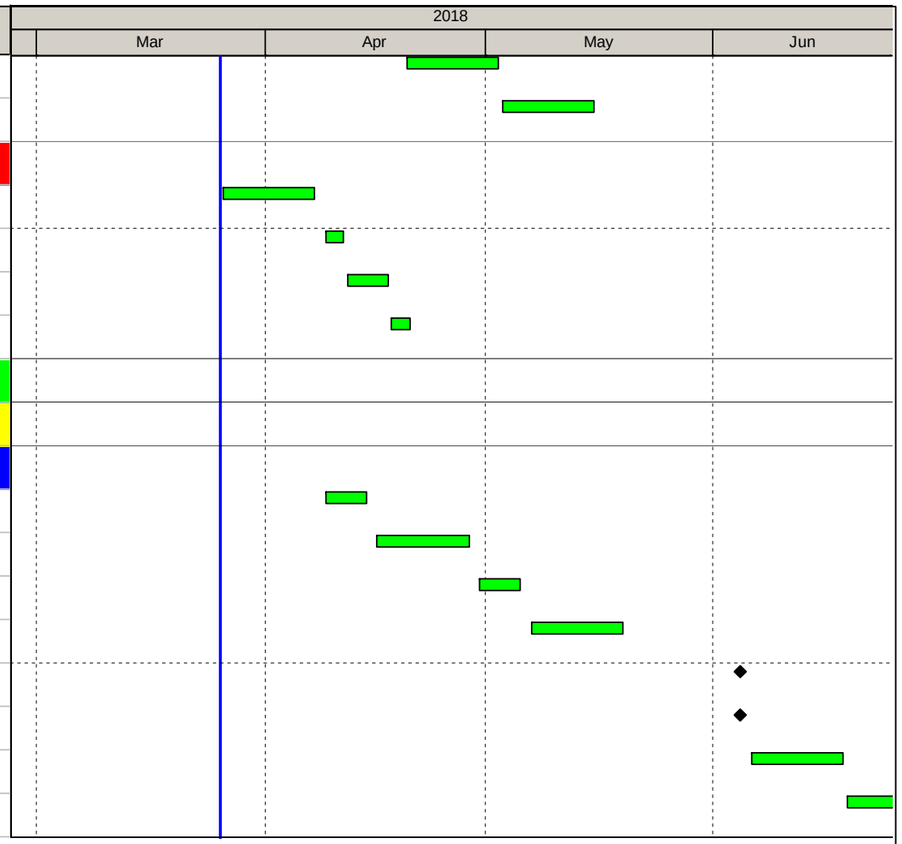
Activity ID	Activity Name	Remaining Duration	Physical % Complete	Start	Finish
Reinstatement next to Entrance B					
Watermains					
01109.3MT10520	Entrance B LSRD J/O MTWRd - Trench excavation	7	0%	29-Mar-18*	07-Apr-18
01109.3MT10530	Entrance B LSRD J/O MTWRd - Manhole and pipe installation	12	0%	09-Apr-18*	21-Apr-18
01109.3MT10540	Entrance B LSRD J/O MTWRd - FW450 watermain installation	12	0%	09-Apr-18*	21-Apr-18
01109.3MT10550	Entrance B LSRD J/O MTWRd - Testing and backfill	10	0%	23-Apr-18*	04-May-18
Entrance C					
Entrances - ABWF Works					
01109.3MT10280	Removed of the external scaffolding for UU works	1	0%	23-Mar-18 A	26-Mar-18
01109.3MT10290	Seam Roof and Gutter works	16	0%	20-Mar-18 A	10-Apr-18
01109.3MT10300	Removal of scaffolding	3	0%	10-Apr-18*	12-Apr-18
01109.3MT10070	TKW Lift 6 Installation	17	0%	06-Apr-18*	25-Apr-18
TKW LT-06					
01109.3MT10360	Erection of scaffolding	3	0%	16-Apr-18*	18-Apr-18
01109.3MT10370	Bracket installation	7	0%	19-Apr-18	25-Apr-18
01109.3MT10380	Main frame installation	12	0%	26-Apr-18	07-May-18
01109.3MT10390	Zinc Roof installation	11	0%	08-May-18	18-May-18
01109.3MT10400	Application of 2 HRS fire rated paint	12	0%	19-May-18	30-May-18
01109.3MT10410	Handover to DC 1159	1	0%	31-May-18	31-May-18
01109.3MT10420	Removal of scaffolding	5	0%	01-Jun-18	05-Jun-18
Entrance D & Vent Shaft					
01109.3MT10060	TKW Internal Wall Stone Installation at Entrance D	14	0%	12-Mar-18 A	12-Apr-18
01109.3MT10010	TKW Entrance D - Cladding Installation	13	0%	29-Mar-18*	14-Apr-18
01109.3MT10020	TKW Entrance D - Plastering Work	31	0%	26-Mar-18*	03-May-18
Entrances - ABWF Works					
01109.3MT10560	Entrance D 600 Foul drain (Exc. ELS, installation, construction) - UU expose and trial pits for F124, F127 & F127B	16	0%	27-Feb-18 A	14-Apr-18
01109.3MT10570	Entrance D 600 Foul drain (Exc. ELS, installation, construction) - F120A - F120	16	0%	23-Mar-18 A	14-Apr-18
CC-E - REPROVISIONING, REMEDIAL AND IMPROVEMENT WORKS (RRIW)					
General C& S Works					
C&S Works for Sung Wong Toi Playground					
01109.PDE1040C70	SUW Playground - Removal of Footbridge Foundation - UU protection	2	0%	26-Mar-18 A	27-Mar-18
01109.PDE1040C10	SUW Playground - Drainpipe installation (MH21 to MH22) - Excavation	8	0%	26-Mar-18	04-Apr-18
01109.PDE1040C20	SUW Playground - Drainpipe installation (MH21 to MH22) - Blinding	1	0%	06-Apr-18	06-Apr-18
01109.PDE1040C80	SUW Playground - Removal of Footbridge Foundation - Concrete breaking, 50% Completion	8	0%	28-Mar-18	07-Apr-18



Activity ID	Activity Name	Remaining Duration	Physical % Complete	Start	Finish
01109.PDE1040C30	SUW Playground - Drainpipe installation (MH21 to MH22) - Pipe laying	2	0%	07-Apr-18	09-Apr-18
01109.PDE1040C40	SUW Playground - Drainpipe installation (MH21 to MH22) - Pressure test	1	0%	10-Apr-18	10-Apr-18
01109.PDE1040C50	SUW Playground - Drainpipe installation (MH21 to MH22) - Backfilling	1	0%	11-Apr-18	11-Apr-18
01109.PDE1040C81	SUW Playground - Removal of Footbridge Foundation - Concrete breaking, Remaining	4	0%	09-Apr-18	12-Apr-18
01109.PDE1040C60	SUW Playground - Cable ducts & draw pits (Foundation)	7	0%	12-Apr-18	19-Apr-18
01109.PDE1040C90	SUW Playground - Removal of Footbridge Foundation - Reinstatement of GAS main	7	0%	13-Apr-18	20-Apr-18
01109.PDE1040C61	SUW Playground - Cable ducts & draw pits (Remaining)	5	0%	20-Apr-18	25-Apr-18
C&S Works for Olympic Garden					
01109.PDE1080A190	Drainage for U-channel Area B - RWP & U-channel U/G drain	1	0%	16-Mar-18 A	26-Mar-18
01109.PDE1080A110	Drainage for U-channel Area A - Pedestrian Diversion	2	0%	26-Mar-18	27-Mar-18
01109.PDE1080A100	Drainpipe installation (S21 to S46b) - Drainpipe laying	3	0%	26-Mar-18	28-Mar-18
01109.PDE1080A200	Drainage for U-channel Area B - Sub-soil drain & drainpipe	8	0%	27-Mar-18*	06-Apr-18
01109.PDE1080A120	Drainage for U-channel Area A - Remaining draw pit & ducts	9	0%	28-Mar-18*	09-Apr-18
01109.PDE1080A130	Drainage for U-channel Area A - Ducting & lamp poles installation	3	0%	10-Apr-18*	12-Apr-18
01109.PDE1080A210	Drainage for U-channel Area B Main drain (S6a to S8, S21) - Rock breaking	18	0%	18-Mar-18 A	17-Apr-18
01109.PDE1080A220	Drainage for U-channel Area B Main drain (S6a to S8, S21) - Blinding	1	0%	18-Apr-18*	18-Apr-18
01109.PDE1080A140	Drainage for U-channel Area A - U-channel include U/G drain	6	0%	13-Apr-18*	19-Apr-18
01109.PDE1080A150	Drainage for U-channel Area A - Street Lighting & pits	5	0%	14-Apr-18*	19-Apr-18
01109.PDE1080A230	Drainage for U-channel Area B Main drain (S6a to S8, S21) - Pipe laying	2	0%	19-Apr-18*	20-Apr-18
01109.PDE1080A240	Drainage for U-channel Area B Main drain (S6a to S8, S21) - Backfilling	1	0%	21-Apr-18*	21-Apr-18
01109.PDE1080A260	Drainage for U-channel Area B - Street Lighting & pits	5	0%	17-Apr-18*	21-Apr-18
01109.PDE1080A250	Drainage for U-channel Area B - Remaining draw pit & ducts	7	0%	23-Apr-18*	30-Apr-18
01109.PDE1080A160	Drainage for U-channel Area A - Planter + U-channel	12	0%	20-Apr-18*	04-May-18
01109.PDE1080A170	Drainage for U-channel Area A - Kerb installation	4	0%	03-May-18*	07-May-18
01109.PDE1080A270	Drainage for U-channel Area B - Planter + U-channel	10	0%	27-Apr-18*	09-May-18
01109.PDE1080A180	Drainage for U-channel Area A - Hard paving	3	0%	08-May-18*	11-May-18
01109.PDE1080A280	Drainage for U-channel Area B - Kerb installation	3	0%	08-May-18*	11-May-18
01109.PDE1080A290	Drainage for U-channel Area B - Hard paving	4	0%	12-May-18*	16-May-18
C&S Works for Subways KS33 & KS34					
C&S Works for Subways KS33					
01109.PDE1040A10	KS33 - Street Lighting & pits (Foundation)	6	100%	21-Mar-18 A	31-Mar-18
01109.PDE1040A11	KS33 - Street Lighting & pits (Remaining)	6	0%	03-Apr-18	10-Apr-18
01109.PDE1040A20	KS33 - Planter block	5	0%	11-Apr-18	16-Apr-18
01109.PDE1040A30	KS33 - Paving block	3	0%	17-Apr-18	19-Apr-18



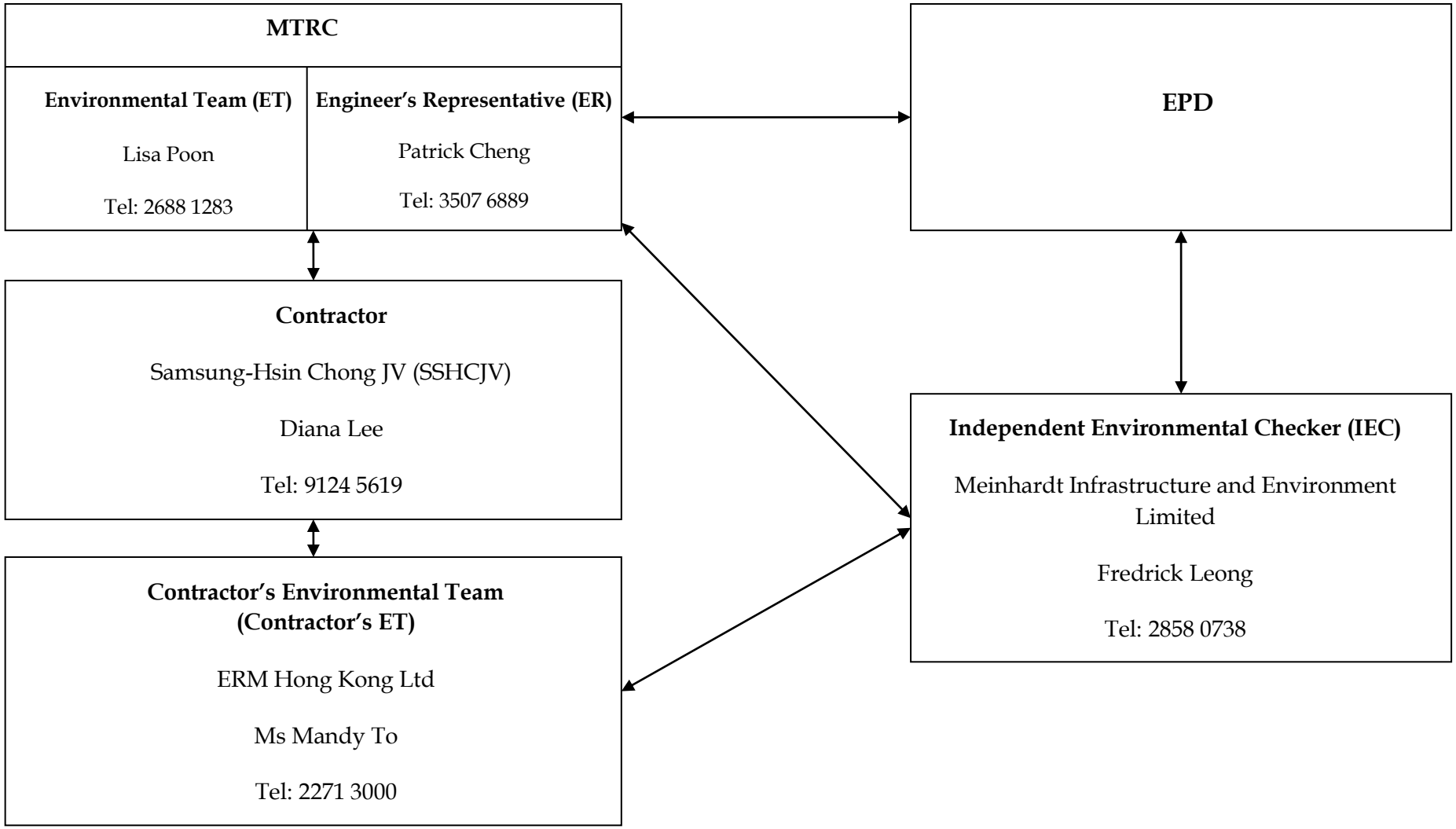
Activity ID	Activity Name	Remaining Duration	Physical % Complete	Start	Finish
01109.PDE1040A40	KS33 - Profile barrier, Main Structure	10	0%	20-Apr-18	02-May-18
01109.PDE1040A50	KS33 - Profile barrier, Remaining	10	0%	03-May-18	15-May-18
C&S Works for Subways KS34					
01109.PDE1040B10	KS34 Drainage work - Excavation & rock breaking for drainpipe	10	0%	26-Mar-18	07-Apr-18
01109.PDE1040B20	KS34 Drainage work - Pipe installation	3	0%	09-Apr-18	11-Apr-18
01109.PDE1040B30	KS34 Drainage work - Manhole construction	5	0%	12-Apr-18	17-Apr-18
01109.PDE1040B40	KS34 Drainage work - UU reinstatement	3	0%	18-Apr-18	20-Apr-18
CC-F - ABWF WORKS INSIDE HOM SCL STATION					
ABWF Works					
Degree 1 Activities, Up Track					
01109.PDF1030A10	Water barrier hoarding installation - transport materials, Up Track	6	0%	09-Apr-18*	14-Apr-18
01109.PDF1030A20	Water barrier hoarding installation - erect hoarding, Up Track	12	0%	16-Apr-18	28-Apr-18
01109.PDF1030A30	Water barrier hoarding installation - transport materials, Down Track	5	0%	30-Apr-18	05-May-18
01109.PDF1030A40	Water barrier hoarding installation - erect hoarding, Down Track	11	0%	07-May-18	19-May-18
01109.PDF1030A50	1153 complete FS commission (TBC, by others)	0	0%		04-Jun-18*
01109.PDF1030A60	1154 Complete PSD (TBC, by others)	0	0%		04-Jun-18*
01109.PDF1030A71	FS barrier hoarding dismantle - Dismantle hoarding, Up Track	11	0%	06-Jun-18	18-Jun-18
01109.PDF1030A72	FS barrier hoarding dismantle - Remove rubbish, Up Track	7	0%	19-Jun-18	26-Jun-18



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

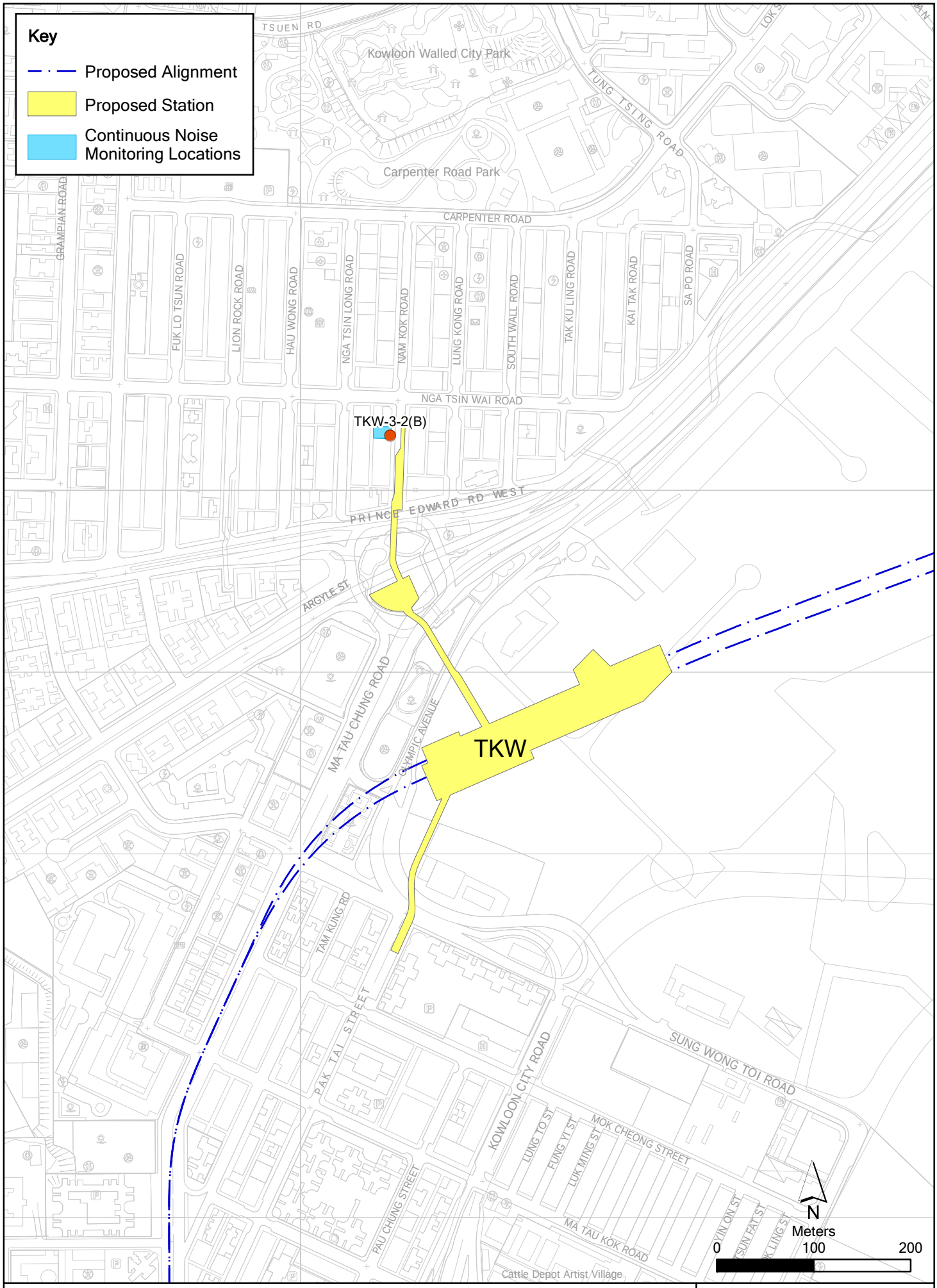


Figure 2.2a

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

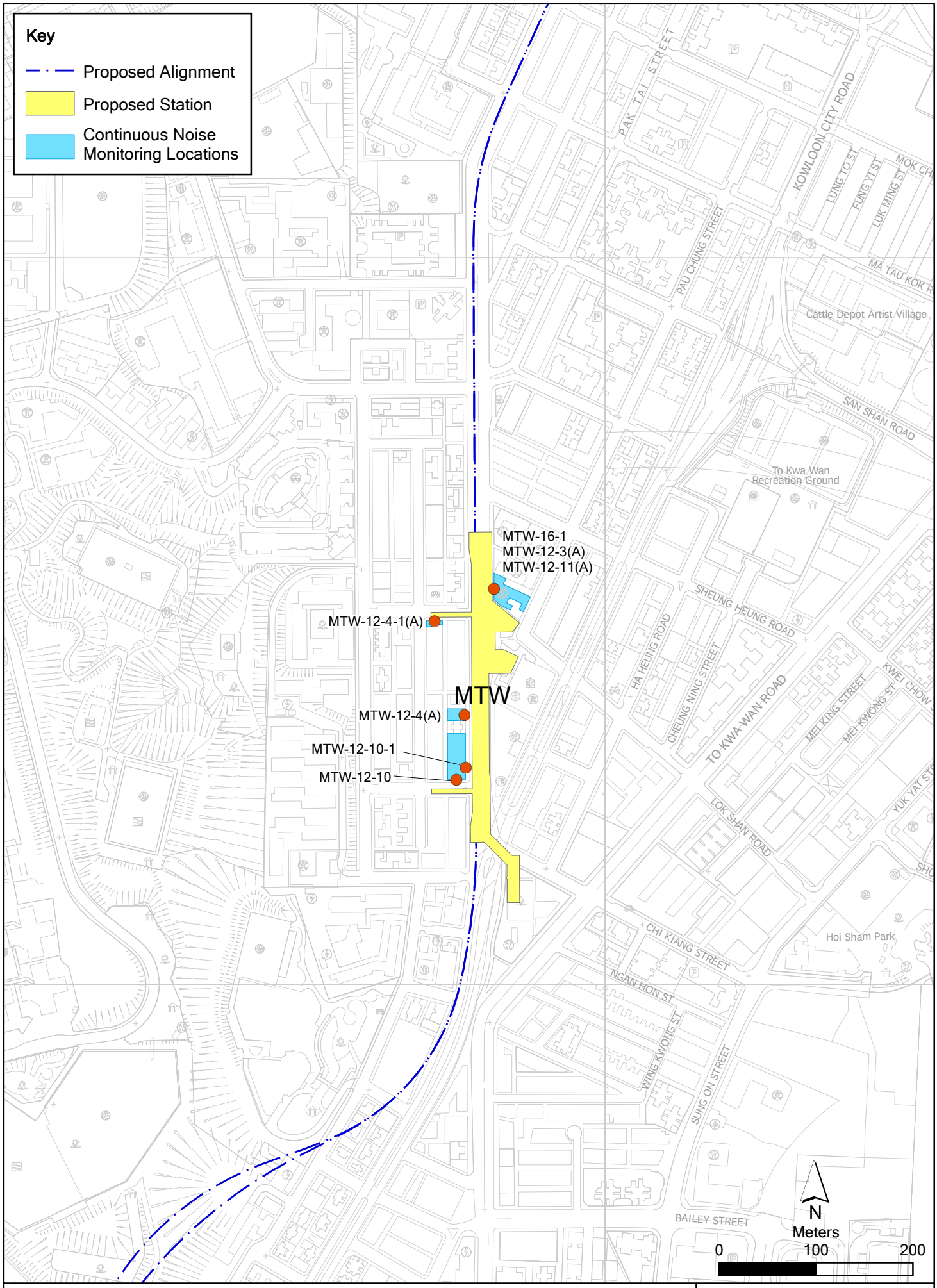


Figure 2.2b

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 2018

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

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 2018

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

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

24-hr TSP Monitoring Stations:
DMS-6, DMS-7, DMS-8, DMS-9 and DMS-10
Monitoring Month: March 2018

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

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 2018

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

Annex F

Calibration Reports

Annex F Calibration Reports

Dust Monitoring Equipment

Monitoring Station ID	Location	Monitoring Equipment		Last Calibration Date	Next Calibration Date
24-hr TSP		**HVS**	**Calibrator**		
DMS-6	Katherine Building	TE-5170 (S/N 0107)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2017	5 May 2018
DMS-7	Parc 22	TE-5170 (S/N 3574)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2017	5 May 2018
DMS-8	SKH Good Shepherd Primary School	TE-5170 (S/N 3572)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2017	5 May 2018
DMS-9	No. 12 Pau Chung Street	TE-5170 (S/N 0814)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2017	5 May 2018
DMS-10	Chat Ma Mansion	TE-5170 (S/N 3573)	CM-AIR-43 (Orifice I.D. 2454)	5 November 2017	5 May 2018

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 10786708)	22 July 2017	22 July 2018
	Sound Level Meter	Rion NL-52 (S/N 00131627)	4 July 2017	4 July 2018

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-6(Katherine Building)
Calibrated by	:	K.T.Ho
Date	:	05/11/2017

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	20 March 2017
Slope (m)	:	2.08464
Intercept (b)	:	-0.036840
Correlation Coefficient(r)	:	0.99994

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1012
Ta(K)	:	296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.8	3.588	1.739	54	54.16
2	13 holes	9.4	3.075	1.493	48	48.14
3	10 holes	7.0	2.653	1.290	38	38.11
4	7 holes	4.4	2.104	1.027	30	30.09
5	5 holes	3.0	1.737	0.851	24	24.07

Sampler Calibration Relationship (Linear Regression)

Slope(m):34.819 Intercept(b): -5.634 Correlation Coefficient(r): 0.9957

Checked by: Magnum Fan Date: 08/11/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-7(Parc 22)
Calibrated by	:	K.T.Ho
Date	:	05/11/2017

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	20 March 2017
Slope (m)	:	2.08464
Intercept (b)	:	-0.036840
Correlation Coefficient(r)	:	0.99994

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1012
Ta(K)	:	296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.4	3.531	1.712	64	64.18
2	13 holes	9.7	3.123	1.516	56	56.16
3	10 holes	7.8	2.801	1.361	50	50.14
4	7 holes	4.4	2.104	1.027	40	40.12
5	5 holes	3.0	1.737	0.851	30	30.09

Sampler Calibration Relationship (Linear Regression)

Slope(m):37.824 Intercept(b):-0.781 Correlation Coefficient(r): 0.9954

Checked by: Magnum Fan Date: 08/11/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-8(SHK Good Shepherd Primary School)
Calibrated by	:	K.T.Ho
Date	:	05/11/2017

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	20 March 2017
Slope (m)	:	2.08464
Intercept (b)	:	-0.036840
Correlation Coefficient(r)	:	0.99994

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1012
Ta(K)	:	296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.4	3.531	1.712	63	63.18
2	13 holes	9.6	3.107	1.508	56	56.16
3	10 holes	7.6	2.765	1.344	50	50.14
4	7 holes	4.6	2.151	1.049	40	40.12
5	5 holes	3.2	1.794	0.878	32	32.09

Sampler Calibration Relationship (Linear Regression)

Slope(m):33.738 Intercept(b):0.641 Correlation Coefficient(r): 0.9986

Checked by: Magnum Fan Date: 08/11/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-9(No. 12 Pau Chung Street)
Calibrated by	:	K.T.Ho
Date	:	05/11/2017

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	20 March 2017
Slope (m)	:	2.08464
Intercept (b)	:	-0.036840
Correlation Coefficient(r)	:	0.99994

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1012
Ta(K)	:	296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.8	3.588	1.739	68	68.20
2	13 holes	9.8	3.140	1.524	58	58.17
3	10 holes	7.6	2.765	1.344	50	50.14
4	7 holes	4.6	2.151	1.049	40	40.12
5	5 holes	2.8	1.678	0.823	28	28.08

Sampler Calibration Relationship (Linear Regression)

Slope(m):42.490 Intercept(b): -6.115 Correlation Coefficient(r): 0.9978

Checked by: Magnum Fan Date: 08/11/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-10(Chat Ma Mansion)
Calibrated by	:	K.T.Ho
Date	:	05/11/2017

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	20 March 2017
Slope (m)	:	2.08464
Intercept (b)	:	-0.036840
Correlation Coefficient(r)	:	0.99994

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1012
Ta(K)	:	296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.4	3.5317	1.712	61	61.18
2	13 holes	9.4	3.075	1.493	54	54.16
3	10 holes	7.2	2.691	1.309	46	46.13
4	7 holes	4.9	2.220	1.083	37	37.11
5	5 holes	2.8	1.678	0.823	28	28.08

Sampler Calibration Relationship (Linear Regression)

Slope(m): 35.266 Intercept(b): 1.975 Correlation Coefficient(r): 0.9988

Checked by: Magnum Fan Date: 08/11/2017

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 20, 2017 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 2454 Pa (mm) - 759.46

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	1.4390	3.2	2.00
2	NA	NA	1.00	1.0240	6.4	4.00
3	NA	NA	1.00	0.9170	7.9	5.00
4	NA	NA	1.00	0.8730	8.8	5.50
5	NA	NA	1.00	0.7200	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0120	0.7033	1.4257		0.9958	0.6920	0.8784
1.0078	0.9842	2.0163		0.9916	0.9683	1.2423
1.0057	1.0967	2.2543		0.9895	1.0791	1.3889
1.0045	1.1507	2.3643		0.9884	1.1322	1.4567
0.9992	1.3878	2.8514		0.9831	1.3654	1.7568
Qstd slope (m) =		2.08464		Qa slope (m) =		1.30537
intercept (b) =		-0.03684		intercept (b) =		-0.02270
coefficient (r) =		0.99994		coefficient (r) =		0.99994
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}

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. : C174092
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-1613) Date of Receipt / 收件日期 : 11 July 2017

Description / 儀器名稱	:	Sound Level Calibrator
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NC-73
Serial No. / 編號	:	10786708
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 : 22 July 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
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong, Technical Officer

Certified By 核證 : K C Lee, Engineer

Date of Issue 簽發日期 : 24 July 2017

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited Calibration & Testing Laboratory
c/o 4 F, 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
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. : C174092
證書編號

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

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

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C173864
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.986	1 kHz ± 2 %	± 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.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
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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
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. : C173613
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-1398) Date of Receipt / 收件日期 : 21 June 2017

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-52
Serial No. / 編號	:	00131627
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

DATE OF TEST / 測試日期 : 4 July 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. (after adjustment)
The results are detailed in the subsequent page(s).

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

Tested By 測試 : H T Wong
Technical Officer

Certified By 核證 : K C Lee
Engineer

Date of Issue 簽發日期 : 4 July 2017

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
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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
c/o 香港新界屯門興安里一號青山貨櫃樓四樓
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. : C173613
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 the internal standard (After Adjustment) was performed before the test 6.1.1.2 to 6.3.2.

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 Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	* 92.8	± 1.1

* Out of IEC 61672 Class 1 Spec.

6.1.1.2 After Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.0	± 1.1

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

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

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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
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

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6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.3

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.7	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 1.6
					8 kHz	92.9	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.6	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_C	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	91.0	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.6	-6.2 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
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Certificate of Calibration
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Certificate No. : C173613
證書編號

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

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

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

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

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

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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
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

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 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 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
05-Mar-18	11:20	11:50	Fine	62.1	76.1	-(b)	-	Traffic noise	25	0.5	NL-52 00131627	NC-73 10786708
16-Mar-18	11:20	11:50	Sunny	61.5	76.1	-(b)	-	Traffic noise	21	0.5	NL-52 00131627	NC-73 10786708
22-Mar-18	11:15	11:45	Sunny	61.0	76.1	-(b)	-	Traffic noise	21	0.5	NL-52 00131627	NC-73 10786708
28-Mar-18	11:14	11:44	Cloudy	61.3	76.1	-(b)	-	Traffic noise	24	0.5	NL-52 00131627	NC-73 10786708

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
05-Mar-18	10:20	10:50	Fine	65.1	70.0	-(b)	-	Traffic noise	25	0.5	NL-52 00131627	NC-73 10786708
16-Mar-18	10:25	10:55	Sunny	65.0	70.0	-(b)	-	Traffic noise	21	0.5	NL-52 00131627	NC-73 10786708
22-Mar-18	10:20	10:50	Sunny	64.6	70.0	-(b)	-	Traffic noise	21	0.5	NL-52 00131627	NC-73 10786708
28-Mar-18	10:22	10:52	Cloudy	65.0	70.0	-(b)	-	Traffic noise	24	0.5	NL-52 00131627	NC-73 10786708

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
05-Mar-18	8:00	8:30	Fine	72.3	75.4	-(b)	-	Traffic noise	25	0.5	NL-52 00131627	NC-73 10786708
16-Mar-18	8:00	8:30	Sunny	72.3	75.4	-(b)	Backhoe	Traffic noise	21	0.5	NL-52 00131627	NC-73 10786708
22-Mar-18	8:00	8:30	Sunny	71.8	75.4	-(b)	Backhoe	Traffic noise	21	0.5	NL-52 00131627	NC-73 10786708
28-Mar-18	8:00	8:30	Cloudy	72.3	75.4	-(b)	Backhoe	Traffic noise	24	0.5	NL-52 00131627	NC-73 10786708

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
05-Mar-18	9:25	9:55	Fine	69.5	69.2	57.7	Backhoe	Traffic noise	25	0.5	NL-52 00131627	NC-73 10786708
16-Mar-18	9:25	9:55	Sunny	69.4	69.2	55.9	Backhoe	Traffic noise	21	0.5	NL-52 00131627	NC-73 10786708
22-Mar-18	9:25	9:55	Sunny	69.6	69.2	59.0	Backhoe	Traffic noise	21	0.5	NL-52 00131627	NC-73 10786708
28-Mar-18	9:24	9:54	Cloudy	68.5	69.2	-(b)	Backhoe	Traffic noise	24	0.5	NL-52 00131627	NC-73 10786708

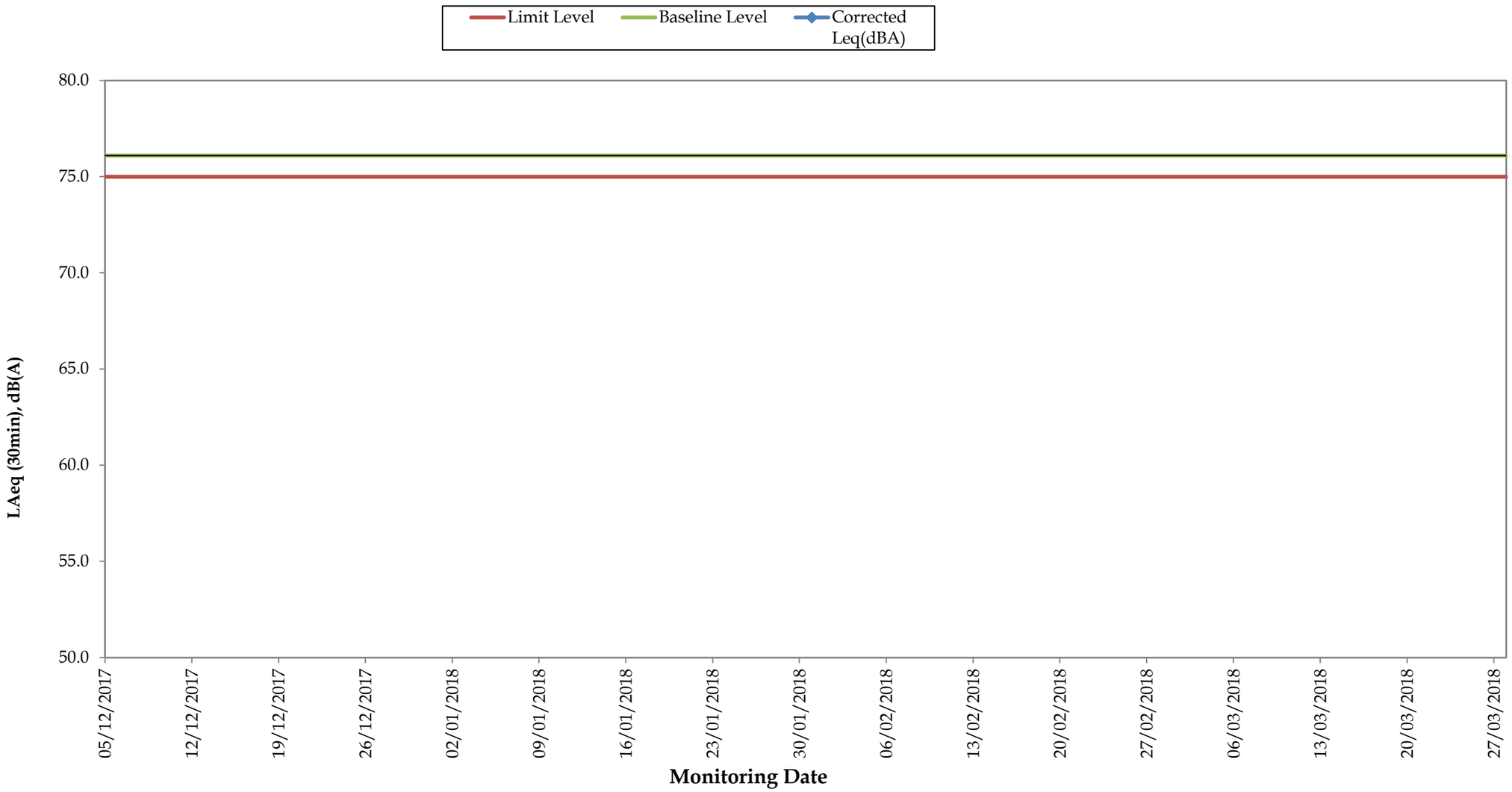
Station NMS-CA-10 Chat Ma Mansion

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
05-Mar-18	8:43	9:13	Fine	75.9	76.6	-(b)	Crane operation	Traffic noise	25	0.5	NL-52 00131627	NC-73 10786708
16-Mar-18	8:42	9:12	Sunny	75.6	76.6	-(b)	-	Traffic noise	21	0.5	NL-52 00131627	NC-73 10786708
22-Mar-18	8:43	9:13	Sunny	75.8	76.6	-(b)	Crane operation	Traffic noise	21	0.5	NL-52 00131627	NC-73 10786708
28-Mar-18	8:42	9:12	Cloudy	76.5	76.6	-(b)	Crane operation	Traffic noise	24	0.5	NL-52 00131627	NC-73 10786708

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 5, 16, 22 and 28 March 2018 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.

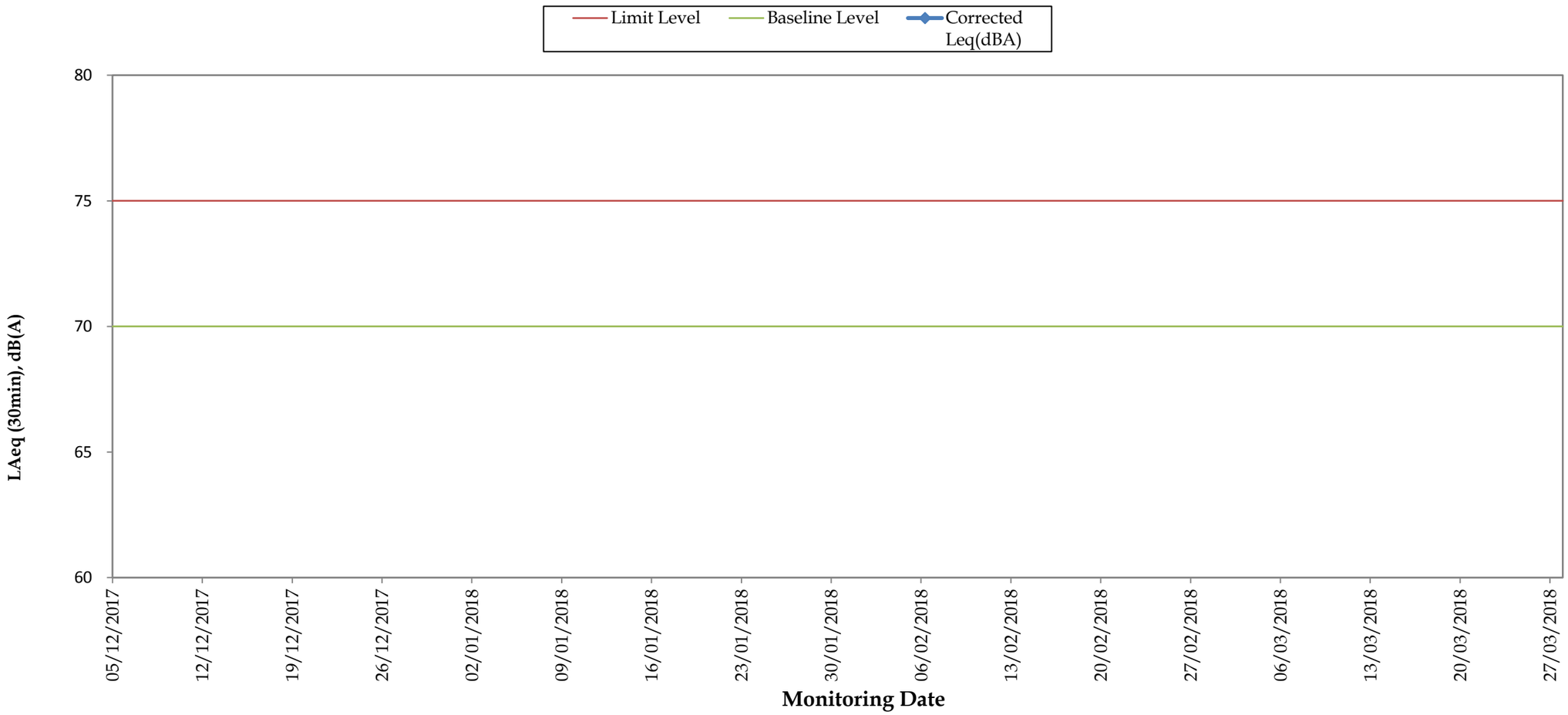
Regular Noise Monitoring Results at NMS-CA-6 (No. 16-23 Nam Kok Road) (LAeq, 30min) for the Past 4 Months



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.

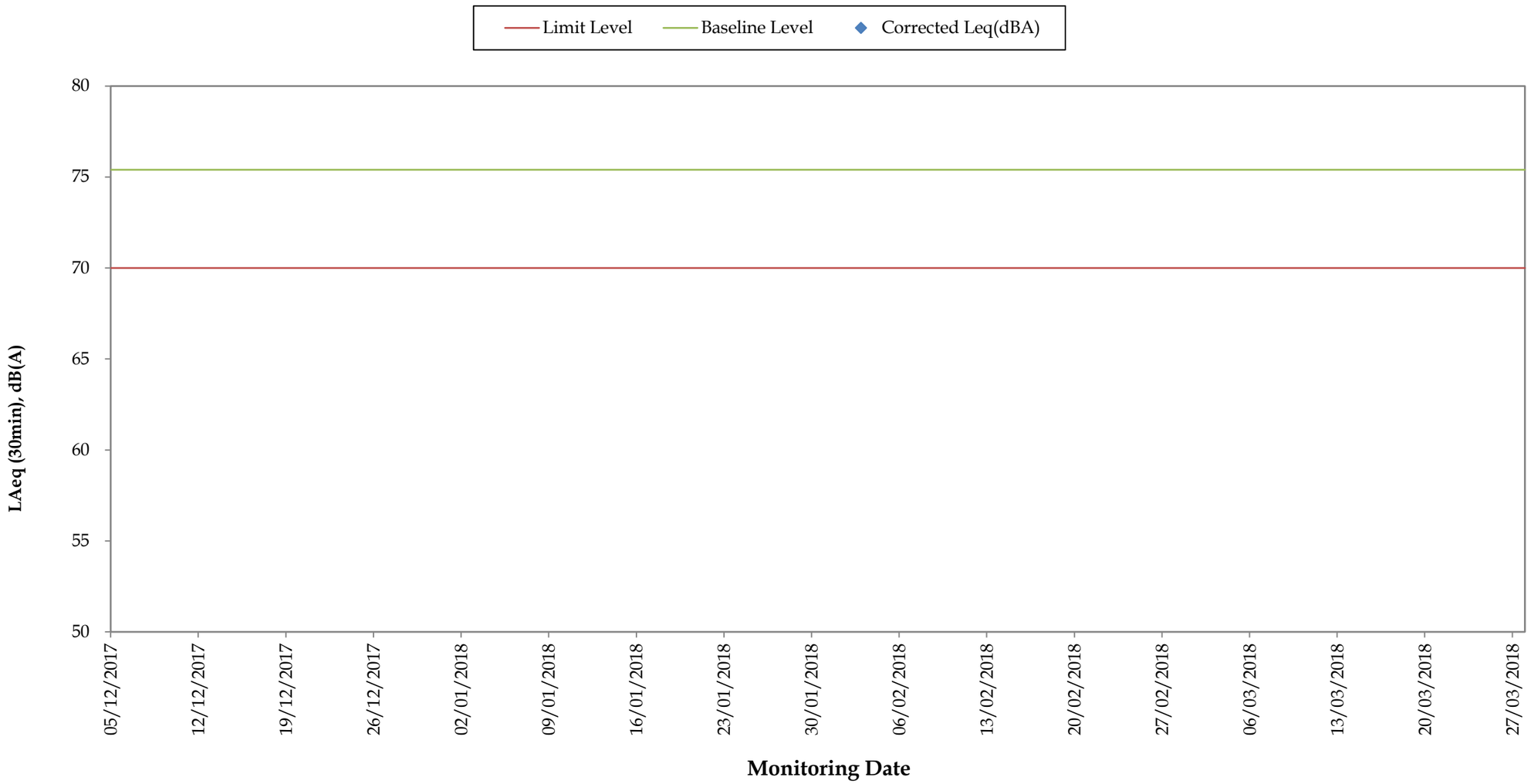
Regular Noise Monitoring Results at NMS-CA-7 (Skytower Tower 2) (LAeq, 30min) for the Past 4 Months



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.

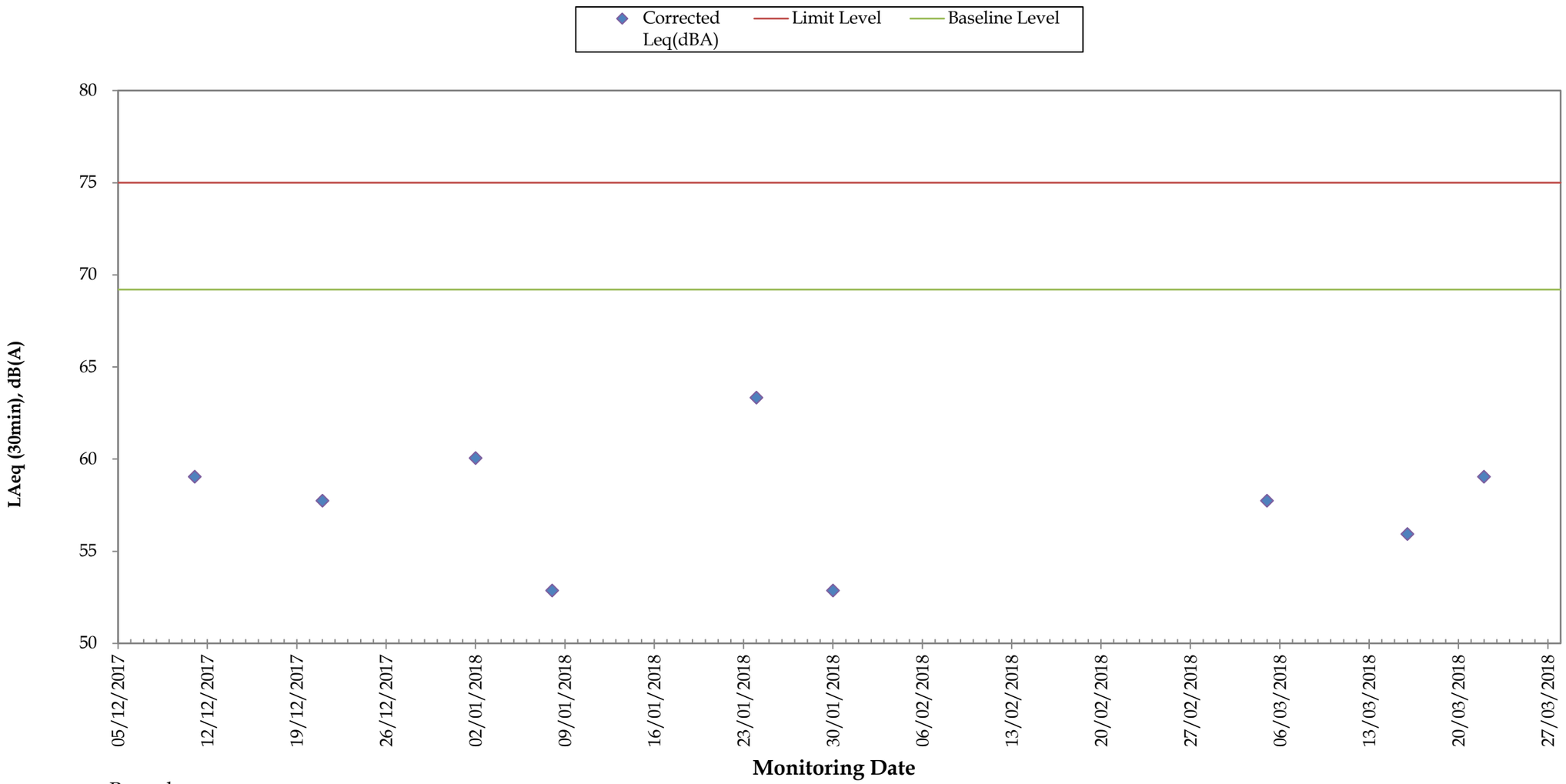
Regular Noise Monitoring Results at NMS-CA- 8 (SKH Good Shepherd Primary School) (LAeq, 30min) for the Past 4 Months



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

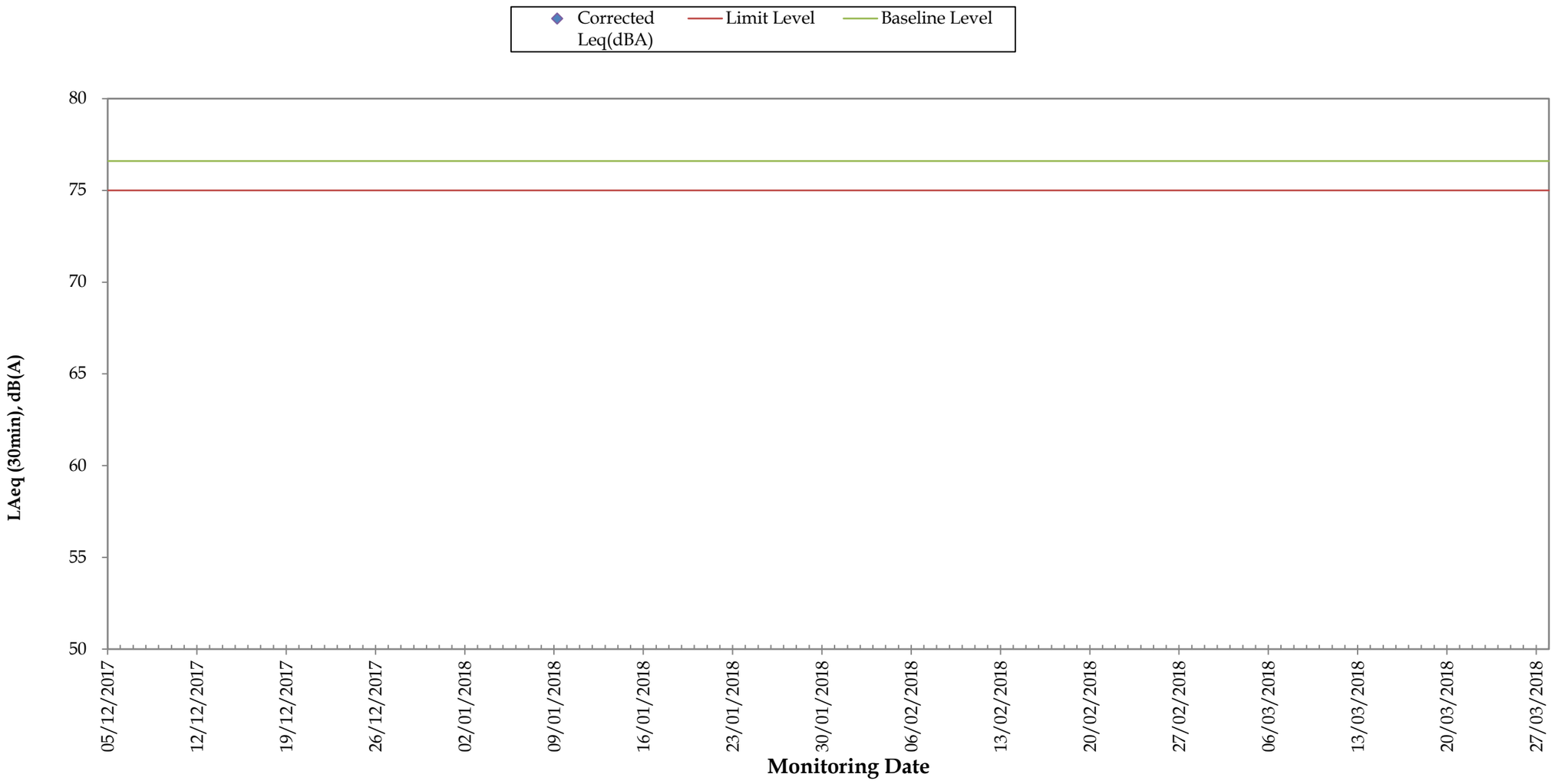
Regular Noise Monitoring Results at NMS-CA-9 (Kong Yiu Mansion) (LAeq, 30min)) for the Past 4 Months



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
05-Mar-18	11:00	06-Mar-18	11:00	Fine	2.7680	2.8590	18536.30	18560.30	24.00	1.32	1.32	1.32	48	156.8	260	-	0107	9063
10-Mar-18	8:52	11-Mar-18	8:52	Sunny	2.7616	2.8952	18560.30	18584.30	24.00	1.32	1.32	1.32	70	156.8	260	-	0107	9068
16-Mar-18	11:08	17-Mar-18	11:08	Sunny	2.7666	2.8905	18584.30	18608.30	24.00	1.32	1.32	1.32	65	156.8	260	-	0107	9073
22-Mar-18	11:02	23-Mar-18	11:02	Sunny	2.7352	2.8410	18608.30	18632.30	24.00	1.32	1.32	1.32	56	156.8	260	-	0107	9078
28-Mar-18	11:02	29-Mar-18	11:02	Cloudy	2.7821	2.8795	18632.30	18656.30	24.00	1.32	1.32	1.32	51	156.8	260	-	0107	9083
												Minimum	48					
												Average	58					
												Maximum	70					

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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
05-Mar-18	10:10	06-Mar-18	10:10	Fine	2.7499	2.8620	7784.17	7808.17	24.00	1.21	1.21	1.21	64	166.7	260	-	3574	9062
10-Mar-18	8:42	11-Mar-18	8:42	Sunny	2.7588	2.8842	7808.17	7832.17	24.00	1.21	1.21	1.21	72	166.7	260	-	3574	9067
16-Mar-18	10:12	17-Mar-18	10:12	Sunny	2.7472	2.8661	7832.17	7856.17	24.00	1.21	1.21	1.21	68	166.7	260	-	3574	9072
22-Mar-18	10:08	23-Mar-18	10:08	Sunny	2.7531	2.8602	7856.17	7880.17	24.00	1.21	1.21	1.21	61	166.7	260	-	3574	9077
28-Mar-18	10:10	29-Mar-18	10:10	Cloudy	2.7798	2.8600	7880.17	7904.17	24.00	1.21	1.21	1.21	46	166.7	260	-	3574	9082
												Minimum	46					
												Average	62					
												Maximum	72					

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	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
05-Mar-18	8:05	06-Mar-18	8:05	Fine	2.7460	2.8612	8741.11	8765.11	24.00	1.25	1.25	1.25	64	152.2	260	-	3572	9061
10-Mar-18	8:28	11-Mar-18	8:28	Sunny	2.7764	2.8900	8765.11	8789.11	24.00	1.25	1.25	1.25	63	152.2	260	-	3572	9066
16-Mar-18	8:05	17-Mar-18	8:05	Sunny	2.7381	2.8592	8789.11	8813.11	24.00	1.25	1.25	1.25	67	152.2	260	-	3572	9071
22-Mar-18	8:05	23-Mar-18	8:05	Sunny	2.7819	2.9112	8813.11	8837.11	24.00	1.25	1.25	1.25	72	152.2	260	-	3572	9076
28-Mar-18	8:05	29-Mar-18	8:05	Cloudy	2.7613	2.8421	8837.11	8861.11	24.00	1.25	1.25	1.25	45	152.2	260	-	3572	9081
												Minimum	45					
												Average	62					
												Maximum	72					

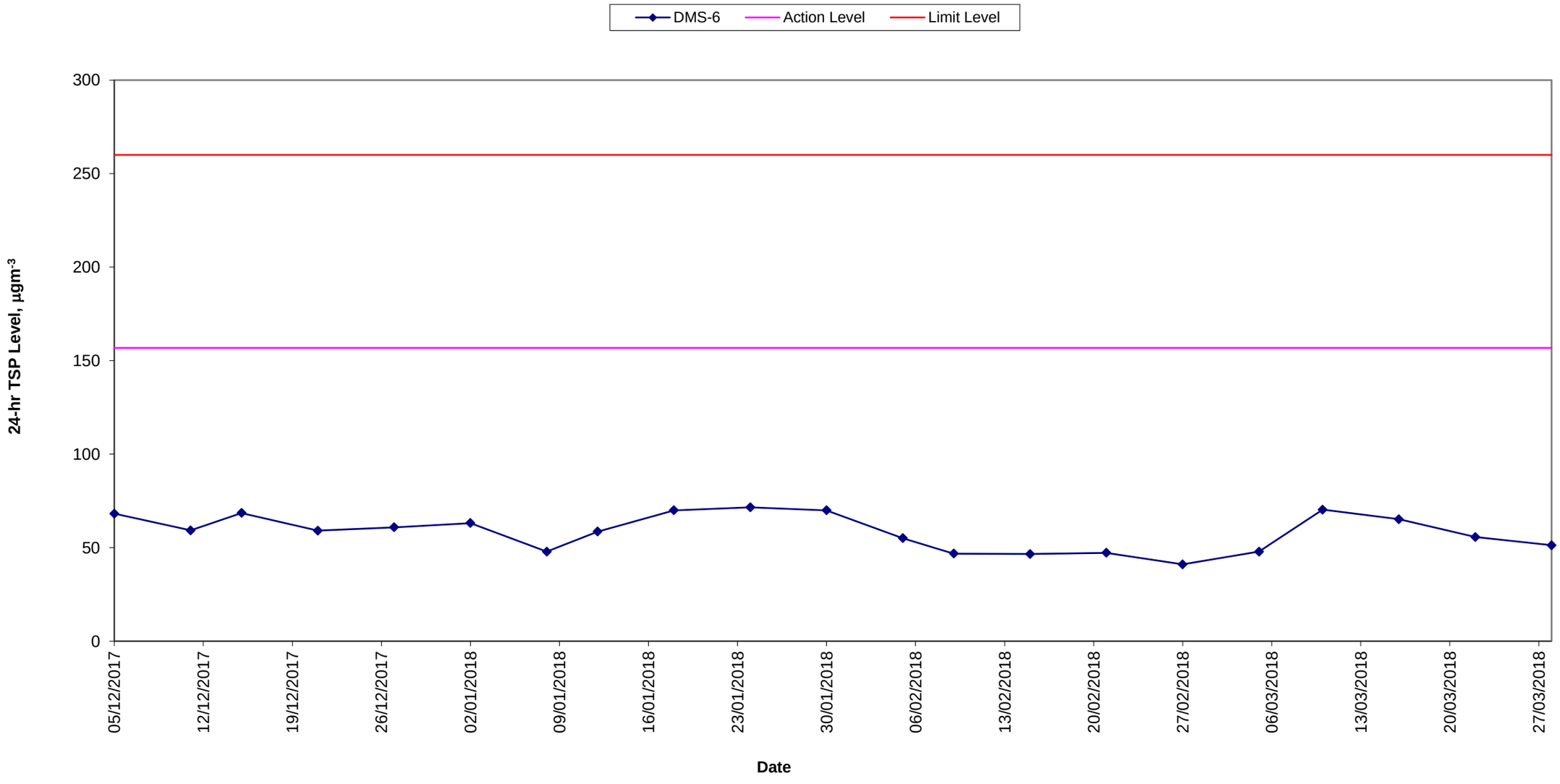
Station DMS-9 No. 12 Pau Chung Street

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	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
05-Mar-18	8:15	06-Mar-18	8:15	Fine	2.7653	2.8791	18708.40	18732.40	24.00	1.24	1.24	1.24	64	160.9	260	-	0814	9060
10-Mar-18	8:10	11-Mar-18	8:10	Sunny	2.7676	2.9004	18732.40	18756.40	24.00	1.24	1.24	1.24	74	160.9	260	-	0814	9065
16-Mar-18	8:15	17-Mar-18	8:15	Sunny	2.7257	2.8345	18756.40	18780.40	24.00	1.24	1.24	1.24	61	160.9	260	-	0814	9070
22-Mar-18	8:15	23-Mar-18	8:15	Sunny	2.7836	2.9015	18780.40	18804.40	24.00	1.24	1.24	1.24	66	160.9	260	-	0814	9075
28-Mar-18	8:15	29-Mar-18	8:15	Cloudy	2.7687	2.8610	18804.40	18828.40	24.00	1.24	1.24	1.24	52	160.9	260	-	0814	9080
												Minimum	52					
												Average	63					
												Maximum	74					

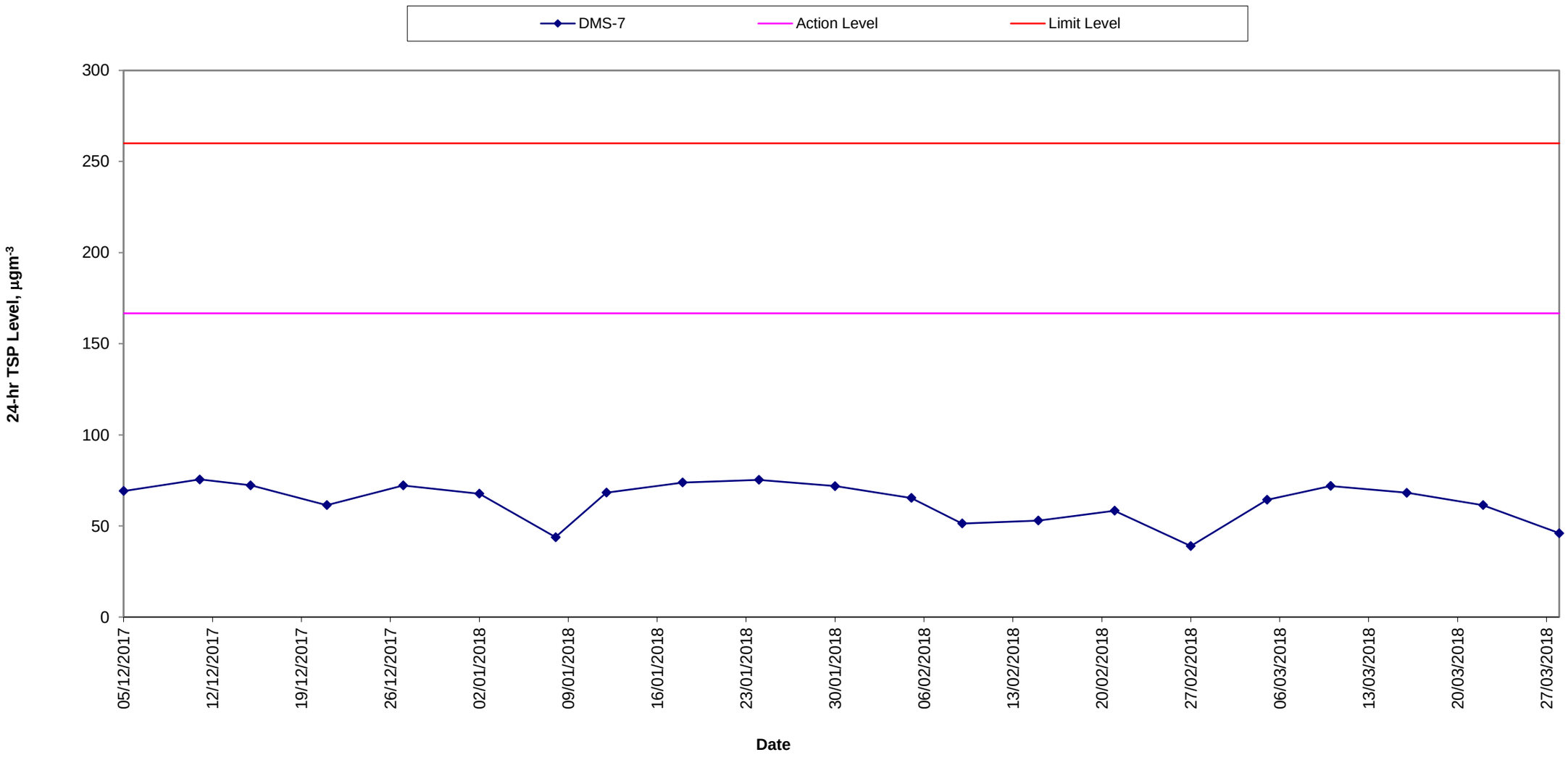
Station DMS-10 Chat Ma Mansion

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	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
05-Mar-18	8:45	06-Mar-18	8:45	Fine	2.7746	2.8922	9157.20	9181.20	24.00	1.21	1.21	1.21	67	170.4	260	-	3573	9059
10-Mar-18	8:00	11-Mar-18	8:00	Sunny	2.7641	2.8719	9181.20	9205.20	24.00	1.21	1.21	1.21	62	170.4	260	-	3573	9064
16-Mar-18	8:45	17-Mar-18	8:45	Sunny	2.7632	2.8619	9205.20	9229.20	24.00	1.21	1.21	1.21	57	170.4	260	-	3573	9069
22-Mar-18	8:45	23-Mar-18	8:45	Sunny	2.7879	2.8911	9229.20	9253.20	24.00	1.21	1.21	1.21	59	170.4	260	-	3573	9074
28-Mar-18	8:43	29-Mar-18	8:43	Cloudy	2.7572	2.8419	9253.20	9277.20	24.00	1.21	1.21	1.21	49	170.4	260	-	3573	9079
												Minimum	49					
												Average	59					
												Maximum	67					

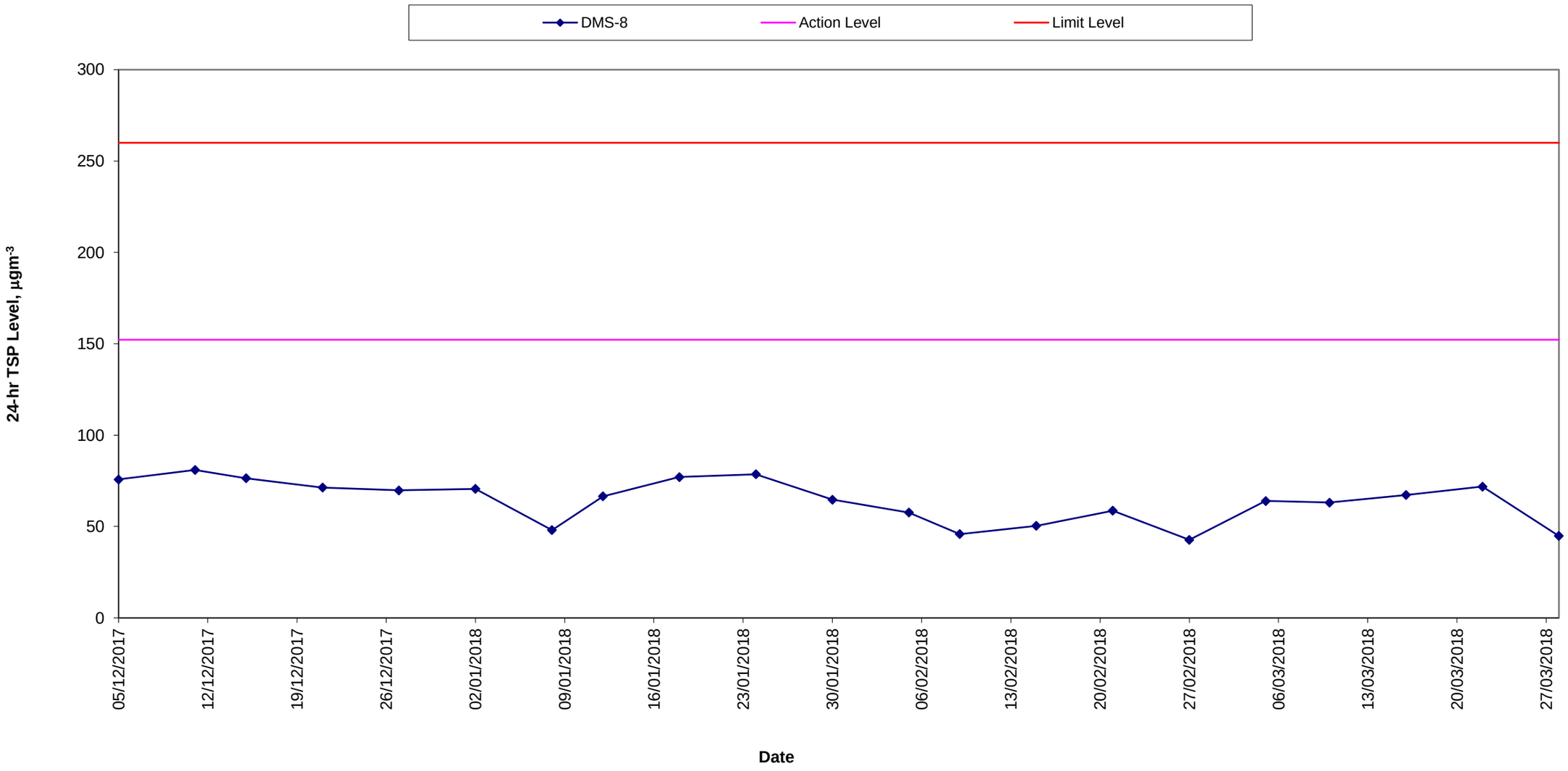
Construction Dust Monitoring Results for the Past 4 Months
DMS-6 (Katherine Building)



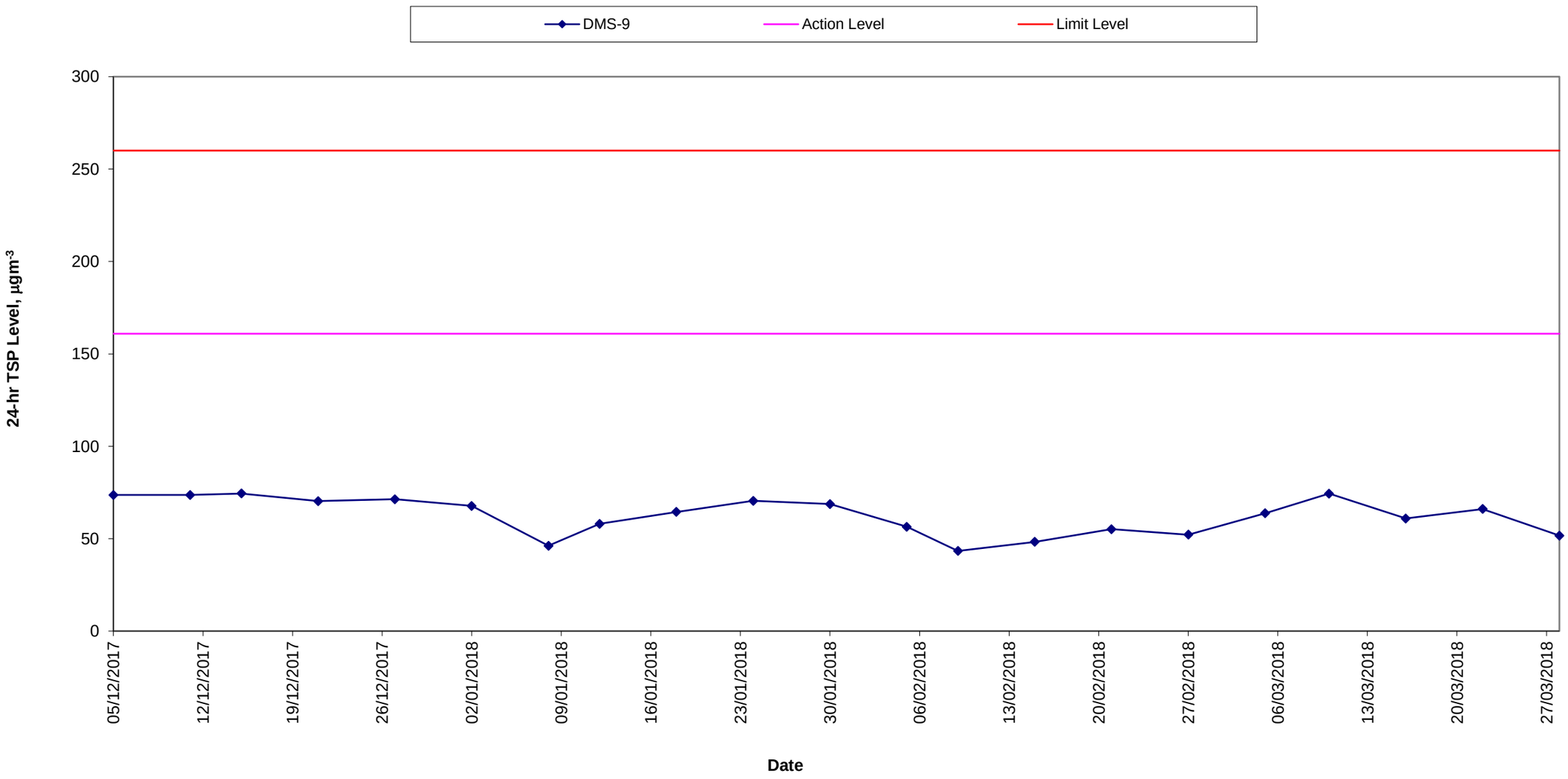
Construction Dust Monitoring Results for the Past 4 Months
DMS- 7 (Parc 22)



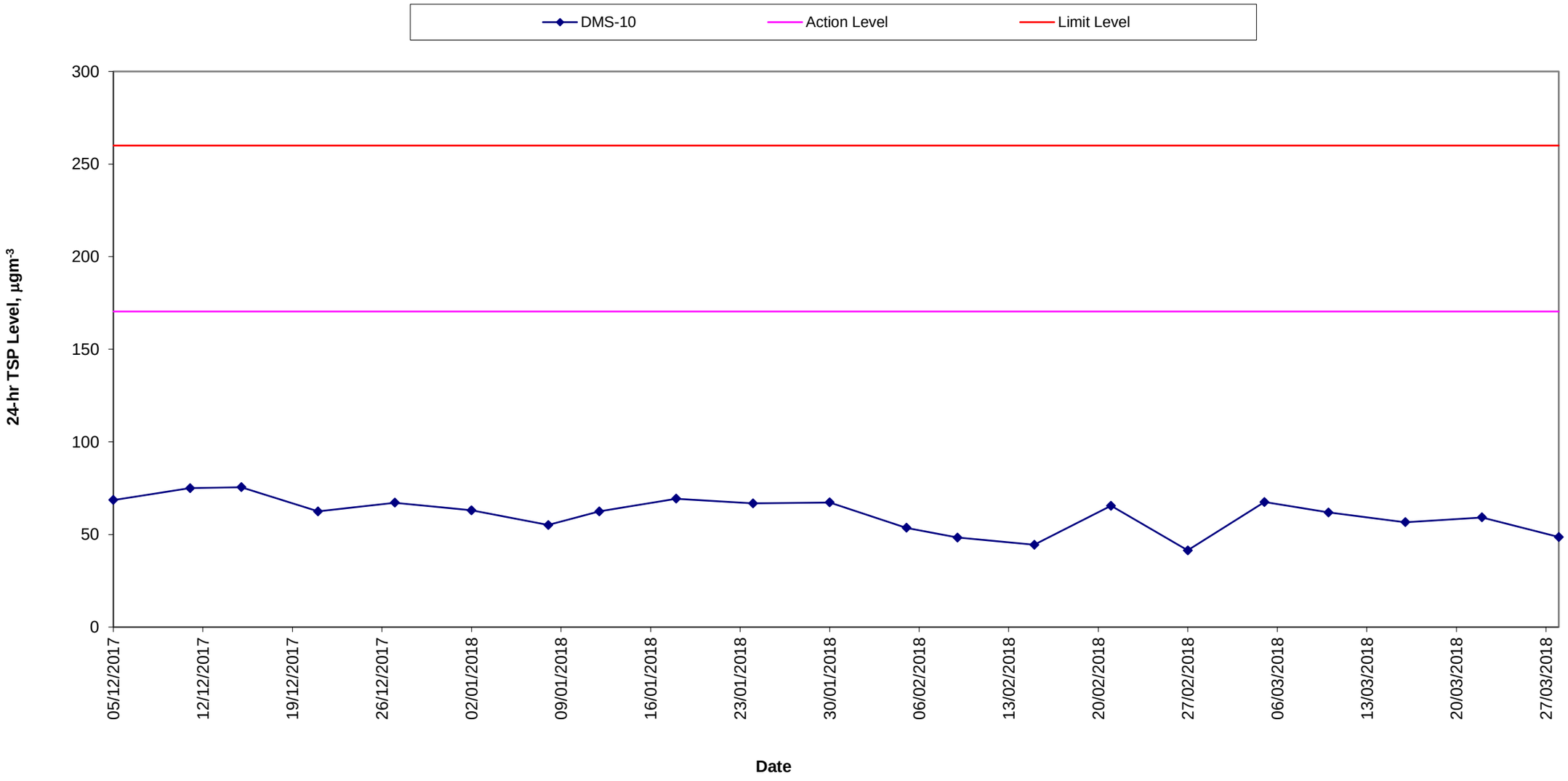
Construction Dust Monitoring Results for the Past 4 Months
DMS-8 (SKH Good Shepherd Primary School)



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



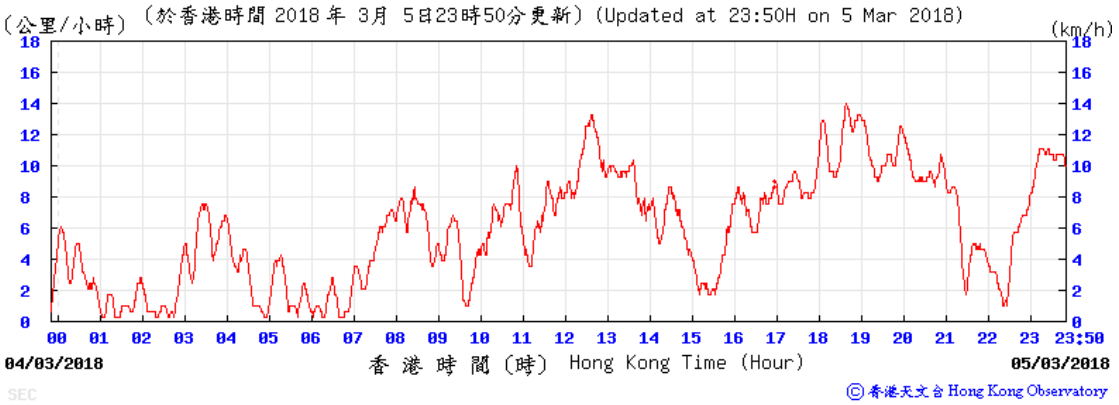
Construction Dust Monitoring Results for the Past 4 Months
DMS-10 (Chat Ma Mansion)



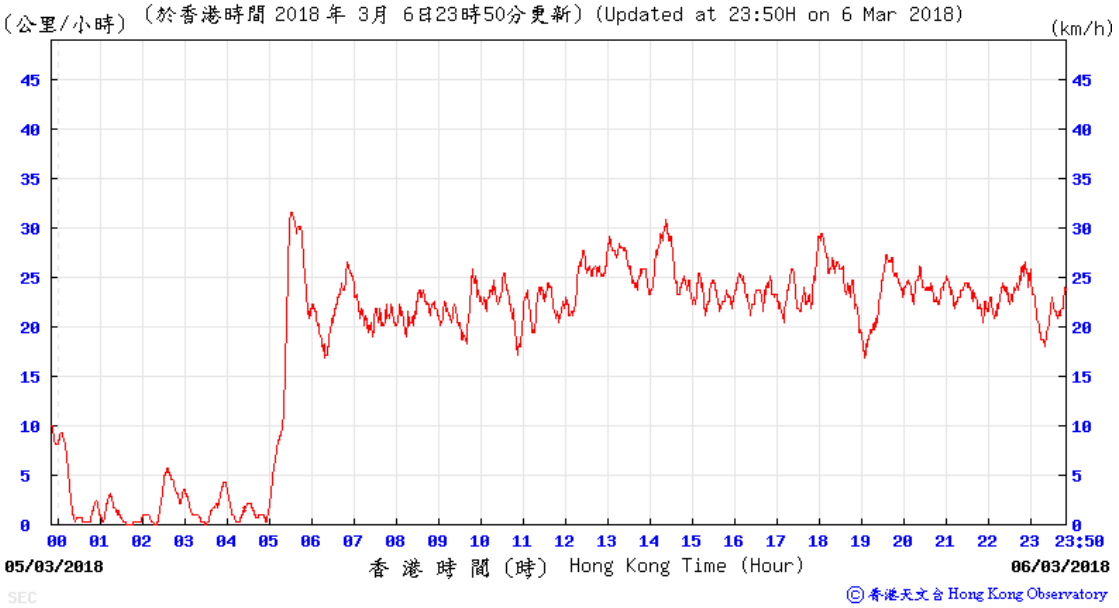
Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

5-6 March 2018

Wind Speed:

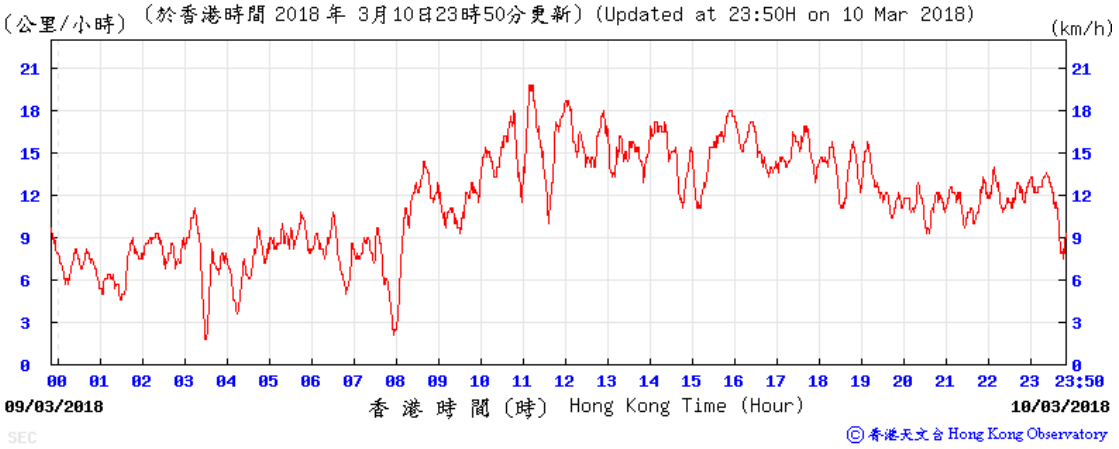


Wind Speed:



10-11 March 2018

Wind Speed:



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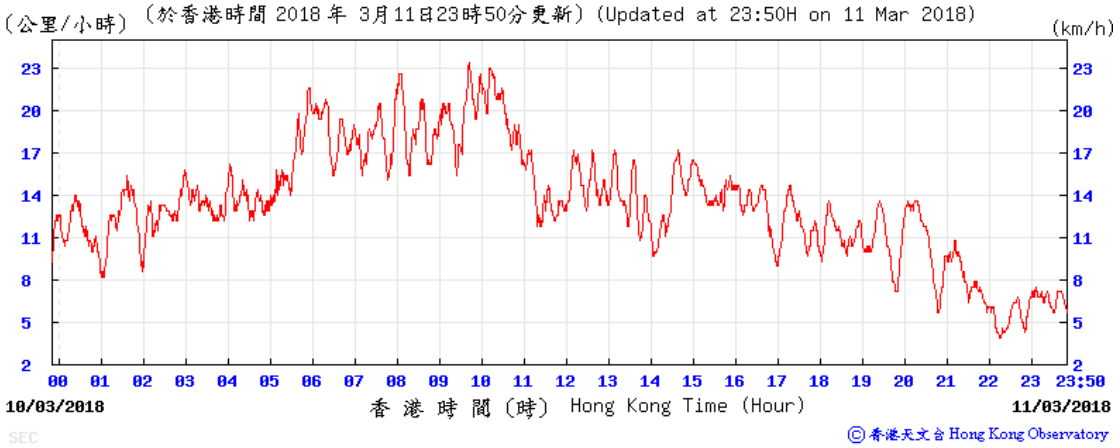
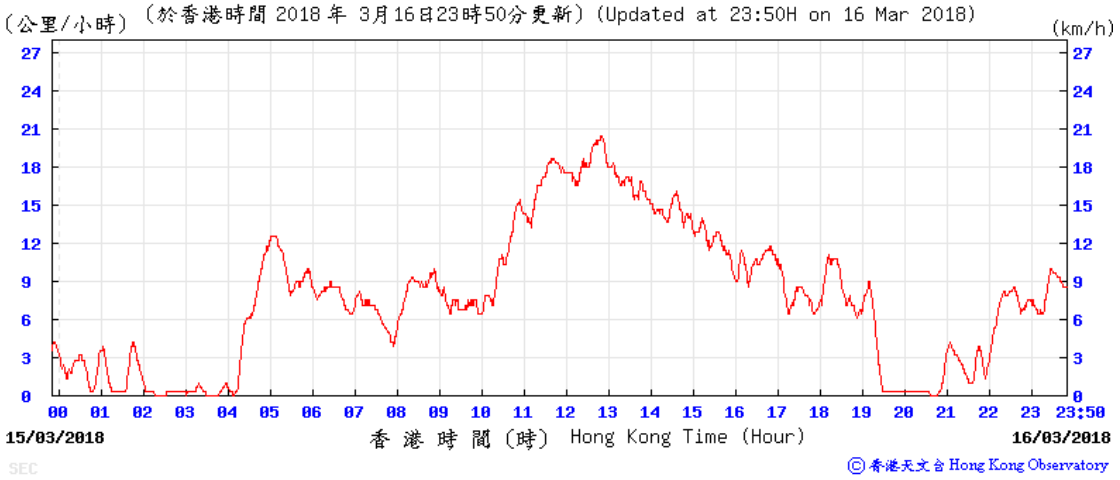
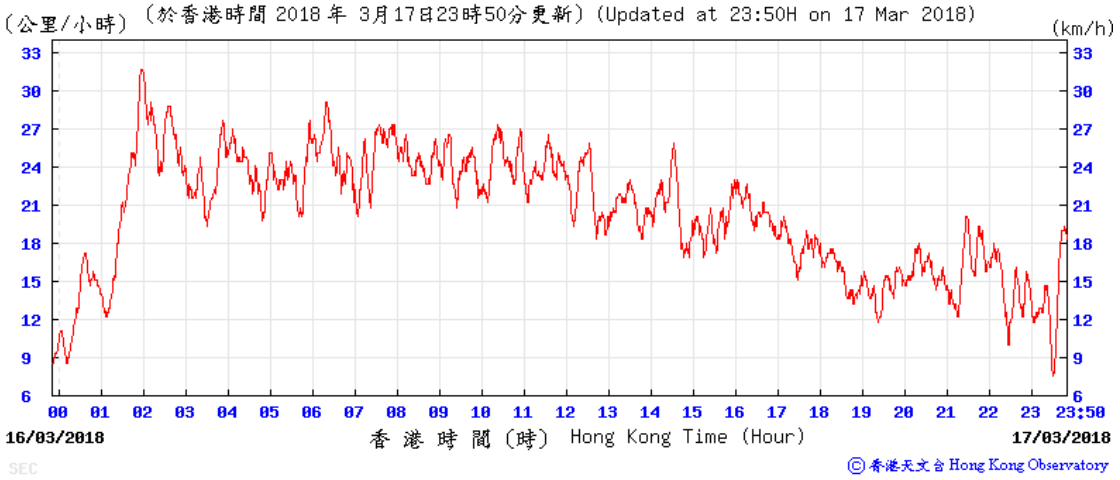


16-17 March 2018

Wind Speed:

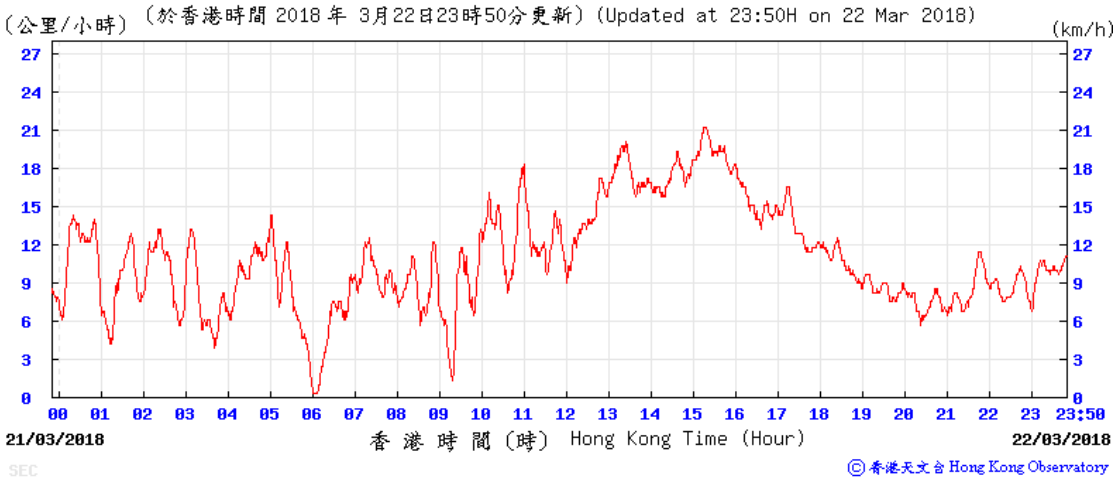


Wind Speed:



22-23 March 2018

Wind Speed:



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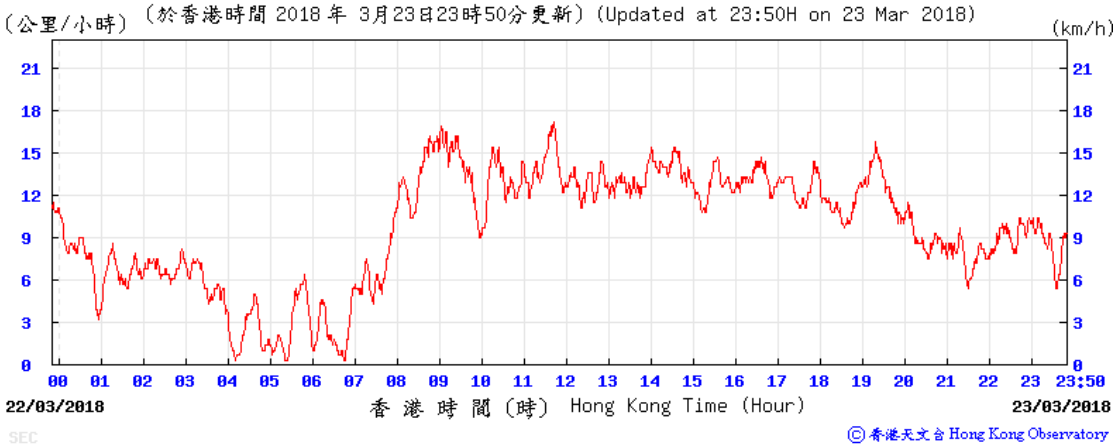
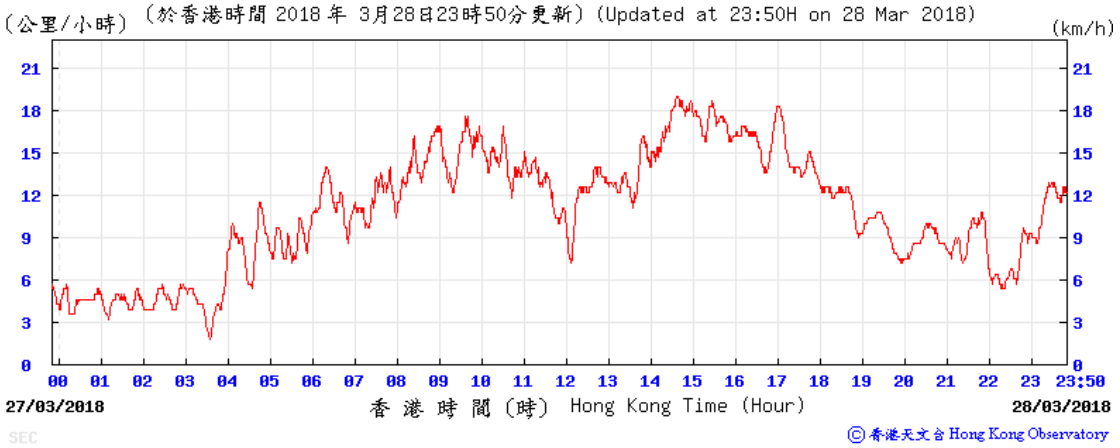


28-29 March 2018

Wind Speed:



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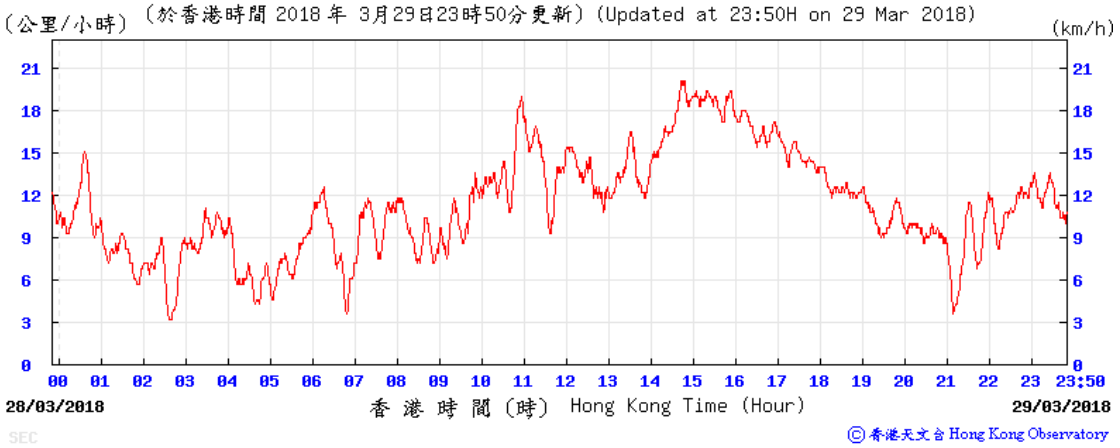
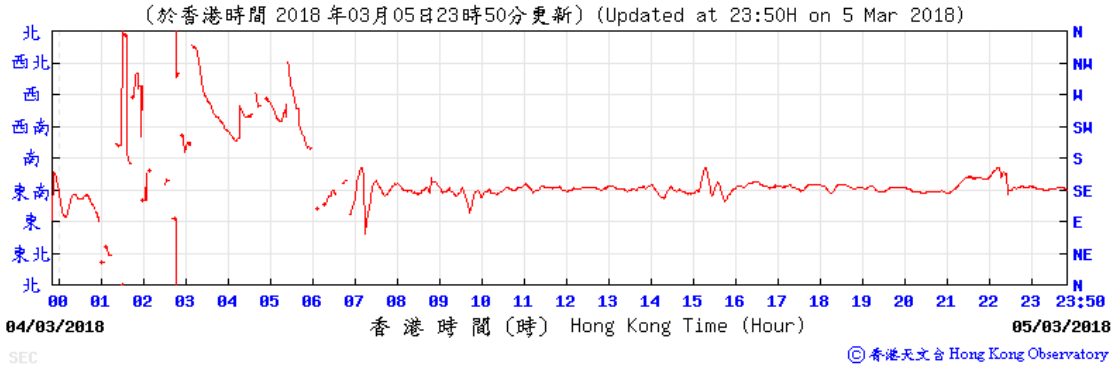


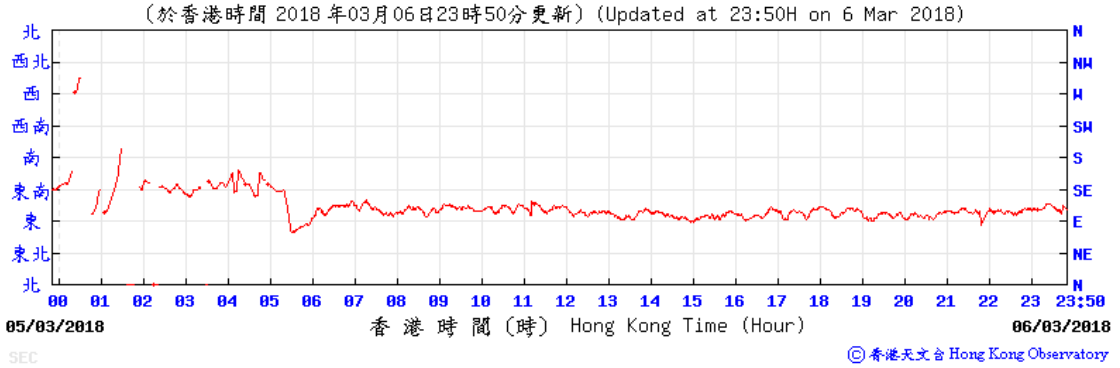
Average wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

5-6 March 2018

Wind Direction:

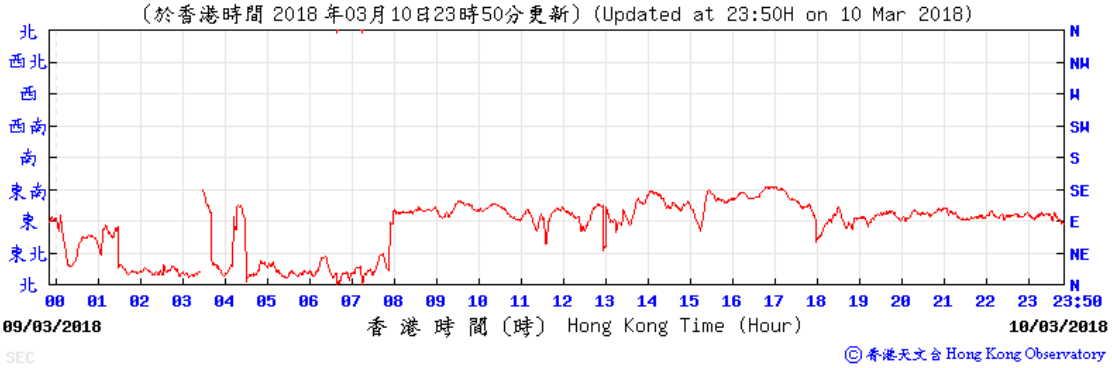


Wind Direction:



10-11 March 2018

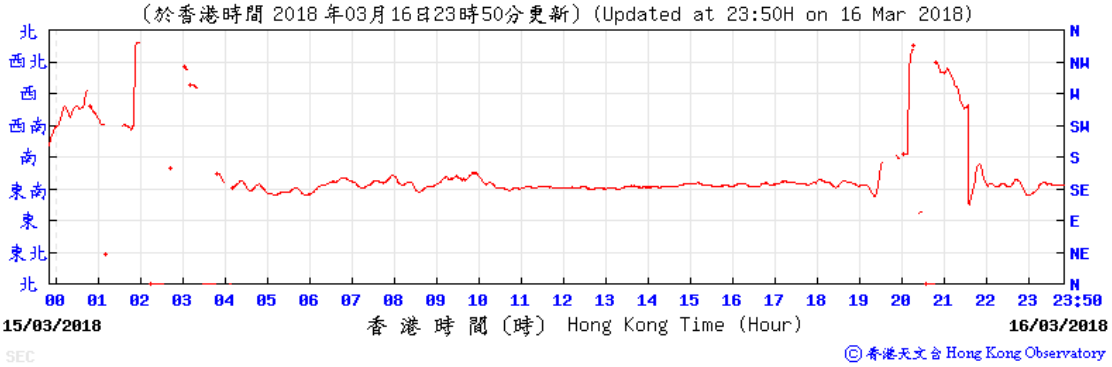
Wind Direction:



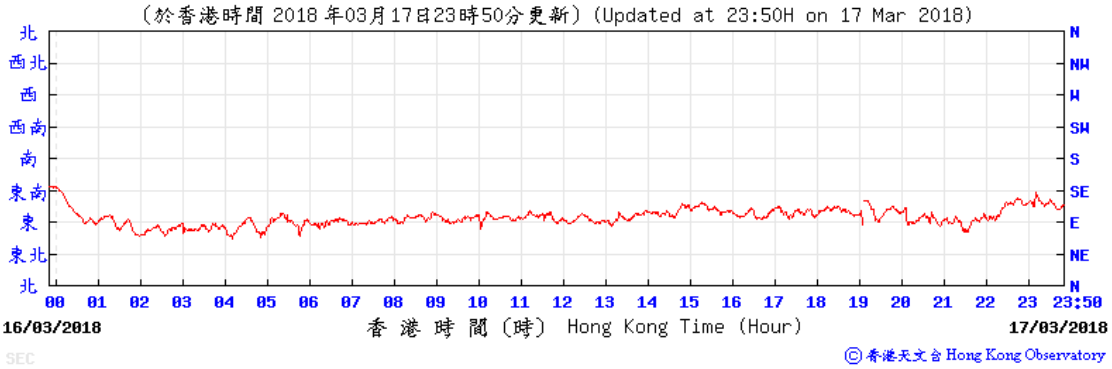
Wind Direction:

16-17 March 2018

Wind Direction:

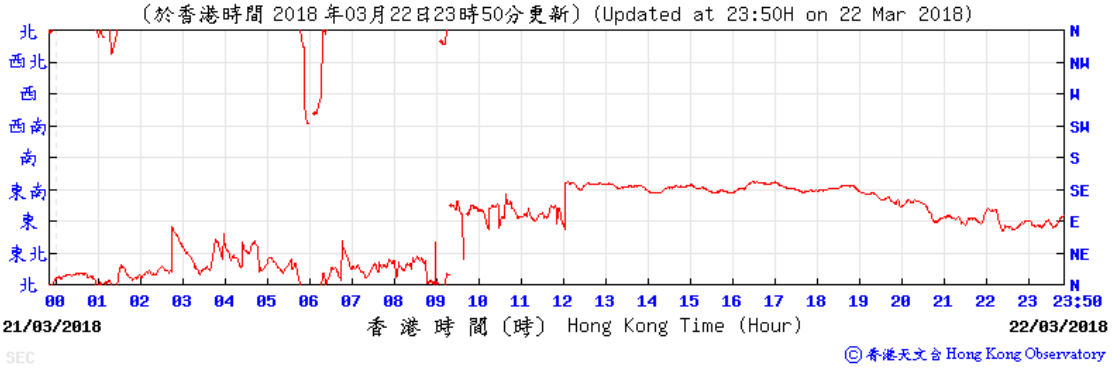


Wind Direction:



22-23 March 2018

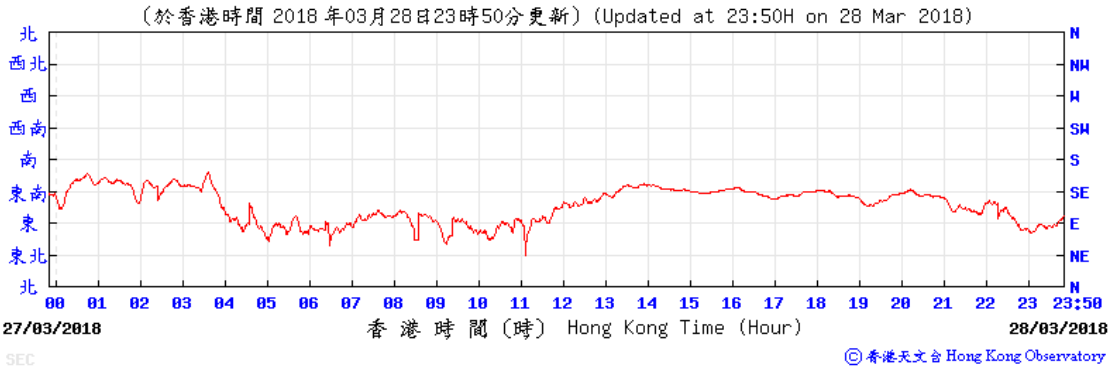
Wind Direction:



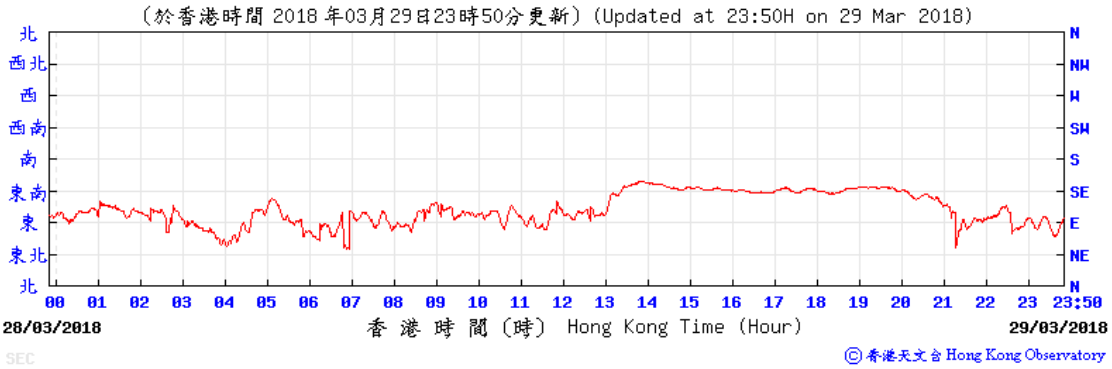
Wind Direction:

28-29 March 2018

Wind Direction:



Wind Direction:



Annex K

Waste Flow Table

Annex K – Waste Flow Table

Monthly Summary Waste Flow Table for the year 2012-2018

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

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of Non-inert C&D Wastes Generated Monthly					Imported Fill
	Total Quantity Generated	Hard Rocks and Large Broken Concrete (See Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill (See Note 5)	Inert C&D Materials Delivered to 1108A Kai Tai Barging Facilities (See Note 6)	Inert C&D Materials Delivered to 1123 Kai Tai Barging Facilities (See Note 12)	Metals	Paper/ cardboard packaging	Plastics (See Note 2)	Chemical Waste (See Note 10)	Others, e.g. general refuse (See Note 5)	
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '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	0.000	0.906	21.752	6.628	2.396	0.000
Jan 2016	28.064	0.000	0.000	0.000	0.000	28.064	-	0.000	0.855	0.494	0.000	0.276	0.000
Feb 2016	4.768	0.000	0.000	0.000	0.000	4.768	-	0.000	0.230	0.327	0.000	0.280	0.000
Mar 2016	13.662	0.000	0.000	0.000	0.000	13.662	-	0.000	0.000	0.316	0.000	0.232	0.000
Apr 2016	21.282	0.000	0.000	0.000	0.000	21.282	-	0.000	0.167	0.674	4.000	0.378	0.000
May 2016	28.466	0.000	0.000	0.000	0.000	28.466	-	0.000	0.072	0.580	0.000	0.315	0.000
Jun 2016	29.018	0.000	0.000	0.000	0.000	29.018	-	0.000	0.045	1.480	3.360	0.292	0.000
Jul 2016	3.727	0.000	0.000	0.000	0.000	3.727	-	0.000	0.045	0.860	0.000	0.347	0.000
Aug 2016	0.197	0.000	0.000	0.000	0.000	0.197	-	0.000	0.140	1.648	0.000	0.382	0.000
Sep 2016	0.000	0.000	0.000	0.000	0.000	0.000	-	0.000	0.122	0.680	0.000	0.443	0.000
Oct 2016	0.000	0.000	0.000	0.000	0.000	0.000	-	0.000	0.144	0.575	0.000	0.435	0.000
Nov 2016	0.000	0.000	0.000	0.000	0.000	0.000	-	0.000	0.133	0.900	9.600	0.589	0.000
Dec 2016	0.000	0.000	0.000	0.000	0.000	0.000	-	0.000	0.063	0.562	0.000	0.696	0.000
Sub-total	129.184	0.000	0.000	0.000	0.000	129.184	0.000	0.000	2.016	9.096	16.960	4.665	0.000

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of Non-inert C&D Wastes Generated Monthly					Imported Fill
	Total Quantity Generated	Hard Rocks and Large Broken Concrete (See Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill (See Note 5)	Inert C&D Materials Delivered to 1108A Kai Tai Barging Facilities (See Note 6)	Inert C&D Materials Delivered to 1123 Kai Tai Barging Facilities (See Note 12)	Metals	Paper/ cardboard packaging	Plastics (See Note 2)	Chemical Waste (See Note 10)	Others, e.g. general refuse (See Note 5)	
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg)	(in '000m^3)	(in '000m³)
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
Apr 2017	0.000	0.000	0.000	0.000	0.000	0.000	-	0.000	0.108	0.504	0.000	0.618	0.000
May 2017	10.676	0.000	0.000	0.000	0.000	0.000	10.676	0.000	0.158	0.296	0.000	0.619	0.000
Jun 2017	13.390	0.000	0.000	0.000	0.000	0.000	13.390	0.000	0.090	0.308	0.000	1.072	0.000
Jul 2017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.135	0.740	0.000	1.147	0.000
Aug 2017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.045	0.780	0.000	0.959	0.000
Sep 2017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.234	0.460	0.000	0.621	0.000
Oct 2017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.095	0.427	0.000	0.599	0.000
Nov 2017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.121	0.607	0.000	0.866	0.000
Dec 2017	3.964	0.000	0.000	0.000	3.964	0.000	0.000	0.000	0.099	0.450	0.000	0.692	0.000
Sub-total	28.030	0.000	0.000	0.000	3.964	0.000	24.066	0.000	1.347	5.713	0.000	9.325	0.000
Jan 2018	2.938	0.000	0.000	0.000	2.938	0.000	0.000	0.000	0.095	0.617	4.480	0.846	0.000
Feb 2018	5.529	0.000	0.000	0.000	5.529	0.000	0.000	0.000	0.117	0.227	0.000	0.374	0.000
Mar 2018	3.746	0.000	0.000	0.000	3.746	0.000	0.000	0.000	0.000	0.450	0.000	0.468	0.000
Sub-total	12.213	0.000	0.000	0.000	12.213	0.000	0.000	0.000	0.212	1.294	4.480	1.688	0.000
Total	982.510	0.000	0.605	2.865	16.241	938.732	24.066	12.800	6.466	53.569	31.123	23.004	6.804

Notes:

-1 The performance targets are given below:

- All excavated materials to be sorted for recovering the inert portion of C&D materials, e.g. hard rocks, soil and broken concrete, for reuse on the Site or disposal to designated outlets;
- All metallic waste to be recovered for collection by recycling contractors;
- All cardboard and paper packaging (for plant, equipment and materials) to be recovered, properly stockpiled in dry and covered condition to prevent cross contamination;
- All chemical wastes to be collected and properly disposed of by specialist contractors; and
- All demolition debris to be stored to recover broken concrete, reinforcement bars, mechanical and electrical fittings, hardware as well as other fitting / materials that have established recycling outlets.

-2 Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

-3 Broken concrete for recycling into aggregates.

-4 The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

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

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

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

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

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

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

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

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

Annex L

(Not Used)

Annex M

Environmental Complaint, Environmental Summon and Prosecution Log

Annex M Environmental Complaint, Environmental Summon and Prosecution Log

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

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

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
July 2016	0	0
August 2016	0	0
September 2016	0	0
October 2016	1	0
November 2016	0	0
December 2016	2	0
January 2017	0	0
February 2017	0	0
March 2017	1	0
April 2017	0	0
May 2017	0	0
June 2017	0	0
July 2017	1	0
August 2017	1	0
September 2017	2	0
October 2017	3	0
November 2017	1	0
December 2017	0	0
January 2018	0	0
February 2018	0	0
March 2018	0	0
Overall Total	41	0

Appendix B

63rd Monthly EM&A Report for Works Contract 1111 – Hung Hom North Approach Tunnels

AECOM

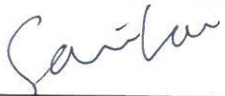
Gammon-Kaden SCL 1111 Joint Venture

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 2018

[April 2018]

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

Version: 0 Date: 10 April 2018

Disclaimer

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AECOM Asia Co. Ltd.
15/F, Grand Central Plaza, Tower 1, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong
Tel: (852) 3922 9000 Fax: (852) 2317 7609 www.aecom.com

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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 2018. As informed by the Contractor, major activities in the reporting period were:

Location	Site Activities
Ho Man Tin	Steel mesh, planter works, hoarding removal
NSL (South)	Concreting works, form work erection, reinforcement fixing, backfill, road & drainage construction, excavation, hoarding removal, bar fence, planting
OB2 / TB1	Maintenance access, abandoned watermain removal and bar fence
OB2A / TB2	Maintenance access, bar fence and slope reinstatement
NSL 9 & Oi Sen Path	Defect rectification, minor steel work

Breaches of Action and Limit Levels for Air Quality

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

Breaches of Action and Limit Levels for Noise

Regular Noise Monitoring

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

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

Continuous Noise Monitoring

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

Complaint, Notification of Summons and Successful Prosecution

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

Future Key Issues

Key issues to be considered in the coming month included:

Location	Site Activities
Ho Man Tin	Steel mesh, planter works, hoarding removal
NSL (South)	Backfill, road & drainage construction, bar fence, planting
OB2 / TB1	Maintenance access, abandoned watermain removal and bar fence
OB2A / TB2	Maintenance access, bar fence and slope reinstatement
NSL 9 + Oi Sen Path	Defect rectification, minor steel work

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

1 INTRODUCTION

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

1.1 Purpose of the Report

1.1.1 This is the sixty-third monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period from 1 to 31 March 2018.

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 EP-437/2012. The latest Environmental Permit (EP No: EP-438/2012/K and EP-437/2012/A) were issued by Director of Environmental Protection (DEP) on 4 October 2016 and 28 November 2017 respectively.

2.1.3 The construction of the SCL is divided into different civil construction works contracts and Works Contract 1111 – Hung Hom North Approach Tunnels (hereafter referred to as “the Project”) covers construction activities at Mong Kok Freight Terminal and part of the construction activities located at Hung Hom under the two EPs.

2.2 Site Description

2.2.1 The major construction activities under Works Contract 1111 include:

- SCL (MKK-HUH) – (i) Construction of an realigned and modified railway from Portal 1A near Oi Man Estate to Hung Hom Station; (ii) Construction of Noise Enclosure at Portal 1A; (iii) modification works on the existing Homantin Siding; and (iv) new EVA near Hung Hom Station.
- SCL (TAW–HUH) – Part of the railway tunnel from Ho Man Tin Station to Hung Hom.
- SCL (HHS) – Construction of tracks and noise barrier of Hung Hom Stabling Sidings.

2.2.2 **Figure 1.1** shows the works areas for the Works Contract 1111.

2.3 Construction Programme and Activities

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

Location	Site Activities
Ho Man Tin	Steel mesh, planter works, hoarding removal
NSL (South)	Concreting works, form work erection, reinforcement fixing, backfill, road & drainage construction, excavation, hoarding removal, bar fence, planting
OB2 / TB1	Maintenance access, abandoned watermain removal and bar fence
OB2A / TB2	Maintenance access, bar fence and slope reinstatement
NSL 9 & Oi Sen Path	Defect rectification, minor steel work

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. Lisa Poon	3127 6295	3127 6422
Meinhardt	Independent Environmental Checker	Independent Environmental Checker	Mr. Fredrick Leong	2859 1739	2540 1580
GKSCKJV	Contractor	Project Manager	Mr. Alan Yan	9855 0361	3904 9630
		Environmental Manager	Ms. Michelle Tang	3904 9663	
		Environmental Officer	Ms. Phoebe Ng	3904 9665	
AECOM	Contractor's Environmental Team (ET)	ET Leader	Mr. Y T Tang	3922 9393	2317 7609

2.5 Status of Environmental Licences, Notification and Permits

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

Table 2.1 Status of Environmental Licenses, Notifications and Permits

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Environmental Permit				
EP-437/2012/A	28 Nov 2017	-	Valid	
EP-438/2012/K	4 Oct 2016	-	Valid	-
Construction Noise Permit				
GW-RE0747-17	15 Sep 2017	14 Mar 2018	Valid	CNP for General Work at NSL 3-6
GW-RE1004-17	23 Dec 2017	20 Jun 2018	Valid	CNP for General Works at NSL 9
GW-RE0051-18	24 Jan 2018	16 Apr 2018	Valid	CNP for OB2 & OB2A Maintenance Work at Chatham Rd North
GW-RE0042-18	27 Jan 2018	26 Jul 2018	Valid	CNP for Dewatering and welding at NSL6
GW-RE0046-18	27 Jan 2018	26 Jul 2018	Valid	CNP for General and Reprovisioning Works at Hung Hom Station
GW-RE0133-18	3 Mar 2018	28 Apr 2018	Valid	CNP for 6m Hoarding and Scaffolding Platform Modification Works at NSL 9 & Oi Sen Path
GW-RE0181-18	22 Mar 2018	31 May 2018	Valid	CNP for Reinstatement Works at NSL 3-6
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)
WT00030411-2018	21 Feb 2018	28 Feb 2023	Valid	For near Winslow Street
Chemical Waste Producer Registration				
5213-641-G2618-01	22 Mar 2013	End of Project	Valid	For Winslow Street Playground Works

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
5213-641-G2618-03	8 Apr 2013	End of Project	Valid	For Hung Hom Station Works
5213-213-G2618-06	16 Apr 2013	End of Project	Valid	For Ho Man Tin Sidings Works
5213-236-G2618-10	14 Jun 2013	End of Project	Valid	For Chatham Road North - Hong Chong Road Works
5213-236-G2618-11	27 May 2013	End of Project	Valid	For Chatham Road North- NSL8 & EWL8 Works
5213-213-G2618-12	14 Apr 2014	End of Project	Valid	For Hung Hom Freight Terminal - NSL 3-5 Works
5213-236-G2618-14	8 May 2014	End of Project	Valid	For Oi Sen Path Works
5213-236-G2618-15	9 Feb 2015	End of Project	Valid	For NSL7 & EWL7 Works
5213-236-G2618-16	3 Aug 2015	End of Project	Valid	For EWL9 Works
Billing Account for Construction Waste Disposal				
7016658	24 Jan 2013	End of Project	Account Active	
Notification Under Air Pollution Control (Construction Dust) Regulation				
353991	02 Jan 2013	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. 234-238 Chatham Road North. The alternative monitoring location has been approved by IEC and EPD.

Monitoring Methodology

3.1.4 24-hour TSP Monitoring

(a) The HVS was installed in the vicinity of the air sensitive receivers. The following criteria were considered in the installation of the HVS as far as practicable:-

(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 2018 is provided in **Appendix F**.

3.2 Regular Construction Noise Monitoring

Monitoring Requirements

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

Table 3.4 Noise Monitoring Parameters, Frequency and Duration

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

Monitoring Equipment

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

Table 3.5 Noise Monitoring Equipment for Regular Noise Monitoring

Equipment	Brand and Model
Integrated Sound Level Meter	Model No. B&K2238 (S/N: 2800927), Model No. B&K2250 (S/N: 3001291)
Acoustic Calibrator	Model No. Rion Co., Ltd 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. 234-238 Chatham Road North. The alternative monitoring location has been approved by IEC and EPD.

Monitoring Methodology

3.2.4 Monitoring Procedure

(a) The sound level meter was set on a tripod at a height of 1.2 m above the ground for free-field measurements at NM2. A correction of +3 dB(A) shall be made to the free field measurements.

(b) Façade measurements were made at NM1.

(c) The battery condition was checked to ensure the correct functioning of the meter.

(d) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

(i) frequency weighting: A
(ii) time weighting: Fast
(iii) time measurement: $L_{eq(30\text{-minutes})}$ during non-restricted hours i.e. 0700 – 1900 on normal weekdays.

(e) Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94 dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.

(f) During the monitoring period, the L_{eq}, L_{10} and L_{90} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.

(g) Noise measurement was paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.

(h) Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

3.2.5 Maintenance and Calibration

(a) The microphone head of the sound level meter was cleaned with soft cloth at regular intervals.

(b) The meter and calibrator were sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.

(c) Calibration certificates of the sound level meters and acoustic calibrators are provided in **Appendix E**.

Monitoring Schedule for the Reporting Month

3.2.6 The schedule for environmental monitoring in March 2018 is provided in **Appendix F**.

3.3 Continuous noise monitoring

Monitoring Requirements

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

Monitoring Locations

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

Table 3.7 Summary of Proposed Continuous Noise Monitoring Location

NSR ID	NSR Description	Uses	Proposed Continuous Noise Monitoring Location	Alternative Noise Monitoring Location
OM4a	Carmel Secondary School (South Block)	Educational	NM1	-
HH2	Wing Fung Building	Residential	NM2	No. 234-238 Chatham Road North(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. 234-238 Chatham Road North. The alternative monitoring location is considered as an appropriate alternative noise monitoring station in the CNMP.

Monitoring Equipment

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

Table 3.8 Noise Monitoring Equipment for Continuous Noise Monitoring

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

Monitoring Parameters, Frequency and Duration

3.3.4 Continuous noise level will be measured in terms of the A-weighted equivalent continuous sound pressure level for 30 minutes ($L_{eq,\ 30\ min}$) 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. 234-238 Chatham Road North. The alternative monitoring location is considered as an appropriate alternative noise monitoring station in the CNMP.
(3) Based on 2014-2015 Calendar of Carmel Secondary School, the examination periods are scheduled in January and February 2015. The continuous noise monitoring was conducted in January and February 2015.
(4) Additional continuous noise monitoring was conducted in March 2015 according to the latest 2014-2015 Calendar of Carmel Secondary School.

3.4 Landscape and Visual

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

4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

Table 4.1 Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
Condition 3.4 (EP-437/2012/A) & Condition 3.4 (EP-438/2012/K)	Monthly EM&A Report for February 2018	14 March 2018

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	48.4	23.4 – 63.0	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, 863 m^3 of inert C&D material was generated. 10 m^3 and 854 m^3 were disposed as public fills at TKO137 and TM38 respectively. No public fills was delivered to Hung Hom Barging Point, handled by other project and reused in the Contract. While 84,000 kg of general refuse was disposed at NENT landfill in the reporting month, No metal, paper and plastics 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 1, 15 and 29 March 2018. 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 1, 8, 15, 21 and 29 March 2018. The one held on 21 March 2018 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	21 Mar 2018	• Inadequate watering for exposed area was observed at Hong Chong Road. The Contractor was advised to provide adequate watering for dry exposed area as a dust suppression measure.	The item was rectified by the Contractor on 29 March 2018.
	29 Mar 2018	• Exposed stockpile of dusty materials without proper cover was observe at Hong Chong Road. The Contractor was advised to cover the stockpile entirely with impervious sheeting or keep the stockpile wet for dust suppression.	The item was rectified by the Contractor on 29 March 2018.
Noise	N/A	N/A	N/A
Waste/ Chemical Management	1 Mar 2018	• Chemical containers without secondary containment were observed at CRN. The Contractor was advised to provide drip tray to prevent potential leakage.	The item was rectified by the Contractor on 8 March 2018.
	8 Mar 2018	• Chemical containers without secondary containment were observed at OSP. The Contractor was advised to provide drip tray to prevent potential leakage.	The item was rectified by the Contractor on 29 March 2018.
	15 Mar 2018	• The Contractor was reminded to remove the retained water observed in the drip tray of the generator at Hong Chong Road to prevent overflow. (Reminder)	The item was rectified by the Contractor on 15 March 2018.
Landscape & Visual	N/A	N/A	N/A
Permits/ Licenses	N/A	N/A	N/A

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

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 Summary of Monitoring Exceedances

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

7.1.2 No noise complaint during 0700 to 1900 hours on normal weekdays was received in the reporting month; hence, no Action Level exceedance was recorded.

7.1.3 No Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.

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

7.2 Summary of Environmental Non-Compliance

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

7.3 Summary of Environmental Complaints

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

7.4 Summary of Environmental Summon and Successful Prosecutions

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

8 FUTURE KEY ISSUES

8.1 Construction Programme for the Project

Construction Programme for the Next Two Month

8.1.1 The major construction works in April and May 2018 will be:

Location	Site Activities
Ho Man Tin	Steel mesh, planter works, hoarding removal
NSL (South)	Backfill, road & drainage construction, bar fence, planting
OB2 / TB1	Maintenance access, abandoned watermain removal and bar fence
OB2A / TB2	Maintenance access, bar fence and slope reinstatement
NSL 9 + Oi Sen Path	Defect rectification, minor steel work

8.2 Key Issues for the Coming Month

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

8.3 Monitoring Schedule for the Next Two Month

8.3.1 The tentative schedule for environmental monitoring in April and May 2018 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 2018. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.

9.1.7 Referring to the Contractor's information, no complaint, notification of summons and successful prosecution was received in the reporting month.

9.2 Recommendations

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

Air Quality Impact

- Provide adequate watering for dry exposed area regularly.
- Cover the exposed stockpile of dusty materials entirely with impervious sheeting.

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

- Provide secondary containment for chemical containers to prevent potential leakage.
- Keep the drip tray clear of retained water.

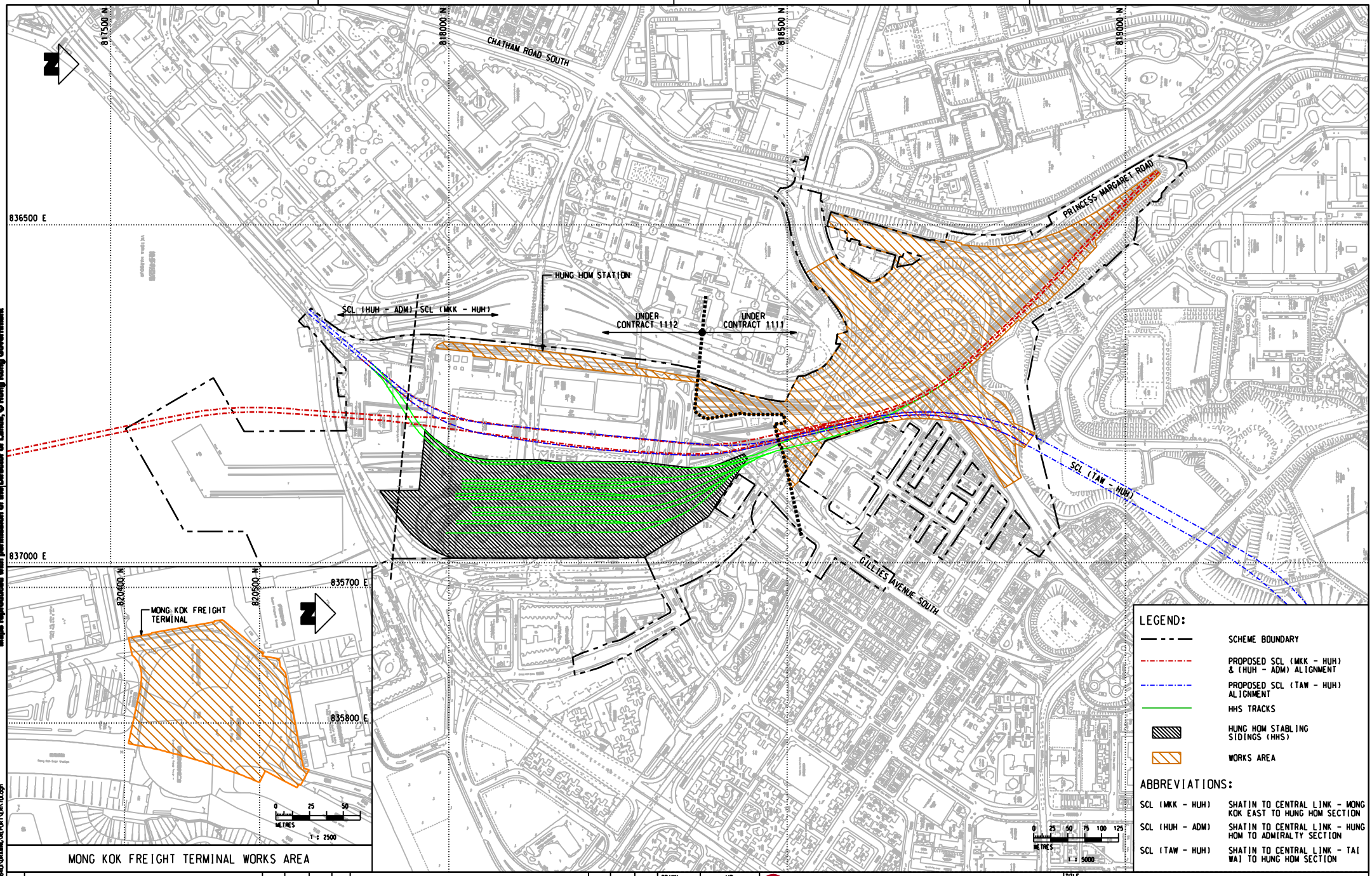
Landscape and Visual Impact

- 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

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ORIGINATOR: AECOM

CADD REF. 701.dgn

TITLE: CONTRACT 1111
HUNG HOM NORTH APPROACH TUNNELS
WORKS AREAS OF THE PROJECT

SCALE: A3 AS SHOWN

FIGURE NO.: FIGURE 1.1

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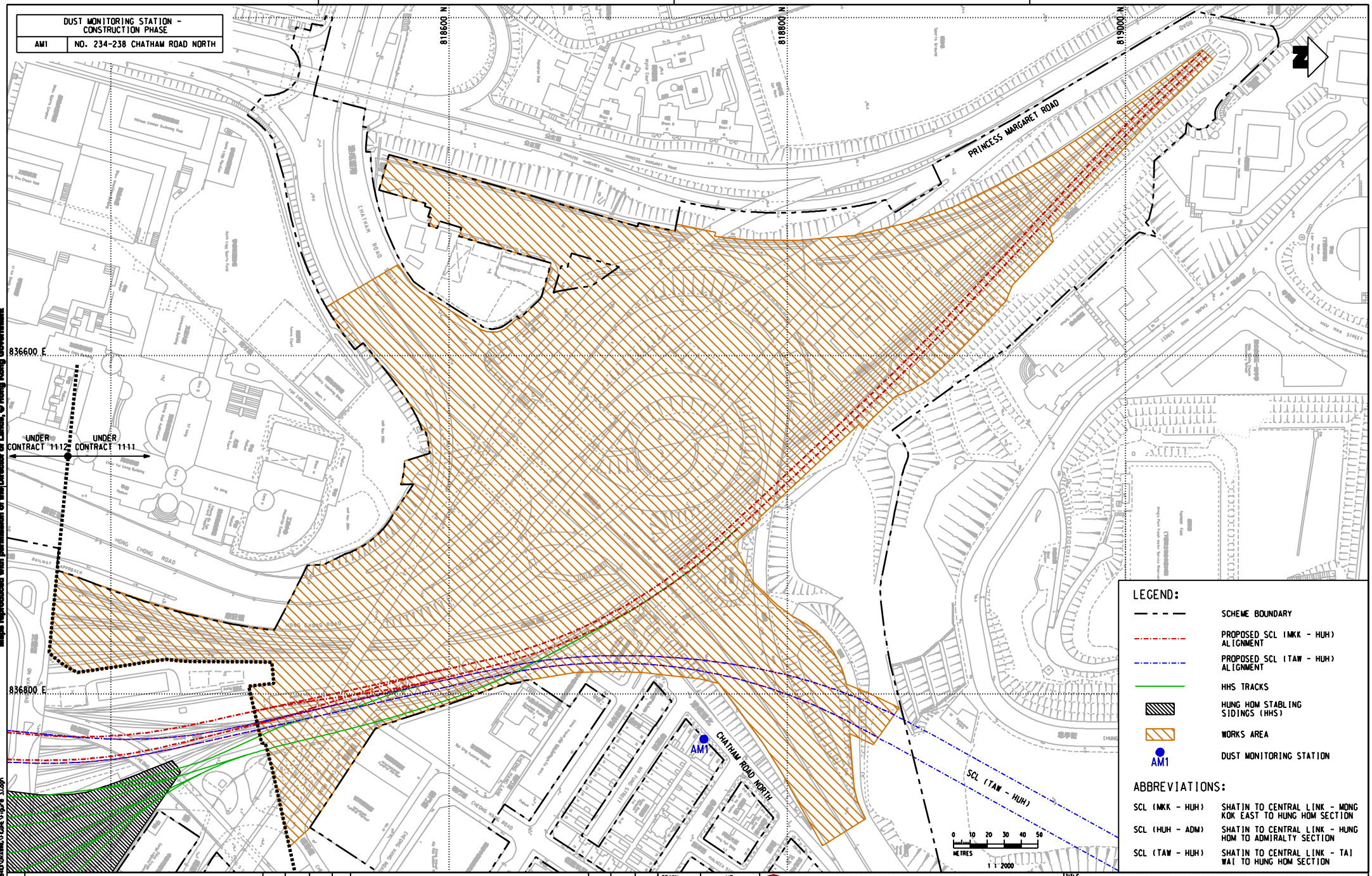

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CADD REF. Figure 2.1.dgn

TITLE: CONTRACT 1111
HUNG HOM NORTH APPROACH TUNNELS
LOCATION OF AIR QUALITY MONITORING STATION

SCALE 1 : 2000 (A3)

FIGURE NO. FIGURE 2.1

REV. -

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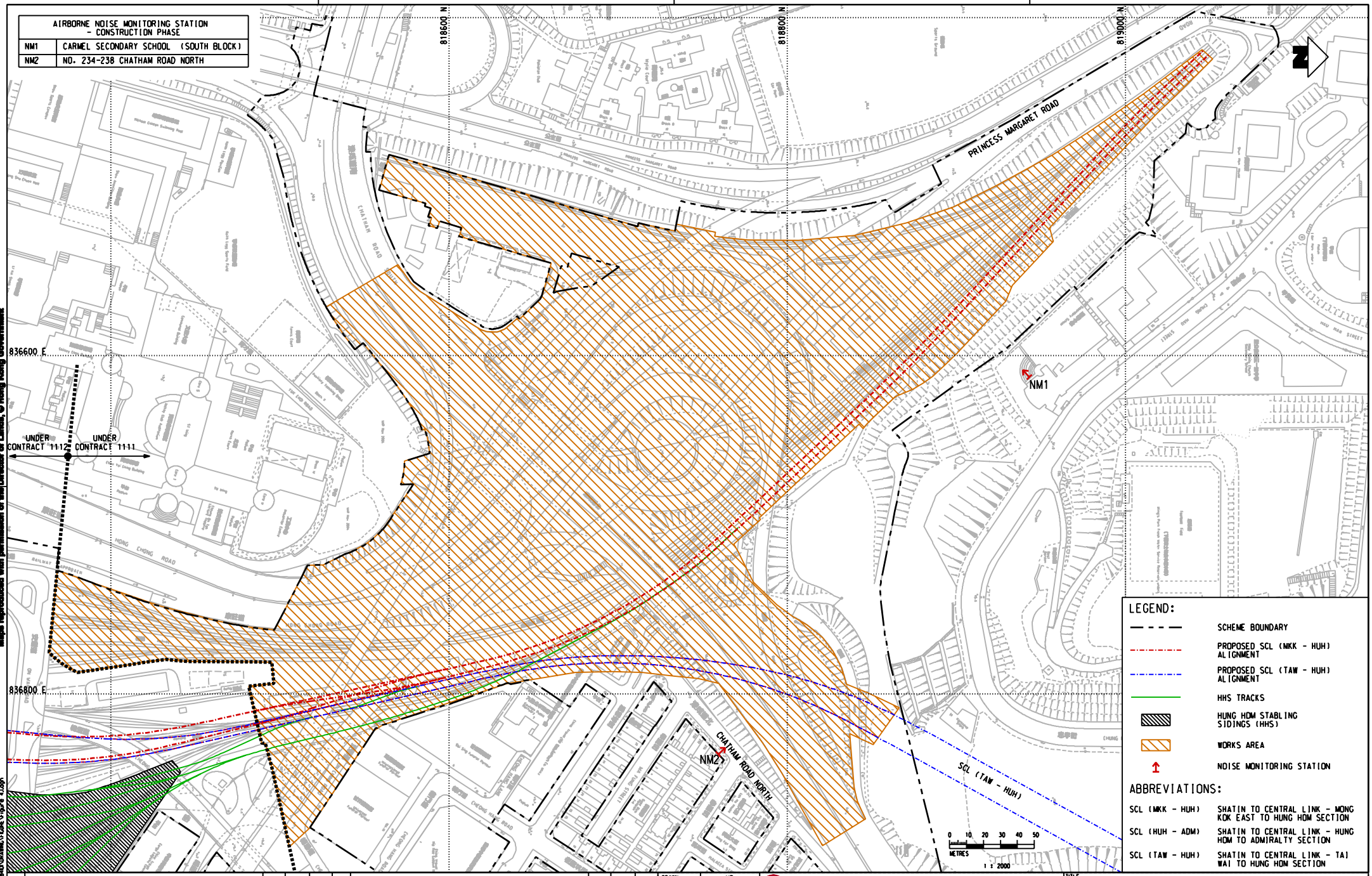

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TITLE: CONTRACT 1111
HUNG HOM NORTH APPROACH TUNNELS
LOCATION OF NOISE MONITORING STATION (CONSTRUCTION PHASE)

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

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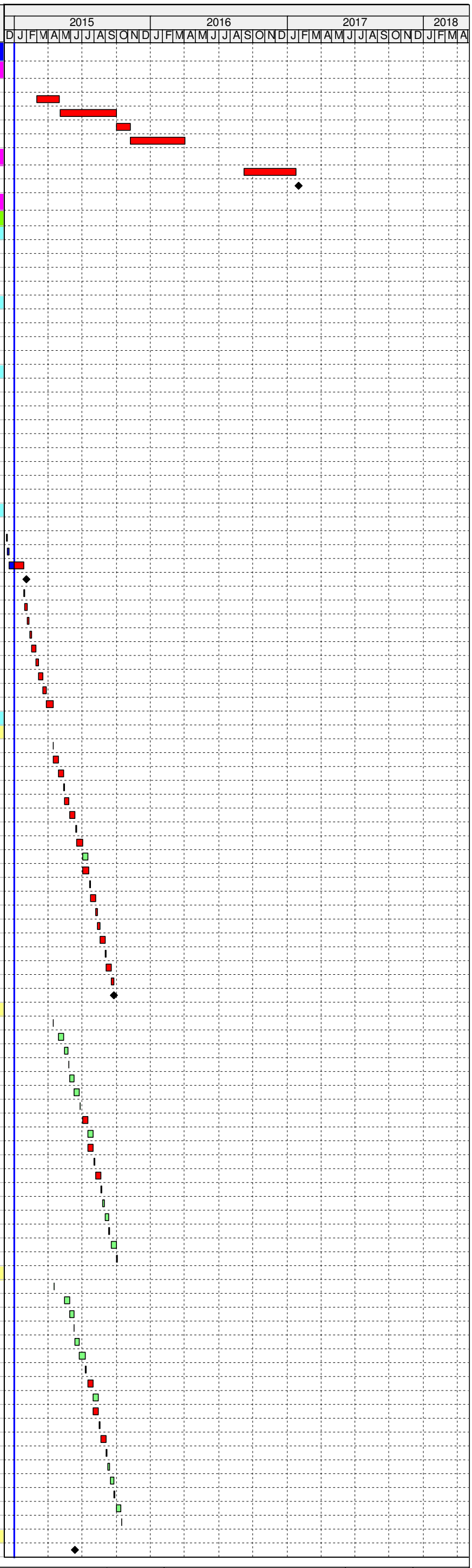
APPENDIX A

Construction Programme

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



Gammon – Kaden SCL 1111 Joint Venture

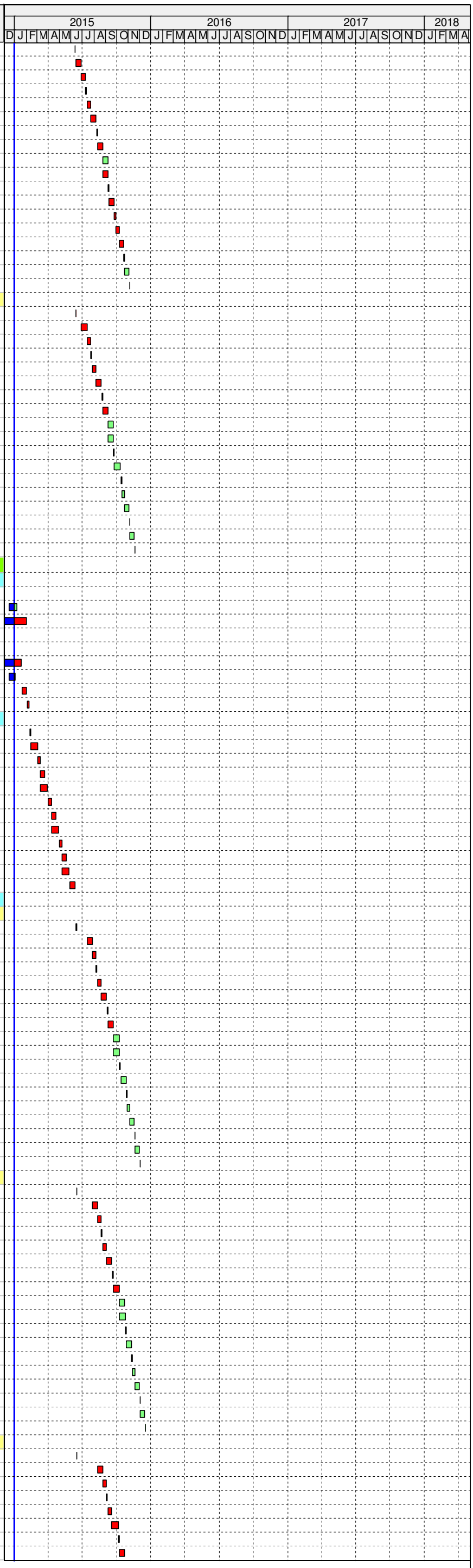
NON-DEMOLITION MASTER PROGRAMME

REVISION B

NDMPB-35

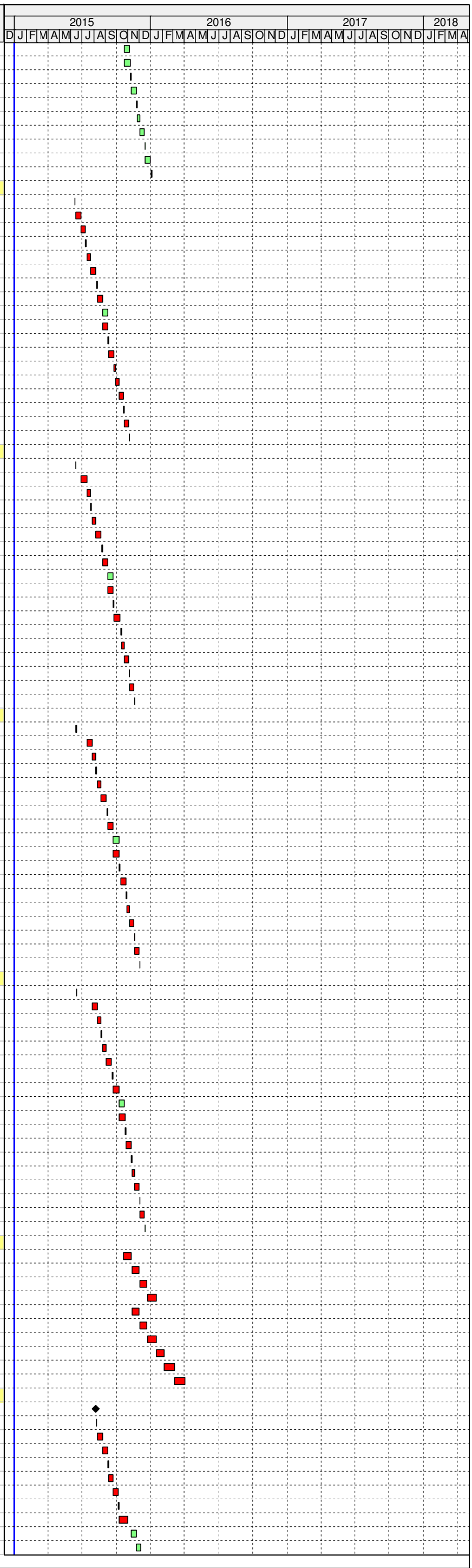
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
N3A04-110	Place Blinding Layer	1d	12-Jun-15	12-Jun-15
N3A04-120	Construct Tunnel Base with Kicker	12d	13-Jun-15	27-Jun-15
N3A04-130	Place Infill Concrete/Compacted Fill up to S4	9d	29-Jun-15	09-Jul-15
N3A04-140	Remove S4	2d	10-Jul-15	11-Jul-15
N3A04-150	Construct NSL Wall up to S3	10d	13-Jul-15	23-Jul-15
N3A04-160	Place Infill Concrete/Compacted Fill up to S3	13d	24-Jul-15	07-Aug-15
N3A04-170	Remove S3	2d	08-Aug-15	10-Aug-15
N3A04-180	Construct NSL Roof (Travelling Form)	12d	11-Aug-15	24-Aug-15
N3A04-190	Tunnel Walkway & Works for Degree 1 Completion	12d	25-Aug-15	07-Sep-15
N3A04-200	Place Infill Concrete/compacted fill up to S2	13d	25-Aug-15	08-Sep-15
N3A04-210	Remove S2	2d	09-Sep-15	10-Sep-15
N3A04-220	Construct EWL Lower Wall	12d	11-Sep-15	24-Sep-15
N3A04-230	Place compacted fill to bottom of 1650 Drain	3d	25-Sep-15	29-Sep-15
N3A04-240	Lay 1650 Stormwater Drain	6d	30-Sep-15	07-Oct-15
N3A04-250	Place compacted fill to S1	10d	08-Oct-15	19-Oct-15
N3A04-260	Remove S1	2d	20-Oct-15	22-Oct-15
N3A04-270	Construct EWL Upper Wall	10d	23-Oct-15	03-Nov-15
N3A04-290	Place compacted fill to final formation level	2d	04-Nov-15	05-Nov-15
Bay N3A-05 - Depends on NSL3B Excavation				
N3A05-110	Place Blinding Layer	1d	13-Jun-15	13-Jun-15
N3A05-120	Construct Tunnel Base with Kicker	12d	29-Jun-15	13-Jul-15
N3A05-130	Place Infill Concrete/Compacted Fill up to S4	9d	14-Jul-15	23-Jul-15
N3A05-140	Remove S4	2d	24-Jul-15	25-Jul-15
N3A05-150	Construct NSL Wall up to S3	10d	27-Jul-15	06-Aug-15
N3A05-160	Place Infill Concrete/Compacted Fill up to S3	13d	07-Aug-15	21-Aug-15
N3A05-170	Remove S3	2d	22-Aug-15	24-Aug-15
N3A05-180	Construct NSL Roof (Travelling Form)	12d	25-Aug-15	07-Sep-15
N3A05-190	Tunnel Walkway & Works for Degree 1 Completion	12d	08-Sep-15	21-Sep-15
N3A05-200	Place Infill Concrete/compacted fill up to S2	13d	08-Sep-15	22-Sep-15
N3A05-210	Remove S2	2d	23-Sep-15	24-Sep-15
N3A05-220	Construct EWL Lower Wall	12d	25-Sep-15	10-Oct-15
N3A05-230	Place compacted fill to bottom of 1650 Drain	3d	12-Oct-15	14-Oct-15
N3A05-240	Lay 1650 Stormwater Drain	6d	15-Oct-15	22-Oct-15
N3A05-250	Place compacted fill to S1	10d	23-Oct-15	03-Nov-15
N3A05-260	Remove S1	2d	04-Nov-15	05-Nov-15
N3A05-270	Construct EWL Upper Wall	10d	06-Nov-15	17-Nov-15
N3A05-290	Place compacted fill to final formation level	2d	18-Nov-15	19-Nov-15
(2) NSL/EWL Area 3B,4,5 (108m)				
Cofferdam				
N3B-1010	Install 2.4m Height Hoarding (NTH)	6d	18-Mar-14	29-Mar-14
N3B-1020	Protective Grouting for settlement prevention	24d	17-Dec-14	07-Jan-15
N3B-1030	SHP (51 no.s) & East Side Pipe Piles (131 no.s), 2 Rigs	182d	27-May-14	31-Jan-15
N3B-1040	Demolish footing of STA building	18d	02-Jul-14 A	22-Jul-14 A
N3B-1050	West Side Pipe Piles (140 no.s), 2 Rigs	140d	23-Jul-14 A	19-Nov-14
N3B-1060	Grout Curtain	60d	19-Nov-14	19-Jan-15
N3B-1070	Grout curtain cut off wall (between NSL4 and NSL5)	24d	16-Dec-14	02-Jan-15
N3B-1170	Dewatering System & Wells	12d	20-Jan-15	02-Feb-15
N3B-1180	Pumping Test	7d	03-Feb-15	09-Feb-15
Excavation and Lateral Support				
N3B-1080	Excavation to Below S1	4d	10-Feb-15	13-Feb-15
N3B-1090	Install S1 & decking	12d	14-Feb-15	03-Mar-15
N3B-1100	Excavation to Start S2 Installation	6d	04-Mar-15	10-Mar-15
N3B-1105	Remaining excavation to S2	11d	11-Mar-15	23-Mar-15
N3B-1110	Install S2	17d	11-Mar-15	30-Mar-15
N3B-1120	Excavation to Start S3 Installation	6d	31-Mar-15	10-Apr-15
N3B-1125	Remaining excavation to S3	10d	11-Apr-15	22-Apr-15
N3B-1130	Install S3	16d	11-Apr-15	29-Apr-15
N3B-1140	Excavation to Start S4 Installation	6d	30-Apr-15	07-May-15
N3B-1145	Remaining excavation to S4	10d	08-May-15	19-May-15
N3B-1150	Install S4	16d	08-May-15	27-May-15
N3B-1160	Excavation to Formation Level @ -10.6 mPD	13d	28-May-15	11-Jun-15
Tunnel Structure (10 Bays)				
Bay N3B-01				
N3B01-110	Place Blinding Layer	1d	15-Jun-15	15-Jun-15
N3B01-120	Construct Tunnel Base with Kicker	12d	14-Jul-15	27-Jul-15
N3B01-130	Place Infill Concrete/Compacted Fill up to S4	9d	28-Jul-15	06-Aug-15
N3B01-140	Remove S4	2d	07-Aug-15	08-Aug-15
N3B01-150	Construct NSL Wall up to S3	10d	10-Aug-15	20-Aug-15
N3B01-160	Place Infill Concrete/Compacted Fill up to S3	13d	21-Aug-15	04-Sep-15
N3B01-170	Remove S3	2d	05-Sep-15	07-Sep-15
N3B01-180	Construct NSL Roof (Travelling Form)	12d	08-Sep-15	21-Sep-15
N3B01-190	Tunnel Walkway & Works for Degree 1 Completion (inside)	12d	22-Sep-15	07-Oct-15
N3B01-200	Place Infill Concrete/compacted fill up to S2	13d	22-Sep-15	08-Oct-15
N3B01-210	Remove S2	2d	09-Oct-15	10-Oct-15
N3B01-220	Construct EWL Lower Wall	12d	12-Oct-15	26-Oct-15
N3B01-230	Place compacted fill to bottom of 1650 Drain	3d	27-Oct-15	29-Oct-15
N3B01-240	Lay 1650 Stormwater Drain	6d	30-Oct-15	05-Nov-15
N3B01-250	Place compacted fill to S1	10d	06-Nov-15	17-Nov-15
N3B01-260	Remove S1	2d	18-Nov-15	19-Nov-15
N3B01-270	Construct EWL Upper Wall	10d	20-Nov-15	01-Dec-15
N3B01-290	Place compacted fill to final formation level	2d	02-Dec-15	03-Dec-15
Bay N3B-02				
N3B02-110	Place Blinding Layer	1d	16-Jun-15	16-Jun-15
N3B02-120	Construct Tunnel Base with Kicker	12d	28-Jul-15	10-Aug-15
N3B02-130	Place Infill Concrete/Compacted Fill up to S4	9d	11-Aug-15	20-Aug-15
N3B02-140	Remove S4	2d	21-Aug-15	22-Aug-15
N3B02-150	Construct NSL Wall up to S3	10d	24-Aug-15	03-Sep-15
N3B02-160	Place Infill Concrete/Compacted Fill up to S3	13d	04-Sep-15	18-Sep-15
N3B02-170	Remove S3	2d	19-Sep-15	21-Sep-15
N3B02-180	Construct NSL Roof (Travelling Form)	12d	22-Sep-15	07-Oct-15
N3B02-190	Tunnel Walkway & Works for Degree 1 Completion	12d	08-Oct-15	22-Oct-15
N3B02-200	Place Infill Concrete/compacted fill up to S2	13d	08-Oct-15	23-Oct-15
N3B02-210	Remove S2	2d	24-Oct-15	26-Oct-15
N3B02-220	Construct EWL Lower Wall	12d	27-Oct-15	09-Nov-15
N3B02-230	Place compacted fill to bottom of 1650 Drain	3d	10-Nov-15	12-Nov-15
N3B02-240	Lay 1650 Stormwater Drain	6d	13-Nov-15	19-Nov-15
N3B02-250	Place compacted fill to S1	10d	20-Nov-15	01-Dec-15
N3B02-260	Remove S1	2d	02-Dec-15	03-Dec-15
N3B02-270	Construct EWL Upper Wall	10d	04-Dec-15	15-Dec-15
N3B02-290	Place compacted fill to final formation level	2d	16-Dec-15	17-Dec-15
Bay N3B-03				
N3B03-110	Place Blinding Layer	1d	17-Jun-15	17-Jun-15
N3B03-120	Construct Tunnel Base with Kicker	12d	11-Aug-15	24-Aug-15
N3B03-130	Place Infill Concrete/Compacted Fill up to S4	9d	25-Aug-15	03-Sep-15
N3B03-140	Remove S4	2d	04-Sep-15	05-Sep-15
N3B03-150	Construct NSL Wall up to S3	10d	07-Sep-15	17-Sep-15
N3B03-160	Place Infill Concrete/Compacted Fill up to S3	13d	18-Sep-15	05-Oct-15
N3B03-170	Remove S3	2d	06-Oct-15	07-Oct-15
N3B03-180	Construct NSL Roof (Travelling Form)	12d	08-Oct-15	22-Oct-15



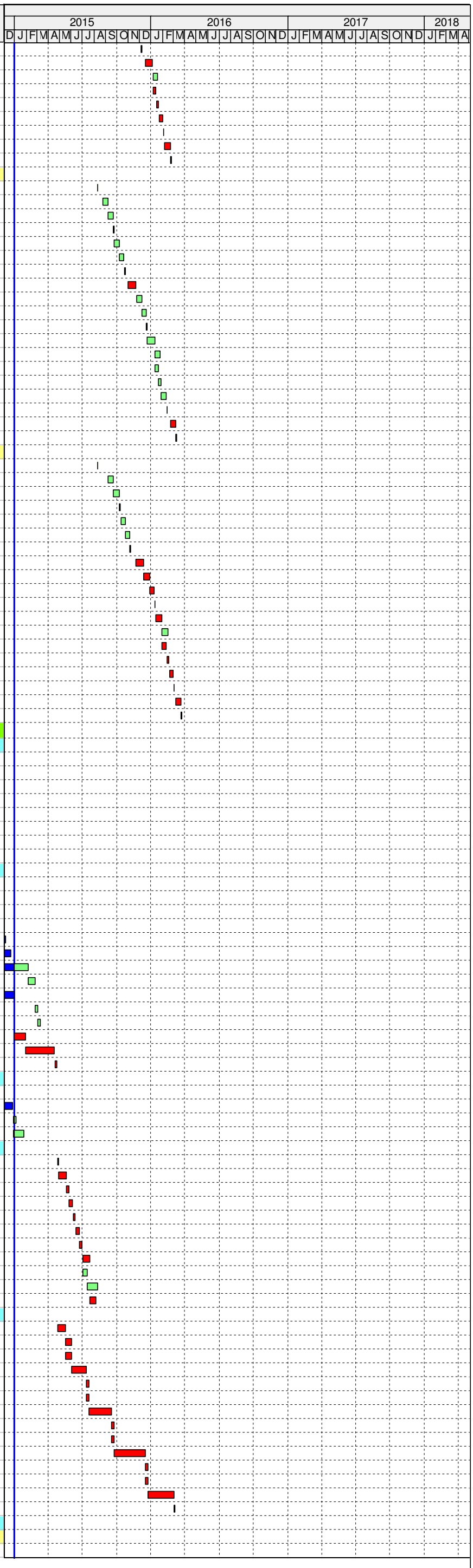
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
N3B03-190	Tunnel Walkway & Works for Degree 1 Completion (inside)	12d	23-Oct-15	05-Nov-15
N3B03-200	Place Infill Concrete/compacted fill up to S2	13d	23-Oct-15	06-Nov-15
N3B03-210	Remove S2	2d	07-Nov-15	09-Nov-15
N3B03-220	Construct EWL Lower Wall	12d	10-Nov-15	23-Nov-15
N3B03-230	Place compacted fill to bottom of 1650 Drain	3d	24-Nov-15	26-Nov-15
N3B03-240	Lay 1650 Stormwater Drain	6d	27-Nov-15	03-Dec-15
N3B03-250	Place compacted fill to S1	10d	04-Dec-15	15-Dec-15
N3B03-260	Remove S1	2d	16-Dec-15	17-Dec-15
N3B03-270	Construct EWL Upper Wall	10d	18-Dec-15	31-Dec-15
N3B03-290	Place compacted fill to final formation level	2d	02-Jan-16	04-Jan-16
Bay N3B-04				
N3B04-110	Place Blinding Layer	1d	12-Jun-15	12-Jun-15
N3B04-120	Construct Tunnel Base with Kicker	12d	13-Jun-15	27-Jun-15
N3B04-130	Place Infill Concrete/Compacted Fill up to S4	9d	29-Jun-15	09-Jul-15
N3B04-140	Remove S4	2d	10-Jul-15	11-Jul-15
N3B04-150	Construct NSL Wall up to S3	10d	13-Jul-15	23-Jul-15
N3B04-160	Place Infill Concrete/Compacted Fill up to S3	13d	24-Jul-15	07-Aug-15
N3B04-170	Remove S3	2d	08-Aug-15	10-Aug-15
N3B04-180	Construct NSL Roof (Travelling Form)	12d	11-Aug-15	24-Aug-15
N3B04-190	Tunnel Walkway & Works for Degree 1 Completion	12d	25-Aug-15	07-Sep-15
N3B04-200	Place Infill Concrete/compacted fill up to S2	13d	25-Aug-15	08-Sep-15
N3B04-210	Remove S2	2d	09-Sep-15	10-Sep-15
N3B04-220	Construct EWL Lower Wall	12d	11-Sep-15	24-Sep-15
N3B04-230	Place compacted fill to bottom of 1650 Drain	3d	25-Sep-15	29-Sep-15
N3B04-240	Lay 1650 Stormwater Drain	6d	30-Sep-15	07-Oct-15
N3B04-250	Place compacted fill to S1	10d	08-Oct-15	19-Oct-15
N3B04-260	Remove S1	2d	20-Oct-15	22-Oct-15
N3B04-270	Construct EWL Upper Wall	10d	23-Oct-15	03-Nov-15
N3B04-290	Place compacted fill to final formation level	2d	04-Nov-15	05-Nov-15
Bay N3B-05				
N3B05-110	Place Blinding Layer	1d	13-Jun-15	13-Jun-15
N3B05-120	Construct Tunnel Base with Kicker	12d	29-Jun-15	13-Jul-15
N3B05-130	Place Infill Concrete/Compacted Fill up to S4	9d	14-Jul-15	23-Jul-15
N3B05-140	Remove S4	2d	24-Jul-15	25-Jul-15
N3B05-150	Construct NSL Wall up to S3	10d	27-Jul-15	06-Aug-15
N3B05-160	Place Infill Concrete/Compacted Fill up to S3	13d	07-Aug-15	21-Aug-15
N3B05-170	Remove S3	2d	22-Aug-15	24-Aug-15
N3B05-180	Construct NSL Roof (Travelling Form)	12d	25-Aug-15	07-Sep-15
N3B05-190	Tunnel Walkway & Works for Degree 1 Completion	12d	08-Sep-15	21-Sep-15
N3B05-200	Place Infill Concrete/compacted fill up to S2	13d	08-Sep-15	22-Sep-15
N3B05-210	Remove S2	2d	23-Sep-15	24-Sep-15
N3B05-220	Construct EWL Lower Wall	12d	25-Sep-15	10-Oct-15
N3B05-230	Place compacted fill to bottom of 1650 Drain	3d	12-Oct-15	14-Oct-15
N3B05-240	Lay 1650 Stormwater Drain	6d	15-Oct-15	22-Oct-15
N3B05-250	Place compacted fill to S1	10d	23-Oct-15	03-Nov-15
N3B05-260	Remove S1 & deck	2d	04-Nov-15	05-Nov-15
N3B05-270	Construct EWL Upper Wall	10d	06-Nov-15	17-Nov-15
N3B05-290	Place compacted fill to final formation level	2d	18-Nov-15	19-Nov-15
Bay N3B-06				
N3B06-110	Place Blinding Layer	1d	15-Jun-15	15-Jun-15
N3B06-120	Construct Tunnel Base with Kicker	12d	14-Jul-15	27-Jul-15
N3B06-130	Place Infill Concrete/Compacted Fill up to S4	9d	28-Jul-15	06-Aug-15
N3B06-140	Remove S4	2d	07-Aug-15	08-Aug-15
N3B06-150	Construct NSL Wall up to S3	10d	10-Aug-15	20-Aug-15
N3B06-160	Place Infill Concrete/Compacted Fill up to S3	13d	21-Aug-15	04-Sep-15
N3B06-170	Remove S3	2d	05-Sep-15	07-Sep-15
N3B06-180	Construct NSL Roof (Travelling Form)	12d	08-Sep-15	21-Sep-15
N3B06-190	Tunnel Walkway & Works for Degree 1 Completion (inside)	12d	22-Sep-15	07-Oct-15
N3B06-200	Place Infill Concrete/compacted fill up to S2	13d	22-Sep-15	08-Oct-15
N3B06-210	Remove S2	2d	09-Oct-15	10-Oct-15
N3B06-220	Construct EWL Lower Wall	12d	12-Oct-15	26-Oct-15
N3B06-230	Place compacted fill to bottom of 1650 Drain	3d	27-Oct-15	29-Oct-15
N3B06-240	Lay 1650 Stormwater Drain	6d	30-Oct-15	05-Nov-15
N3B06-250	Place compacted fill to S1	10d	06-Nov-15	17-Nov-15
N3B06-260	Remove S1 & deck	2d	18-Nov-15	19-Nov-15
N3B06-270	Construct EWL Upper Wall	10d	20-Nov-15	01-Dec-15
N3B06-290	Place compacted fill to final formation level	2d	02-Dec-15	03-Dec-15
Bay N3B-07				
N3B07-110	Place Blinding Layer	1d	16-Jun-15	16-Jun-15
N3B07-120	Construct Tunnel Base with Kicker	12d	28-Jul-15	10-Aug-15
N3B07-130	Place Infill Concrete/Compacted Fill up to S4	9d	11-Aug-15	20-Aug-15
N3B07-140	Remove S4	2d	21-Aug-15	22-Aug-15
N3B07-150	Construct NSL Wall up to S3	10d	24-Aug-15	03-Sep-15
N3B07-160	Place Infill Concrete/Compacted Fill up to S3	13d	04-Sep-15	18-Sep-15
N3B07-170	Remove S3	2d	19-Sep-15	21-Sep-15
N3B07-180	Construct NSL Roof (Travelling Form)	12d	22-Sep-15	07-Oct-15
N3B07-190	Tunnel Walkway & Works for Degree 1 Completion	12d	08-Oct-15	22-Oct-15
N3B07-200	Place Infill Concrete/compacted fill up to S2	13d	08-Oct-15	23-Oct-15
N3B07-210	Remove S2	2d	24-Oct-15	26-Oct-15
N3B07-220	Construct EWL Lower Wall	12d	27-Oct-15	09-Nov-15
N3B07-230	Place compacted fill to bottom of 1650 Drain	3d	10-Nov-15	12-Nov-15
N3B07-240	Lay 1650 Stormwater Drain	6d	13-Nov-15	19-Nov-15
N3B07-250	Place compacted fill to S1	10d	20-Nov-15	01-Dec-15
N3B07-260	Remove S1 & deck	2d	02-Dec-15	03-Dec-15
N3B07-270	Construct EWL Upper Wall	10d	04-Dec-15	15-Dec-15
N3B07-290	Place compacted fill to final formation level	2d	16-Dec-15	17-Dec-15
Shunt Neck from Bay 3A-01 to 3B-07				
N3ASN-020	Construct Shunt Neck Base (Bays 1-3)	18d	20-Oct-15	10-Nov-15
N3ASN-022	Construct Shunt Neck Base (Bays 4-6)	18d	11-Nov-15	01-Dec-15
N3ASN-024	Construct Shunt Neck Base (Bays 7-9)	18d	02-Dec-15	22-Dec-15
N3ASN-026	Construct Shunt Neck Base (Bays 10-12)	18d	23-Dec-15	15-Jan-16
N3ASN-030	Construct Shunt Neck Wall (Bays 1-3)	18d	11-Nov-15	01-Dec-15
N3ASN-032	Construct Shunt Neck Wall (Bays 4-6)	18d	02-Dec-15	22-Dec-15
N3ASN-034	Construct Shunt Neck Wall (Bays 7-9)	18d	23-Dec-15	15-Jan-16
N3ASN-036	Construct Shunt Neck Wall (Bays 10-12)	18d	16-Jan-16	05-Feb-16
N3ASN-040	Backfill to Final Level	21d	06-Feb-16	04-Mar-16
N3ASN-050	Place Mass Concrete Fill (12 Bays)	21d	05-Mar-16	01-Apr-16
Bay N3B-08 - Depends on NSL6 Excavation				
N3B08-110	NSL6 Excavation Completed (South Side only)	0d		07-Aug-15
N3B08-120	Place Blinding Layer	1d	08-Aug-15	08-Aug-15
N3B08-130	Construct Tunnel Base with Kicker	12d	11-Aug-15	24-Aug-15
N3B08-140	Place Infill Concrete/Compacted Fill up to S4	13d	25-Aug-15	08-Sep-15
N3B08-150	Remove S4	2d	09-Sep-15	10-Sep-15
N3B08-160	Construct NSL Wall up to S3	10d	11-Sep-15	22-Sep-15
N3B08-170	Place Infill Concrete/Compacted Fill up to S3	10d	23-Sep-15	06-Oct-15
N3B08-180	Remove S3	2d	07-Oct-15	08-Oct-15
N3B08-190	Construct NSL Roof / EWL Base (Travelling Form)	18d	09-Oct-15	30-Oct-15
N3B08-200	Construct EWL Lower Wall up to S2	12d	10-Nov-15	23-Nov-15
N3B08-210	Place Infill Concrete/compacted fill up to S2	10d	24-Nov-15	04-Dec-15



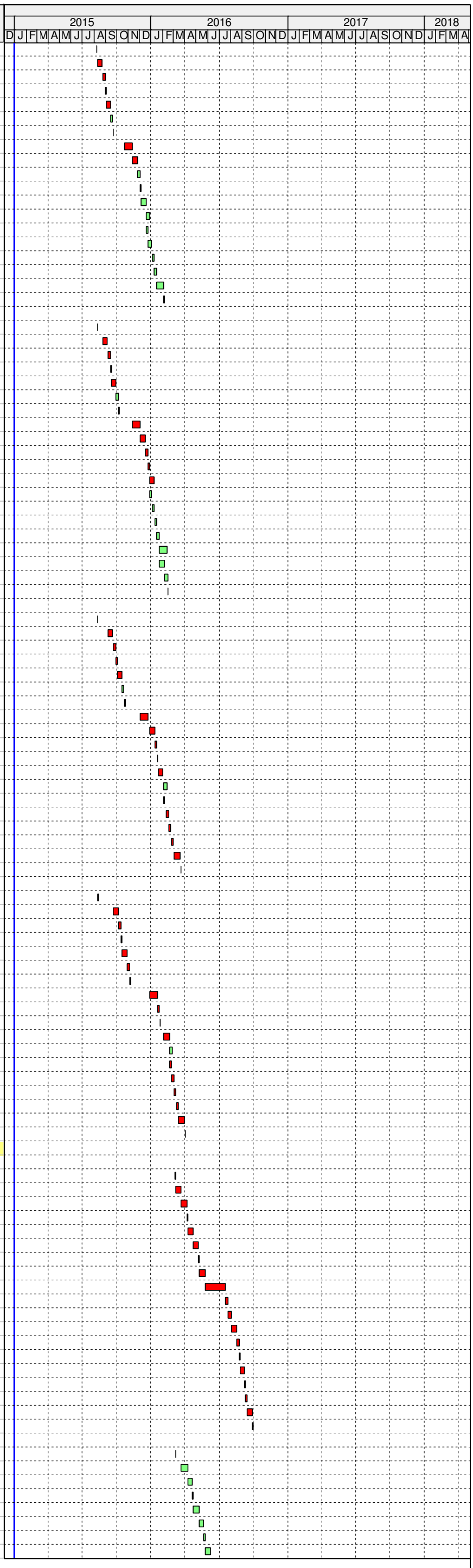
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
N3B08-220	Remove S2	2d	05-Dec-15	07-Dec-15
N3B08-230	Construct EWL Upper Wall with Strut Beam	15d	16-Dec-15	05-Jan-16
N3B08-240	Tunnel Walkway & Works for Degree 1 Completion	12d	06-Jan-16	19-Jan-16
N3B08-250	Place compacted fill to bottom of 1650 Drain	8d	06-Jan-16	14-Jan-16
N3B08-260	Lay 1650 Stormwater Drain	6d	15-Jan-16	21-Jan-16
N3B08-270	Place compacted fill to S1	10d	22-Jan-16	02-Feb-16
N3B08-280	Remove S1 & working deck	2d	03-Feb-16	04-Feb-16
N3B08-290	Construct Shunt Neck & Retaining Wall near Trackside	12d	05-Feb-16	22-Feb-16
N3B08-300	Place compacted fill to final formation level	2d	23-Feb-16	24-Feb-16
Bay N3B-09 - Depends on NSL6 Excavation				
N3B09-110	Place Blinding Layer	1d	10-Aug-15	10-Aug-15
N3B09-120	Construct Tunnel Base with Kicker	12d	25-Aug-15	07-Sep-15
N3B09-130	Place Infill Concrete/Compacted Fill up to S4	13d	08-Sep-15	22-Sep-15
N3B09-140	Remove S4	2d	23-Sep-15	24-Sep-15
N3B09-150	Construct NSL Wall up to S3	10d	25-Sep-15	08-Oct-15
N3B09-160	Place Infill Concrete/Compacted Fill up to S3	10d	09-Oct-15	20-Oct-15
N3B09-170	Remove S3	2d	22-Oct-15	23-Oct-15
N3B09-180	Construct NSL Roof / EWL Base (Travelling Form)	18d	31-Oct-15	20-Nov-15
N3B09-190	Construct EWL Lower Wall up to S2	12d	24-Nov-15	07-Dec-15
N3B09-200	Place Infill Concrete/compacted fill up to S2	10d	08-Dec-15	18-Dec-15
N3B09-210	Remove S2	2d	19-Dec-15	21-Dec-15
N3B09-220	Construct EWL Upper Wall with Strut Beam	15d	22-Dec-15	11-Jan-16
N3B09-230	Tunnel Walkway & Works for Degree 1 Completion	12d	12-Jan-16	25-Jan-16
N3B09-240	Place compacted fill to bottom of 1650 Drain	8d	12-Jan-16	20-Jan-16
N3B09-250	Lay 1650 Stormwater Drain	6d	21-Jan-16	27-Jan-16
N3B09-260	Place compacted fill to S1	10d	28-Jan-16	11-Feb-16
N3B09-270	Remove S1 & working deck	2d	12-Feb-16	13-Feb-16
N3B09-280	Construct Shunt Neck & Retaining Wall near Trackside	12d	23-Feb-16	07-Mar-16
N3B09-290	Place compacted fill to final formation level	2d	08-Mar-16	09-Mar-16
Bay N3B-10 - Depends on NSL6 Excavation				
N3B10-110	Place Blinding Layer	1d	11-Aug-15	11-Aug-15
N3B10-120	Construct Tunnel Base with Kicker	12d	08-Sep-15	21-Sep-15
N3B10-130	Place Infill Concrete/Compacted Fill up to S4	13d	22-Sep-15	08-Oct-15
N3B10-140	Remove S4	2d	09-Oct-15	10-Oct-15
N3B10-150	Construct NSL Wall up to S3	10d	12-Oct-15	23-Oct-15
N3B10-160	Place Infill Concrete/Compacted Fill up to S3	10d	24-Oct-15	04-Nov-15
N3B10-170	Remove S3	2d	05-Nov-15	06-Nov-15
N3B10-180	Construct NSL Roof / EWL Base (Travelling Form)	18d	21-Nov-15	11-Dec-15
N3B10-190	Construct EWL Lower Wall up to S2	12d	12-Dec-15	28-Dec-15
N3B10-200	Place Infill Concrete/compacted fill up to S2	10d	29-Dec-15	09-Jan-16
N3B10-210	Remove S2	2d	11-Jan-16	12-Jan-16
N3B10-220	Construct EWL Upper Wall with Strut Beam	15d	13-Jan-16	29-Jan-16
N3B10-230	Tunnel Walkway & Works for Degree 1 Completion	12d	30-Jan-16	16-Feb-16
N3B10-240	Place compacted fill to bottom of 1650 Drain	8d	30-Jan-16	11-Feb-16
N3B10-250	Lay 1650 Stormwater Drain	6d	12-Feb-16	18-Feb-16
N3B10-260	Place compacted fill to S1	10d	19-Feb-16	01-Mar-16
N3B10-270	Remove S1 & working deck	2d	02-Mar-16	03-Mar-16
N3B10-280	Construct Shunt Neck & Retaining Wall near Trackside	12d	08-Mar-16	21-Mar-16
N3B10-290	Place compacted fill to final formation level	2d	22-Mar-16	23-Mar-16
(3) NSL/EWL 6 (NSL/EWL-77m, EWL-41m)				
Stage 1 Piling - Winslow Street Area				
N06-1010	Possess Areas W1, W1A & Site clearance	18d	19-Feb-13	11-Mar-13
N06-1020	Expose & protect utilities	24d	12-Mar-13	12-Apr-13
N06-1030	East Side Pipe Piles (41 no.s)	82d	13-Apr-13	22-Jul-13 A
N06-1040	Grout Curtain	24d	23-Jul-13 A	19-Aug-13
N06-1050	Expose existing utilities	70d	20-Aug-13	12-Nov-13
N06-1060	Support/Divert Utilities	53d	13-Nov-13	16-Jan-14
N06-1070	Pipe Piles (54 no.s)	81d	17-Jan-14	29-Apr-14
N06-1080	Grout Curtain	24d	30-Apr-14	29-May-14
Stage 2 Piling - Track Area				
N06-1090	Possess Areas M1 & Site clearance	24d	17-Mar-14	14-Apr-14
N06-1100	Install 6m Hoarding (NTH)	68d	15-Apr-14	18-Sep-14
N06-1110	Trip wire system (NTH)	68d	22-Apr-14	21-Oct-14
N06-1120	OHL Diversions	83d	02-Aug-14	10-Nov-14
N06-1130	Trial pits & expose utilities	95d	16-Aug-14	08-Dec-14
N06-1140	Pregrouting	111d	12-Aug-14	22-Dec-14
N06-1150	West Side Pipe Piles (92 no.s) SM, 1-3 rigs	138d	23-Aug-14	06-Feb-15
N06-1160	Grout Curtain (include windows)	12d	07-Feb-15	24-Feb-15
N06-1170	Grout Curtain cut off wall (between NSL 6 and NSL 7)	24d	02-Dec-14	31-Dec-14
N06-1180	Dewatering System	6d	25-Feb-15	03-Mar-15
N06-1190	Pumping Test	7d	04-Mar-15	10-Mar-15
N06-1200	Tril pits for additional piles	25d	31-Dec-14	29-Jan-15
N06-1210	Additional piles to separate EWL from NSL (30 no.s)	60d	30-Jan-15	17-Apr-15
N06-1220	Demobilization & site clearance	6d	18-Apr-15	24-Apr-15
Stage 3 Piling - Remaining Piles in Winslow Playground and Mortuary				
N06-1320	Site clearance & preparation works	14d	15-Oct-14	30-Oct-14
N06-1330	Piling (32 no.s) near NSL5 and NSL7 cross walls	48d	19-Nov-14	27-Dec-14
N06-1340	Kingposts	6d	29-Dec-14	05-Jan-15
N06-1350	Grout Curtain	24d	29-Dec-14	26-Jan-15
ELS NSL6S (For N06-01 to N06-04 & 6E-01 to 6E-04)				
N06-1230	Excavation to Below S1	3d	25-Apr-15	28-Apr-15
N06-1240	Install S1 & decking	16d	29-Apr-15	18-May-15
N06-1250	Excavation to Below S2	6d	19-May-15	26-May-15
N06-1260	Install S2	9d	27-May-15	05-Jun-15
N06-1270	Excavation to Below S3	6d	06-Jun-15	12-Jun-15
N06-1280	Install S3	8d	13-Jun-15	23-Jun-15
N06-1290	Excavation to Below S4	6d	24-Jun-15	30-Jun-15
N06-1300	Install S4	17d	02-Jul-15	21-Jul-15
N06-1310	Excavation to EWL Formation Level	10d	02-Jul-15	13-Jul-15
N06-1315	Plate Load Test	28d	14-Jul-15	10-Aug-15
N06-1390	Excavation to NSL Formation Level	15d	22-Jul-15	07-Aug-15
ELS NSL6N - 6 Utilities Windows + 2 Abandoned Windows (For N06-05 to N06-08)				
N06-1380	Excavation to S1 (1m)	18d	25-Apr-15	16-May-15
N06-1400	Install S1 & Decking	12d	18-May-15	01-Jun-15
N06-1410	Install support for utilities	12d	18-May-15	01-Jun-15
N06-1420	Excavation to S2 (1.8m)	32d	02-Jun-15	11-Jul-15
N06-1430	Install S2	6d	11-Jul-15	18-Jul-15
N06-1440	Install lagging support underneath utilities windows	6d	11-Jul-15	18-Jul-15
N06-1450	Excavation to S3 (2.9m)	52d	18-Jul-15	17-Sep-15
N06-1460	Install S3	6d	17-Sep-15	24-Sep-15
N06-1470	Install lagging support underneath utilities windows	6d	17-Sep-15	24-Sep-15
N06-1480	Excavation to S4 (3.8m)	68d	24-Sep-15	16-Dec-15
N06-1490	Install S4	6d	16-Dec-15	23-Dec-15
N06-1500	Install lagging support underneath utilities windows	6d	16-Dec-15	23-Dec-15
N06-1510	Excavation to tunnel formation (3m)	54d	23-Dec-15	02-Mar-16
N06-1520	Install lagging support underneath utilities windows	3d	02-Mar-16	05-Mar-16
Tunnel Structure (10 Bays)				
NSL/EWL/Shunt Neck Integrated Structure (40m) at South Side - 4 Bays				
Bay N06-01				



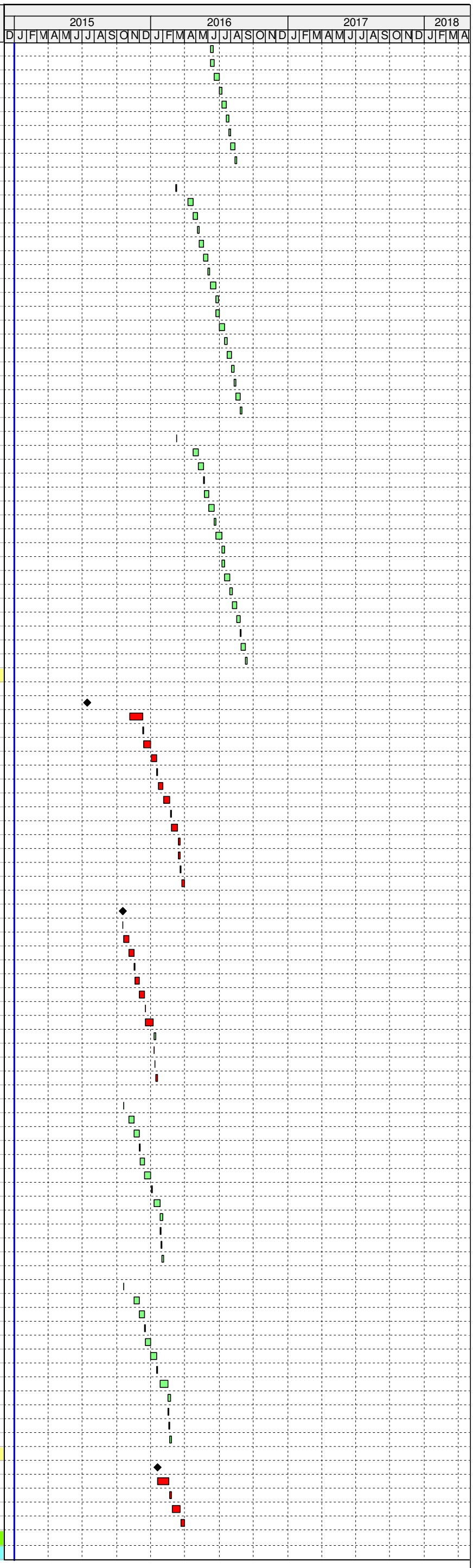
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
N0601-110	Place Blinding Layer (at approx -10 mPD)	1d	08-Aug-15	08-Aug-15
N0601-120	Construct Tunnel Base with Kicker	12d	10-Aug-15	22-Aug-15
N0601-130	Place Infill Concrete/Compacted Fill up to S4	7d	24-Aug-15	31-Aug-15
N0601-140	Remove S4	2d	01-Sep-15	02-Sep-15
N0601-150	Construct NSL Wall up to S3	10d	03-Sep-15	14-Sep-15
N0601-160	Place Infill Concrete/Compacted Fill up to S3	5d	15-Sep-15	19-Sep-15
N0601-170	Remove S3	2d	21-Sep-15	22-Sep-15
N0601-180	Construct NSL Roof / EWL Base (Travelling Form)	18d	23-Oct-15	12-Nov-15
N0601-190	Construct EWL Lower Wall up to S2	12d	13-Nov-15	26-Nov-15
N0601-200	Place Infill Concrete/compacted fill up to S2	5d	27-Nov-15	02-Dec-15
N0601-210	Remove S2	2d	03-Dec-15	04-Dec-15
N0601-220	Construct EWL Upper Wall & Roof	12d	05-Dec-15	18-Dec-15
N0601-230	Tunnel Walkway & Works for Degree 1 Completion	6d	19-Dec-15	28-Dec-15
N0601-240	Place compacted fill to bottom of 1650 Drain	4d	19-Dec-15	23-Dec-15
N0601-250	Lay 1650 Stormwater Drain	6d	24-Dec-15	02-Jan-16
N0601-260	Place compacted fill to S1	5d	04-Jan-16	08-Jan-16
N0601-270	Remove S1/working deck & fill to shunt neck	6d	09-Jan-16	15-Jan-16
N0601-280	Construct Shunt Neck & Retaining Wall near Trackside	16d	16-Jan-16	03-Feb-16
N0601-290	Place compacted fill to final formation level	2d	04-Feb-16	05-Feb-16
Bay N06-02 (with Sump Pit)				
N0602-110	Place Blinding Layer (at approx -11 mPD)	1d	10-Aug-15	10-Aug-15
N0602-120	Construct Tunnel Base with Kicker	12d	24-Aug-15	05-Sep-15
N0602-130	Place Infill Concrete/Compacted Fill up to S4	7d	07-Sep-15	14-Sep-15
N0602-140	Remove S4	2d	15-Sep-15	16-Sep-15
N0602-150	Construct NSL Wall up to S3	10d	17-Sep-15	29-Sep-15
N0602-160	Place Infill Concrete/Compacted Fill up to S3	5d	30-Sep-15	06-Oct-15
N0602-170	Remove S3	2d	07-Oct-15	08-Oct-15
N0602-180	Construct NSL Roof / EWL Base (Travelling Form)	18d	13-Nov-15	03-Dec-15
N0602-190	Construct EWL Lower Wall up to S2	12d	04-Dec-15	17-Dec-15
N0602-200	Place Infill Concrete/compacted fill up to S2	5d	18-Dec-15	23-Dec-15
N0602-210	Remove S2	2d	24-Dec-15	28-Dec-15
N0602-220	Construct EWL Upper Wall	10d	29-Dec-15	09-Jan-16
N0602-230	Place compacted fill to bottom of 1650 Drain	4d	29-Dec-15	02-Jan-16
N0602-240	Lay 1650 Stormwater Drain	6d	04-Jan-16	09-Jan-16
N0602-250	Place compacted fill to S1	5d	11-Jan-16	15-Jan-16
N0602-260	Remove S1/working deck & fill to shunt neck	6d	16-Jan-16	22-Jan-16
N0602-270	Construct Shunt Neck & Retaining Wall near Trackside	16d	23-Jan-16	13-Feb-16
N0602-280	Construct EWL roof	12d	23-Jan-16	05-Feb-16
N0602-290	Tunnel Walkway & Works for Degree 1 Completion	6d	06-Feb-16	16-Feb-16
N0602-300	Place compacted fill to final formation level	2d	15-Feb-16	16-Feb-16
Bay N06-03				
N0603-110	Place Blinding Layer (at approx -9 mPD)	1d	11-Aug-15	11-Aug-15
N0603-120	Construct Tunnel Base with Kicker	12d	07-Sep-15	19-Sep-15
N0603-130	Place Infill Concrete/Compacted Fill up to S4	7d	21-Sep-15	29-Sep-15
N0603-140	Remove S4	2d	30-Sep-15	02-Oct-15
N0603-150	Construct NSL Wall up to S3	10d	03-Oct-15	14-Oct-15
N0603-160	Place Infill Concrete/Compacted Fill up to S3	5d	15-Oct-15	20-Oct-15
N0603-170	Remove S3	2d	22-Oct-15	23-Oct-15
N0603-180	Construct NSL Roof / EWL Base (Travelling Form)	18d	04-Dec-15	24-Dec-15
N0603-190	Construct EWL Lower Wall up to S2	12d	28-Dec-15	11-Jan-16
N0603-200	Place Infill Concrete/compacted fill up to S2	5d	12-Jan-16	16-Jan-16
N0603-210	Remove S2	2d	18-Jan-16	19-Jan-16
N0603-220	Construct EWL Upper Wall & Roof	12d	20-Jan-16	02-Feb-16
N0603-230	Tunnel Walkway & Works for Degree 1 Completion	6d	03-Feb-16	12-Feb-16
N0603-240	Place compacted fill to bottom of 1650 Drain	4d	03-Feb-16	06-Feb-16
N0603-250	Lay 1650 Stormwater Drain	6d	11-Feb-16	17-Feb-16
N0603-260	Place compacted fill to S1	5d	18-Feb-16	23-Feb-16
N0603-270	Remove S1/working deck & fill to shunt neck	6d	24-Feb-16	01-Mar-16
N0603-280	Construct Shunt Neck & Retaining Wall near Trackside	16d	02-Mar-16	19-Mar-16
N0603-290	Place compacted fill to final formation level	2d	21-Mar-16	22-Mar-16
Bay N06-04				
N0604-110	Place Blinding Layer (at approx -7.5 mPD)	1d	12-Aug-15	12-Aug-15
N0604-120	Construct Tunnel Base with Kicker	12d	21-Sep-15	06-Oct-15
N0604-130	Place Infill Concrete/compacted fill up to S4	5d	07-Oct-15	12-Oct-15
N0604-140	Remove S4	2d	13-Oct-15	14-Oct-15
N0604-150	Construct NSL Wall /EWL Base up to S3	12d	15-Oct-15	29-Oct-15
N0604-160	Place Infill Concrete/compacted fill up to S3	5d	30-Oct-15	04-Nov-15
N0604-170	Remove S3	2d	05-Nov-15	06-Nov-15
N0604-180	Construct NSL Roof/EWL lower wall up to S2 (Travelling Form)	18d	28-Dec-15	18-Jan-16
N0604-200	Place Infill Concrete/compacted fill up to S2	5d	19-Jan-16	23-Jan-16
N0604-210	Remove S2	2d	25-Jan-16	26-Jan-16
N0604-220	Construct EWL Upper Wall & Roof	12d	03-Feb-16	19-Feb-16
N0604-230	Tunnel Walkway & Works for Degree 1 Completion	6d	20-Feb-16	26-Feb-16
N0604-240	Place compacted fill to bottom of 1650 Drain	4d	20-Feb-16	24-Feb-16
N0604-250	Lay 1650 Stormwater Drain	6d	25-Feb-16	02-Mar-16
N0604-260	Place compacted fill to S1	5d	03-Mar-16	08-Mar-16
N0604-270	Remove S1/working deck & fill to shunt neck	5d	09-Mar-16	14-Mar-16
N0604-280	Construct Shunt Neck & Retaining Wall near Trackside	12d	15-Mar-16	31-Mar-16
N0604-290	Place compacted fill to final formation level	2d	01-Apr-16	02-Apr-16
NSL/Shunt Neck (37m) at North Side - 4 Bays				
Bay N06-05 (NSL/Shunt Neck) (with Towngas Pipe Jacking)				
N0605-110	Place Blinding Layer (at approx -7.5 mPD)	1d	05-Mar-16	07-Mar-16
N0605-120	Construct Tunnel Base with Kicker	12d	07-Mar-16	21-Mar-16
N0605-130	Place Infill Concrete/compacted fill up to S4	10d	21-Mar-16	06-Apr-16
N0605-140	Remove S4	3d	06-Apr-16	09-Apr-16
N0605-150	Construct NSL Wall up to S3	12d	09-Apr-16	23-Apr-16
N0605-160	Place Infill Concrete/compacted fill up to S3	10d	23-Apr-16	06-May-16
N0605-170	Remove S3	3d	06-May-16	10-May-16
N0605-180	Construct NSL Roof (Travelling Form)	12d	10-May-16	25-May-16
N0605-185	Pipe Jacking for Towngas on NSL roof (partial NTH)	44d	25-May-16	18-Jul-16
N0605-188	Remove jacking assembly	6d	18-Jul-16	25-Jul-16
N0605-190	Place concrete/compacted fill up to S2	7d	25-Jul-16	02-Aug-16
N0605-200	Remove S2 & utilities support	12d	02-Aug-16	16-Aug-16
N0605-220	Lay 1650 Stormwater Drain	6d	16-Aug-16	23-Aug-16
N0605-230	Place compacted fill to Shunt Neck Formation	3d	23-Aug-16	26-Aug-16
N0605-240	Construct Shunt Neck Trough (bottom part)	10d	26-Aug-16	07-Sep-16
N0605-250	Place compacted fill up to S1	3d	07-Sep-16	10-Sep-16
N0605-260	Remove S1	3d	10-Sep-16	14-Sep-16
N0605-270	Construct Shunt Neck Trough (upper part)	10d	14-Sep-16	27-Sep-16
N0605-290	Backfill to Formation	3d	27-Sep-16	30-Sep-16
Bay N06-06 (NSL/Shunt Neck)				
N0606-120	Place Blinding Layer (at approx -7.5 mPD)	1d	07-Mar-16	08-Mar-16
N0606-130	Construct Tunnel Base with Kicker	12d	21-Mar-16	08-Apr-16
N0606-140	Place infill concrete/compacted fill up to S4	10d	08-Apr-16	20-Apr-16
N0606-150	Remove S4	3d	20-Apr-16	23-Apr-16
N0606-160	Construct NSL Wall up to S3	12d	23-Apr-16	09-May-16
N0606-170	Place infill oncrete /compacted fill up to S3	10d	09-May-16	21-May-16
N0606-180	Remove S3	3d	21-May-16	25-May-16
N0606-190	Construct NSL Roof (Travelling Form)	12d	25-May-16	08-Jun-16



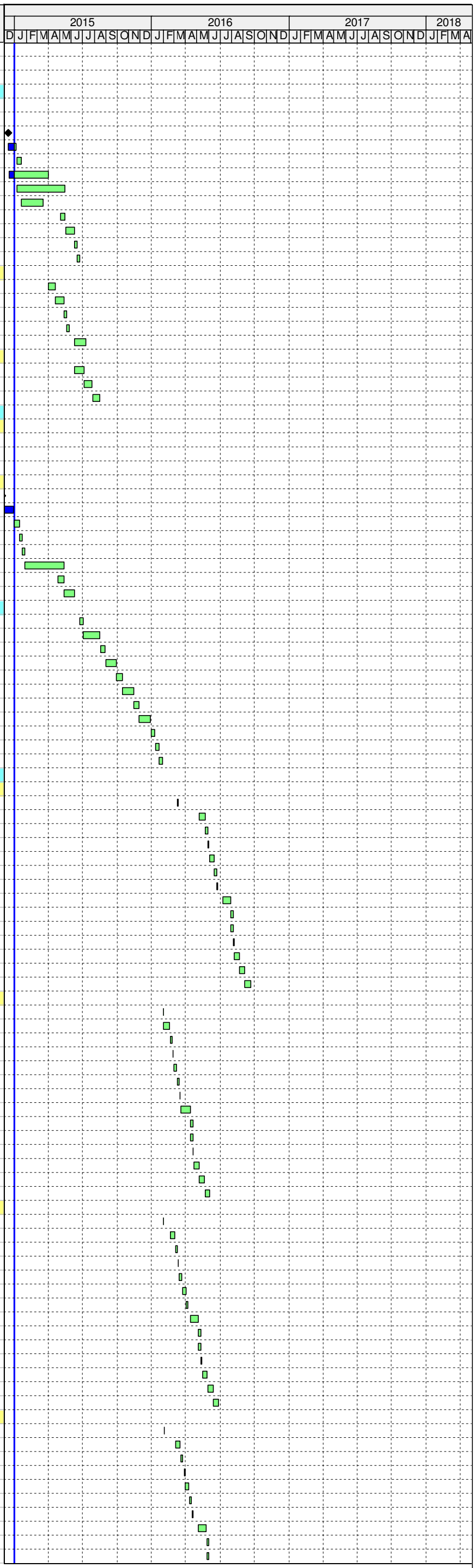
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
N0606-200	Tunnel Walkway & Works for Degree 1 Completion	6d	08-Jun-16	16-Jun-16
N0606-210	Place infill concrete/compacted fill up to S2	7d	08-Jun-16	17-Jun-16
N0606-220	Remove S2 & utilities support	12d	17-Jun-16	02-Jul-16
N0606-230	Place compacted fill to Shunt Neck Formation	6d	02-Jul-16	09-Jul-16
N0606-240	Construct Shunt Neck Trough (bottom part)	10d	09-Jul-16	21-Jul-16
N0606-250	Place compacted fill to S1	6d	21-Jul-16	28-Jul-16
N0606-260	Remove S1	3d	28-Jul-16	01-Aug-16
N0606-270	Construct Shunt Neck Trough (upper part)	10d	01-Aug-16	12-Aug-16
N0606-280	Place compacted fill to final formation	3d	12-Aug-16	16-Aug-16
Bay N06-07 (NSL/Shunt Neck)				
N0607-110	Place Blinding Layer (at approx -7.5 mPD)	1d	08-Mar-16	09-Mar-16
N0607-120	Construct Tunnel Base with Kicker	12d	08-Apr-16	22-Apr-16
N0607-130	Place infill concrete/compacted fill up to S4	10d	22-Apr-16	05-May-16
N0607-140	Remove S4	3d	05-May-16	09-May-16
N0607-150	Construct NSL Wall up to S3	10d	09-May-16	21-May-16
N0607-160	Place infill oncrete /compacted fill up to S3	10d	21-May-16	02-Jun-16
N0607-170	Remove S3	3d	02-Jun-16	06-Jun-16
N0607-180	Construct NSL Roof (Travelling Form)	12d	08-Jun-16	23-Jun-16
N0607-190	Tunnel Walkway & Works for Degree 1 Completion	6d	23-Jun-16	30-Jun-16
N0607-200	Place infill concrete/compacted fill up to S2	7d	23-Jun-16	02-Jul-16
N0607-210	Remove S2 & utilities support	12d	02-Jul-16	16-Jul-16
N0607-220	Place compacted fill to Shunt Neck Formation	6d	16-Jul-16	23-Jul-16
N0607-230	Construct Shunt Neck Trough (bottom part)	10d	23-Jul-16	04-Aug-16
N0607-240	Place compacted fill to S1	6d	04-Aug-16	11-Aug-16
N0607-250	Remove S1	3d	11-Aug-16	15-Aug-16
N0607-260	Construct Shunt Neck Trough (upper part)	10d	15-Aug-16	26-Aug-16
N0607-270	Place compacted fill to final formation	3d	26-Aug-16	30-Aug-16
Bay N06-08 (NSL/Shunt Neck)				
N0608-110	Place Blinding Layer (at approx -7.5 mPD)	1d	09-Mar-16	10-Mar-16
N0608-120	Construct Tunnel Base with Kicker	12d	22-Apr-16	07-May-16
N0608-130	Place infill concrete/compacted fill up to S4	10d	07-May-16	20-May-16
N0608-140	Remove S4	3d	20-May-16	24-May-16
N0608-150	Construct NSL Wall up to S3	10d	24-May-16	04-Jun-16
N0608-160	Place infill oncrete /compacted fill up to S3	10d	04-Jun-16	17-Jun-16
N0608-170	Remove S3	3d	17-Jun-16	21-Jun-16
N0608-180	Construct NSL Roof (Travelling Form)	12d	23-Jun-16	08-Jul-16
N0608-190	Tunnel Walkway & Works for Degree 1 Completion	6d	08-Jul-16	15-Jul-16
N0608-200	Place infill concrete/compacted fill up to S2	7d	08-Jul-16	16-Jul-16
N0608-210	Remove S2 & utilities support	12d	16-Jul-16	30-Jul-16
N0608-220	Place compacted fill to Shunt Neck Formation	6d	30-Jul-16	06-Aug-16
N0608-230	Construct Shunt Neck Trough (bottom part)	10d	06-Aug-16	18-Aug-16
N0608-240	Place compacted fill to S1	6d	18-Aug-16	25-Aug-16
N0608-250	Remove S1	3d	25-Aug-16	29-Aug-16
N0608-260	Construct Shunt Neck Trough (upper part)	10d	29-Aug-16	09-Sep-16
N0608-270	Place compacted fill to final formation	3d	09-Sep-16	13-Sep-16
EWL Structure (41m) - 4 Bays				
Bay E06-01				
E0601-110	Excavation in EWL6 reached approx - 4.5 mPD	0d		13-Jul-15
E0601-115	Site formation to reach EWL formation (after Bay N06-04)	31d	05-Nov-15	10-Dec-15
E0601-120	Place Blinding Layer (at approx -4.5mPD)	1d	11-Dec-15	11-Dec-15
E0601-130	Construct Tunnel Base with Kicker	15d	12-Dec-15	31-Dec-15
E0601-140	Place infill concrete/compacted fill up to S3	12d	02-Jan-16	15-Jan-16
E0601-150	Remove S3	3d	16-Jan-16	19-Jan-16
E0601-160	Construct EWL Wall up to S2	12d	20-Jan-16	02-Feb-16
E0601-170	Place infill concrete/compacted fill up to S2	13d	03-Feb-16	20-Feb-16
E0601-180	Remove S2	3d	22-Feb-16	24-Feb-16
E0601-190	Construct EWL Roof (Travelling Form)	15d	25-Feb-16	12-Mar-16
E0601-200	Tunnel Walkway & Works for Degree 1 Completion	6d	14-Mar-16	19-Mar-16
E0601-210	Place compacted fill up to S1	5d	14-Mar-16	18-Mar-16
E0601-220	Remove S1	3d	19-Mar-16	22-Mar-16
E0601-230	Place compacted fill to final formation level	3d	23-Mar-16	29-Mar-16
Bay E06-02 (Depends on EWL7 Excavation)				
E0602-110	Excavation in EWL7 completed	0d		16-Oct-15
E0602-120	Place Blinding Layer (at approx -5mPD)	1d	17-Oct-15	17-Oct-15
E0602-130	Construct Tunnel Base with Kicker	12d	19-Oct-15	02-Nov-15
E0602-140	Place infill concrete/compacted fill up to S3	12d	03-Nov-15	16-Nov-15
E0602-150	Remove S3	2d	17-Nov-15	18-Nov-15
E0602-160	Construct EWL Wall up to S2	10d	19-Nov-15	30-Nov-15
E0602-170	Place infill concrete/compacted fill up to S3	13d	01-Dec-15	15-Dec-15
E0602-180	Remove S2	2d	16-Dec-15	17-Dec-15
E0602-190	Construct EWL Roof (Travelling Form)	15d	18-Dec-15	07-Jan-16
E0602-200	Tunnel Walkway & Works for Degree 1 Completion	6d	08-Jan-16	14-Jan-16
E0602-210	Place compacted fill up to S1	2d	08-Jan-16	09-Jan-16
E0602-220	Remove S1	2d	11-Jan-16	12-Jan-16
E0602-230	Place compacted fill to final formation level	5d	13-Jan-16	18-Jan-16
Bay E06-03 (Depends on EWL7 Excavation)				
E0603-110	Place Blinding Layer (at approx -6mPD)	1d	19-Oct-15	19-Oct-15
E0603-120	Construct Tunnel Base with Kicker	12d	03-Nov-15	16-Nov-15
E0603-130	Place infill concrete/compacted fill up to S3	12d	17-Nov-15	30-Nov-15
E0603-140	Remove S3	2d	01-Dec-15	02-Dec-15
E0603-150	Construct EWL Wall up to S2	10d	03-Dec-15	14-Dec-15
E0603-160	Place infill concrete/compacted fill up to S3	13d	15-Dec-15	31-Dec-15
E0603-170	Remove S2	2d	02-Jan-16	04-Jan-16
E0603-180	Construct EWL Roof (Travelling Form)	15d	08-Jan-16	25-Jan-16
E0603-190	Tunnel Walkway & Works for Degree 1 Completion	6d	26-Jan-16	01-Feb-16
E0603-200	Place compacted fill up to S1	2d	26-Jan-16	27-Jan-16
E0603-210	Remove S1	2d	28-Jan-16	29-Jan-16
E0603-220	Place compacted fill to final formation level	5d	30-Jan-16	04-Feb-16
Bay E06-04 (Depends on EWL7 Excavation)				
E0604-110	Place Blinding Layer (at approx -6mPD)	1d	20-Oct-15	20-Oct-15
E0604-120	Construct Tunnel Base with Kicker	12d	17-Nov-15	30-Nov-15
E0604-130	Place infill concrete/compacted fill up to S3	12d	01-Dec-15	14-Dec-15
E0604-140	Remove S3	2d	15-Dec-15	16-Dec-15
E0604-150	Construct EWL Wall up to S2	10d	17-Dec-15	30-Dec-15
E0604-160	Place infill concrete/compacted fill up to S3	13d	31-Dec-15	15-Jan-16
E0604-170	Remove S2	2d	16-Jan-16	18-Jan-16
E0604-180	Construct EWL Roof (Travelling Form)	15d	26-Jan-16	15-Feb-16
E0604-190	Tunnel Walkway & Works for Degree 1 Completion	6d	16-Feb-16	22-Feb-16
E0604-200	Place compacted fill up to S1	2d	16-Feb-16	17-Feb-16
E0604-210	Remove S1	2d	18-Feb-16	19-Feb-16
E0604-220	Place compacted fill to final formation level	5d	20-Feb-16	25-Feb-16
CLP Ducts from NSL3-6				
A12290	Filling completed up to bottom of retaining wall	0d		18-Jan-16
A12300	Construct retaining wall	24d	19-Jan-16	18-Feb-16
A12310	Backfill to retaining wall	6d	19-Feb-16	25-Feb-16
A12320	Construct draw pits & lay cable ducts	20d	26-Feb-16	19-Mar-16
A12330	Backfill to formation level	6d	21-Mar-16	30-Mar-16
(4) NSL7, 8A, 8B-1 (80m)				
Preparation Works				



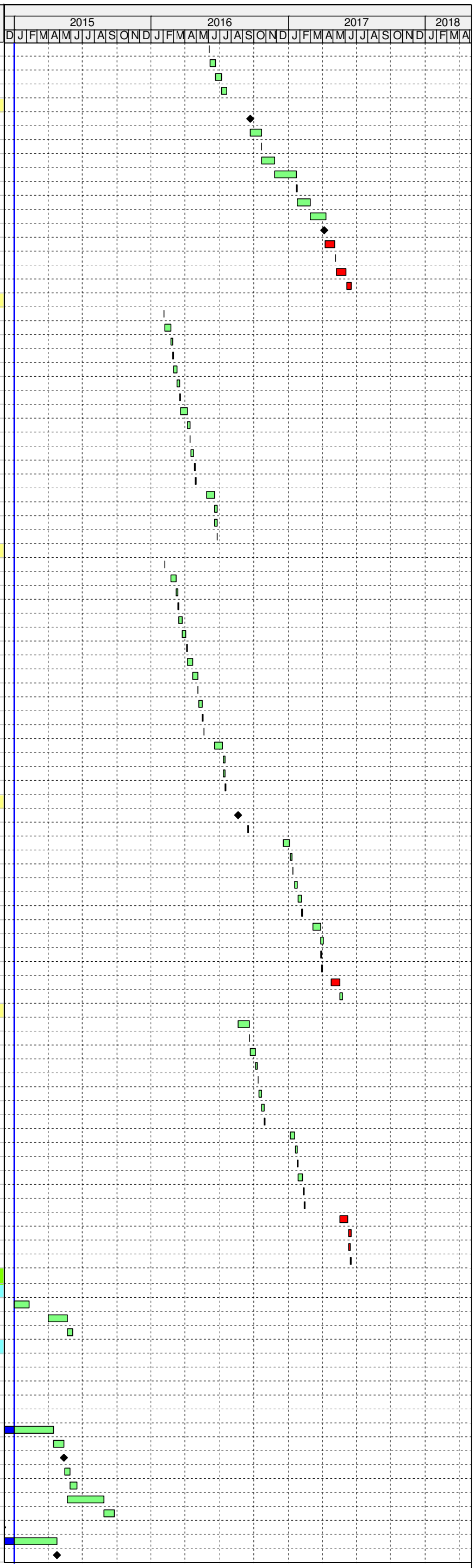
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
N07-1200	Possess Areas M1 & Site clearance	48d	17-Mar-14	17-May-14
N07-1210	Install 6.0m Height Hoarding (NTH)	18d	20-May-14	28-Jun-14
N07-1220	Trip wire system (NTH)	9d	01-Jul-14 A	19-Jul-14 A
Cofferdam Piling in NSL7				
N07-1010	Pregrouting	20d	21-Jul-14 A	12-Aug-14
N07-1020	West side Pipe piles (48 no.s), SM, 1.5 Rigs	96d	13-Aug-14	30-Nov-14
N07-1030	Traffic diverted to TB1 W/B (TTM Stage 5B)	0d		14-Dec-14
N07-1032	Site clearance	16d	15-Dec-14	05-Jan-15
N07-1034	Mobilisation	11d	06-Jan-15	17-Jan-15
N07-1040	Middle SHP (24 no.s), SM	84d	17-Dec-14	31-Mar-15
N07-1050	East Side Pipe Piles (52 no.s)	104d	06-Jan-15	15-May-15
N07-1055	East Side SHP (24 no.s)	48d	19-Jan-15	18-Mar-15
N07-1058	Erect platfom for post grout works	12d	02-May-15	15-May-15
N07-1060	Remaining Grout Curtain	20d	16-May-15	09-Jun-15
N07-1070	Instrumentation & Dewatering System	6d	10-Jun-15	16-Jun-15
N07-1080	Pumping Test	7d	17-Jun-15	23-Jun-15
Underpinning to OB2 Deck				
N07-1090	Install lower frame	12d	01-Apr-15	18-Apr-15
N07-1100	Install upper frame	18d	20-Apr-15	11-May-15
N07-1105	Install restraint frame	6d	12-May-15	18-May-15
N07-1110	Load Transfer (NTH)	4d	19-May-15	26-May-15
N07-1120	Demolish existing east abutment	24d	10-Jun-15	09-Jul-15
Underpinning to Subway within NSL7				
N07-1230	Local excavation to below subway	20d	10-Jun-15	04-Jul-15
N07-1240	Install bracket for underpinning	18d	06-Jul-15	25-Jul-15
N07-1250	Construct support connection to subway	18d	27-Jul-15	15-Aug-15
Cofferdam Piling in NSL8A & NSL8B-1				
Piles Completed During TB1 & TB2 Construction				
N07-1130	West side Pipe piles (72 no.s), SM	288d	16-Sep-13	05-Sep-14
N07-1140	Stage 1 SHP (19 no.s)	38d	01-Apr-14	21-May-14
N07-1150	East Side Pipe Piles (65 no.s)	96d	01-Apr-14	30-Jul-14 A
Piles After TB2 Diversion				
N07-1160	Traffic Diverted to TB2	0d		29-Nov-14
N07-1170	Site formation & form access	24d	29-Nov-14	29-Dec-14
N07-1180	Form access	12d	30-Dec-14	13-Jan-15
N07-1185	Remove old depot structure	6d	14-Jan-15	20-Jan-15
N07-1188	Demolish OB2 Wingwall & slope	6d	21-Jan-15	27-Jan-15
N07-1190	Stage 2 SHP (23 no.s), SM	81d	28-Jan-15	11-May-15
N07-1370	Grout Curtain Cut off Wall near NSL8B1 & NSL8B2	12d	27-Apr-15	11-May-15
N07-1380	Loading Test	28d	12-May-15	08-Jun-15
Excavation and Lateral Support				
N07-1260	Excavation to S1 break pipe piles	7d	24-Jun-15	02-Jul-15
N07-1270	Install S1 & decking	38d	03-Jul-15	15-Aug-15
N07-1280	Excavation to S2 & break pipe piles	12d	17-Aug-15	29-Aug-15
N07-1290	Install S2	25d	31-Aug-15	29-Sep-15
N07-1300	Excavation to S3 & break pipe piles	12d	30-Sep-15	14-Oct-15
N07-1310	Install S3	25d	15-Oct-15	13-Nov-15
N07-1320	Excavation to S4 (EWL formation) & break pipe piles	12d	14-Nov-15	27-Nov-15
N07-1330	Install S4	25d	28-Nov-15	29-Dec-15
N07-1340	Excavation to S5 in NSL 8A only	9d	30-Dec-15	09-Jan-16
N07-1350	Install S5	9d	11-Jan-16	20-Jan-16
N07-1360	Excavation to Formation in NSL 8A only	9d	21-Jan-16	30-Jan-16
Tunnel Structure (8 Bays)				
Bay N07-01				
N0701-110	Place Blinding Layer (at approx -6.5 mPD)	1d	10-Mar-16	11-Mar-16
N0701-120	Construct Tunnel Base with Kicker	12d	07-May-16	23-May-16
N0701-130	Place infill concrete/compacted fill up to S3	6d	23-May-16	30-May-16
N0701-140	Remove S3	2d	30-May-16	01-Jun-16
N0701-150	Construct NSL Wall up to S2	8d	04-Jun-16	15-Jun-16
N0701-160	Place infill concrete /compacted fill up to S2	6d	15-Jun-16	22-Jun-16
N0701-170	Remove S2	2d	22-Jun-16	24-Jun-16
N0701-180	Construct NSL Roof & CRN1 abutment lower wall (Travelling Form)	18d	08-Jul-16	29-Jul-16
N0701-190	Tunnel Walkway & Works for Degree 1 Completion	6d	29-Jul-16	05-Aug-16
N0701-200	Place infill concrete/compacted fill up to S1	6d	29-Jul-16	05-Aug-16
N0701-210	Remove S1	2d	05-Aug-16	08-Aug-16
N0701-220	Construct CRN1 East Abutment middle wall	12d	08-Aug-16	22-Aug-16
N0701-230	Construct CRN1 East Abutment upper wall	12d	22-Aug-16	05-Sep-16
N0701-240	Construct Shunt Neck	12d	05-Sep-16	20-Sep-16
Bay N07-02				
N0702-110	Place Blinding Layer (at approx -6.5 mPD)	1d	01-Feb-16	01-Feb-16
N0702-120	Construct Tunnel Base with Kicker	12d	02-Feb-16	18-Feb-16
N0702-130	Place infill concrete/compacted fill up to S3	6d	19-Feb-16	25-Feb-16
N0702-140	Remove S3	2d	26-Feb-16	27-Feb-16
N0702-150	Construct NSL Wall up to S2	8d	29-Feb-16	08-Mar-16
N0702-160	Place infill concrete /compacted fill up to S2	6d	09-Mar-16	15-Mar-16
N0702-170	Remove S2	2d	16-Mar-16	17-Mar-16
N0702-180	Construct NSL Roof & CRN1 abutment lower wall (Travelling Form)	18d	18-Mar-16	12-Apr-16
N0702-190	Tunnel Walkway & Works for Degree 1 Completion	6d	13-Apr-16	19-Apr-16
N0702-200	Place infill concrete/compacted fill up to S1	6d	13-Apr-16	19-Apr-16
N0702-210	Remove S1	2d	20-Apr-16	21-Apr-16
N0702-220	Construct CRN1 East Abutment middle wall	12d	22-Apr-16	06-May-16
N0702-230	Construct CRN1 East Abutment upper wall	12d	07-May-16	21-May-16
N0702-240	Construct Shunt Neck	12d	23-May-16	04-Jun-16
Bay N07-03				
N0703-110	Place Blinding Layer (at approx -6.5 mPD)	1d	02-Feb-16	02-Feb-16
N0703-120	Construct Tunnel Base with Kicker	12d	19-Feb-16	03-Mar-16
N0703-130	Place infill concrete/compacted fill up to S3	6d	04-Mar-16	10-Mar-16
N0703-140	Remove S3	2d	11-Mar-16	12-Mar-16
N0703-150	Construct NSL Wall up to S2	8d	14-Mar-16	22-Mar-16
N0703-160	Place infill concrete /compacted fill up to S2	6d	23-Mar-16	01-Apr-16
N0703-170	Remove S2	2d	02-Apr-16	05-Apr-16
N0703-180	Construct NSL Roof & CRN1 abutment lower wall (Travelling Form)	18d	13-Apr-16	04-May-16
N0703-190	Tunnel Walkway & Works for Degree 1 Completion	6d	05-May-16	11-May-16
N0703-200	Place infill concrete/compacted fill up to S1	6d	05-May-16	11-May-16
N0703-210	Remove S1	2d	12-May-16	13-May-16
N0703-220	Construct CRN1 East Abutment middle wall	12d	16-May-16	28-May-16
N0703-230	Construct CRN1 East Abutment upper wall	12d	30-May-16	13-Jun-16
N0703-240	Construct Shunt Neck	12d	14-Jun-16	27-Jun-16
Bay N07-04				
N0704-110	Place Blinding Layer (at approx -6.5 mPD)	1d	03-Feb-16	03-Feb-16
N0704-120	Construct Tunnel Base with Kicker	12d	04-Mar-16	17-Mar-16
N0704-130	Place infill concrete/compacted fill up to S3	6d	18-Mar-16	24-Mar-16
N0704-140	Remove S3	2d	29-Mar-16	30-Mar-16
N0704-150	Construct NSL Wall up to S2	8d	31-Mar-16	09-Apr-16
N0704-160	Place infill concrete /compacted fill up to S2	6d	11-Apr-16	16-Apr-16
N0704-170	Remove S2	2d	18-Apr-16	19-Apr-16
N0704-180	Construct NSL Roof & CRN1 abutment lower wall (Travelling Form)	18d	05-May-16	26-May-16
N0704-190	Tunnel Walkway & Works for Degree 1 Completion	6d	27-May-16	02-Jun-16
N0704-200	Place infill concrete/compacted fill up to S1	6d	27-May-16	02-Jun-16



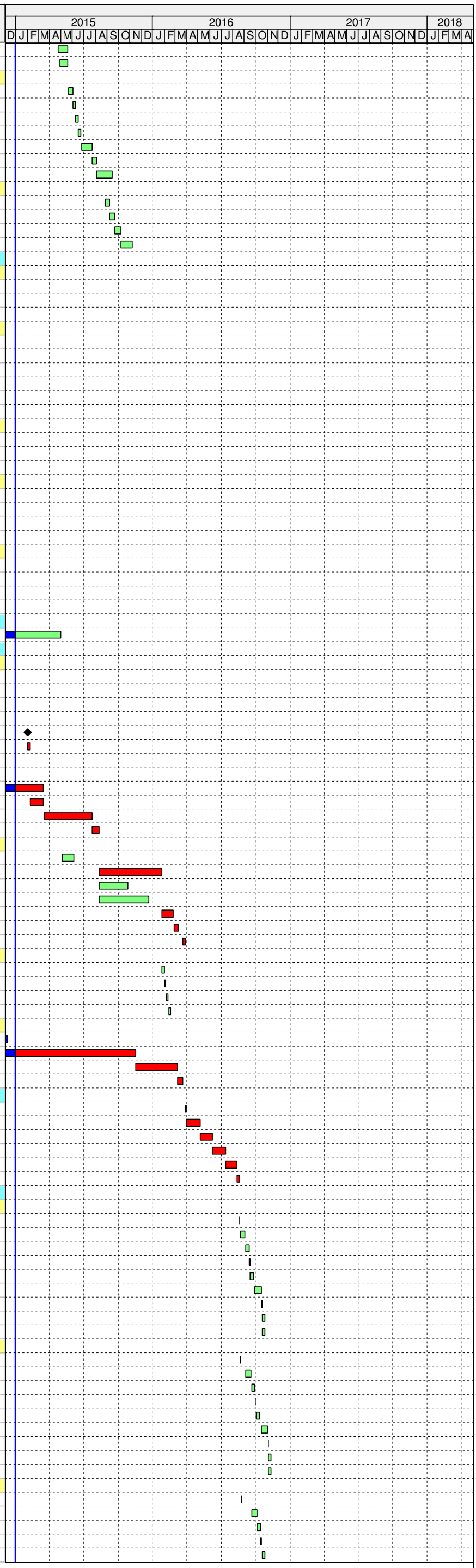
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
N0704-210	Remove S1	2d	03-Jun-16	04-Jun-16
N0704-220	Construct CRN1 East Abutment middle wall	12d	06-Jun-16	20-Jun-16
N0704-230	Construct CRN1 East Abutment upper wall	12d	21-Jun-16	05-Jul-16
N0704-240	Construct Shunt Neck	12d	06-Jul-16	19-Jul-16
Remaining Shunt Neck Affected by TB1 & TB2				
N0704-245	Tunnel above Chatham Rd Completed (Bays N0701-N0704)	0d		20-Sep-16
N0704-250	Construct Chatham Road to Original Condition	24d	20-Sep-16	20-Oct-16
N0704-260	Divert TB1 W/B to Chatham Rd W/B	1d	20-Oct-16	21-Oct-16
N0704-270	Dismantle TB1 W/B portion (Partial NTH)	30d	21-Oct-16	25-Nov-16
N0704-280	Construct Watermain Bridge, Type L4 parapet	48d	25-Nov-16	23-Jan-17
N0704-290	Divert TB1 E/B to Chatham Rd E/B	1d	23-Jan-17	24-Jan-17
N0704-300	Dismantle TB1 E/B portion (Partial NTH)	30d	24-Jan-17	28-Feb-17
N0704-302	Shunt Neck above Bay 07-05 to Bay 07-07 (3 Bays)	36d	28-Feb-17	11-Apr-17
N0704-305	Tunnel above Slip Rd Completed (Bays 8B02-8B03)	0d		07-Apr-17
N0704-308	Construct Hong Chong Rd Slip Rd to Original Condition	24d	08-Apr-17	05-May-17
N0704-310	Divert TB2 to Hong Chong Slip Rd	1d	06-May-17	06-May-17
N0704-320	Dismantle TB2 (Partial NTH)	24d	08-May-17	03-Jun-17
N0704-330	Construct Shunt Neck above Bay 07-08 (1 Bay)	12d	05-Jun-17	17-Jun-17
Bay N07-05 (with Sump Pit)				
N0705-110	Place Blinding Layer (at approx -12.5 mPD)	1d	04-Feb-16	04-Feb-16
N0705-120	Construct Sump Pit Base with Kicker	12d	05-Feb-16	22-Feb-16
N0705-130	Place infill concrete/compacted fill up to S5	4d	23-Feb-16	26-Feb-16
N0705-140	Remove S5	2d	27-Feb-16	29-Feb-16
N0705-150	Construct Sump Pit Wall up to S4	8d	01-Mar-16	09-Mar-16
N0705-160	Place infill concrete /compacted fill up to S4	6d	10-Mar-16	16-Mar-16
N0705-170	Remove S4	2d	17-Mar-16	18-Mar-16
N0705-180	Construct Tunnel Base with Kicker & Sump Pit Wall	12d	19-Mar-16	06-Apr-16
N0705-190	Place infill concrete up to S3	5d	07-Apr-16	12-Apr-16
N0705-200	Remove S3	2d	13-Apr-16	14-Apr-16
N0705-210	Construct NSL Wall & Sump Pit Roof up to S2	8d	15-Apr-16	23-Apr-16
N0705-220	Place infill concrete/compacted fill up to S2	3d	25-Apr-16	27-Apr-16
N0705-230	Remove S2	2d	28-Apr-16	29-Apr-16
N0705-240	Construct NSL Roof/Strut Beam (Travelling Form)	18d	27-May-16	17-Jun-16
N0705-250	Tunnel Walkway & Works for Degree 1 Completion	6d	18-Jun-16	24-Jun-16
N0705-260	Place compacted fill up to S1	5d	18-Jun-16	23-Jun-16
N0705-270	Remove S1	2d	24-Jun-16	25-Jun-16
Bay N07-06 (with Sump Pit)				
N0706-110	Place Blinding Layer (at approx -12.5 mPD)	1d	05-Feb-16	05-Feb-16
N0706-120	Construct Sump Pit Base with Kicker	12d	23-Feb-16	07-Mar-16
N0706-130	Place infill concrete/compacted fill up to S5	4d	08-Mar-16	11-Mar-16
N0706-140	Remove S5	2d	12-Mar-16	14-Mar-16
N0706-150	Construct Sump Pit Wall up to S4	8d	15-Mar-16	23-Mar-16
N0706-160	Place infill concrete /compacted fill up to S4	6d	24-Mar-16	02-Apr-16
N0706-170	Remove S4	2d	05-Apr-16	06-Apr-16
N0706-180	Construct Tunnel Base with Kicker & Sump Pit Wall	12d	07-Apr-16	20-Apr-16
N0706-190	Place infill concrete up to S3	10d	21-Apr-16	03-May-16
N0706-200	Remove S3	2d	04-May-16	05-May-16
N0706-210	Construct NSL Wall & Sump Pit Roof up to S2	8d	06-May-16	16-May-16
N0706-220	Place infill concrete/compacted fill up to S2	3d	17-May-16	19-May-16
N0706-230	Remove S2	2d	20-May-16	21-May-16
N0706-240	Construct NSL Roof/Strut Beam (Travelling Form)	18d	18-Jun-16	09-Jul-16
N0706-250	Tunnel Walkway & Works for Degree 1 Completion	6d	11-Jul-16	16-Jul-16
N0706-260	Place compacted fill up to S1	5d	11-Jul-16	15-Jul-16
N0706-270	Remove S1	2d	16-Jul-16	18-Jul-16
Bay N07-08 - After Bay N8B-01				
N0708-110	Excavation Reached Formation in NSL8B	0d		19-Aug-16
N0708-120	Place Blinding Layer (at approx -4 mPD)	1d	15-Sep-16	15-Sep-16
N0708-130	Construct Tunnel Base with Kicker	12d	19-Dec-16	04-Jan-17
N0708-140	Place infill concrete/compacted fill up to S3	6d	05-Jan-17	11-Jan-17
N0708-150	Remove S3	2d	12-Jan-17	13-Jan-17
N0708-160	Construct NSL Wall up to S2	8d	17-Jan-17	25-Jan-17
N0708-170	Place infill concrete /compacted fill up to S2	6d	26-Jan-17	04-Feb-17
N0708-180	Remove S2	2d	06-Feb-17	07-Feb-17
N0708-190	Construct NSL Roof up to S1	18d	07-Mar-17	27-Mar-17
N0708-200	Tunnel Walkway & Works for Degree 1 Completion	6d	28-Mar-17	03-Apr-17
N0708-210	Place infill concrete/compacted fill up to S1	3d	28-Mar-17	30-Mar-17
N0708-220	Remove S1	2d	31-Mar-17	01-Apr-17
N0708-230	Construct NSL Roof/Strut Beam (Travelling Form)	18d	26-Apr-17	18-May-17
N0708-240	Backfilling	6d	19-May-17	25-May-17
Bay N07-07 (with Sump Pit)				
N0707-110	Further ELS from -4 to approx -12.5 mPD for Sump Pit	24d	20-Aug-16	17-Sep-16
N0707-120	Place Blinding Layer (at approx -12.5 mPD)	1d	19-Sep-16	19-Sep-16
N0707-130	Construct Sump Pit Base with Kicker	12d	20-Sep-16	04-Oct-16
N0707-140	Place infill concrete/compacted fill up to S5	4d	05-Oct-16	08-Oct-16
N0707-150	Remove S5	2d	11-Oct-16	12-Oct-16
N0707-160	Construct Sump Pit Wall up to S4	8d	13-Oct-16	21-Oct-16
N0707-170	Place infill concrete /compacted fill up to S4	6d	22-Oct-16	28-Oct-16
N0707-180	Remove S4	2d	29-Oct-16	31-Oct-16
N0707-190	Construct Tunnel Base with Kicker & Sump Pit Wall	12d	05-Jan-17	18-Jan-17
N0707-200	Place infill concrete up to S3	5d	19-Jan-17	24-Jan-17
N0707-210	Remove S3	2d	25-Jan-17	26-Jan-17
N0707-220	Construct NSL Wall & Sump Pit Roof up to S2	8d	27-Jan-17	08-Feb-17
N0707-230	Place infill concrete/compacted fill up to S2	3d	09-Feb-17	11-Feb-17
N0707-240	Remove S2	2d	13-Feb-17	14-Feb-17
N0707-250	Construct NSL Roof/Strut Beam (Travelling Form)	18d	19-May-17	09-Jun-17
N0707-260	Tunnel Walkway & Works for Degree 1 Completion	6d	10-Jun-17	16-Jun-17
N0707-270	Place compacted fill up to S1	5d	10-Jun-17	15-Jun-17
N0707-280	Remove S1	2d	16-Jun-17	17-Jun-17
(5) NSL 8B-2, 9, OSP (230m)				
Cofferdam Piling in NSL8B-2				
N8B-1060	East Side 273 minipiles (34 no.s)	34d	30-Dec-14	07-Feb-15
N8B-1065	SHP (13 no.s), SM	39d	01-Apr-15	21-May-15
N8B-1210	Curtain Grout	12d	22-May-15	05-Jun-15
Cofferdam Piling in NSL9				
N8B-1070	East side 273 minipiles (34 no.s) - Stage 1	34d	17-Apr-14	31-May-14
N8B-1080	PEM's Decomissioned & Removed	0d		15-Sep-14
N8B-1090	Pregrouting	24d	16-Sep-14	17-Oct-14
N8B-1100	Site clearance	12d	18-Oct-14	31-Oct-14
N8B-1110	Trial pits	6d	01-Nov-14	07-Nov-14
N8B-1120	East side 273 minipiles (72 no.s) - Stage 2	144d	19-Nov-14	14-Apr-15
N8B-1122	Curtain Grout	24d	15-Apr-15	13-May-15
N8B-1123	Relocate access in NSL9	0d		13-May-15
N8B-1124	Trial pit	12d	14-May-15	28-May-15
N8B-1125	East side 273 minipiles (17 no.s) - Stage 3	17d	29-May-15	17-Jun-15
N8B-1150	SHP (27 no.s) - not affected by OB2A east abutment	81d	22-May-15	27-Aug-15
N8B-1160	Remaining curtain grout	24d	28-Aug-15	24-Sep-15
N8B-1165	Traffic Diverted to TB2	0d		29-Nov-14
N8B-1175	West side 273 minipiles (91 no.s), SM	184d	29-Nov-14	23-Apr-15
N8B-1178	Piling under OB2 A completed	0d		23-Apr-15



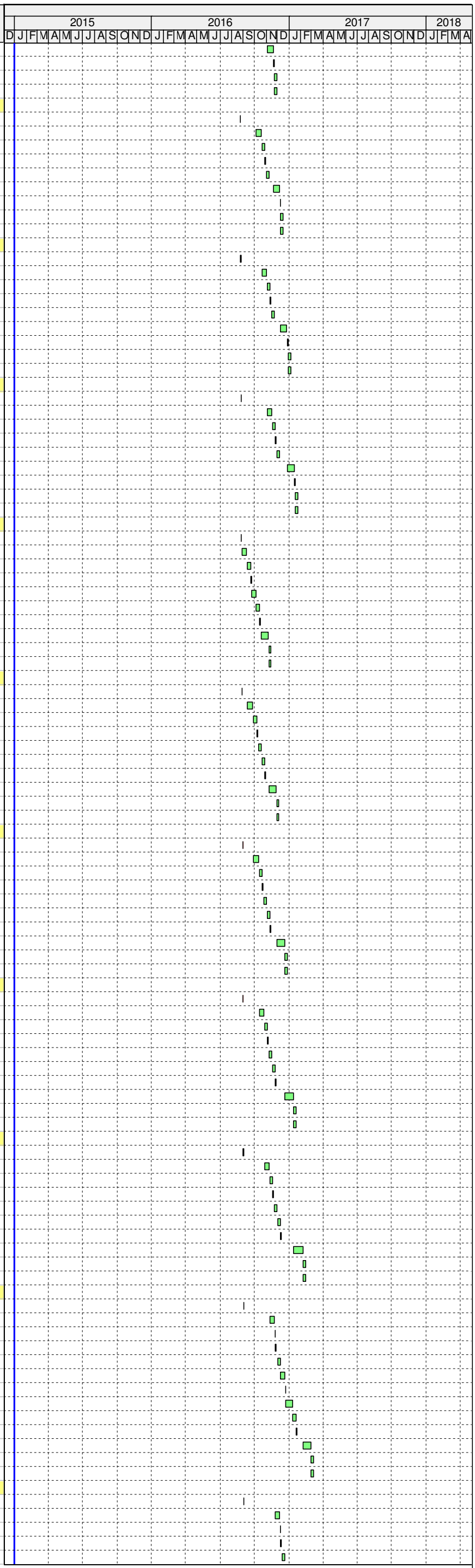
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
N8B-1185	Curtain grout under OB2A	22d	24-Apr-15	20-May-15
N8B-1195	Modify hoarding	18d	29-Apr-15	20-May-15
Underpinning to OB2A Deck				
N8B-1010	Install lower frame & columns (5 sets)	10d	21-May-15	02-Jun-15
N8B-1020	Install upper frame & cross beams	5d	03-Jun-15	08-Jun-15
N8B-1025	Install restrain frame (NTH)	4d	09-Jun-15	16-Jun-15
N8B-1030	Expose existing pile cap of OB2A @ approx +3 mPD	6d	17-Jun-15	24-Jun-15
N8B-1040	Demolish existing east abutment and pile cap	24d	25-Jun-15	23-Jul-15
N8B-1050	Raking strut	10d	24-Jul-15	04-Aug-15
N8B-1170	SHP (12 no.s) - after OB2A east abutment demolition	36d	05-Aug-15	15-Sep-15
Underpinning to Subway within NSL8B & NSL9				
N8B-1180	Excavation to below subway (3000m3)	10d	28-Aug-15	08-Sep-15
N8B-1186	Demolish existing pile cap under wingwall	12d	09-Sep-15	22-Sep-15
N8B-1190	Install bracket for underpinning	12d	23-Sep-15	08-Oct-15
N8B-1200	Construct connection to subway (incl CLP protection)	24d	09-Oct-15	06-Nov-15
Cofferdam Piling at Oi Sen Path (For 400 kV Diversion)				
Piling at North Side Timber Platform (Stage 1)				
N8B-1360	Erect Working Platform for East Side Piling Works	63d	10-Sep-13	25-Nov-13
N8B-1370	Cofferdam East Side 273mm Pipe Piles (63 no.s, Rig MI4)	95d	17-Oct-13	11-Feb-14
N8B-1410	Grout Curtain	24d	10-Feb-14	08-Mar-14
Piling at South Side Existing Footpath (Stage 2)				
N8B-1290	Construct temporary walkway at south side of OSP (for piling)	39d	03-Oct-13	18-Nov-13
N8B-1300	Local Pedestrian Diversion	6d	19-Nov-13	25-Nov-13
N8B-1310	Cofferdam East Side 273mm Pipe Piles (49 no.s, Rig HD90)	53d	26-Nov-13	29-Jan-14
N8B-1320	Expose CLP cables and CLP inspection	12d	30-Jan-14	15-Feb-14
N8B-1330	Cofferdam East Side 273mm Pipe Piles (6 no.s, Rig HD90)	12d	17-Feb-14	01-Mar-14
N8B-1340	Grout Curtain	24d	10-Feb-14	08-Mar-14
Temporary Walkway & Pedestrian Diversion (OSP North) 180m				
N8B-1450	Drill rock dowels (110 no.s)	28d	05-Feb-14	08-Mar-14
N8B-1460	Erect pedestrian walkway - 75 bays	79d	10-Mar-14	17-Jun-14
N8B-1470	Pedestrian Diversion (north side & south side)	1d	18-Jun-14	18-Jun-14
Temporary Walkway & Pedestrian Diversion (OSP South) 90m				
N8B-1350	Dismantle timber piling platform	6d	10-Mar-14	15-Mar-14
N8B-1420	Erect working platform for slope excavation/tie back soil nails	6d	17-Mar-14	22-Mar-14
N8B-1430	Excavation and tie back soil nails to existing OSP	36d	24-Mar-14	10-May-14
N8B-1440	Construct Pedestrian Walkway	41d	28-Apr-14	17-Jun-14
400 kV Diversion				
N8B-1380	Expose existing 400 kV to cable tiles (by GKJV)	48d	19-Jun-14	14-Aug-14
N8B-1390	Construct Temporary Cable Hanger	48d	15-Aug-14	15-Sep-14
N8B-1400	Hand over to CLP to expose 400 kV (by CLP)	30d	16-Sep-14	24-Sep-14
N8B-1480	Slew 400kV (by CLP)	18d	25-Sep-14	17-Oct-14
Drainage in Ho Man Tin Trackside Area				
N8B-1670	Sewerage & Drainage Works within HMT Track Area	145d	01-Nov-14	30-Apr-15
Cofferdam Piling at Oi Sen Path (Remaining)				
Preparation Works & Rock Slopes Excavation				
N8B-1550	Install 2.4m Height Hoarding (NTH)	12d	03-May-14	29-May-14
N8B-1560	Install 6.0m Height Hoarding (NTH)	12d	31-May-14	26-Jun-14
N8B-1570	Expose/Protect utilities	24d	27-Jun-14	25-Jul-14 A
N8B-1580	Trip wire system (NTH)	12d	26-Jul-14 A	09-Aug-14
N8B-1590	PEM Stage D Decomissioned	0d		31-Jan-15*
N8B-1595	Remove PEM	6d	02-Feb-15	07-Feb-15
N8B-1600	Form Haul Road	36d	16-Sep-14	29-Oct-14
N8B-1610	Working platform for slopwork	36d	25-Sep-14	07-Nov-14
N8B-1620	Rock Slope CH 100850-101090 (Top 4m), 25m3/Day	104d	08-Nov-14	16-Mar-15
N8B-1630	Form additional haul road from north side	28d	09-Feb-15	16-Mar-15
N8B-1660	Rock Slope CH 100850-101090 (Remaining), 50m3/Day	102d	17-Mar-15	22-Jul-15
N8B-1665	Rock mapping, inspection, rock dowels (as required)	17d	23-Jul-15	11-Aug-15
Piling Affected by Slope Excavation CH 100+890 to 101+090				
N8B-1505	6m hoarding & tripwire (NTH)	14d	05-May-15*	04-Jun-15
N8B-1510	West side 273 minipiles (137 no.s), SM - 2 Rigs	137d	12-Aug-15	25-Jan-16
N8B-1520	East side (41) & middle (22) minipiles (Total 63 no.s)	63d	12-Aug-15	27-Oct-15
N8B-1530	Middle SHP (74 no.s) - 2 Rigs	111d	12-Aug-15	22-Dec-15
N8B-1540	Remaining Curtain Grout	24d	26-Jan-16	25-Feb-16
N8B-1640	Dewatering System	12d	26-Feb-16	10-Mar-16
N8B-1760	Pumping Test (NSL 8B-2, 9, OSP)	7d	22-Mar-16	28-Mar-16
OHL A0+911 Diversion				
N8B-1840	Construct foundation for A0+902	6d	26-Jan-16	01-Feb-16
N8B-1850	Erect Portal Structure (NTH) for A0+902	2d	02-Feb-16	04-Feb-16
N8B-1860	OHL Diversion (NTH)	3d	06-Feb-16	11-Feb-16
N8B-1870	Remove existing OHL A0+911 (NTH)	3d	13-Feb-16	18-Feb-16
Piling not Affected by Slope Excavation CH 100+840 to 100+890				
N8B-1680	Piling for OHL Diversion	18d	19-Nov-14	09-Dec-14
N8B-1690	West side 273 minipiles (145 no.s), SM - outside slopes	290d	24-Nov-14	16-Nov-15
N8B-1740	Curtain Grout	90d	17-Nov-15	07-Mar-16
N8B-1750	Dewatering System	12d	08-Mar-16	21-Mar-16
Excavation and Lateral Support				
N8B-1220	Trim Formation to Below S1 (1000m3 soft), 500m3/Day	2d	29-Mar-16	30-Mar-16
N8B-1230	Install S1 & decking (including existing CLP support)	30d	31-Mar-16	06-May-16
N8B-1240	ELS to S2 (7000m3 soft), 350m3/Day	26d	07-May-16	07-Jun-16
N8B-1260	ELS to S3 (8050m3 soft), 350m3/Day	29d	08-Jun-16	13-Jul-16
N8B-1280	ELS to Formation (3555m3 soft,800m3 rock),350m/D,50m/D	26d	14-Jul-16	12-Aug-16
N8B-1285	Plate Load Test / SPT	7d	13-Aug-16	19-Aug-16
Tunnel Structure (23 Bays)				
Bay N8B-23 (Work Front 1)				
N8B23-110	Place Blinding Layer (at approx 2.4 mPD)	1d	20-Aug-16	20-Aug-16
N8B23-120	Construct Tunnel Base with Kicker	12d	22-Aug-16	03-Sep-16
N8B23-130	Place infill concrete/compacted fill up to S1	8d	05-Sep-16	13-Sep-16
N8B23-140	Remove S1	2d	14-Sep-16	15-Sep-16
N8B23-150	Construct NSL Lower Wall	8d	17-Sep-16	26-Sep-16
N8B23-160	Construct NSL Upper Wall with retaining structure	15d	27-Sep-16	15-Oct-16
N8B23-170	Place infill concrete	2d	17-Oct-16	18-Oct-16
N8B23-180	Tunnel Walkway & Works for Degree 1 Completion	6d	19-Oct-16	25-Oct-16
N8B23-190	Backfilling to OSP	6d	19-Oct-16	25-Oct-16
Bay N8B-22 (Work Front 1)				
N8B22-110	Place Blinding Layer (at approx 2.4 mPD)	1d	22-Aug-16	22-Aug-16
N8B22-120	Construct Tunnel Base with Kicker	12d	05-Sep-16	19-Sep-16
N8B22-130	Place infill concrete/compacted fill up to S1	8d	20-Sep-16	28-Sep-16
N8B22-140	Remove S1	2d	29-Sep-16	30-Sep-16
N8B22-150	Construct NSL Lower Wall	8d	03-Oct-16	12-Oct-16
N8B22-160	Construct NSL Upper Wall with retaining structure	15d	17-Oct-16	02-Nov-16
N8B22-170	Place infill concrete	2d	03-Nov-16	04-Nov-16
N8B22-180	Tunnel Walkway & Works for Degree 1 Completion	6d	05-Nov-16	11-Nov-16
N8B22-190	Backfilling to OSP	6d	05-Nov-16	11-Nov-16
Bay N8B-21 (Work Front 1)				
N8B21-110	Place Blinding Layer (at approx 2.4 mPD)	1d	23-Aug-16	23-Aug-16
N8B21-120	Construct Tunnel Base with Kicker	12d	20-Sep-16	04-Oct-16
N8B21-130	Place infill concrete/compacted fill up to S1	8d	05-Oct-16	14-Oct-16
N8B21-140	Remove S1	2d	15-Oct-16	17-Oct-16
N8B21-150	Construct NSL Lower Wall	8d	18-Oct-16	26-Oct-16



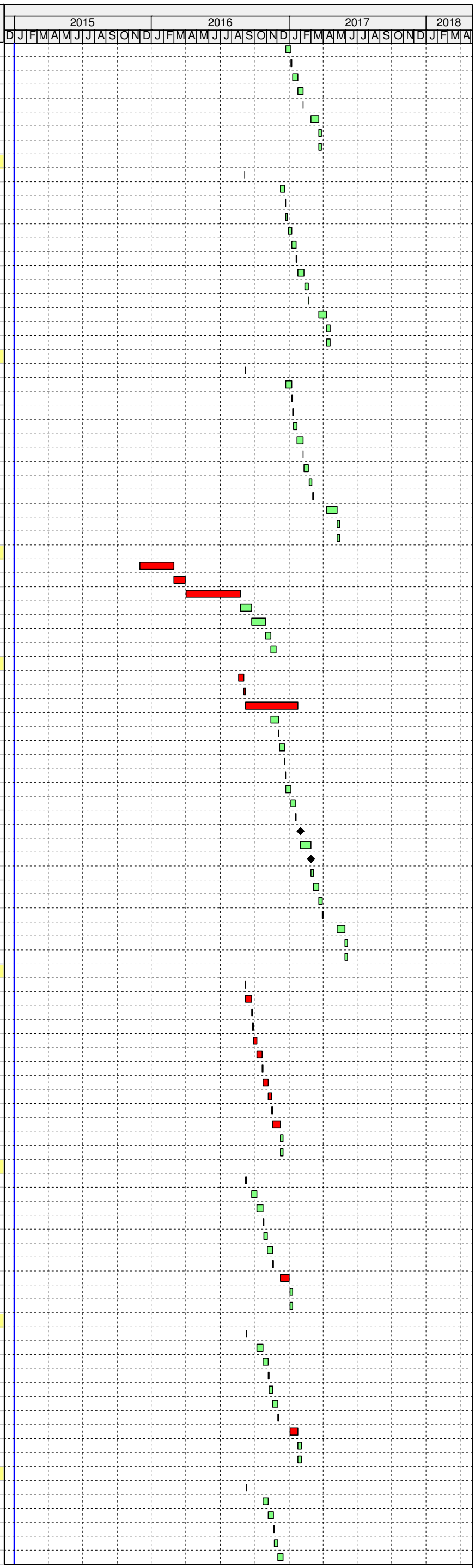
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
N8B21-160	Construct NSL Upper Wall with retaining structure	15d	03-Nov-16	19-Nov-16
N8B21-170	Place infill concrete	2d	21-Nov-16	22-Nov-16
N8B21-180	Tunnel Walkway & Works for Degree 1 Completion	6d	23-Nov-16	29-Nov-16
N8B21-190	Backfilling to OSP	6d	23-Nov-16	29-Nov-16
Bay N8B-20 (Work Front 1)				
N8B20-110	Place Blinding Layer (at approx 2.4 mPD)	1d	24-Aug-16	24-Aug-16
N8B20-120	Construct Tunnel Base with Kicker	12d	05-Oct-16	19-Oct-16
N8B20-130	Place infill concrete/compacted fill up to S1	8d	20-Oct-16	28-Oct-16
N8B20-140	Remove S1	2d	29-Oct-16	31-Oct-16
N8B20-150	Construct NSL Lower Wall	8d	01-Nov-16	09-Nov-16
N8B20-160	Construct NSL Upper Wall with retaining structure	15d	21-Nov-16	07-Dec-16
N8B20-170	Place infill concrete	2d	08-Dec-16	09-Dec-16
N8B20-180	Tunnel Walkway & Works for Degree 1 Completion	6d	10-Dec-16	16-Dec-16
N8B20-190	Backfilling to OSP	6d	10-Dec-16	16-Dec-16
Bay N8B-19 (Work Front 1)				
N8B19-110	Place Blinding Layer (at approx 2.4 mPD)	1d	25-Aug-16	25-Aug-16
N8B19-120	Construct Tunnel Base with Kicker	12d	20-Oct-16	02-Nov-16
N8B19-130	Place infill concrete/compacted fill up to S1	8d	03-Nov-16	11-Nov-16
N8B19-140	Remove S1	2d	12-Nov-16	14-Nov-16
N8B19-150	Construct NSL Lower Wall	8d	15-Nov-16	23-Nov-16
N8B19-160	Construct NSL Upper Wall with retaining structure	15d	08-Dec-16	24-Dec-16
N8B19-170	Place infill concrete	2d	28-Dec-16	29-Dec-16
N8B19-180	Tunnel Walkway & Works for Degree 1 Completion	6d	30-Dec-16	06-Jan-17
N8B19-190	Backfilling to OSP	6d	30-Dec-16	06-Jan-17
Bay N8B-18 (Work Front 1)				
N8B18-110	Place Blinding Layer (at approx 2.4 mPD)	1d	26-Aug-16	26-Aug-16
N8B18-120	Construct Tunnel Base with Kicker	12d	03-Nov-16	16-Nov-16
N8B18-130	Place infill concrete/compacted fill up to S1	8d	17-Nov-16	25-Nov-16
N8B18-140	Remove S1	2d	26-Nov-16	28-Nov-16
N8B18-150	Construct NSL Lower Wall	8d	29-Nov-16	07-Dec-16
N8B18-160	Construct NSL Upper Wall with retaining structure	15d	28-Dec-16	14-Jan-17
N8B18-170	Place infill concrete	2d	16-Jan-17	17-Jan-17
N8B18-180	Tunnel Walkway & Works for Degree 1 Completion	6d	18-Jan-17	24-Jan-17
N8B18-190	Backfilling to OSP	6d	18-Jan-17	24-Jan-17
Bay N8B-17 (Work Front 2)				
N8B17-110	Place Blinding Layer (at approx 2.0 mPD)	1d	27-Aug-16	27-Aug-16
N8B17-120	Construct Tunnel Base with Kicker	12d	29-Aug-16	10-Sep-16
N8B17-130	Place infill concrete/compacted fill up to S2	8d	12-Sep-16	21-Sep-16
N8B17-140	Remove S2	2d	22-Sep-16	23-Sep-16
N8B17-150	Construct NSL Wall up to S1	8d	24-Sep-16	04-Oct-16
N8B17-160	Place infill concrete /compacted fill up to S1	8d	05-Oct-16	14-Oct-16
N8B17-170	Remove S1	2d	15-Oct-16	17-Oct-16
N8B17-180	Construct NSL Roof/Strut Beam (Travelling Form)	18d	18-Oct-16	07-Nov-16
N8B17-190	Tunnel Walkway & Works for Degree 1 Completion	6d	08-Nov-16	14-Nov-16
N8B17-200	Backfilling	6d	08-Nov-16	14-Nov-16
Bay N8B-16 (Work Front 2)				
N8B16-110	Place Blinding Layer (at approx 1.6 mPD)	1d	29-Aug-16	29-Aug-16
N8B16-120	Construct Tunnel Base with Kicker	12d	12-Sep-16	26-Sep-16
N8B16-130	Place infill concrete/compacted fill up to S2	8d	27-Sep-16	06-Oct-16
N8B16-140	Remove S2	2d	07-Oct-16	08-Oct-16
N8B16-150	Construct NSL Wall up to S1	8d	11-Oct-16	19-Oct-16
N8B16-160	Place infill concrete /compacted fill up to S1	8d	20-Oct-16	28-Oct-16
N8B16-170	Remove S1	2d	29-Oct-16	31-Oct-16
N8B16-180	Construct NSL Roof/Strut Beam (Travelling Form)	18d	08-Nov-16	28-Nov-16
N8B16-190	Tunnel Walkway & Works for Degree 1 Completion	6d	29-Nov-16	05-Dec-16
N8B16-200	Backfilling	6d	29-Nov-16	05-Dec-16
Bay N8B-15 (Work Front 2)				
N8B15-110	Place Blinding Layer (at approx 1.2 mPD)	1d	30-Aug-16	30-Aug-16
N8B15-120	Construct Tunnel Base with Kicker	12d	27-Sep-16	12-Oct-16
N8B15-130	Place infill concrete/compacted fill up to S2	8d	13-Oct-16	21-Oct-16
N8B15-140	Remove S2	2d	22-Oct-16	24-Oct-16
N8B15-150	Construct NSL Wall up to S1	8d	25-Oct-16	02-Nov-16
N8B15-160	Place infill concrete /compacted fill up to S1	8d	03-Nov-16	11-Nov-16
N8B15-170	Remove S1	2d	12-Nov-16	14-Nov-16
N8B15-180	Construct NSL Roof/Strut Beam (Travelling Form)	18d	29-Nov-16	19-Dec-16
N8B15-190	Tunnel Walkway & Works for Degree 1 Completion	6d	20-Dec-16	28-Dec-16
N8B15-200	Backfilling	6d	20-Dec-16	28-Dec-16
Bay N8B-14 (Work Front 2)				
N8B14-110	Place Blinding Layer (at approx 0.8 mPD)	1d	31-Aug-16	31-Aug-16
N8B14-120	Construct Tunnel Base with Kicker	12d	13-Oct-16	26-Oct-16
N8B14-130	Place infill concrete/compacted fill up to S2	8d	27-Oct-16	04-Nov-16
N8B14-140	Remove S2	2d	05-Nov-16	07-Nov-16
N8B14-150	Construct NSL Wall up to S1	8d	08-Nov-16	16-Nov-16
N8B14-160	Place infill concrete /compacted fill up to S1	8d	17-Nov-16	25-Nov-16
N8B14-170	Remove S1	2d	26-Nov-16	28-Nov-16
N8B14-180	Construct NSL Roof/Strut Beam (Travelling Form)	18d	20-Dec-16	12-Jan-17
N8B14-190	Tunnel Walkway & Works for Degree 1 Completion	6d	13-Jan-17	19-Jan-17
N8B14-200	Backfilling	6d	13-Jan-17	19-Jan-17
Bay N8B-13 (Work Front 2)				
N8B13-110	Place Blinding Layer (at approx 0.8 mPD)	1d	01-Sep-16	01-Sep-16
N8B13-120	Construct Tunnel Base with Kicker	12d	27-Oct-16	09-Nov-16
N8B13-130	Place infill concrete/compacted fill up to S2	8d	10-Nov-16	18-Nov-16
N8B13-140	Remove S2	2d	19-Nov-16	21-Nov-16
N8B13-150	Construct NSL Wall up to S1	8d	22-Nov-16	30-Nov-16
N8B13-160	Place infill concrete /compacted fill up to S1	8d	01-Dec-16	09-Dec-16
N8B13-170	Remove S1	2d	10-Dec-16	12-Dec-16
N8B13-180	Construct NSL Roof/Strut Beam (Travelling Form)	18d	13-Jan-17	06-Feb-17
N8B13-190	Tunnel Walkway & Works for Degree 1 Completion	6d	07-Feb-17	13-Feb-17
N8B13-200	Backfilling	6d	07-Feb-17	13-Feb-17
Bay N8B-12 (Work Front 2)				
N8B12-110	Place Blinding Layer (at approx 0 mPD)	1d	02-Sep-16	02-Sep-16
N8B12-120	Construct Tunnel Base with Kicker	12d	10-Nov-16	23-Nov-16
N8B12-130	Place infill concrete/compacted fill up to S3	2d	24-Nov-16	25-Nov-16
N8B12-140	Remove S3	2d	26-Nov-16	28-Nov-16
N8B12-150	Construct NSL Wall up to S2	8d	01-Dec-16	09-Dec-16
N8B12-160	Place infill concrete /compacted fill up to S2	10d	10-Dec-16	21-Dec-16
N8B12-170	Remove S2	2d	22-Dec-16	23-Dec-16
N8B12-180	Construct NSL Wall up to S1	12d	24-Dec-16	10-Jan-17
N8B12-190	Place infill concrete /compacted fill up to S2	8d	11-Jan-17	19-Jan-17
N8B12-200	Remove S1	2d	20-Jan-17	21-Jan-17
N8B12-210	Construct NSL Roof/Strut Beam (Travelling Form)	18d	07-Feb-17	27-Feb-17
N8B12-220	Tunnel Walkway & Works for Degree 1 Completion	6d	28-Feb-17	06-Mar-17
N8B12-230	Backfilling	6d	28-Feb-17	06-Mar-17
Bay N8B-11 (Work Front 2)				
N8B11-110	Place Blinding Layer (at approx 0 mPD)	1d	03-Sep-16	03-Sep-16
N8B11-120	Construct Tunnel Base with Kicker	12d	24-Nov-16	07-Dec-16
N8B11-130	Place infill concrete/compacted fill up to S3	2d	08-Dec-16	09-Dec-16
N8B11-140	Remove S3	2d	10-Dec-16	12-Dec-16
N8B11-150	Construct NSL Wall up to S2	8d	13-Dec-16	21-Dec-16



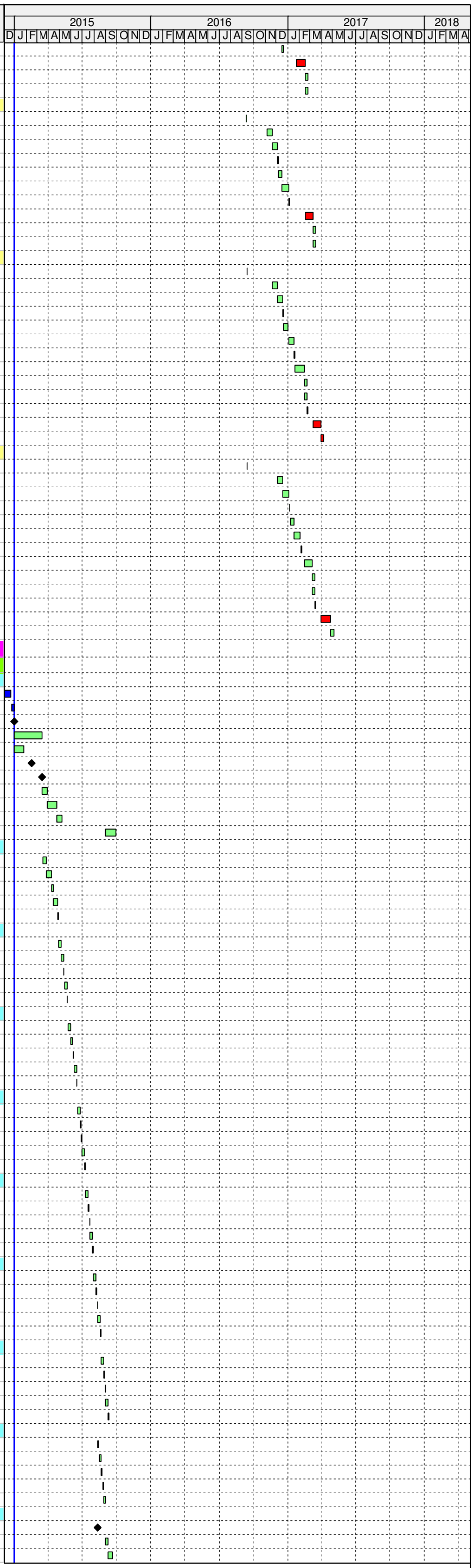
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
N8B11-160	Place infill concrete /compacted fill up to S2	10d	22-Dec-16	05-Jan-17
N8B11-170	Remove S2	2d	06-Jan-17	07-Jan-17
N8B11-180	Construct NSL Wall up to S1	12d	11-Jan-17	24-Jan-17
N8B11-190	Place infill concrete /compacted fill up to S2	8d	25-Jan-17	06-Feb-17
N8B11-200	Remove S1	2d	07-Feb-17	08-Feb-17
N8B11-210	Construct NSL Roof/Strut Beam (Travelling Form)	18d	28-Feb-17	20-Mar-17
N8B11-220	Tunnel Walkway & Works for Degree 1 Completion	6d	21-Mar-17	27-Mar-17
N8B11-230	Backfilling	6d	21-Mar-17	27-Mar-17
Bay N8B-10 (Work Front 2)				
N8B10-110	Place Blinding Layer (at approx -1 mPD)	1d	05-Sep-16	05-Sep-16
N8B10-120	Construct Tunnel Base with Kicker	12d	08-Dec-16	21-Dec-16
N8B10-130	Place infill concrete/compacted fill up to S3	2d	22-Dec-16	23-Dec-16
N8B10-140	Remove S3	2d	24-Dec-16	28-Dec-16
N8B10-150	Construct NSL Wall up to S2	8d	29-Dec-16	07-Jan-17
N8B10-160	Place infill concrete /compacted fill up to S2	10d	09-Jan-17	19-Jan-17
N8B10-170	Remove S2	2d	20-Jan-17	21-Jan-17
N8B10-180	Construct NSL Wall up to S1	12d	25-Jan-17	10-Feb-17
N8B10-190	Place infill concrete /compacted fill up to S2	8d	11-Feb-17	20-Feb-17
N8B10-200	Remove S1	2d	21-Feb-17	22-Feb-17
N8B10-210	Construct NSL Roof/Strut Beam (Travelling Form)	18d	21-Mar-17	11-Apr-17
N8B10-220	Tunnel Walkway & Works for Degree 1 Completion	6d	12-Apr-17	21-Apr-17
N8B10-230	Backfilling	6d	12-Apr-17	21-Apr-17
Bay N8B-09 (Work Front 2)				
N8B09-110	Place Blinding Layer (at approx -1 mPD)	1d	06-Sep-16	06-Sep-16
N8B09-120	Construct Tunnel Base with Kicker	12d	22-Dec-16	07-Jan-17
N8B09-130	Place infill concrete/compacted fill up to S3	2d	09-Jan-17	10-Jan-17
N8B09-140	Remove S3	2d	11-Jan-17	12-Jan-17
N8B09-150	Construct NSL Wall up to S2	8d	13-Jan-17	21-Jan-17
N8B09-160	Place infill concrete /compacted fill up to S2	10d	23-Jan-17	06-Feb-17
N8B09-170	Remove S2	2d	07-Feb-17	08-Feb-17
N8B09-210	Construct NSL Wall up to S1	12d	09-Feb-17	22-Feb-17
N8B09-220	Place infill concrete /compacted fill up to S2	8d	23-Feb-17	03-Mar-17
N8B09-230	Remove S1	2d	04-Mar-17	06-Mar-17
N8B09-240	Construct NSL Roof/Strut Beam (Travelling Form)	18d	12-Apr-17	08-May-17
N8B09-250	Tunnel Walkway & Works for Degree 1 Completion	6d	09-May-17	15-May-17
N8B09-260	Backfilling	6d	09-May-17	15-May-17
Pipe Jacking for CLP				
N8B-1770	Construct launching pit at Ho Man Tin	72d	01-Dec-15*	29-Feb-16
N8B-1780	Assemble TBM	24d	01-Mar-16	31-Mar-16
N8B-1790	Drive 1200 Dia casing (60m) - 1st trip (partial NTH)	120d	01-Apr-16	24-Aug-16
N8B-1800	Reposition TBM for drilling in opposite direction	24d	25-Aug-16	22-Sep-16
N8B-1810	Drive 1200 Dia casing (15m) - 2nd trip (partial NTH)	30d	23-Sep-16	29-Oct-16
N8B-1820	Retrieve TBM from Receiving Pit	12d	31-Oct-16	12-Nov-16
N8B-1830	Dismantle driving pit & receiving pit & reinstate area	12d	14-Nov-16	26-Nov-16
Bay N8B-08 (Work Front 2) - with New CLP Ducts & Existing CLP				
N8B08-110	Further ELS to formation of CLP duct (approx -3.2 mPD)	12d	20-Aug-16	02-Sep-16
N8B08-120	Lay CLP Ducts within cofferdam section	4d	03-Sep-16	07-Sep-16
N8B08-125	CLP Cable Laying	140d	08-Sep-16	25-Jan-17
N8B08-130	Filling to tunnel formation level	18d	14-Nov-16	03-Dec-16
N8B08-160	Place Blinding Layer	1d	05-Dec-16	05-Dec-16
N8B08-170	Construct Tunnel Base with Kicker	12d	06-Dec-16	19-Dec-16
N8B08-180	Place infill concrete/compacted fill up to S3	2d	20-Dec-16	21-Dec-16
N8B08-190	Remove S3	2d	22-Dec-16	23-Dec-16
N8B08-200	Construct NSL Wall up to S2	8d	24-Dec-16	05-Jan-17
N8B08-210	Place infill concrete /compacted fill up to S2	10d	06-Jan-17	17-Jan-17
N8B08-220	Remove S2	2d	18-Jan-17	19-Jan-17
N8B08-222	CLP Power on	0d		30-Jan-17
N8B08-224	New CLP Cable Connection (by CLP)	24d	01-Feb-17	28-Feb-17
N8B08-225	Diversion of existing CLP	0d		28-Feb-17
N8B08-226	Remove Abandoned CLP Cables	6d	01-Mar-17	07-Mar-17
N8B08-230	Construct NSL Wall up to S1	12d	08-Mar-17	21-Mar-17
N8B08-240	Place infill concrete /compacted fill up to S2	8d	22-Mar-17	30-Mar-17
N8B08-250	Remove S1	2d	31-Mar-17	01-Apr-17
N8B08-260	Construct NSL Roof/Strut Beam (Travelling Form)	18d	09-May-17	29-May-17
N8B08-270	Tunnel Walkway & Works for Degree 1 Completion	6d	31-May-17	06-Jun-17
N8B08-280	Backfilling	6d	31-May-17	06-Jun-17
Bay N8B-07 (Work Front 3)				
N8B07-110	Place Blinding Layer (at approx -1 mPD)	1d	07-Sep-16	07-Sep-16
N8B07-120	Construct Tunnel Base with Kicker	12d	08-Sep-16	22-Sep-16
N8B07-130	Place infill concrete/compacted fill up to S3	2d	23-Sep-16	24-Sep-16
N8B07-140	Remove S3	2d	26-Sep-16	27-Sep-16
N8B07-150	Construct NSL Wall up to S2	8d	28-Sep-16	07-Oct-16
N8B07-160	Place infill concrete /compacted fill up to S2	10d	08-Oct-16	20-Oct-16
N8B07-170	Remove S2	2d	21-Oct-16	22-Oct-16
N8B07-180	Construct NSL Wall up to S1	12d	24-Oct-16	05-Nov-16
N8B07-190	Place infill concrete /compacted fill up to S2	8d	07-Nov-16	15-Nov-16
N8B07-200	Remove S1	2d	16-Nov-16	17-Nov-16
N8B07-210	Construct NSL Roof/Strut Beam (Travelling Form)	18d	18-Nov-16	08-Dec-16
N8B07-220	Tunnel Walkway & Works for Degree 1 Completion	6d	09-Dec-16	15-Dec-16
N8B07-230	Backfilling	6d	09-Dec-16	15-Dec-16
Bay N8B-06 (Work Front 3)				
N8B06-110	Place Blinding Layer (at approx -2 mPD)	1d	08-Sep-16	08-Sep-16
N8B06-120	Construct Tunnel Base with Kicker	12d	23-Sep-16	07-Oct-16
N8B06-130	Place infill concrete/compacted fill up to S2	12d	08-Oct-16	22-Oct-16
N8B06-140	Remove S2	2d	24-Oct-16	25-Oct-16
N8B06-150	Construct NSL Wall up to S1	8d	26-Oct-16	03-Nov-16
N8B06-160	Place infill concrete /compacted fill up to S1	13d	04-Nov-16	18-Nov-16
N8B06-170	Remove S1	2d	19-Nov-16	21-Nov-16
N8B06-180	Construct NSL Roof/Strut Beam (Travelling Form)	18d	09-Dec-16	31-Dec-16
N8B06-190	Tunnel Walkway & Works for Degree 1 Completion	6d	03-Jan-17	09-Jan-17
N8B06-200	Backfilling	6d	03-Jan-17	09-Jan-17
Bay N8B-05 (Work Front 3)				
N8B05-110	Place Blinding Layer (at approx -3 mPD)	1d	09-Sep-16	09-Sep-16
N8B05-120	Construct Tunnel Base with Kicker	12d	08-Oct-16	22-Oct-16
N8B05-130	Place infill concrete/compacted fill up to S2	12d	24-Oct-16	05-Nov-16
N8B05-140	Remove S2	2d	07-Nov-16	08-Nov-16
N8B05-150	Construct NSL Wall up to S1	8d	09-Nov-16	17-Nov-16
N8B05-160	Place infill concrete /compacted fill up to S1	13d	18-Nov-16	02-Dec-16
N8B05-170	Remove S1	2d	03-Dec-16	05-Dec-16
N8B05-180	Construct NSL Roof/Strut Beam (Travelling Form)	18d	03-Jan-17	23-Jan-17
N8B05-190	Tunnel Walkway & Works for Degree 1 Completion	6d	24-Jan-17	02-Feb-17
N8B05-200	Backfilling	6d	24-Jan-17	02-Feb-17
Bay N8B-04 (Work Front 3)				
N8B04-110	Place Blinding Layer (at approx -3 mPD)	1d	10-Sep-16	10-Sep-16
N8B04-120	Construct Tunnel Base with Kicker	12d	24-Oct-16	05-Nov-16
N8B04-130	Place infill concrete/compacted fill up to S2	12d	07-Nov-16	19-Nov-16
N8B04-140	Remove S2	2d	21-Nov-16	22-Nov-16
N8B04-150	Construct NSL Wall up to S1	8d	23-Nov-16	01-Dec-16
N8B04-160	Place infill concrete /compacted fill up to S1	13d	02-Dec-16	16-Dec-16



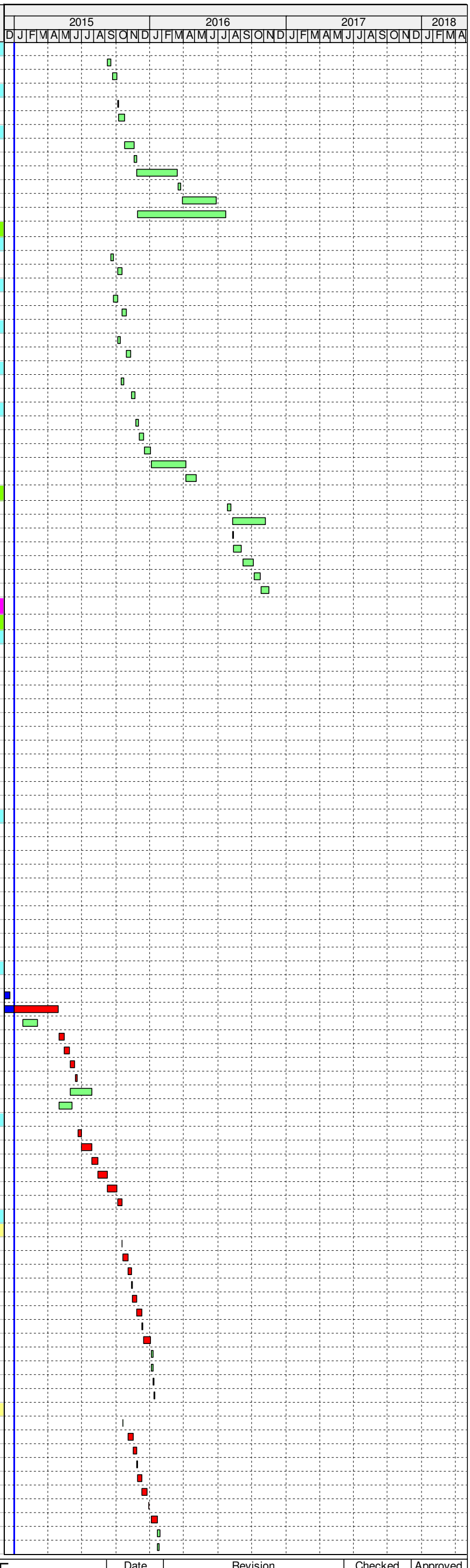
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
N8B04-170	Remove S1	2d	17-Dec-16	19-Dec-16
N8B04-180	Construct NSL Roof/Strut Beam (Travelling Form)	18d	24-Jan-17	16-Feb-17
N8B04-190	Tunnel Walkway & Works for Degree 1 Completion	6d	17-Feb-17	23-Feb-17
N8B04-200	Backfilling	6d	17-Feb-17	23-Feb-17
Bay N8B-03 (Work Front 3)				
N8B03-110	Place Blinding Layer (at approx -3 mPD)	1d	12-Sep-16	12-Sep-16
N8B03-120	Construct Tunnel Base with Kicker	12d	07-Nov-16	19-Nov-16
N8B03-130	Place infill concrete/compacted fill up to S2	12d	21-Nov-16	03-Dec-16
N8B03-140	Remove S2	2d	05-Dec-16	06-Dec-16
N8B03-150	Construct NSL Wall up to S1	8d	07-Dec-16	15-Dec-16
N8B03-160	Place infill concrete /compacted fill up to S1	13d	16-Dec-16	03-Jan-17
N8B03-170	Remove S1	2d	04-Jan-17	05-Jan-17
N8B03-180	Construct NSL Roof/Strut Beam (Travelling Form)	18d	17-Feb-17	09-Mar-17
N8B03-190	Tunnel Walkway & Works for Degree 1 Completion	6d	10-Mar-17	16-Mar-17
N8B03-200	Backfilling	6d	10-Mar-17	16-Mar-17
Bay N8B-02 (Work Front 3)				
N8B02-110	Place Blinding Layer (at approx -4 mPD)	1d	13-Sep-16	13-Sep-16
N8B02-120	Construct Tunnel Base with Kicker	12d	21-Nov-16	03-Dec-16
N8B02-130	Place infill concrete/compacted fill up to S3	12d	05-Dec-16	17-Dec-16
N8B02-140	Remove S3	2d	19-Dec-16	20-Dec-16
N8B02-150	Construct NSL Wall up to S2	8d	21-Dec-16	31-Dec-16
N8B02-160	Place infill concrete /compacted fill up to S2	13d	03-Jan-17	17-Jan-17
N8B02-170	Remove S2	2d	18-Jan-17	19-Jan-17
N8B02-180	Construct NSL Roof up to S1	18d	20-Jan-17	13-Feb-17
N8B02-190	Tunnel Walkway & Works for Degree 1 Completion	6d	14-Feb-17	20-Feb-17
N8B02-200	Place infill concrete/compacted fill up to S1	7d	14-Feb-17	21-Feb-17
N8B02-210	Remove S1	2d	22-Feb-17	23-Feb-17
N8B02-220	Construct NSL Roof/Strut Beam (Travelling Form)	18d	10-Mar-17	30-Mar-17
N8B02-230	Backfilling	6d	31-Mar-17	07-Apr-17
Bay N8B-01 (Work Front 3)				
N8B01-110	Place Blinding Layer (at approx -4 mPD)	1d	14-Sep-16	14-Sep-16
N8B01-120	Construct Tunnel Base with Kicker	12d	05-Dec-16	17-Dec-16
N8B01-130	Place infill concrete/compacted fill up to S3	12d	19-Dec-16	04-Jan-17
N8B01-140	Remove S3	2d	05-Jan-17	06-Jan-17
N8B01-150	Construct NSL Wall up to S2	8d	07-Jan-17	16-Jan-17
N8B01-160	Place infill concrete /compacted fill up to S2	13d	17-Jan-17	03-Feb-17
N8B01-170	Remove S2	2d	04-Feb-17	06-Feb-17
N8B01-180	Construct NSL Roof up to S1	18d	14-Feb-17	06-Mar-17
N8B01-190	Tunnel Walkway & Works for Degree 1 Completion	6d	07-Mar-17	13-Mar-17
N8B01-200	Place infill concrete/compacted fill up to S1	7d	07-Mar-17	14-Mar-17
N8B01-210	Remove S1	2d	15-Mar-17	16-Mar-17
N8B01-220	Construct NSL Roof/Strut Beam (Travelling Form)	18d	31-Mar-17	25-Apr-17
N8B01-230	Backfilling	6d	26-Apr-17	04-May-17
Noise Enclosure at Oi Sen Path				
Section 1 CH 101+063 to CH 101+155 (9 Bays)				
Preparation Works & Base for Noise Enclosure				
NB-010	Slope Excavation	1d	18-Oct-14	23-Dec-14
NB-020	Plate load test	6d	24-Dec-14	31-Dec-14
NB-030	Plate Load Test Completed	0d		31-Dec-14
NB-040	Construct Base (6 bays), including S1112 Footing @Bay1	60d	31-Dec-14	14-Mar-15
NB-050	Place concrete blocks for platform (7 bays)	21d	31-Dec-14	24-Jan-15
NB-060	Completion of return wire diversion (by MTR)	0d		15-Feb-15*
NB-290	PEM Decommissioning (by MTR)	0d		15-Mar-15*
NB-300	Remove PEM Container	12d	16-Mar-15	28-Mar-15
NB-310	Site formation	18d	30-Mar-15	23-Apr-15
NB-320	Construct Base for Bay 7	12d	24-Apr-15	08-May-15
NB-330	Install bearings for NS3 & NS4	24d	01-Sep-15	29-Sep-15
Bay 1 (Precast Skin)				
NB01-010	Place precast wall skin (3m x 4 pieces) - NTH	5d	17-Mar-15	26-Mar-15
NB01-020	Erect working platform, protective measures, and fix rebar	8d	27-Mar-15	09-Apr-15
NB01-030	Place concrete (2 pours)	3d	10-Apr-15	13-Apr-15
NB01-040	Erect steework platform above Bay 1 - NTH	6d	14-Apr-15	25-Apr-15
NB01-050	Make good surfacing	1d	27-Apr-15	27-Apr-15
Bay 2 (Precast Skin)				
NB02-010	Place precast wall skin (3m x 4 pieces) - NTH	4d	28-Apr-15	05-May-15
NB02-020	Erect working platform, protective measures, and fix rebar	5d	06-May-15	11-May-15
NB02-030	Place concrete	1d	12-May-15	12-May-15
NB02-040	Erect steework platform above Bay 2 - NTH	4d	14-May-15	21-May-15
NB02-050	Make good surfacing	1d	22-May-15	22-May-15
Bay 3 (Precast Skin)				
NB03-010	Place precast wall skin (3m x 4 pieces) - NTH	4d	23-May-15	30-May-15
NB03-020	Erect working platform, protective measures, and fix rebar	5d	01-Jun-15	05-Jun-15
NB03-030	Place concrete	1d	06-Jun-15	06-Jun-15
NB03-040	Erect steework platform above Bay 3 - NTH	4d	09-Jun-15	16-Jun-15
NB03-050	Make good surfacing	1d	17-Jun-15	17-Jun-15
Bay 4 (Precast Skin)				
NB04-010	Place precast wall skin (3m x 4 pieces) - NTH	4d	18-Jun-15	25-Jun-15
NB04-020	Erect working platform, protective measures, and fix rebar	2d	26-Jun-15	27-Jun-15
NB04-030	Place concrete	1d	29-Jun-15	29-Jun-15
NB04-040	Erect steework platform above Bay 4 - NTH	4d	30-Jun-15	07-Jul-15
NB04-050	Make good surfacing	1d	08-Jul-15	08-Jul-15
Bay 5 (Precast Skin)				
NB05-010	Place precast wall skin (3m x 4 pieces) - NTH	4d	09-Jul-15	16-Jul-15
NB05-020	Erect working platform, protective measures, and fix rebar	2d	17-Jul-15	18-Jul-15
NB05-030	Place concrete	1d	20-Jul-15	20-Jul-15
NB05-040	Erect steework platform above Bay 5 - NTH	4d	21-Jul-15	28-Jul-15
NB05-050	Make good surfacing	1d	29-Jul-15	29-Jul-15
Bay 6 (Precast Skin)				
NB06-010	Place precast wall skin (3m x 4 pieces) - NTH	4d	30-Jul-15	06-Aug-15
NB06-020	Erect working platform, protective measures, and fix rebar	2d	07-Aug-15	08-Aug-15
NB06-030	Place concrete	1d	10-Aug-15	10-Aug-15
NB06-040	Erect steework platform above Bay 6 - NTH	4d	11-Aug-15	18-Aug-15
NB06-050	Make good surfacing	1d	19-Aug-15	19-Aug-15
Bay 7 (Precast Skin)				
NB07-010	Place precast wall skin (3m x 4 pieces) - NTH	4d	20-Aug-15	27-Aug-15
NB07-020	Erect working platform, protective measures, and fix rebar	2d	28-Aug-15	29-Aug-15
NB07-030	Place concrete	1d	31-Aug-15	31-Aug-15
NB07-040	Erect steework platform above Bay 7 - NTH	4d	01-Sep-15	08-Sep-15
NB07-050	Make good surfacing	1d	09-Sep-15	09-Sep-15
Piling for Steel Platform				
NB-070	Mobilize piling rig	3d	12-Aug-15	14-Aug-15
NB-080	273mm Minipiles for temporary platform (Stage 1)	4d	15-Aug-15	19-Aug-15
NB-085	Relocate piling rig	3d	20-Aug-15	22-Aug-15
NB-088	273mm Minipiles for temporary platform (Stage 2)	4d	24-Aug-15	27-Aug-15
NB-090	Demobilize piling rig	3d	28-Aug-15	31-Aug-15
Bay 8 (Conventional)				
NB08-010	Slope Excavation Completed	0d		11-Aug-15
NB08-020	Construct Base	7d	01-Sep-15	08-Sep-15
NB08-030	Construct Wall	10d	09-Sep-15	19-Sep-15



Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
Bay 9 (Conventional)				
NB09-010	Construct Base	7d	09-Sep-15	16-Sep-15
NB09-020	Construct Wall	10d	21-Sep-15	03-Oct-15
Steel Platform at Bay 8 & Bay 9				
NB-100	Install posts on noise footing base (4 no.s)	4d	05-Oct-15	08-Oct-15
NB-110	Install deck with barrier	12d	09-Oct-15	23-Oct-15
Stage 1 Noise Enclosue Panel Erectiion				
NB-120	Erect Steelwork (Erect-NTH, Assemble-Day), Bay 1	22d	24-Oct-15	18-Nov-15
NB-130	OHL Diversion @ CH 101+145 by MTR (NTH)	4d	19-Nov-15	26-Nov-15
NB-140	Erect Steelwork (Erect-NTH, Assemble-Day), Bay 2-Bay 5	88d	27-Nov-15	15-Mar-16
NB-150	OHL Diversion @ CH 101+101 by MTR (NTH)	4d	17-Mar-16	24-Mar-16
NB-160	Erect Steelwork (Erect-NTH, Assemble-Day), Bay 6-Bay 9	74d	29-Mar-16	27-Jun-16
NB-170	Erect Bracing, Purlin, and Panel (NTH)	103d	28-Nov-15	23-Jul-16
Section 2 CH 101+022 to CH 101+063 (4 Bays)				
Bay 10 (Conventional)				
NB10-010	Construct Base	7d	17-Sep-15	24-Sep-15
NB10-020	Construct Wall	10d	06-Oct-15	16-Oct-15
Bay 11 (Conventional)				
NB11-010	Construct Base	7d	25-Sep-15	05-Oct-15
NB11-020	Construct Wall	10d	17-Oct-15	29-Oct-15
Bay 12 (Conventional)				
NB12-010	Construct Base	7d	06-Oct-15	13-Oct-15
NB12-020	Construct Wall	10d	30-Oct-15	10-Nov-15
Bay 13 (Conventional)				
NB13-010	Construct Base	7d	14-Oct-15	22-Oct-15
NB13-020	Construct Wall	10d	11-Nov-15	21-Nov-15
Stage 2 Noise Enclosue Panel Erectiion				
NB-180	OHL Diversion @ CH 101+055 by MTR (NTH)	4d	24-Nov-15	01-Dec-15
NB-190	Site clearance & preparation	12d	02-Dec-15	15-Dec-15
NB-200	Erect Steelwork (Erect & Assemble-NTH), Bay 10-Bay 13	8d	17-Dec-15	02-Jan-16
NB-210	Erect Bracing, Purlin, and Panel (NTH)	40d	05-Jan-16	05-Apr-16
NB-220	Install downpipes and gutter (NTH)	12d	07-Apr-16	03-May-16
Noise Enclosure Underslung, Accessories, and Inspection				
NB-225	Temporary support for underslung structure (NTH)	6d	26-Jul-16	06-Aug-16
NB-230	Erect underslung structure (Drop Panel) (NTH)	39d	09-Aug-16	05-Nov-16
NB-240	Additional subframe at Grid 18-21 (NTH)	2d	09-Aug-16	11-Aug-16
NB-250	Aerofoil lourver (NTH)	10d	13-Aug-16	03-Sep-16
NB-260	Access opening for bearing (NTH)	13d	06-Sep-16	04-Oct-16
NB-270	Touchup, make good, and inspection (NTH)	8d	06-Oct-16	22-Oct-16
NB-280	Remove temporary working platform (NTH)	10d	25-Oct-16	15-Nov-16
East West Line (EWL)				
(7) EWL Area 7 (50m)				
Control Room				
E07-1040	Liaise with CLP for power supply - Phase 1	72d	17-Dec-12	16-Mar-13
E07-1050	Liaise with CLP for power supply - Phase 2	72d	18-Mar-13	17-Jun-13
E07-1060	BS submission and approval for control room - Phase 1	72d	17-Dec-12	16-Mar-13
E07-1070	BS submission and approval for control room - Phase 2	72d	18-Mar-13	17-Jun-13
E07-1080	ELS Design for Control Room	60d	18-Jun-13	27-Aug-13
E07-1090	Method statement and procurement	24d	28-Aug-13	25-Sep-13
E07-1100	194mm Pipe Piles (92 no.s)	40d	26-Sep-13	13-Nov-13
E07-1110	Construct retaining wall (including ELS)	55d	14-Nov-13	20-Jan-14
E07-1120	BS Works	45d	21-Jan-14	17-Mar-14
E07-1130	Draw pits and cable duct	60d	11-Mar-14	26-May-14
E07-1140	Change over (diversion by LCSD and EMSD)	14d	27-May-14	12-Jun-14
E07-1180	Demolish existing control room	12d	01-Aug-14	14-Aug-14
Stage 1 Cofferdam Piling (Winslow Street area)				
E07-1290	Demolish existing planter & roadwork for TTA implementation	33d	18-Feb-14	27-Mar-14
E07-1300	Implement no-right-turn TTA	1d	28-Mar-14	28-Mar-14
E07-1310	Trial pits for utilities	60d	29-Mar-14	14-Jun-14
E07-1320	Pre-grouting at Wing Fung Mansion	24d	16-Jun-14	14-Jul-14 A
E07-1330	Construct retaining wall for underpass TTA	18d	24-May-14	14-Jun-14
E07-1340	ELS and demolition of existing wingwall	24d	16-Jun-14	14-Jul-14 A
E07-1350	Erect road deck with utilities support	24d	23-Jun-14	21-Jul-14 A
E07-1360	Construct road connection for TTA	24d	03-Jul-14 A	30-Jul-14 A
E07-1370	Implement underpass TTA	1d	31-Jul-14 A	31-Jul-14 A
E07-1380	Trial pits for utilities & pregrouting	48d	01-Aug-14	09-Sep-14
Stage 2 Cofferdam Piling (After Chatham Rd W/B Diversion)				
E07-1010	Implement TTM Stage 5A	1d	22-Nov-14	22-Nov-14
E07-1020	Trial Pits	24d	24-Nov-14	20-Dec-14
E07-1030	Pipe Piles (61 no.s), - Swing Leaders	109d	01-Dec-14	29-Apr-15
E07-1035	Pipe piles at Chatham Rd (43 no.s)	32d	22-Jan-15	03-Mar-15
E07-1045	Site formation at exitsing Chatham Rd	12d	30-Apr-15	14-May-15
E07-1150	Remaining Grout Curtain & utilities windows grouting	12d	15-May-15	29-May-15
E07-1160	Dewatering System	12d	30-May-15	12-Jun-15
E07-1170	Pumping Test	6d	13-Jun-15	19-Jun-15
E07-1175	600mm Watermain Diversion	48d	30-May-15	27-Jul-15
E07-1185	Sewerage Diversion	30d	30-Apr-15	05-Jun-15
Excavation and Lateral Support				
E07-1190	Excavation to Below 1st Level Strut	7d	22-Jun-15	29-Jun-15
E07-1200	Install S1 & Decking	24d	30-Jun-15	28-Jul-15
E07-1220	ELS to S2	14d	29-Jul-15	13-Aug-15
E07-1240	ELS to S3 (incl CLP Support)	21d	14-Aug-15	07-Sep-15
E07-1260	ELS to S4	21d	08-Sep-15	03-Oct-15
E07-1280	Excavation to Formation Level	11d	05-Oct-15	16-Oct-15
Tunnel Structure (5 Bays)				
Bay E07-05				
E0701-110	Place Blinding Layer (at approx -6mPD)	1d	17-Oct-15	17-Oct-15
E0701-120	Construct Tunnel Base with Kicker	12d	19-Oct-15	02-Nov-15
E0701-130	Place infill concrete/compacted fill up to S3 (2.5m)	8d	03-Nov-15	11-Nov-15
E0701-140	Remove S3	2d	12-Nov-15	13-Nov-15
E0701-150	Construct EWL Wall up to S2	10d	14-Nov-15	25-Nov-15
E0701-160	Place infill concrete/compacted fill up to S2 (4m)	13d	26-Nov-15	10-Dec-15
E0701-170	Remove S2	2d	11-Dec-15	12-Dec-15
E0701-180	Construct EWL Roof (Travelling Form)	15d	14-Dec-15	02-Jan-16
E0701-190	Tunnel Walkway & Works for Degree 1 Completion	6d	04-Jan-16	09-Jan-16
E0701-200	Place compacted fill up to S1 (1.5m)	5d	04-Jan-16	08-Jan-16
E0701-210	Remove S1	2d	09-Jan-16	11-Jan-16
E0701-220	Place compacted fill to final formation level (0.5m)	2d	12-Jan-16	13-Jan-16
Bay E07-04				
E0702-110	Place Blinding Layer (at approx -6mPD)	1d	19-Oct-15	19-Oct-15
E0702-120	Construct Tunnel Base with Kicker	12d	03-Nov-15	16-Nov-15
E0702-130	Place infill concrete/compacted fill up to S3 (2.5m)	8d	17-Nov-15	25-Nov-15
E0702-140	Remove S3	2d	26-Nov-15	27-Nov-15
E0702-150	Construct EWL Wall up to S2	10d	28-Nov-15	09-Dec-15
E0702-160	Place infill concrete/compacted fill up to S2 (4m)	13d	10-Dec-15	24-Dec-15
E0702-170	Remove S2	2d	28-Dec-15	29-Dec-15
E0702-180	Construct EWL Roof (Travelling Form)	15d	04-Jan-16	20-Jan-16
E0702-190	Tunnel Walkway & Works for Degree 1 Completion	6d	21-Jan-16	27-Jan-16
E0702-200	Place compacted fill up to S1 (1.5m)	5d	21-Jan-16	26-Jan-16

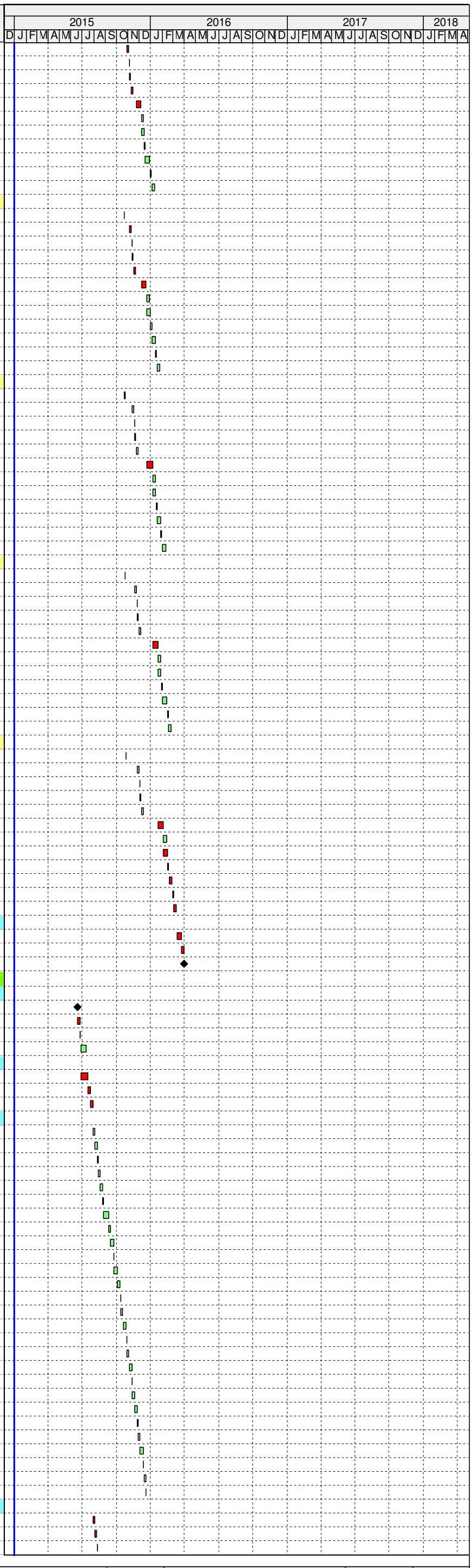


Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
E0702-210	Remove S1	2d	27-Jan-16	28-Jan-16
E0702-220	Place compacted fill to final formation level (0.5m)	2d	29-Jan-16	30-Jan-16
Bay E07-03				
E0703-110	Place Blinding Layer (at approx -6mPD)	1d	20-Oct-15	20-Oct-15
E0703-120	Construct Tunnel Base with Kicker	12d	17-Nov-15	30-Nov-15
E0703-130	Place infill concrete/compacted fill up to S3 (2.5m)	8d	01-Dec-15	09-Dec-15
E0703-140	Remove S3	2d	10-Dec-15	11-Dec-15
E0703-150	Construct EWL Wall up to S2	10d	12-Dec-15	23-Dec-15
E0703-160	Place infill concrete/compacted fill up to S2 (4m)	13d	24-Dec-15	11-Jan-16
E0703-170	Remove S2	2d	12-Jan-16	13-Jan-16
E0703-180	Construct EWL Roof (Travelling Form)	15d	21-Jan-16	06-Feb-16
E0703-190	Tunnel Walkway & Works for Degree 1 Completion	6d	11-Feb-16	17-Feb-16
E0703-200	Place compacted fill up to S1 (1.5m)	5d	11-Feb-16	16-Feb-16
E0703-210	Remove S1	2d	17-Feb-16	18-Feb-16
E0703-220	Place compacted fill to final formation level (0.5m)	2d	19-Feb-16	20-Feb-16
Bay E07-02				
E0704-110	Place Blinding Layer (at approx -6mPD)	1d	22-Oct-15	22-Oct-15
E0704-120	Construct Tunnel Base with Kicker	12d	01-Dec-15	14-Dec-15
E0704-130	Place infill concrete/compacted fill up to S3 (2.5m)	8d	15-Dec-15	23-Dec-15
E0704-140	Remove S3	2d	24-Dec-15	28-Dec-15
E0704-150	Construct EWL Wall up to S2	10d	29-Dec-15	09-Jan-16
E0704-160	Place infill concrete/compacted fill up to S2 (4m)	13d	11-Jan-16	25-Jan-16
E0704-170	Remove S2	2d	26-Jan-16	27-Jan-16
E0704-180	Construct EWL Roof (Travelling Form)	15d	11-Feb-16	27-Feb-16
E0704-190	Tunnel Walkway & Works for Degree 1 Completion	6d	29-Feb-16	05-Mar-16
E0704-200	Place compacted fill up to S1 (1.5m)	5d	29-Feb-16	04-Mar-16
E0704-210	Remove S1	2d	05-Mar-16	07-Mar-16
E0704-220	Place compacted fill to final formation level (0.5m)	2d	08-Mar-16	09-Mar-16
Bay E07-01				
E0705-110	Place Blinding Layer (at approx -6mPD)	1d	23-Oct-15	23-Oct-15
E0705-120	Construct Tunnel Base with Kicker	12d	15-Dec-15	30-Dec-15
E0705-130	Place infill concrete/compacted fill up to S3 (2.5m)	8d	31-Dec-15	09-Jan-16
E0705-140	Remove S3	2d	11-Jan-16	12-Jan-16
E0705-150	Construct EWL Wall up to S2	10d	13-Jan-16	23-Jan-16
E0705-160	Place infill concrete/compacted fill up to S2 (4m)	13d	25-Jan-16	11-Feb-16
E0705-170	Remove S2	2d	12-Feb-16	13-Feb-16
E0705-180	Construct EWL Roof (Travelling Form)	15d	29-Feb-16	16-Mar-16
E0705-190	Tunnel Walkway & Works for Degree 1 Completion	6d	17-Mar-16	23-Mar-16
E0705-200	Place compacted fill up to S1 (1.5m)	5d	17-Mar-16	22-Mar-16
E0705-210	Remove S1	2d	23-Mar-16	24-Mar-16
E0705-220	Place compacted fill to final formation level (0.5m)	2d	29-Mar-16	30-Mar-16
(8) EWL Area 8 (62m)				
Cofferdam				
E08-1180	Implement TTA	60d	08-Jan-13	21-Mar-13
E08-1190	Site clearance	30d	22-Mar-13	30-Apr-13
E08-1200	Expose & Protect Utilities - Stage 1	36d	02-May-13	14-Jun-13
E08-1210	Stage 1 Pipe Piles (50 no.s), 2 Rigs	75d	15-Jun-13	24-Aug-13
E08-1220	Stage 1 Grout Curtain	24d	26-Aug-13	23-Sep-13
E08-1230	Expose & Protect Utilities - Stage 2	32d	26-Aug-13	03-Oct-13
E08-1240	Predrilling	6d	04-Oct-13	10-Oct-13
E08-1250	Stage 2 Pipe Piles (15 no.s) & EWL8/9 Cross Wall (30 no.s), 2 Rigs	34d	04-Oct-13	13-Nov-13
E08-1260	Kingposts (4 no.s)	4d	14-Nov-13	18-Nov-13
Traffic Decking for Hong Chong Rd Diversion				
E08-1010	Excavation for Traffic Decking	12d	19-Nov-13	02-Dec-13
E08-1020	Install Steel Memebrs for Traffic Decking (with utilities support)	24d	03-Dec-13	02-Jan-14
E08-1030	Deck and Concrete for Traffic Decking	20d	03-Jan-14	25-Jan-14
E08-1040	Asphalt Surface for Traffic Decking	6d	27-Jan-14	05-Feb-14
E08-1050	Construct Road Connections to existing road	50d	03-Dec-13	05-Feb-14
E08-1060	Divert Chatham Rd North Slip Rd (TTA Stage 3c)	6d	06-Feb-14	12-Feb-14
Traffic Decking for Chatham Rd Partial E/B Diversion				
E08-1170	Expose cables and watermain	24d	13-Feb-14	12-Mar-14
E08-1270	Protection works to cables and watermain	6d	13-Mar-14	19-Mar-14
E08-1280	Pipe piles (30 no.s) and kingposts	45d	20-Mar-14	09-May-14
E08-1290	Curtain grout	24d	24-Apr-14	23-May-14
E08-1300	Install Steel Memebrs for Traffic Decking	12d	24-May-14	07-Jun-14
E08-1310	Deck and Concrete for Traffic Decking	12d	09-Jun-14	21-Jun-14
E08-1320	Construct Road Connections to existing road	38d	10-May-14	24-Jun-14
E08-1330	Asphalt pavement & roadwork for traffic diversion	7d	25-Jun-14	03-Jul-14 A
E08-1360	Implement TTA for partial diversion (Stage 4B)	1d	13-Jul-14 A	13-Jul-14 A
Traffic Decking for TB1 W/B Diversion				
E08-1340	Traffic partially diverted (Stage 4B)	0d		13-Jul-14 A
E08-1350	Demolish existing pavement and expose/protect utilities	28d	14-Jul-14 A	06-Aug-14
E08-1370	Pipe piles (20 no.s)	40d	07-Aug-14	01-Nov-14
E08-1380	Curtain grout	24d	08-Oct-14	10-Nov-14
E08-1390	Excavation & Install Steel Memebrs for Traffic Decking	26d	02-Nov-14	14-Nov-14
E08-1400	Deck and Concrete for Traffic Decking	12d	07-Nov-14	19-Nov-14
E08-1410	Construct Road Connections to existing road	32d	07-Nov-14	21-Nov-14
E08-1420	Asphalt pavement & roadwork for traffic diversion	5d	18-Nov-14	22-Nov-14
E08-1430	Expose utilities	18d	24-Nov-14	13-Dec-14
E08-1440	Remaining PP at Chatham Rd+cut off wall (39 no.s)-2 Rigs	36d	08-Dec-14	21-Jan-15
E08-1450	Remaining Curtain grout	12d	22-Jan-15	04-Feb-15
E08-1460	Remaining Dewatering System	8d	05-Feb-15	13-Feb-15
E08-1470	Pumping Test	7d	14-Feb-15	20-Feb-15
Excavation and Lateral Support				
E08-1070	Pre-Pumping test excavation for traffic deck (3000m3 soft)	6d	04-Feb-14	05-Nov-14
E08-1080	Remaining Excavation to Below S1	2d	23-Feb-15	24-Feb-15
E08-1090	Install remaining S1 & decking @ +4.1 mPD	6d	25-Feb-15	03-Mar-15
E08-1100	ELS to S2	11d	04-Mar-15	16-Mar-15
E08-1120	ELS to S3	28d	17-Mar-15	22-Apr-15
E08-1140	ELS to S4	27d	23-Apr-15	26-May-15
E08-1165	ELS to Formation (2760m3 soft), 250m3/Day	11d	27-May-15	08-Jun-15
E08-1166	Plate Load Test	28d	09-Jun-15	06-Jul-15
E08-1175	Excavation to Formation @-9.2 mPD (3500m3 rock), 32m3/Day	109d	09-Jun-15	17-Oct-15
Tunnel Structure (6 Bays)				
Bay E08-06				
E0801-110	Place Blinding Layer	1d	19-Oct-15	19-Oct-15
E0801-120	Construct Tunnel Base with Kicker	6d	20-Oct-15	27-Oct-15
E0801-130	Place Infill Concrete	1d	28-Oct-15	28-Oct-15
E0801-140	Remove 4th Level Strut	3d	29-Oct-15	31-Oct-15
E0801-150	Construct Tunnel Wall	6d	02-Nov-15	07-Nov-15
E0801-160	Construct Tunnel Roof (Travelling Form)	12d	09-Nov-15	21-Nov-15
E0801-170	Miscellaneous Works Required for Degree 1 Completion	6d	23-Nov-15	28-Nov-15
E0801-180	Place General Fill / Infill Concrete up to 3rd Level Strut	7d	23-Nov-15	30-Nov-15
E0801-190	Remove 3rd Level Strut	3d	01-Dec-15	03-Dec-15
E0801-200	Place General Fill to 2nd Level Strut	8d	04-Dec-15	12-Dec-15
E0801-210	Remove 2nd Level Strut	3d	14-Dec-15	16-Dec-15
E0801-220	Place General Fill to 1st Level Strut	7d	17-Dec-15	24-Dec-15
Bay E08-05				
E0802-110	Place Blinding Layer	1d	20-Oct-15	20-Oct-15

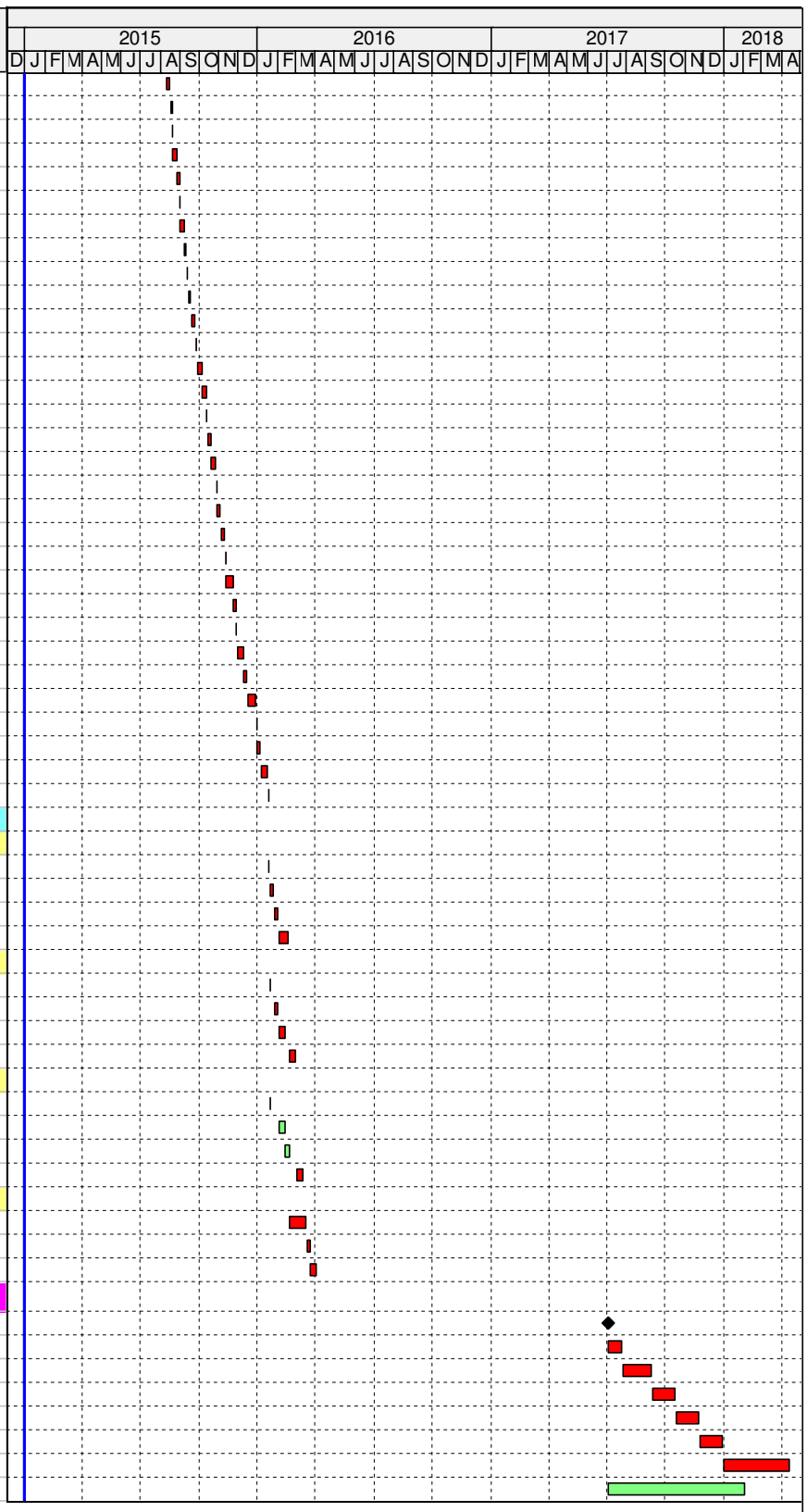
Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

Activity ID	Activity Name	Dur	Start	Finish
E0802-120	Construct Tunnel Base with Kicker	6d	28-Oct-15	03-Nov-15
E0802-130	Place Infill Concrete	1d	04-Nov-15	04-Nov-15
E0802-140	Remove 4th Level Strut	3d	05-Nov-15	07-Nov-15
E0802-150	Construct Tunnel Wall	6d	09-Nov-15	14-Nov-15
E0802-160	Construct Tunnel Roof (Travelling Form)	12d	23-Nov-15	05-Dec-15
E0802-170	Miscellaneous Works Required for Degree 1 Completion	6d	07-Dec-15	12-Dec-15
E0802-180	Place General Fill / Infill Concrete up to 3rd Level Strut	7d	07-Dec-15	14-Dec-15
E0802-190	Remove 3rd Level Strut	3d	15-Dec-15	17-Dec-15
E0802-200	Place General Fill to 2nd Level Strut	8d	18-Dec-15	29-Dec-15
E0802-210	Remove 2nd Level Strut	3d	30-Dec-15	02-Jan-16
E0802-220	Place General Fill to 1st Level Strut	7d	04-Jan-16	11-Jan-16
Bay E08-04				
E0803-110	Place Blinding Layer	1d	22-Oct-15	22-Oct-15
E0803-120	Construct Tunnel Base with Kicker	6d	04-Nov-15	10-Nov-15
E0803-130	Place Infill Concrete	1d	11-Nov-15	11-Nov-15
E0803-140	Remove 4th Level Strut	3d	12-Nov-15	14-Nov-15
E0803-150	Construct Tunnel Wall	6d	16-Nov-15	21-Nov-15
E0803-160	Construct Tunnel Roof (Travelling Form)	12d	07-Dec-15	19-Dec-15
E0803-170	Miscellaneous Works Required for Degree 1 Completion	6d	21-Dec-15	29-Dec-15
E0803-180	Place General Fill / Infill Concrete up to 3rd Level Strut	7d	21-Dec-15	30-Dec-15
E0803-190	Remove 3rd Level Strut	3d	31-Dec-15	04-Jan-16
E0803-200	Place General Fill to 2nd Level Strut	8d	05-Jan-16	13-Jan-16
E0803-210	Remove 2nd Level Strut	3d	14-Jan-16	16-Jan-16
E0803-220	Place General Fill to 1st Level Strut	7d	18-Jan-16	25-Jan-16
Bay E08-03				
E0804-110	Place Blinding Layer	1d	23-Oct-15	23-Oct-15
E0804-120	Construct Tunnel Base with Kicker	6d	11-Nov-15	17-Nov-15
E0804-130	Place Infill Concrete	1d	18-Nov-15	18-Nov-15
E0804-140	Remove 4th Level Strut	3d	19-Nov-15	21-Nov-15
E0804-150	Construct Tunnel Wall	6d	23-Nov-15	28-Nov-15
E0804-160	Construct Tunnel Roof (Travelling Form)	12d	21-Dec-15	06-Jan-16
E0804-170	Miscellaneous Works Required for Degree 1 Completion	6d	07-Jan-16	13-Jan-16
E0804-180	Place General Fill / Infill Concrete up to 3rd Level Strut	7d	07-Jan-16	14-Jan-16
E0804-190	Remove 3rd Level Strut	3d	15-Jan-16	18-Jan-16
E0804-200	Place General Fill to 2nd Level Strut	8d	19-Jan-16	27-Jan-16
E0804-210	Remove 2nd Level Strut	3d	28-Jan-16	30-Jan-16
E0804-220	Place General Fill to 1st Level Strut	7d	01-Feb-16	11-Feb-16
Bay E08-02				
E0805-110	Place Blinding Layer	1d	24-Oct-15	24-Oct-15
E0805-120	Construct Tunnel Base with Kicker	6d	18-Nov-15	24-Nov-15
E0805-130	Place Infill Concrete	1d	25-Nov-15	25-Nov-15
E0805-140	Remove 4th Level Strut	3d	26-Nov-15	28-Nov-15
E0805-150	Construct Tunnel Wall	6d	30-Nov-15	05-Dec-15
E0805-160	Construct Tunnel Roof (Travelling Form)	12d	07-Jan-16	20-Jan-16
E0805-170	Miscellaneous Works Required for Degree 1 Completion	6d	21-Jan-16	27-Jan-16
E0805-180	Place General Fill / Infill Concrete up to 3rd Level Strut	7d	21-Jan-16	28-Jan-16
E0805-190	Remove 3rd Level Strut	3d	29-Jan-16	01-Feb-16
E0805-200	Place General Fill to 2nd Level Strut	8d	02-Feb-16	13-Feb-16
E0805-210	Remove 2nd Level Strut	3d	15-Feb-16	17-Feb-16
E0805-220	Place General Fill to 1st Level Strut	7d	18-Feb-16	25-Feb-16
Bay E08-01				
E0806-110	Place Blinding Layer	1d	26-Oct-15	26-Oct-15
E0806-120	Construct Tunnel Base with Kicker	6d	25-Nov-15	01-Dec-15
E0806-130	Place Infill Concrete	1d	02-Dec-15	02-Dec-15
E0806-140	Remove 4th Level Strut	3d	03-Dec-15	05-Dec-15
E0806-150	Construct Tunnel Wall	6d	07-Dec-15	12-Dec-15
E0806-160	Construct Tunnel Roof (Travelling Form)	12d	21-Jan-16	03-Feb-16
E0806-170	Miscellaneous Works Required for Degree 1 Completion	6d	04-Feb-16	13-Feb-16
E0806-180	Place General Fill / Infill Concrete up to 3rd Level Strut	7d	04-Feb-16	15-Feb-16
E0806-190	Remove 3rd Level Strut	3d	16-Feb-16	18-Feb-16
E0806-200	Place General Fill to 2nd Level Strut	8d	19-Feb-16	27-Feb-16
E0806-210	Remove 2nd Level Strut	3d	29-Feb-16	02-Mar-16
E0806-220	Place General Fill to 1st Level Strut	7d	03-Mar-16	10-Mar-16
Deck Removal and Filling to Formation				
E08-1480	Remove S1 & Traffic Decking	11d	11-Mar-16	23-Mar-16
E08-1490	Place General Fill to Final Formation Level	2d	24-Mar-16	29-Mar-16
E08-1500	Ket Date 4G achieved	0d		29-Mar-16
(9) EWL Area 9 (31m)				
Remaining Piling & Traffic Decking				
E09-1010	Possess Area W4	0d	18-Jun-15	
E09-1020	Site Clearance and expose Utilities	6d	18-Jun-15	25-Jun-15
E09-1030	Implement TTA Stage 6	1d	26-Jun-15	26-Jun-15
E09-1070	Install edge beam and remaining traffic decking	12d	27-Jun-15	11-Jul-15
Curtain Grout for Temporary Cut Slope				
E09-1080	Curtain grout for temporary cut slope	15d	27-Jun-15	15-Jul-15
E09-1090	Instrumentation & dewatering system	6d	16-Jul-15	22-Jul-15
E09-1110	Pumping Test	6d	23-Jul-15	29-Jul-15
Temporary Cut Slope at East Side				
E09-1120	Excavation to below +6.00 mPD	5d	30-Jul-15	04-Aug-15
E09-1130	Tie back soil nails (32 no.s) at +6.00 mPD, 2 rigs	6d	05-Aug-15	11-Aug-15
E09-1140	Shotcrete to excavated surface	1d	12-Aug-15	12-Aug-15
E09-1150	Excavation to below +4.00 mPD	5d	13-Aug-15	18-Aug-15
E09-1160	Tie back soil nails (32 no.s) at +4.00 mPD, 2 rigs	6d	19-Aug-15	25-Aug-15
E09-1170	Shotcrete to excavated surface	1d	26-Aug-15	26-Aug-15
E09-1180	Install support for 900 dia watermain	12d	27-Aug-15	09-Sep-15
E09-1190	Excavation to below +2.00 mPD	5d	10-Sep-15	15-Sep-15
E09-1200	Tie back soil nails (35 no.s) at +2.00 mPD, 2 rigs	7d	16-Sep-15	23-Sep-15
E09-1210	Shotcrete to excavated surface	1d	24-Sep-15	24-Sep-15
E09-1220	Excavation to below +0.00 mPD	5d	25-Sep-15	02-Oct-15
E09-1230	Tie back soil nails (35 no.s) at +0.00 mPD, 2 rigs	7d	03-Oct-15	10-Oct-15
E09-1240	Shotcrete to excavated surface	1d	12-Oct-15	12-Oct-15
E09-1250	Excavation to below -2.00 mPD	5d	13-Oct-15	17-Oct-15
E09-1260	Tie back soil nails (35 no.s) at -2.00 mPD, 2 rigs	7d	19-Oct-15	27-Oct-15
E09-1280	Shotcrete to excavated surface	1d	28-Oct-15	28-Oct-15
E09-1290	Excavation to below -4.00 mPD	5d	29-Oct-15	03-Nov-15
E09-1300	Tie back soil nails (35 no.s) at -4.00 mPD, 2 rigs	7d	04-Nov-15	11-Nov-15
E09-1310	Shotcrete to excavated surface	1d	12-Nov-15	12-Nov-15
E09-1320	Excavation to below -6.00 mPD	5d	13-Nov-15	18-Nov-15
E09-1330	Tie back soil nails (35 no.s) at -6.00 mPD, 2 rigs	7d	19-Nov-15	26-Nov-15
E09-1340	Shotcrete to excavated surface	1d	27-Nov-15	27-Nov-15
E09-1350	Excavation to below -8.00 mPD	5d	28-Nov-15	03-Dec-15
E09-1360	Tie back soil nails (35 no.s) at -8.00 mPD, 2 rigs	7d	04-Dec-15	11-Dec-15
E09-1370	Shotcrete to excavated surface	1d	12-Dec-15	12-Dec-15
E09-1380	Excavation to tunnel formation	5d	14-Dec-15	18-Dec-15
E09-1390	Shotcrete to excavated surface	1d	19-Dec-15	19-Dec-15
Temporary Cut Slope at West Side				
E09-1400	Excavation to below +15.40 mPD	5d	30-Jul-15	04-Aug-15
E09-1410	Tie back soil nails (6 no.s) at +15.40 mPD, 1 rig	4d	05-Aug-15	08-Aug-15
E09-1420	Shotcrete to excavated surface	1d	10-Aug-15	10-Aug-15



Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

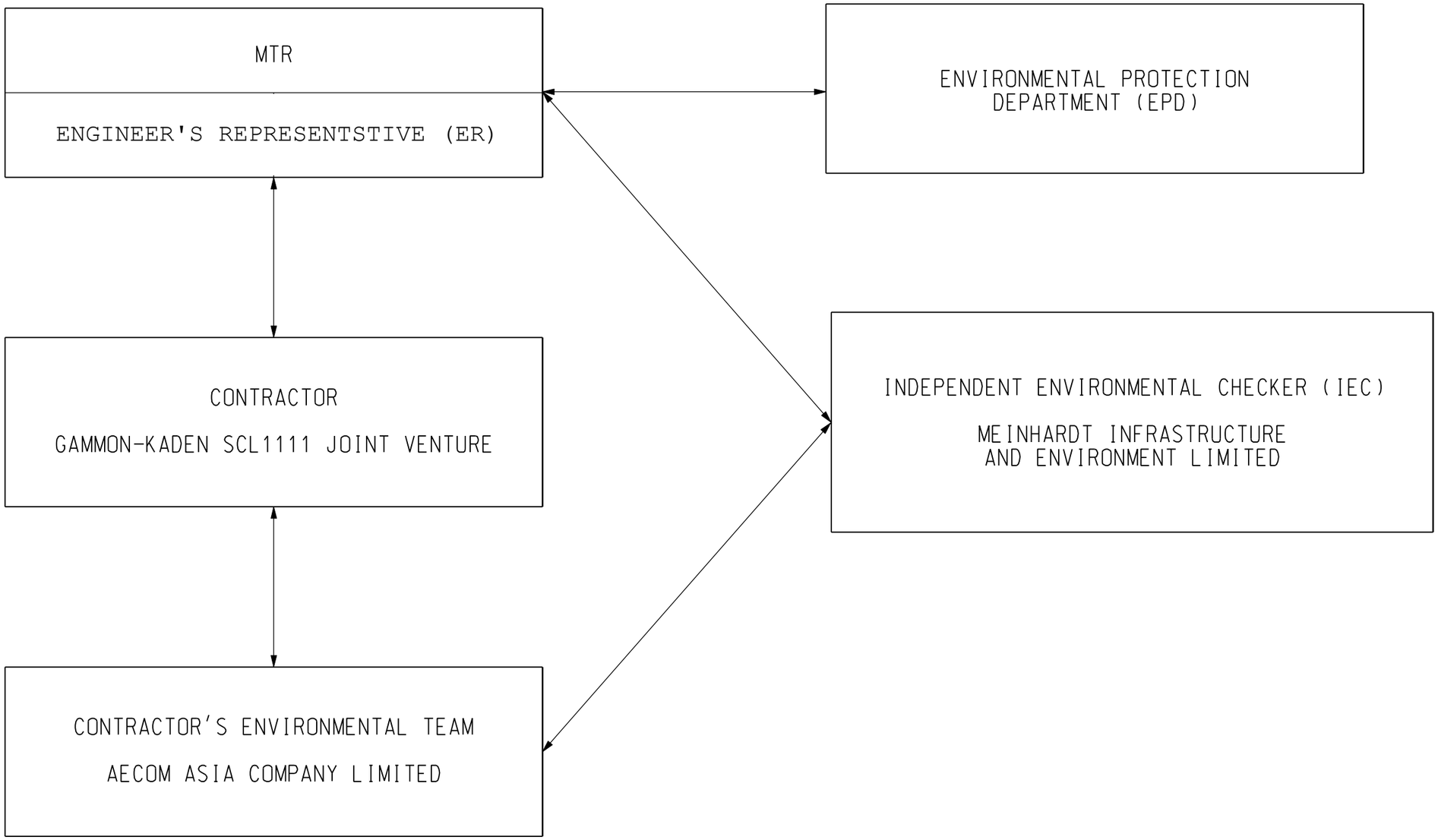
Activity ID	Activity Name	Dur	Start	Finish
E09-1430	Excavation to below +11.50 mPD	5d	11-Aug-15	15-Aug-15
E09-1440	Tie back soil nails (5 no.s) at +11.50 mPD, 1 rig	3d	17-Aug-15	19-Aug-15
E09-1450	Shotcrete to excavated surface	1d	20-Aug-15	20-Aug-15
E09-1460	Excavation to below +8.00 mPD	5d	21-Aug-15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



Date	Revision	Checked	Approved
15-Jul-15	meeting comments incorporated		
16-Jul-15	meeting comments incorporated		
17-Sep-15	activity lagging time removed		

APPENDIX B

Project Organization Structure



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PLOT DRV: V:\ustnset\MTR\PLOTDRIVER\WINDOWS\A3 COLOUR.plt
MODELNAME: Default PRINTED BY: YANJP 2013/1/10 17:12:34
FILENAME: P:\projects\602840\DRAWING\FIGURE\Figure 1.2.dgn

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	HD
DESIGNED	LCLL
CHECKED	LCLL
APPROVED	IMW
DATE	08/JAN/2013

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MTR

SHATIN TO CENTRAL LINK

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

ORIGINATOR: AECOM

CADD REF. Appendix B

TITLE
CONTRACT 1111
HUNG HOM NORTH APPROACH TUNNELS
PROJECT ORGANISATION

SCALE N.T.S.

FIGURE NO. Appendix B

REV. –

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	@
		• 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	V
		• 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	V
		• 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	V
		• 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	@
		• 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 22, 2017 Rootsmeter S/N 0438320 Ta (K) - 295
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	1.3910	3.2	2.00
2	NA	NA	1.00	0.9810	6.4	4.00
3	NA	NA	1.00	0.8750	7.9	5.00
4	NA	NA	1.00	0.8330	8.8	5.50
5	NA	NA	1.00	0.6890	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9984	0.7178	1.4161		0.9957	0.7158	0.8844
0.9942	1.0135	2.0027		0.9915	1.0107	1.2507
0.9921	1.1338	2.2391		0.9894	1.1308	1.3983
0.9910	1.1897	2.3484		0.9883	1.1865	1.4666
0.9858	1.4307	2.8322		0.9831	1.4269	1.7687
Qstd slope (m) =		1.98425		Qa slope (m) =		1.24250
intercept (b) =		-0.00930		intercept (b) =		-0.00581
coefficient (r) =		0.99998		coefficient (r) =		0.99998
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:	9-Feb-18	Next Due Date:	9-Apr-18
Equipment No.:	---	Serial No.	8259

Ambient Condition			
Temperature, Ta (K)	290.1	Pressure, Pa (mmHg)	761.1

Orifice Transfer Standard Information					
Serial No:	988	Slope, mc	1.98425	Intercept, bc	-0.0093
Last Calibration Date:	22-May-17	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	22-May-18				

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	6.7	2.63	1.33	44.0	44.63
13	5.5	2.38	1.20	36.0	36.51
10	4.9	2.25	1.14	32.0	32.46
7	4.3	2.10	1.06	26.0	26.37
5	3.2	1.81	0.92	18.0	18.26

By Linear Regression of Y on X

Slope , mw = **65.3603** **Intercept, bw =** **-42.2267**

Correlation Coefficient* = **0.9967**

*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; $IC = (mw \times Qstd + bw) \times [(760 / Pa) \times (Ta / 298)]^{1/2}$ = **42.14**

Remarks: _____

QC Reviewer: W. S Signature: W. S Date: 9/2/18

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
香港黃竹坑道37號利達中心12樓
12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
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.: 17CA0901 01

Item tested

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

Item submitted by

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	01-Sep-2017

Date of test: 09-Sep-2017

Reference equipment used in the calibration

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

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	50 ± 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:** 09-Sep-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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SOILS & MATERIALS ENGINEERING CO., LTD.
香港黃竹坑道37號利達中心12樓
12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
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)

Certificate No.: 17CA0901 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	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: Lai Sheng Jie Date: 09-Sep-2017

Checked by: Fung Chi Yip Date: 09-Sep-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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SOILS & MATERIALS ENGINEERING CO., LTD.
香港黃竹坑道37號利達中心12樓
12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
E-mail: smec@cigismec.com Website: www.cigismec.com
Tel: (852) 2873 6860
Fax: (852) 2555 7533

N-011-05

HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 17CA1006 01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	Microphone	Preamp
Manufacturer:	B & K	B & K	B & K
Type/Model No.:	2250	4189	ZC0032
Serial/Equipment No.:	3001291	3005374	23853
Adaptors used:	-	-	-

Item submitted by

Customer Name:	AECOM ASIA CO LIMITED
Address of Customer:	-
Request No.:	-
Date of receipt:	06-Oct-2017

Date of test: 06-Oct-2017

Reference equipment used in the calibration

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

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	50 ± 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:** 06-Oct-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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SOILS & MATERIALS ENGINEERING CO., LTD.
香港黃竹坑道37號利達中心12樓
12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
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)

Certificate No.: 17CA1006 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 Uncertanity (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 Uncertanity (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: Lai Sheng Jie Date: 06-Oct-2017

Checked by: Fung Chi Yip Date: 06-Oct-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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SOILS & MATERIALS ENGINEERING CO., LTD.
香港黃竹坑道37號利達中心12樓
12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
E-mail: smec@cigismec.com Website: www.cigismec.com
Tel: (852) 2873 6860
Fax: (852) 2555 7533

CERTIFICATE OF CALIBRATION

Certificate No.: 17CA0922 03-02 **Page:** 1 of 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Rion Co., Ltd.
Type/Model No.:	NC-74
Serial/Equipment No.:	34246490 / N.004.10
Adaptors used:	-

Item submitted by

Curstomer:	AECOM ASIA CO LIMITED
Address of Customer:	-
Request No.:	-
Date of receipt:	22-Sep-2017

Date of test: 28-Sep-2017

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	11-Apr-2018	SCL
Preamplifier	B&K 2673	2743150	05-May-2018	CEPREI
Measuring amplifier	B&K 2610	2346941	03-May-2018	CEPREI
Signal generator	DS 360	61227	01-Apr-2018	CEPREI
Digital multi-meter	34401A	US36087050	25-Apr-2018	CEPREI
Audio analyzer	8903B	GB41300350	21-Apr-2018	CEPREI
Universal counter	53132A	MY40003662	22-Apr-2018	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1000 ± 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:** 28-Sep-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 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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SOILS & MATERIALS ENGINEERING CO., LTD.
香港黃竹坑道37號利達中心12樓
12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
E-mail: smec@cigismec.com Website: www.cigismec.com
Tel: (852) 2873 6860
Fax: (852) 2555 7533

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 17CA0922 03-02 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 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 = 0.011 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 = 1002.1 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 = 2.8 %**

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: Lai Sheng Jie **Date:** 28-Sep-2017

Checked by: Fung Chi Yip **Date:** 28-Sep-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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APPENDIX F

EM&A Monitoring Schedules

Shatin to Central Link Contract 1111 - Hung Hom North Approach Tunnels
Impact Monitoring Schedule for March 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Mar	2-Mar	3-Mar
					24-hour TSP (AM1)	
4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar
				24-hour TSP (AM1)	Noise (NM1, NM2)	
11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar
			24-hour TSP (AM1)	Noise (NM1, NM2)		
18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar
		24-hour TSP (AM1)	Noise (NM1, NM2)			
25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar
	24-hour TSP (AM1)	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 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr	7-Apr
		Noise (NM1, NM2)	24-hour TSP (AM1)			
8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr
		24-hour TSP (AM1)	Noise (NM1, NM2)			
15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr
	24-hour TSP (AM1)	Noise (NM1, NM2)				24-hour TSP (AM1)
22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr
		Noise (NM1, NM2)			24-hour TSP (AM1)	
29-Apr	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 2018

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

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

APPENDIX G

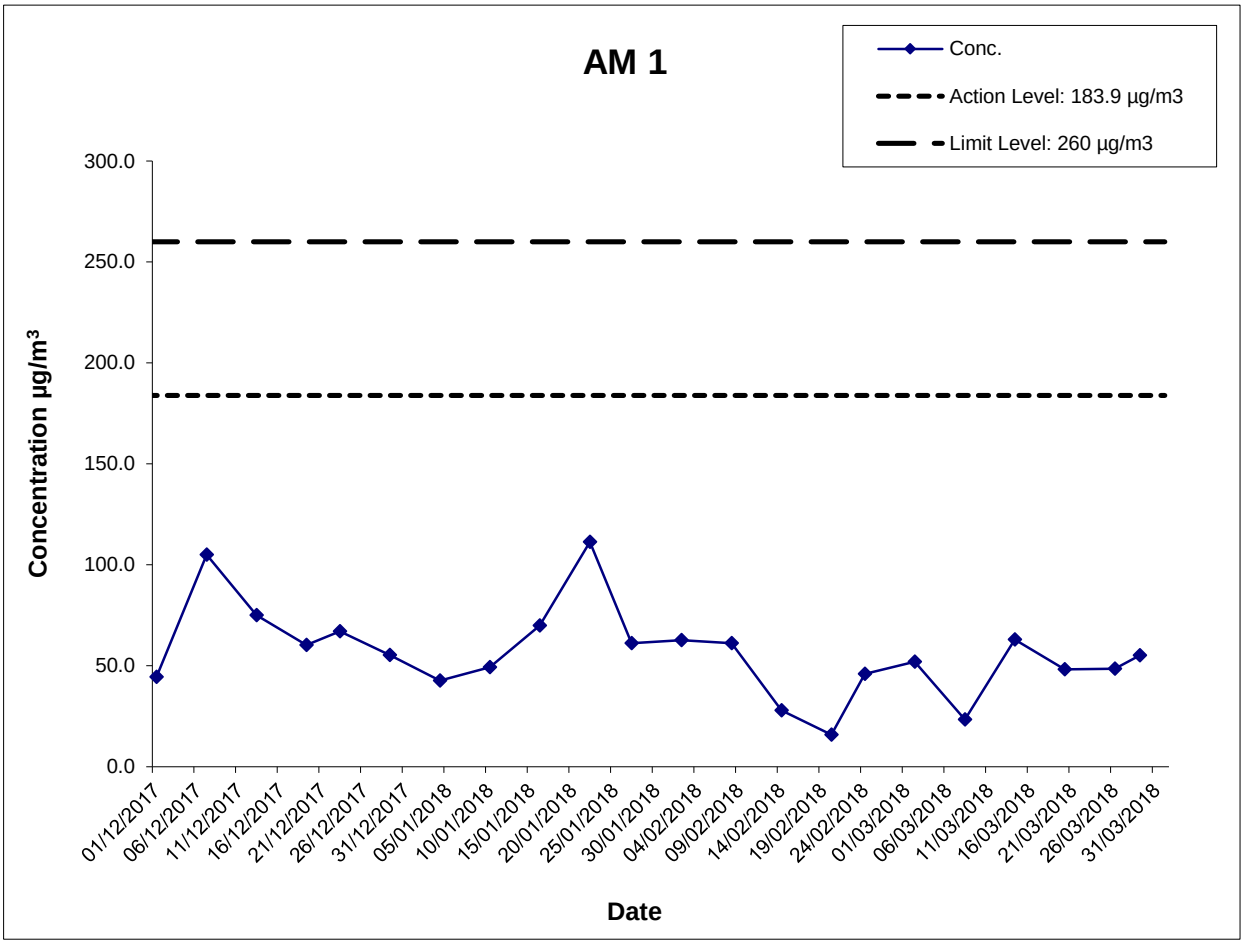
Air Quality Monitoring Results and their Graphical Presentations

Appendix G
Air Quality Monitoring Results

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

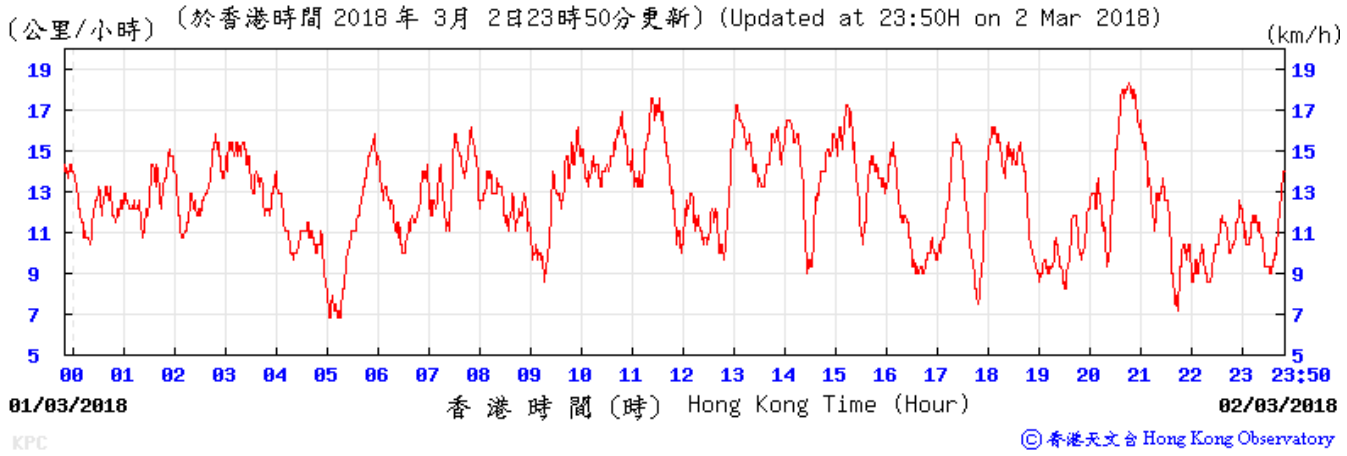
Start		End		Weather	Air	Atmospheric	Flow Rate (m^3/min.)		Av. flow	Total vol.	Filter Weight (g)		Particulate	Elapse Time		Sampling	Conc.
Date	Time	Date	Time	Condition	Temp. (^oC)	Pressure (hPa)	Initial	Final	(m^3/min)	(m^3)	Initial	Final	weight(g)	Initial	Final	Time(hrs.)	($\mu g/m^3$)
2-Mar-18	0:00	3-Mar-18	0:00	Sunny	31.3	1012.1	1.34	1.34	1.34	1932.5	2.7107	2.8111	0.1004	14636.02	14660.02	24.00	52.0
8-Mar-18	0:00	9-Mar-18	0:00	Sunny	14.5	1019.4	1.34	1.34	1.34	1932.5	2.6996	2.7448	0.0452	14660.02	14684.02	24.00	23.4
14-Mar-18	0:00	15-Mar-18	0:00	Rainy	20.2	1014.8	1.34	1.34	1.34	1932.5	2.7126	2.8344	0.1218	14684.02	14708.02	24.00	63.0
20-Mar-18	0:00	21-Mar-18	0:00	Sunny	21.4	1013.0	1.34	1.34	1.34	1932.5	2.6986	2.7919	0.0933	14708.02	14732.02	24.00	48.3
26-Mar-18	0:00	27-Mar-18	0:00	Cloudy	22.6	1018.3	1.34	1.34	1.34	1932.5	2.6601	2.7540	0.0939	14732.02	14756.02	24.00	48.6
29-Mar-18	0:00	30-Mar-18	0:00	Sunny	22.9	1014.3	1.34	1.34	1.34	1932.5	2.5459	2.6526	0.1067	14756.02	14780.02	24.00	55.2
																Average	**48.4**
																Minimum	**23.4**
																Maximum	**63.0**

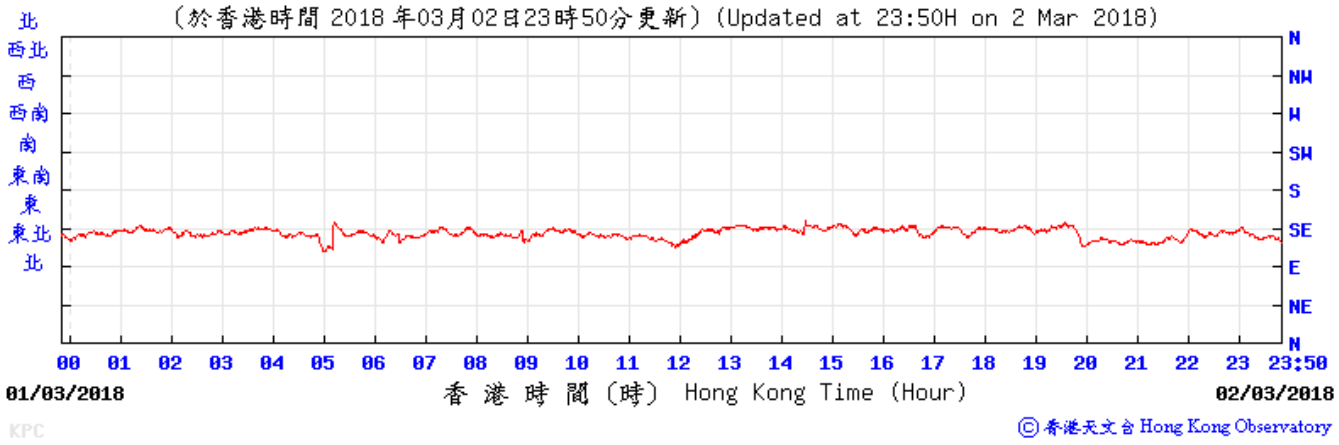
Appendix G Air Quality Monitoring Results



AECOM	Shatin to Central Link Works Contract 1111- Hung Hom North Approach Tunnels	SCALE	N.T.S.	DATE	Apr-18
		CHECK	TYUT	DRAWN	RCCP
	Graphical Presentations of Impact 24-hour TSP Monitoring Results	JOB NO.	60284101	APPENDIX No. G	Rev. -

Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, March 2018





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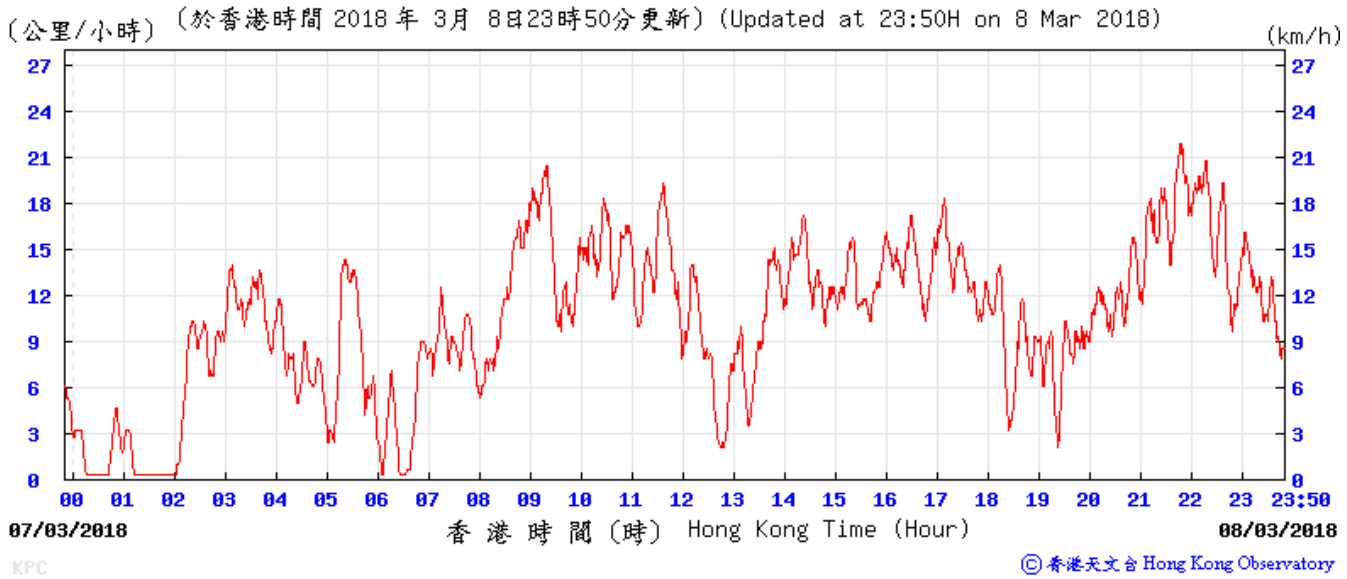

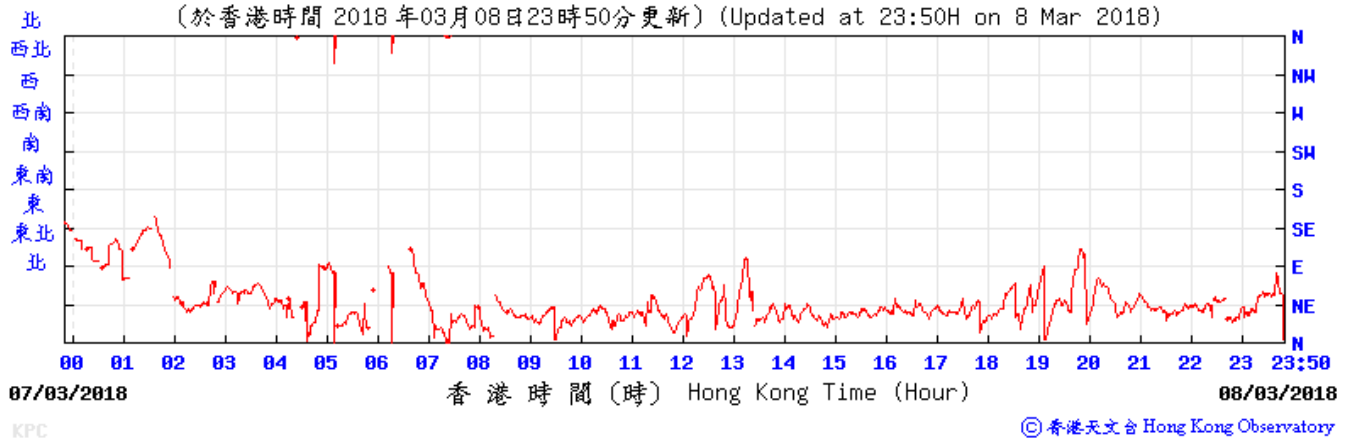

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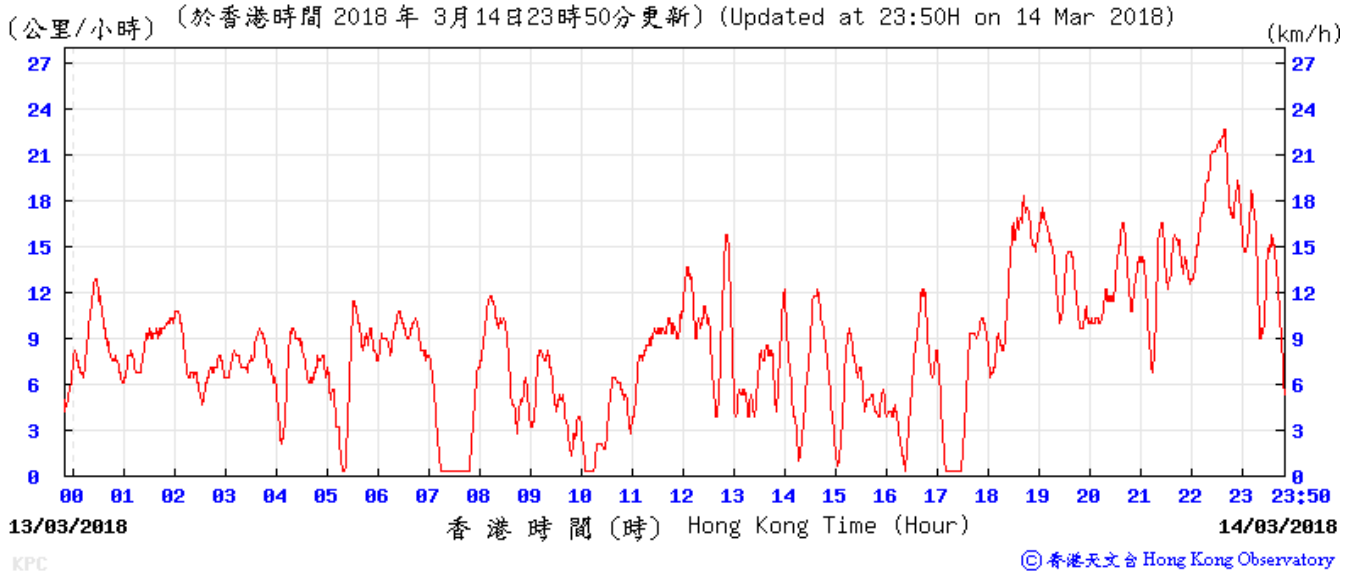

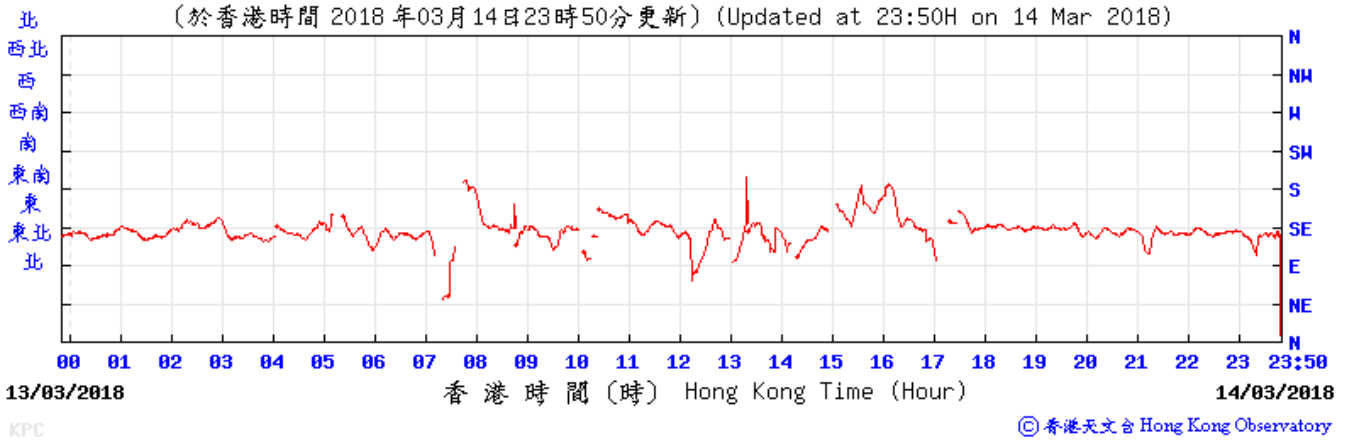

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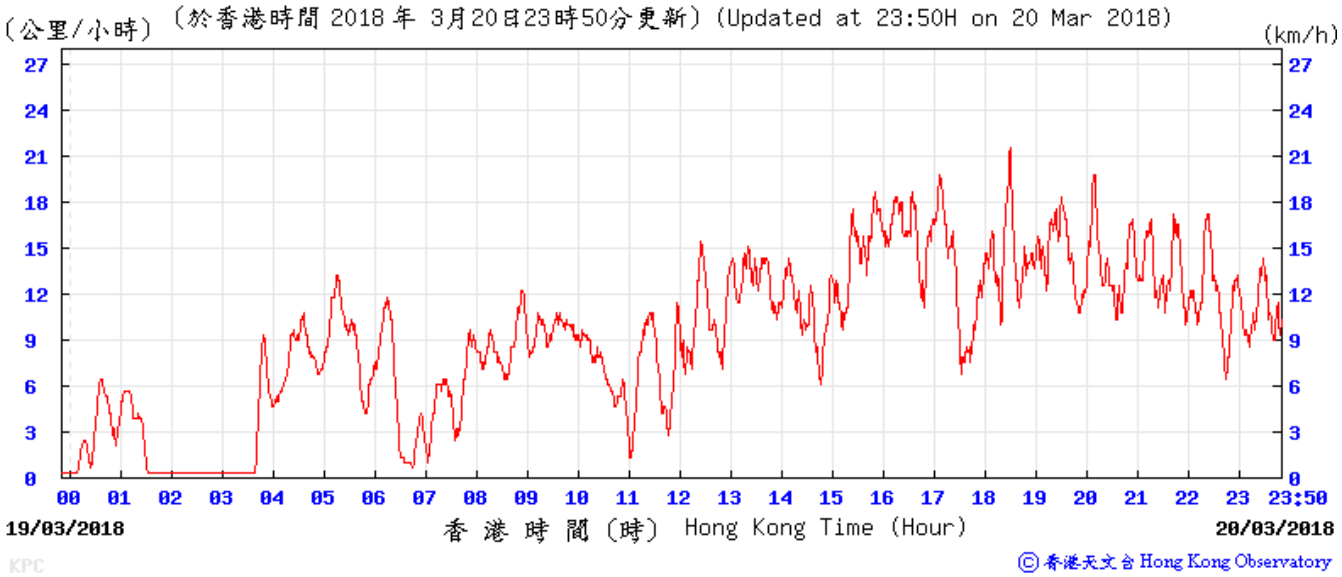

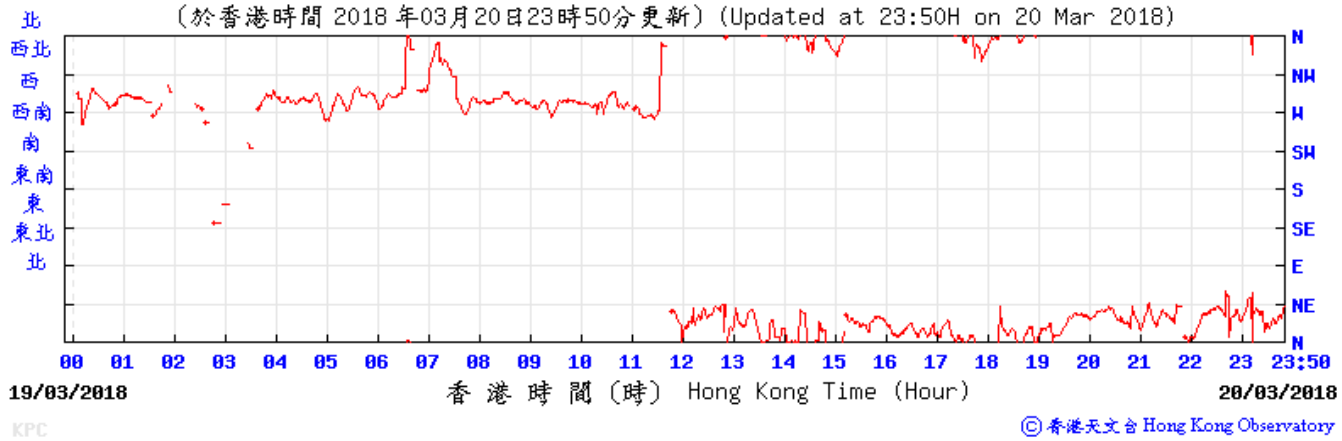

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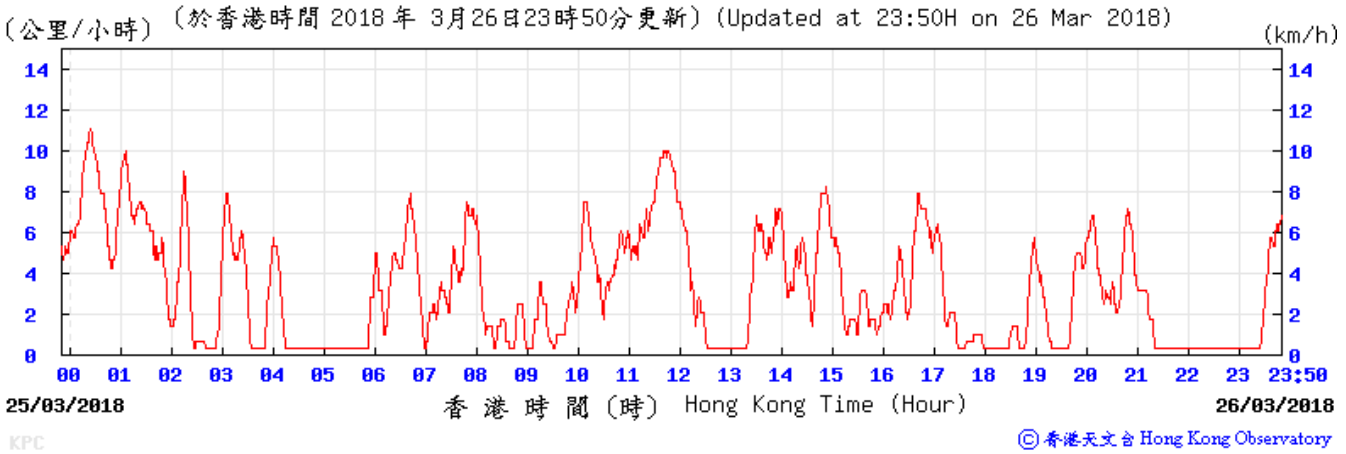

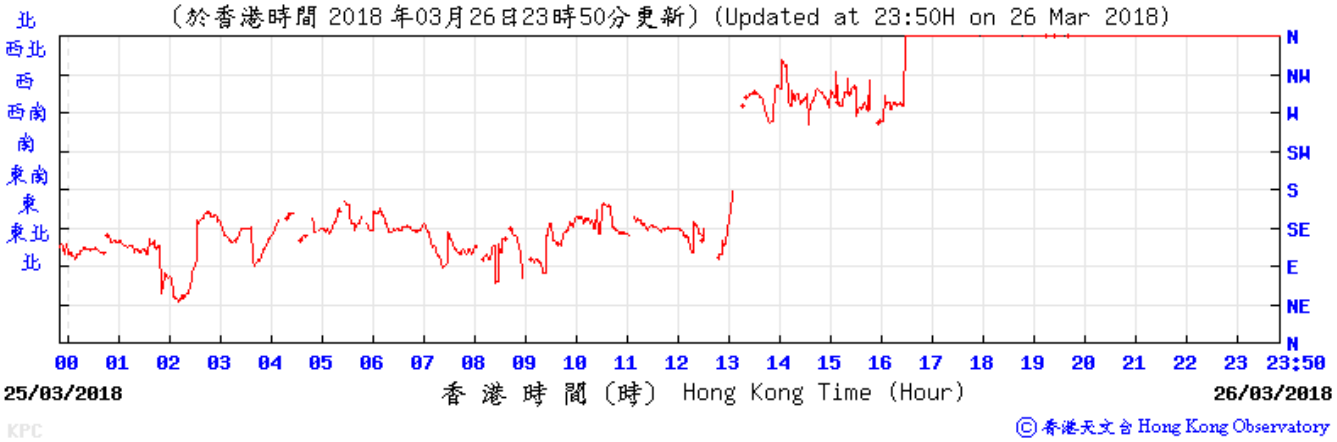

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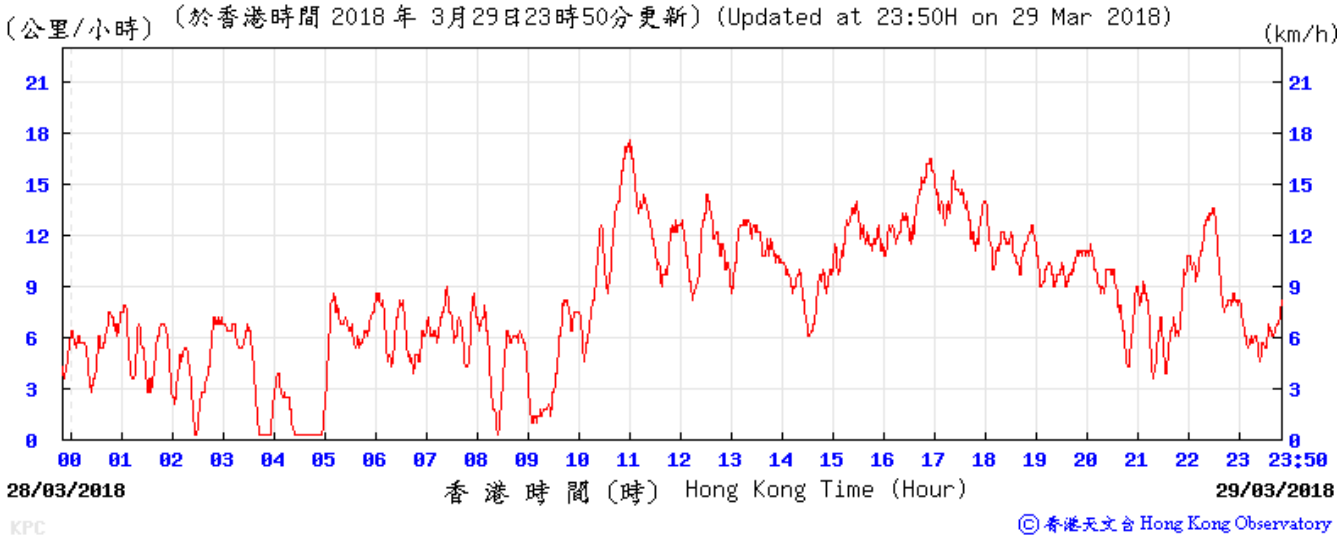
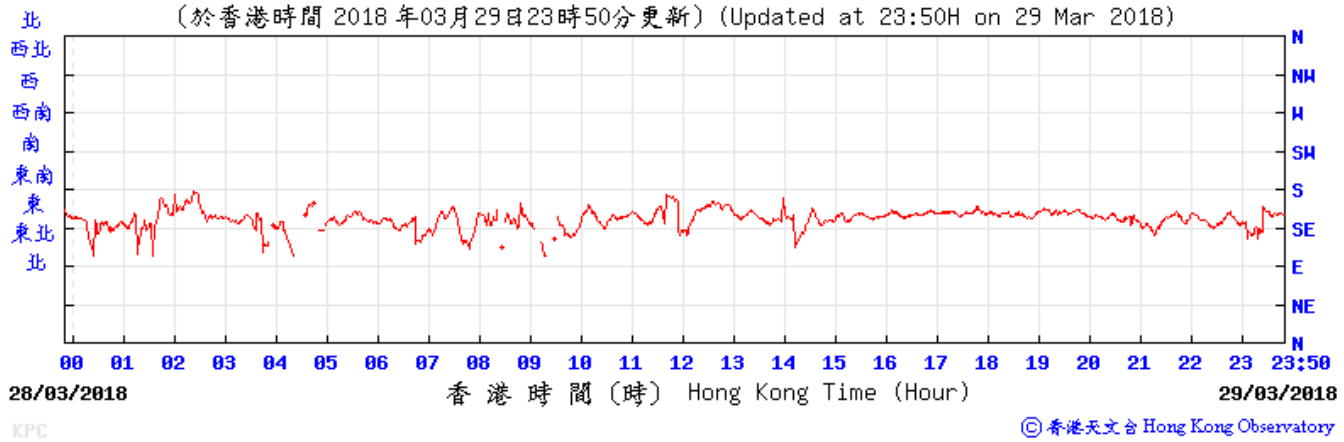




APPENDIX H

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				
9-Mar-18	Sunny	14:30	63.7	65.6	64.3	<Baseline	68.0	70	N
15-Mar-18	Fine	10:25	65.6	69.6	67.8	<Baseline	68.0	70	N
21-Mar-18	Sunny	10:00	63.4	66.7	64.8	<Baseline	68.0	70	N
27-Mar-18	Cloudy	10:30	64.3	67.2	66.7	<Baseline	68.0	70	N

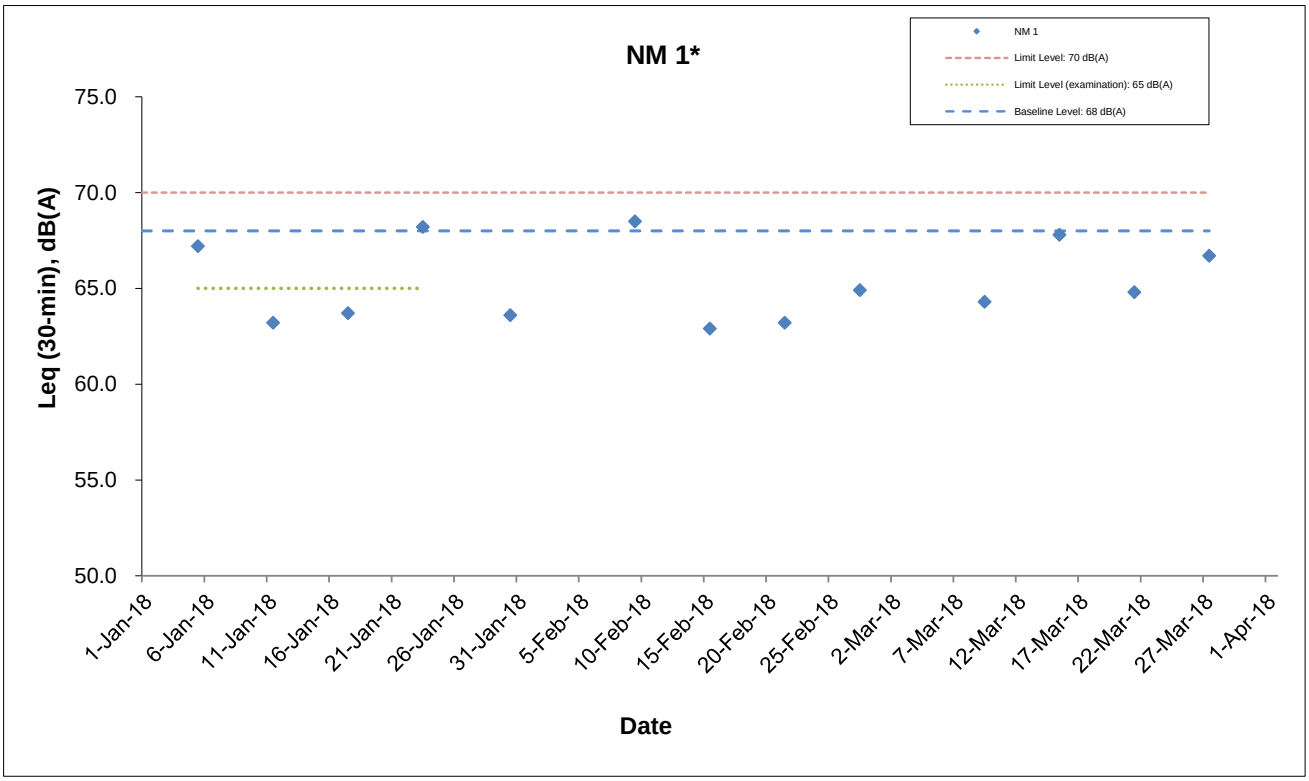
Daytime Noise Monitoring Results at Station NM 2 (No. 234 – 238 Chatham Road North)

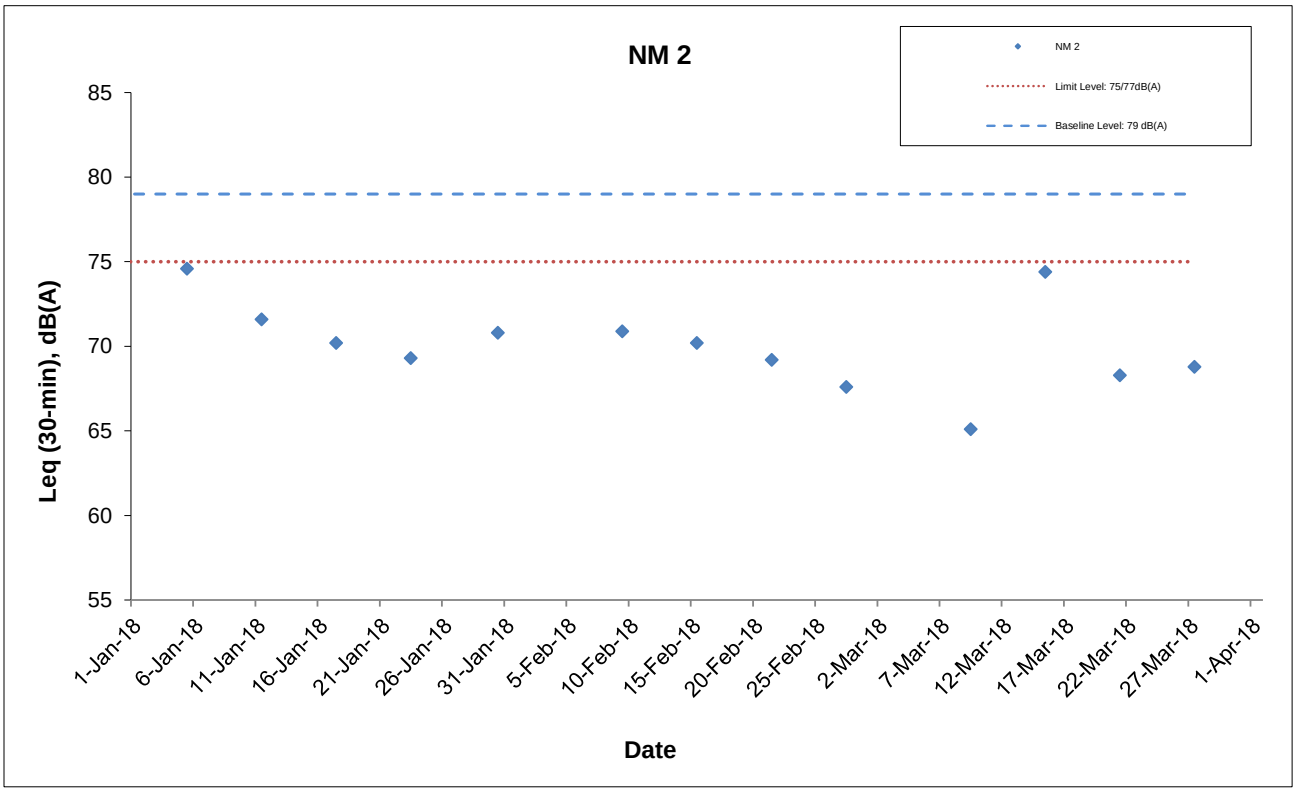
Date	Weather Condition	Noise Level for 30-min, dB(A)++				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
9-Mar-18	Sunny	15:15	64.5	67.4	65.1	<Baseline	79.0	75	N
15-Mar-18	Fine	11:20	71.2	75.9	74.4	<Baseline	79.0	75	N
21-Mar-18	Sunny	10:45	67.2	69.1	68.3	<Baseline	79.0	75	N
27-Mar-18	Cloudy	11:20	67.3	69.4	68.8	<Baseline	79.0	75	N

+ - Façade measurement

++ - Free field measurement

Appendix H Regular Construction Noise Monitoring Results





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

AECOM	Shatin to Central Link Works Contract 1111-Hung Hom North Approach Tunnels	SCALE	N.T.S.	DATE	Apr-18
		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	2
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	1.208	0.000	0.000	0.000	1.208	0.206	0.022	0.000	0.228	0.000	0.000	0.000	0.979	0.979	0.000	0.000	5.500	0.000	40.090	0.000	0.000
Feb	0.584	0.000	0.000	0.000	0.584	0.189	0.221	0.000	0.410	0.000	0.000	0.000	0.173	0.173	0.000	0.000	0.000	0.000	57.400	0.000	0.000
Mar	0.863	0.000	0.000	0.000	0.863	0.010	0.854	0.000	0.863	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	84.000	0.000	0.000
Apr																					
May																					
Jun																					
SUB-TOTAL	2.654	0.000	0.000	0.000	2.654	0.405	1.097	0.000	1.502	0.000	0.000	0.000	1.153	1.153	0.000	0.000	5.500	0.000	181.490	0.000	0.000
Jul																					
Aug																					
Sep																					
Oct																					
Nov																					
Dec																					
2018 TOTAL	2.654	0.000	0.000	0.000	2.654	0.405	1.097	0.000	1.502	0.000	0.000	0.000	1.153	1.153	0.000	0.000	5.500	0.000	181.490	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

62nd Monthly EM&A Report for Works Contract 1103 – Hin Keng to Diamond Hill Tunnels

MTR Corporation Limited

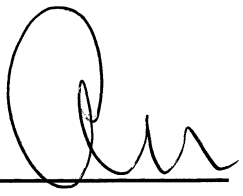
Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report No. 62

[Period from 1 to 31 March 2018]

Works Contract 1103 – Hin Keng to Diamond Hill Tunnels

(April 2018)

Certified by: Jacky Chan 

Position: Environmental Team Leader

Date: 11 April 2018

MTR Corporation Limited

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

Monthly Environmental Monitoring and Audit Report – March 2018

228105-27

April 2018

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

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

Job number 228105-27

Ove Arup & Partners Hong Kong Ltd
Level 5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Kowloon
Hong Kong
www.arup.com

ARUP

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Appendices

Appendix A: Construction programme

Appendix B: Environmental Monitoring Programme in the Reporting Month

Appendix C: Environmental Mitigation Implementation Schedule (EMIS)

Appendix D: Calibration Certificates for Air Monitoring Equipment

Appendix E: Dust Results

Appendix F: Wind Data

Appendix G: Calibration Certificates of Noise Monitoring Equipment

Appendix H: Noise Results

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

Appendix J: Monthly Waste Flow Table

Appendix K: Environmental Monitoring Programme for Coming Month

Appendix L: Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions

Executive Summary

This is the sixty second Environmental Monitoring and Audit (EM&A) report prepared by Ove Arup & Partners Hong Kong Limited (Arup), the designated Environmental Team (ET), for the Project "SCL1103 Hin Keng to Diamond Hill Tunnels". Construction works of this works contract commenced on 14 February 2013 and this report presents the results of EM&A works conducted in the month of March 2018 (1 to 31 March 2018).

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

- ELS Works and ABWF Works in Fung Tak;
- Site Formation at Hin Keng;
- 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 791 m^3 were generated and disposed of at public fill in TKO137FB/TM38FB and 157 m^3 of general refuse was generated and disposed of at NENT/SENT/WENT landfill.

Hazard

No blasting activity was carried out during the reporting month.

Environmental Auditing

A total of 5 environmental site audits were conducted on a weekly basis in the reporting month. The first site inspection was on 1 March 2018 and the final was undertaken on 29 March 2018. An IEC joint site audit was undertaken on 22 March 2018. No non-conformance to the environmental requirements was identified during the reporting period.

Complaint Log

No complaints were received during the reporting period.

Notifications of Summons and Successful Prosecutions

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

Reporting Changes

There were no reporting changes during the reporting month.

Future Key Issues

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

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

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

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

1 Environmental Status

1.1 Project Background

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

The construction of the SCL (TAW-HUH) has been divided into a series of civil construction Works Contracts and this Works Contract 1103 covers the construction of the tunnels between Diamond Hill (DIH) and Hin Keng (HIK).

1.2 Construction Programme

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

1.3 Work Undertaken During the Reporting Month

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

Table 1.1 Construction Activities in the Reporting Month

Locations [1]	**Major Works Undertaken**
Hin Keng	Site Formation
Fung Tak	ELS Works and ABWF Works
Ma Chai Hang	C&S Works and ABWF Works
Shiu Chuen O	Storage Area

1.4 Project Organization

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

Table 1.2 Contacts of Key Environmental Staff

Organisation	Name	Telephone
Project Proponent: MTRC		
Engineer's Representative	Sammi Wong	3767 0268
SCL Project-wide Environmental Team Leader	Lisa Poon	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	Jacky Chan	2268 5292

1.5 Project Area and Environmental Monitoring locations

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

Table 1.3 Summary of Air Quality and Noise Monitoring Stations

ID	Premise
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	Superseded, EPD processing renewal.
	WT00014648-2012	Hin Keng	10 Dec 2012	Superseded, EPD processing renewal.
	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 (CNP)	GW-RE0976-17	Ma Chai Hang	3 Jan 2018	2 July 2018
	GW-RE0004-18	Fung Tak	20 Jan 2018	19 July 2018
	GW-RN0681-17	Hin Keng	5 Nov 2017	4 May 2018
	GW-RN0729-17	Hin Keng	20 Nov 2017	19 May 2018
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 sixty second monthly EM&A report summarising the monitoring methodology, locations, periods, frequencies, results and any observation from the air quality,

noise, ecology, waste management, landscape and visual monitoring and environmental site audit from 1 to 31 March 2018.

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 2018)	14 March 2018

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 2018 was characterised largely by cold and dry conditions associated with the northeast monsoon. On occasion, warm weather associated with a south westerly airstream affected Hong Kong.

3.3.2 Air Quality Monitoring Results

Monitoring of 24-hour TSP was conducted on 5, 10, 16, 22, and 28 March 2018. 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	47.7	23.8 – 63.0	148.7	260
DMS-2	60.5	24.5 – 79.2	167.4	260

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

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

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

3.3.3 General Observations

Major construction works including Site Formation at Hin Keng; ELS Works and ABWF works at Fung Tak and Ma Chai Hang and storage at Shui Chuen O.

4 Noise Monitoring

4.1 Noise Monitoring Requirements

4.1.1 Impact Monitoring

Monitoring Parameters

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

Monitoring Frequency

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

Table 4.1 Construction Noise Monitoring Parameters and Frequency

Time Period (when construction activity is found)	Parameters	Monitoring Frequency
Between 0700-1900 hours on normal weekdays	$L_{eq(30\ min)}$	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	Soundtek ST-106	J70006	IEC 651 Type 1 IEC 804 Type 1
Sound level calibrator	Rion NC-74	35236437	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 2018 was characterised largely by cold and dry conditions associated with the northeast monsoon. On occasion, warm weather associated with a south westerly airstream affected Hong Kong.

4.3.2 Noise Monitoring Results

Impact Monitoring

Monitoring of the construction noise level was conducted on 6, 13, 19 and 29 March 2018. 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)
6-Mar-18	16:00-16:30	56.4	57.0	< Baseline Level	70/65
13- Mar-18	11:30-12:00	56.4		< Baseline Level	
19- Mar-18	11:30-12:00	56.4		< Baseline Level	
29- Mar-18	10:00-10:30	61.3		59.3	

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)
6-Mar-18	15:00-15:30	62.0	66.0	< Baseline Level	70/65
13- Mar-18	10:00-10:30	63.9		< Baseline Level	
19- Mar-18	10:00-10:30	62.2		< Baseline Level	
29- Mar-18	11:30-12:00	54.9		< 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 2018. 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	791 m^3 (Total)	TKO137FB/TM38FB
Inert C&D Materials	0 m^3	Reused in the Contract
Chemical Waste	0 kg	Disposed of by a licensed collector
Paper / cardboard packaging	0 kg	-
Plastic	0 kg	
Metal	0 kg	
General Refuse	157 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 22 March 2018 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 2018	Fung Tak	The contractor is reminded to ensure that stockpiles are properly covered.	Agreed with ET's Advice.	The contractor rectified the issue and ensured that the stockpiles were covered. Closed 8 March.
15 & 22 March 2018	Fung Tak	The contractor is reminded to ensure that stockpiles are properly covered.	Agreed with ET's Advice.	The contractor rectified the issue and ensured that the stockpiles were covered. Closed 29 March.
29 March 2018	Fung Tak	The contractor shall ensure regular water spraying	Agreed with ET's Advice.	The contractor noted the issue and will report the status in the next reporting month.
Waste				
22 February 2018	Fung Tak	The contractor is reminded to ensure that chemical containers are properly stored.	Agreed with ET's Advice.	The contractor rectified the issue and ensured that chemical containers were properly stored. Closed 1 March 2018.
1 March 2018	Ma Chai Hang	The contractor is reminded to practice proper housekeeping and ensure that the site is kept organised and tidy.	Agreed with ET's Advice	The contractor rectified the issue and ensured proper housekeeping was practiced. Closed 8 March 2018.
8 March 2018	Ma Chai Hang	The contractor is reminded to ensure that chemical containers are properly stored.	Agreed with ET's Advice.	The contractor rectified the issue and ensured that chemical containers were properly stored.

Inspection Date	Works Area	Key Observations and Recommendations	Contractor's Response / Environmental Outcome	Closed Date / Follow up Status
				Closed 15 March 2018.
22 March 2018	Ma Chai Hang	The contractor is reminded to ensure that general refuse is regularly cleared.	Agreed with ET's Advice.	The contractor rectified the issue and ensured that refuse was regularly cleared. Closed 29 March 2018.
29 March 2018	Ma Chai Hang	The contractor is reminded to practice proper housekeeping and ensure that the site is kept organised and tidy.	Agreed with ET's Advice	The contractor noted the issue and will report the status in the next reporting month.
29 March 2018	Fung Tak	That contractor shall ensure that oil drums have the provision of a drip tray.	Agreed with ET's Advice	The contractor noted the issue and will report the status in the next reporting month.
29 March 2018	Fung Tak	That contractor shall ensure that PMEs are properly maintained.	Agreed with ET's Advice	The contractor noted the issue and will report the status in the next reporting month.
Water				
8 March 2018	Fung Tak	The contractor is reminded to ensure that water seepage is avoided after rain events.	Agreed with ET's Advice.	The contractor rectified the issue and ensured water seepage was prevented. Closed 15 March 2018.
Noise				
29 March 2018	Fung Tak	The contractor shall ensure that breaker heads have the provision of an acoustic blanket.	Agreed with ET's Advice	The contractor noted the issue and will report the status in the next reporting month.

9.2 Summary of Environmental Complaint

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

Table 9.2 Summary of Complaints

Reporting Period	Complaint Statistics	
	Number	Cumulative
01/03/18 – 31/03/18	0	23

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**
Hin Keng	Site Formation
Fung Tak	ELS Works and ABWF Works
Ma Chai Hang	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. Five environmental site audits were conducted in the reporting month.

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

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

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

No complaints were 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

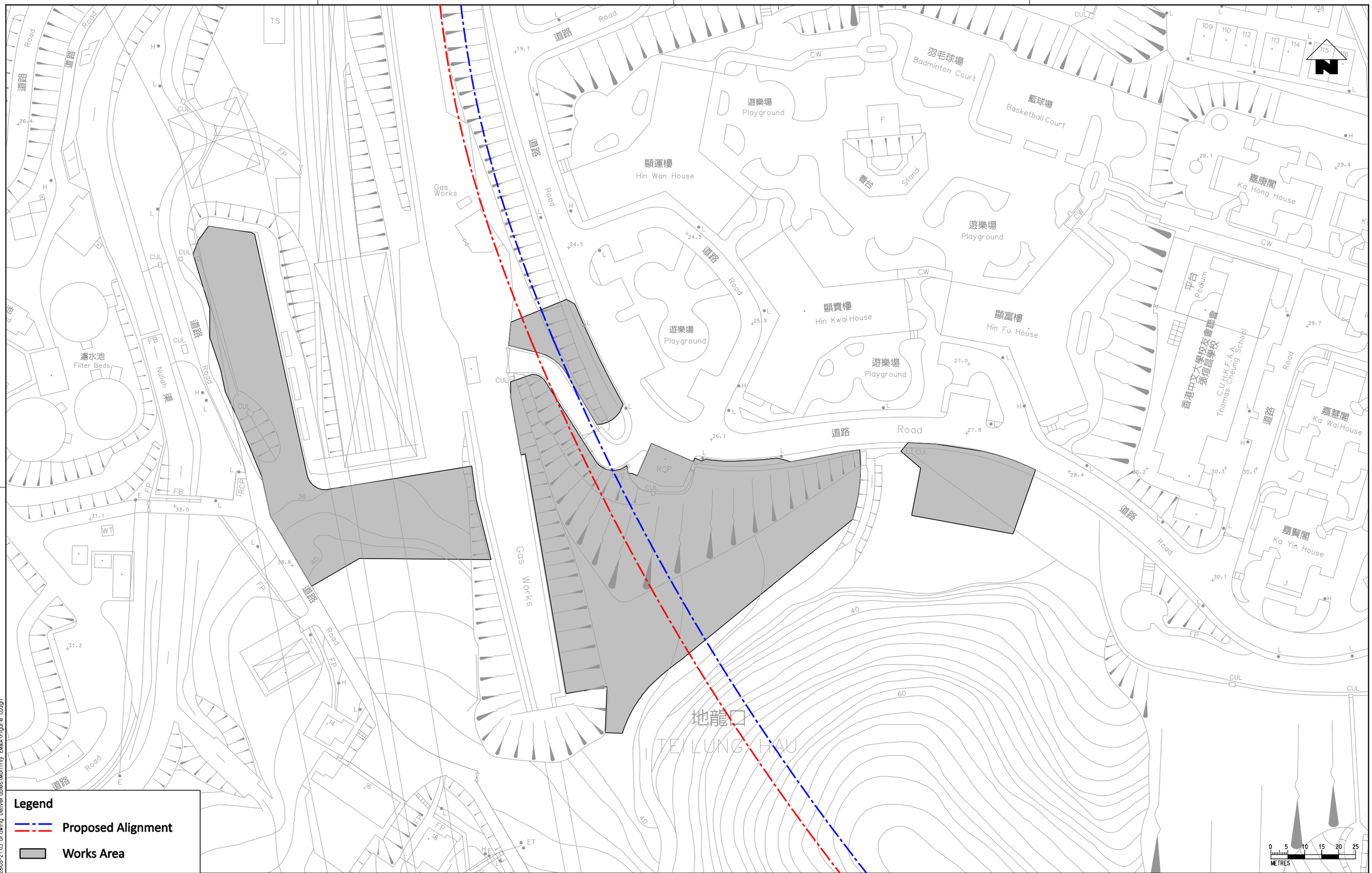
(1) MTR Corporation Limited. SCL – NEX/2206 EIA Study for Tai Wai to Hung Hom Section. Final Environmental Impact Assessment Report. October 2011.

(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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ORIGINATOR

ARUP Ove Arup & Partners Hong Kong Limited

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.
1:1000 (A3)	Figure 1.1	A

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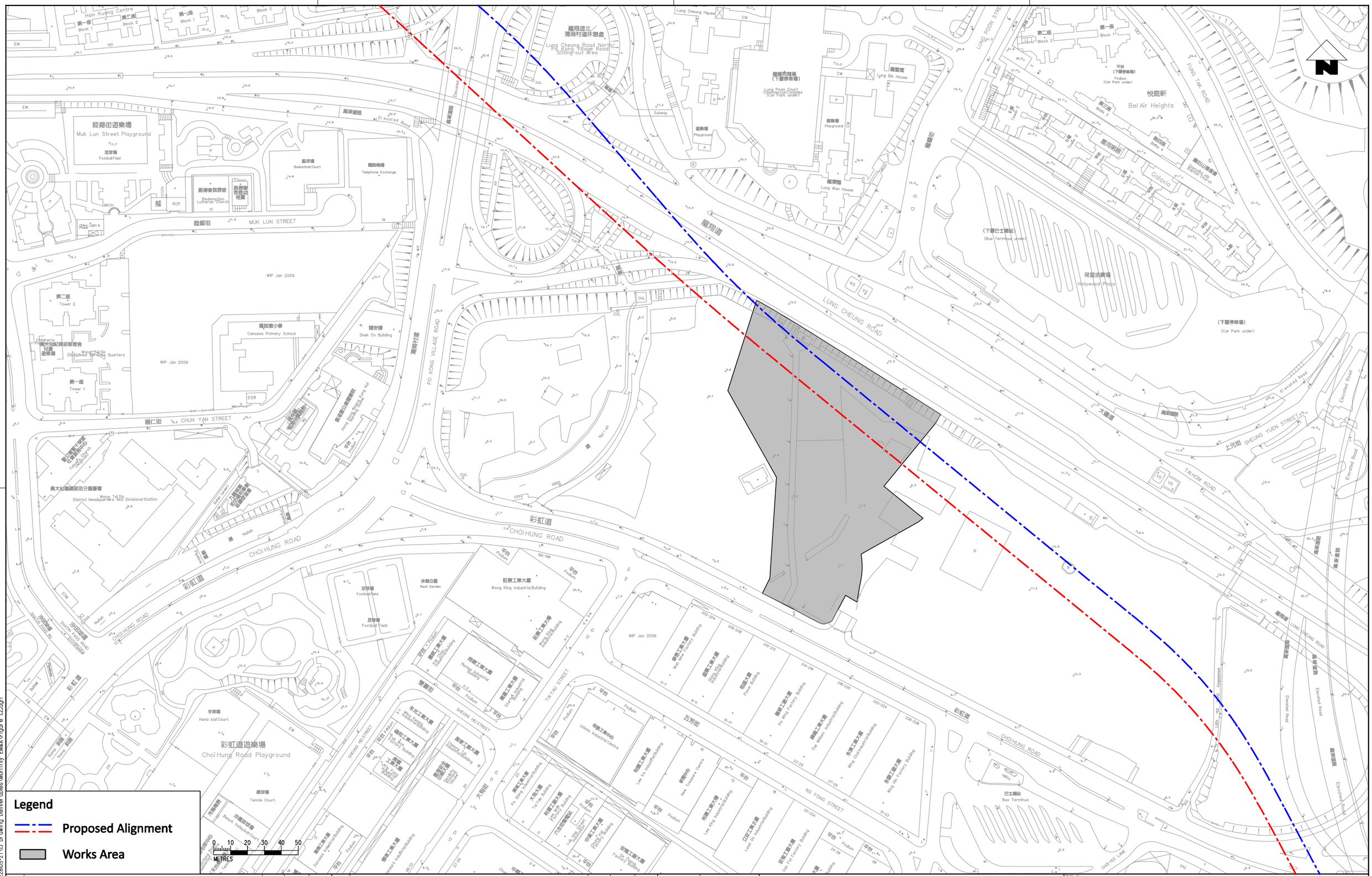

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HIN KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Areas
- General Site Layout of Diamond Hill Works Area
(Sheet 2 of 6)

SCALE	DRAWING NO.	REV.
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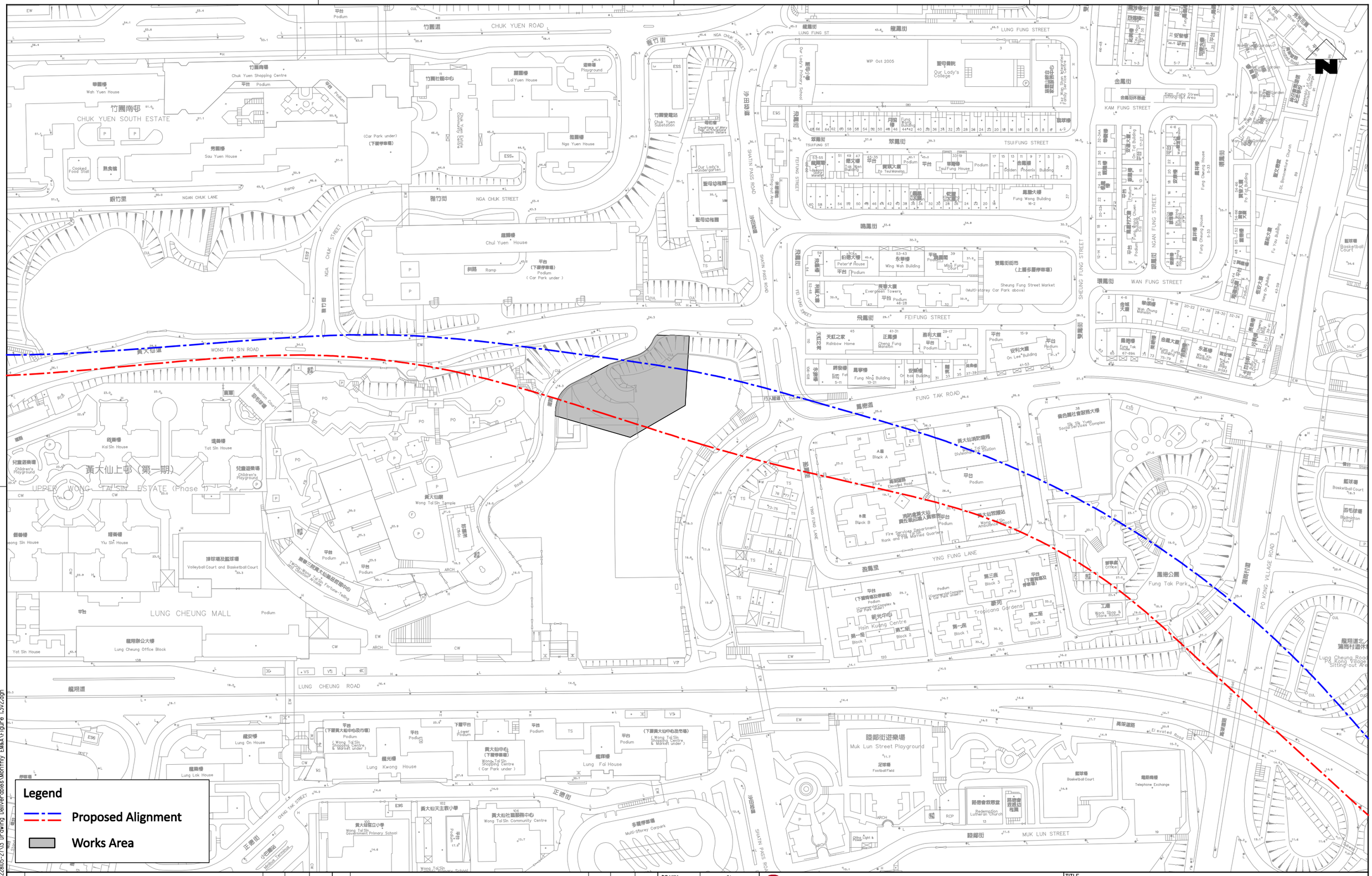

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TITLE

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)

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

SCALE	DRAWING NO.	REV.
1:2000 (A3)	Figure 1.4	A

REV	DESCRIPTION	BY	DATE	APPROVED
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TITLE

CONTRACT 1103
HIK KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Area
General Site Layout of Shui Chuen O Works Area
(Sheet 5 of 6)

SCALE	DRAWING NO.	REV.
1 : 2000 (A3)	Figure 1.5	A

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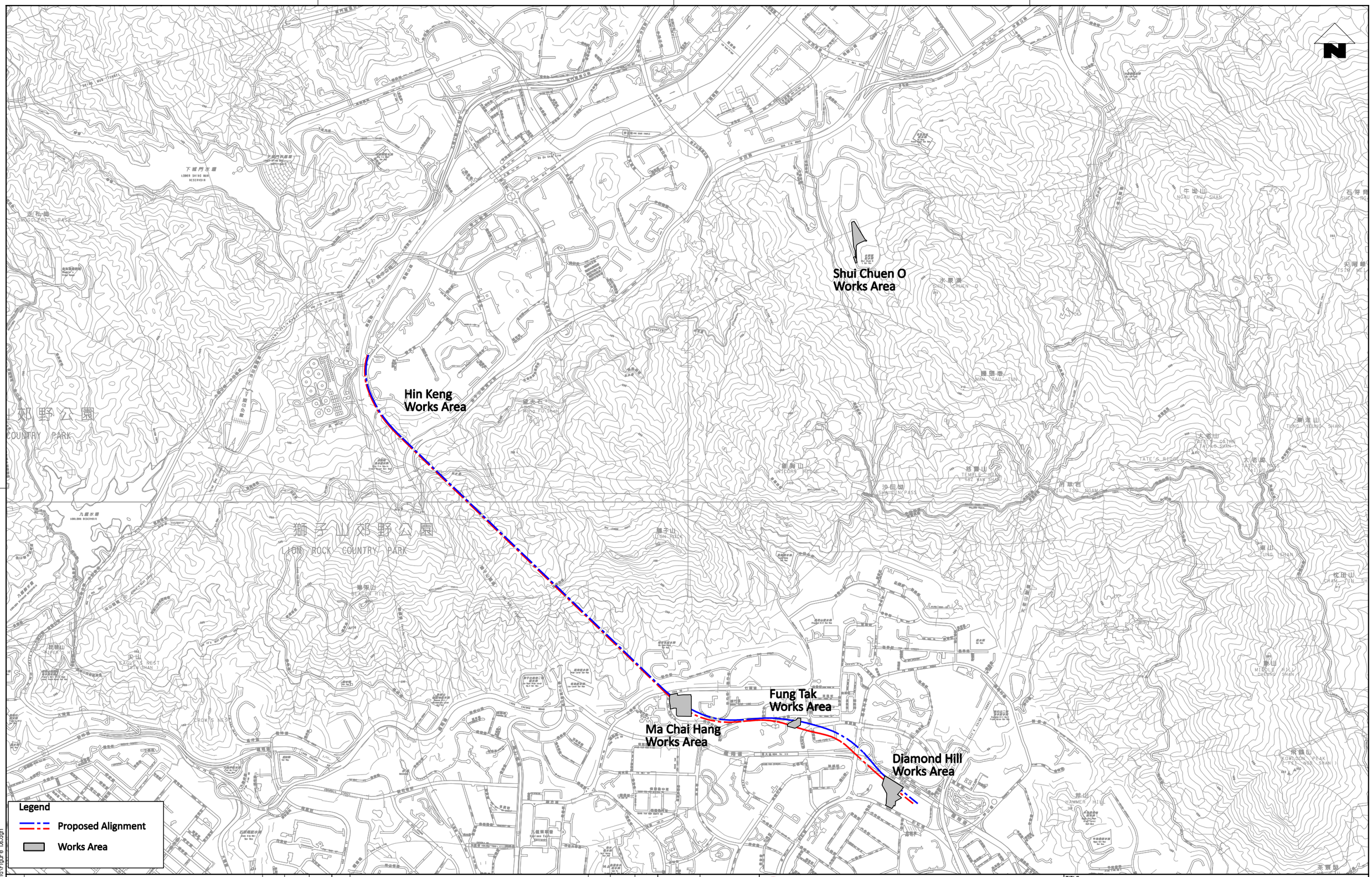

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TITLE

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.
1:20000 (A3)	Figure 1.6	B

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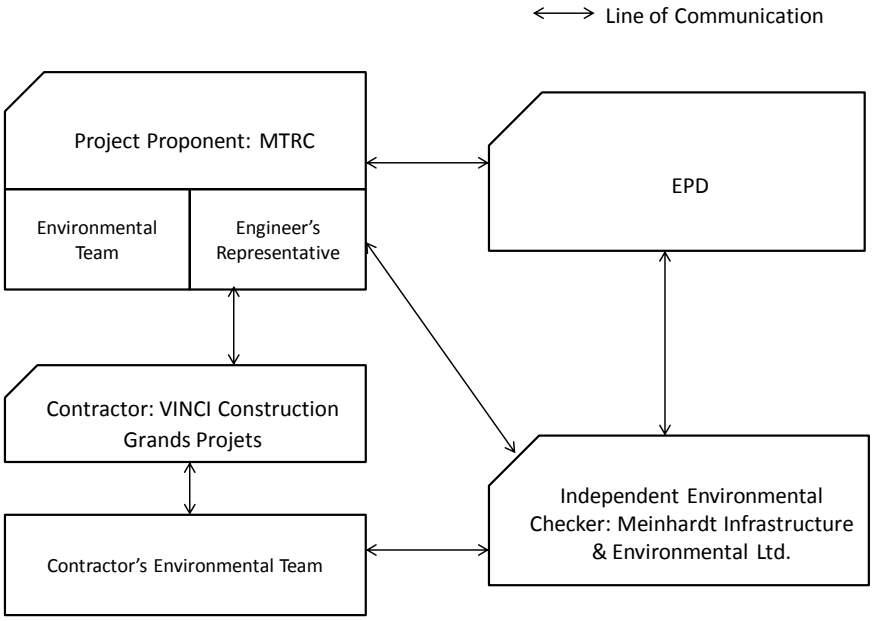
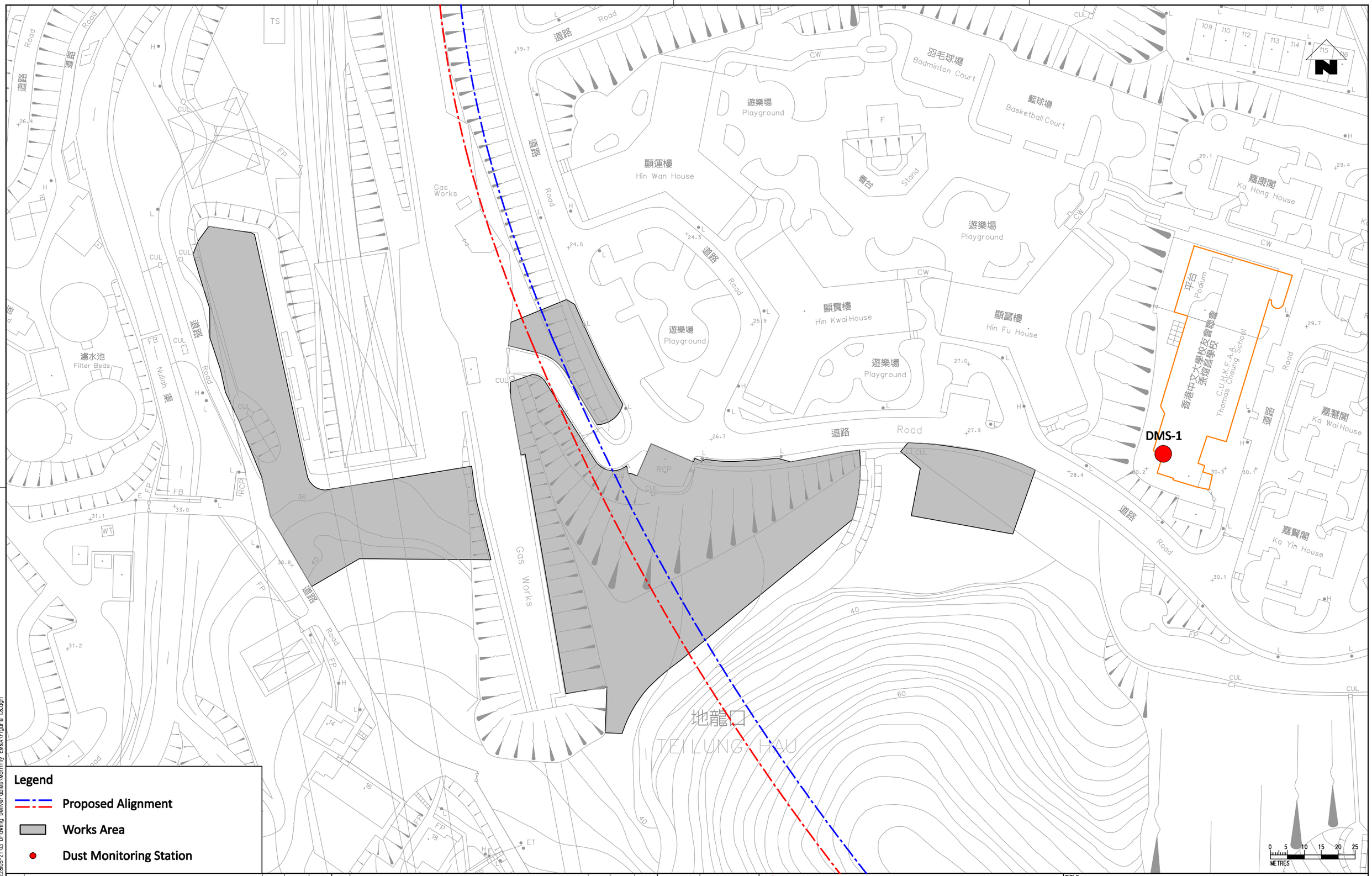
Figure 1.7 - Project Organisation for Environmental Works





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TITLE

CONTRACT 1103

HIN KENG TO DIAMOND HILL TUNNELS

Locations of Proposed Dust Monitoring Stations

(Sheet 1 of 3)

SCALE 1:1000 (A3)

DRAWING NO. Figure 1.8

REV. A

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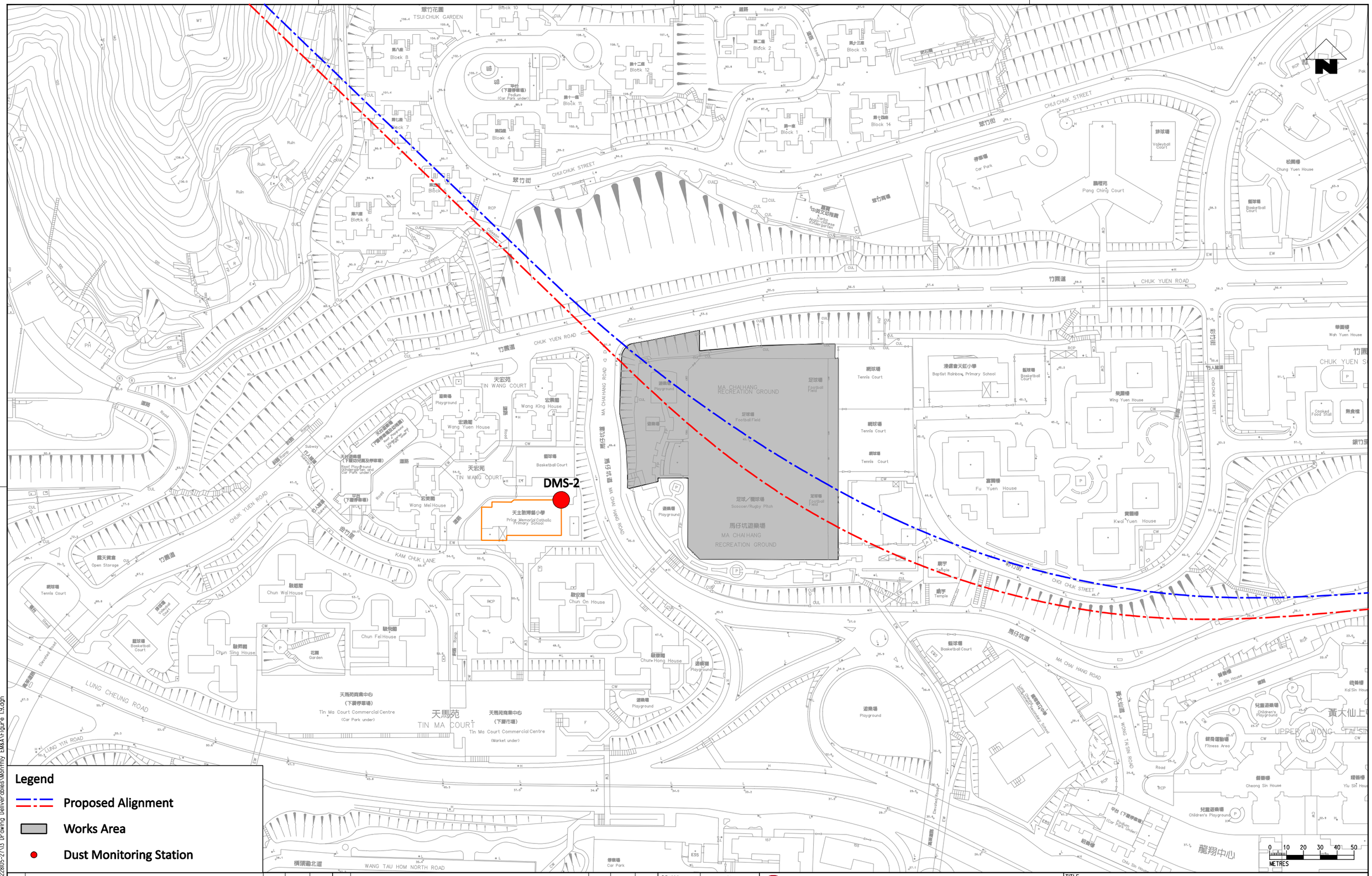

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TITLE

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

0 10 20 30 40 50
METRES

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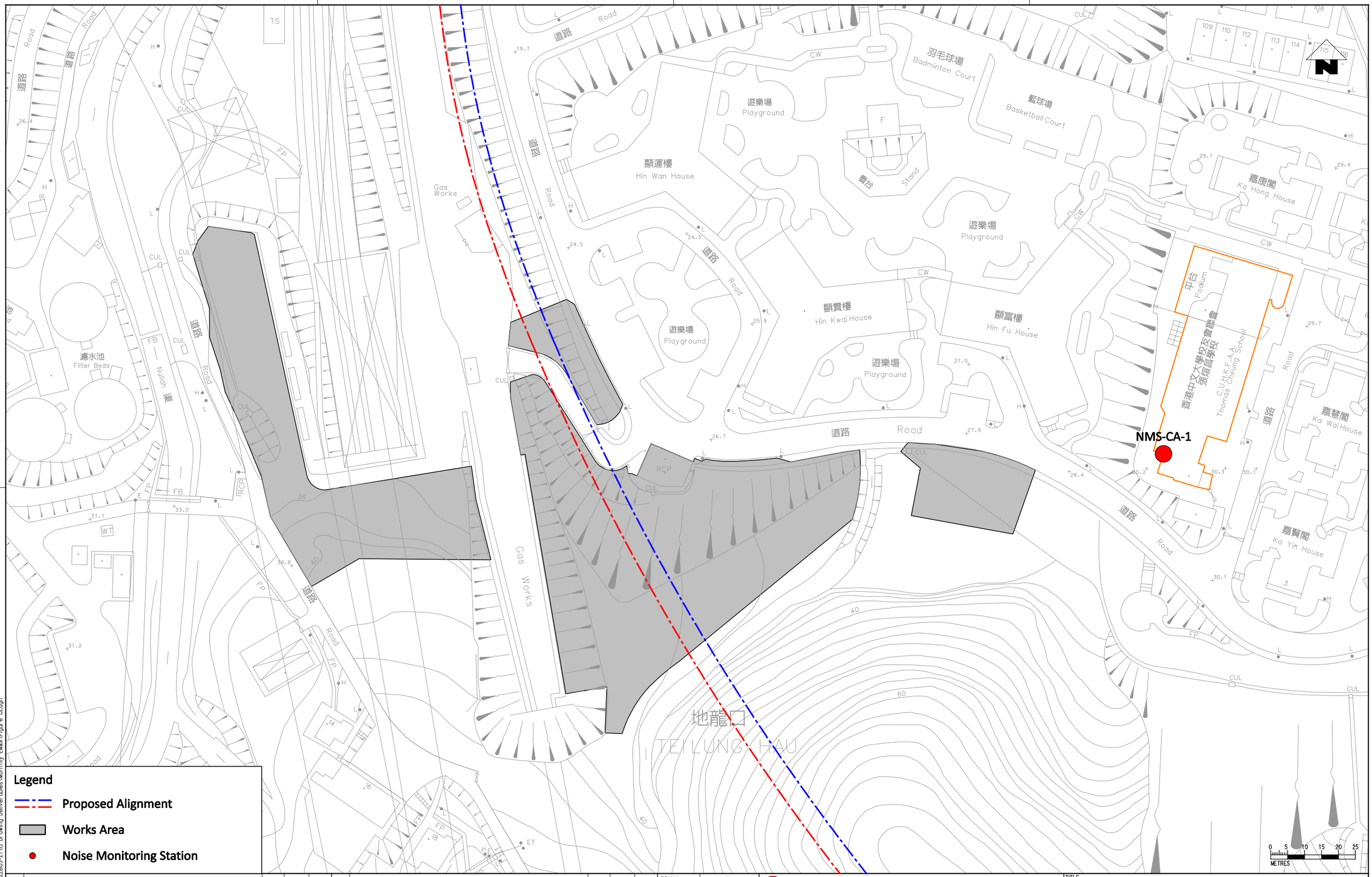
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Proposed Dust Monitoring Stations
(Sheet 3 of 3)

SCALE 1:2000 (A3)

DRAWING NO. Figure 1.10

REV. A



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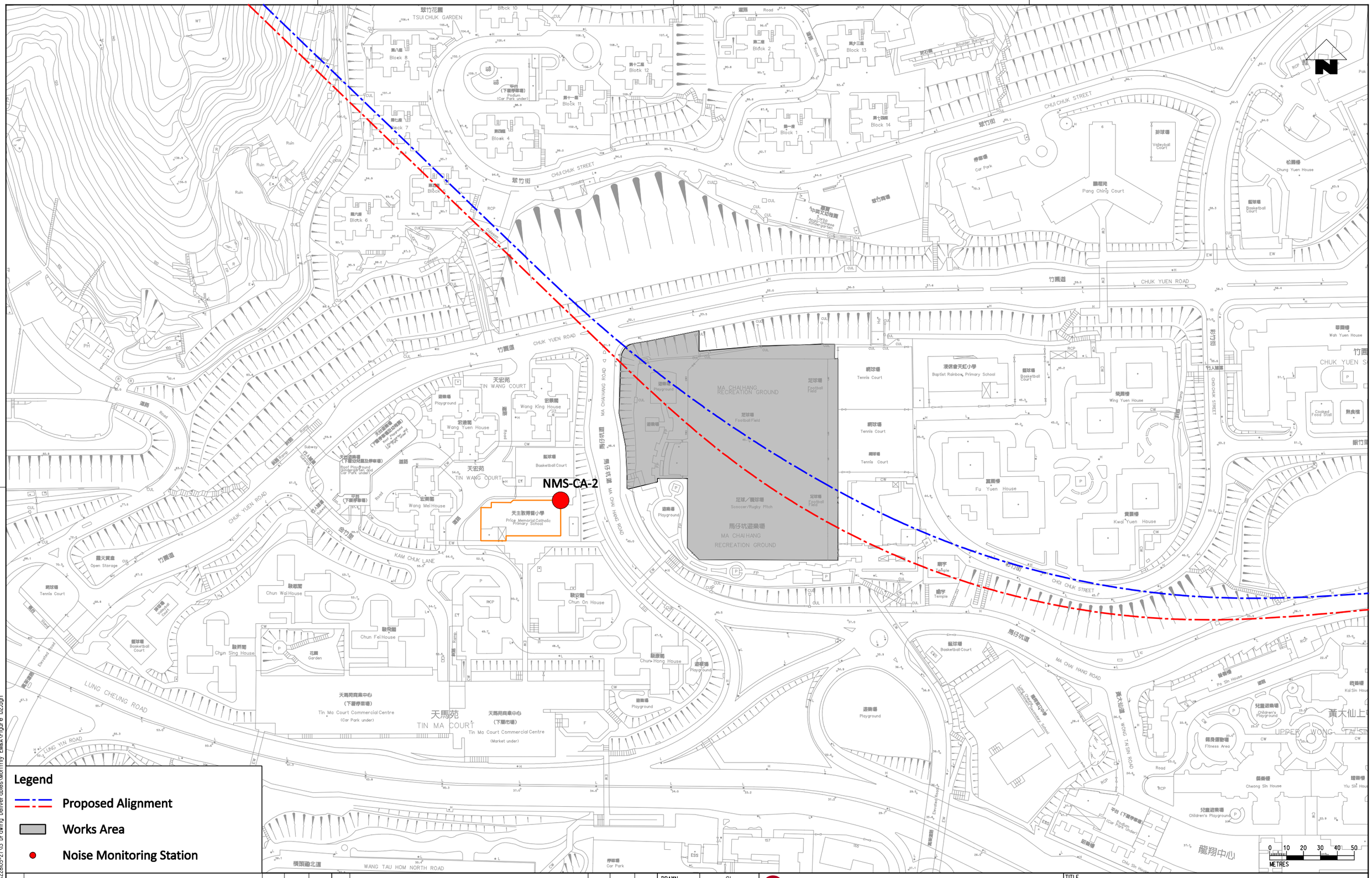
TITLE

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

SCALE	DRAWING NO.	REV.
1:1000 (A3)	Figure 1.11	A



Legend

- Proposed Alignment
- Works Area
- Noise Monitoring Station

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

SCALE	DRAWING NO.	REV.
1:2000 (A3)	Figure 1.12	A

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NMS-CA-3/NMS-CA-4

Legend

- Proposed Alignment
- Works Area
- Noise Monitoring Station

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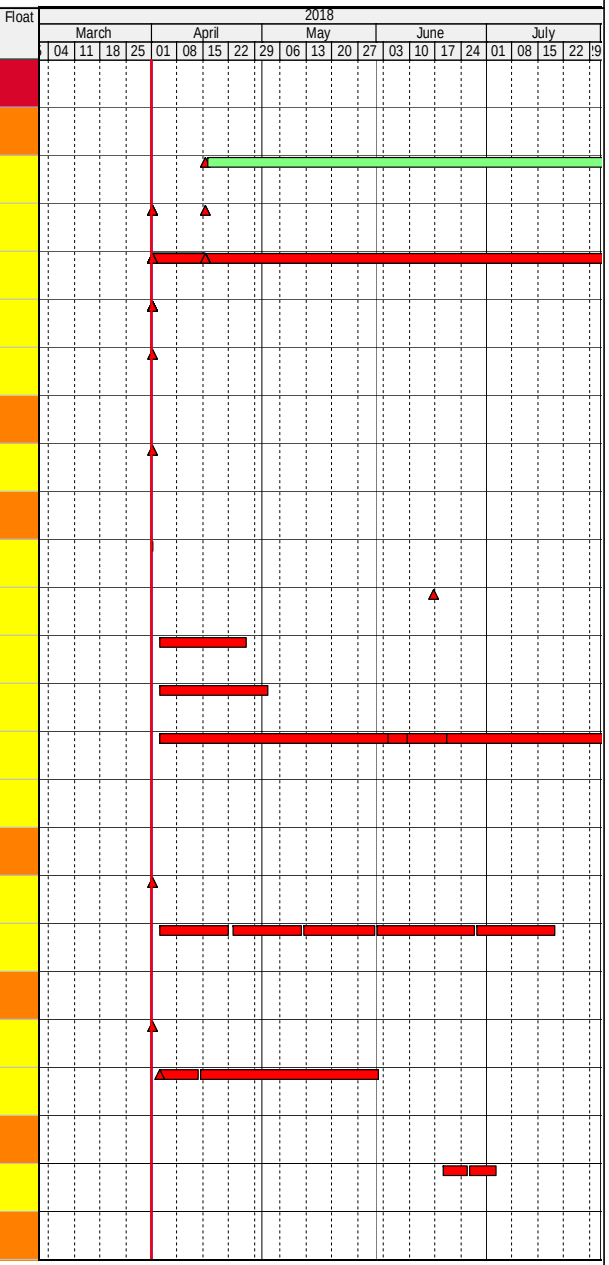
CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Noise Monitoring Stations
(Construction Airborne Noise)
(Sheet 3 of 3)

SCALE 1:2000 (A3)
DRAWING NO. Figure 1.13
REV. A

Appendix A

Construction Programme

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Total Float
	CONTRACT 1103:- HIN KENG TO DIAMOND HILL TUNNELS					
	PROJECT DATES					
	Specific Limits (FOT A2)					
	Schedule of Critical Dates (FOT A3)					
	Schedule of Access Dates for Works Areas (PS A F3)					
	Schedule of Access Dates for Designated Contractors (PS A I)					
	Programme Data (PS A C2) Schedule of Power On Dates					
	COST CENTER A - PRELIMINARIES					
	Milestone Schedule - Preliminaries					
	COST CENTER F - MA CHAI HANG VENTILATION BUILDING (MCV)					
	COST CENTER F - Milestone Schedule - MCV					
	MCV - TTM Scheme					
	MCV - Shaft Excavation and ELS					
	MCV - C&S Works					
	MCV - ABWF					
	MCV - Statutory Inspection					
	COST CENTER G - FUNG TAK EAP/EEP BUILDING (FTA)					
	COST CENTER G - Milestone Schedule - FTA					
	FTA - C&S Works					
	COST CENTER H - HIN KENG WORKING SHAFT					
	COST CENTER H - Milestone Schedule - HIK Shaft					
	HIK - Site Formation					
	COST CENTER I - MAINTENANCE SHED IN MA CHAI HANG (N/A)					
	Maintenance Shed - C&S Works					
	COST CENTER L - ASSOCIATED WORKS					

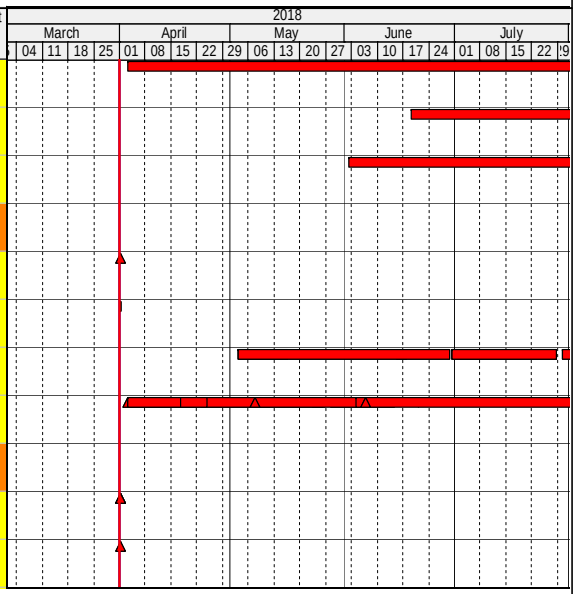


Milestone | Critical Milestone | Critical Remaining Work | Remaining Work
Actual MS | Remaining Level of Effort | Actual Level of Effort | Baseline (RMP)
Baseline (Last Month) | Actual Work | Baseline Milestone | Baseline Milestone

Three Month Rolling Programme
As of 31-MARCH-2018

Date	Revision	Checked	Approved
31-Mar-18	Submission for MTR Information	KK	EC

Activity ID	Activity Name	Original Duration	Start	Finish	Physical % Complete	Total Float
	Instrumentation and Monitoring					
	Association Works - MCV Building					
	Association Works - HIK Shaft					
	COST CENTER M - RRIW					
	COST CENTER M - Milestone Schedule - RRIW (Revised by MTR)					
	COST CENTER M - Milestone Schedule - RRIW (TBA)					
	RRIW - at Ma Chai Hang					
	RRIW - Fung Tak Public Transport Terminus (PTT)					
	COST CENTER N - OPTION 1: FUNG TAK PILE REMOVAL WORKS (Works Completed)					
	COST CENTER N - Milestone Schedule - Option 1 (Milestones Not Applicable)					
	Preliminaries and General					



Appendix B

Environmental Monitoring Programme in Reporting Month

SCL Works Contract 1103 - Hin Keng to Diamond Hill Tunnels
Impact Monitoring Schedule - March 2018

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

	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

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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

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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	✓ ✓

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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	✓ ✓ ✓ ✓

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		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	✓ ✓ ✓

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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	✓
		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	✓

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		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 ✓

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		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 ✓ ✓ ✓

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		• 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	✓

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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	✓ ✓ ✓ Obs ✓ ✓
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	✓

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		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	✓

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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 ✓ ✓

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		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					✓ ✓ ✓ ✓ ✓

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		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					✓

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		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	*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	✓ ✓ ✓ ✓
S10.7.1	W3	*Sewage Effluent*	To minimize water quality	All construction sites	Construction	• Water Pollution	

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		• 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.	from sewage effluent	where practicable	stage	Control Ordinance • TM-water	✓
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 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	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

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		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	✓ ✓ ✓

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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	✓ ✓

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		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	*C&D Waste* • 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	✓ ✓

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		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	*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. • 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	✓ Rdr Rdr, Obs ✓

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

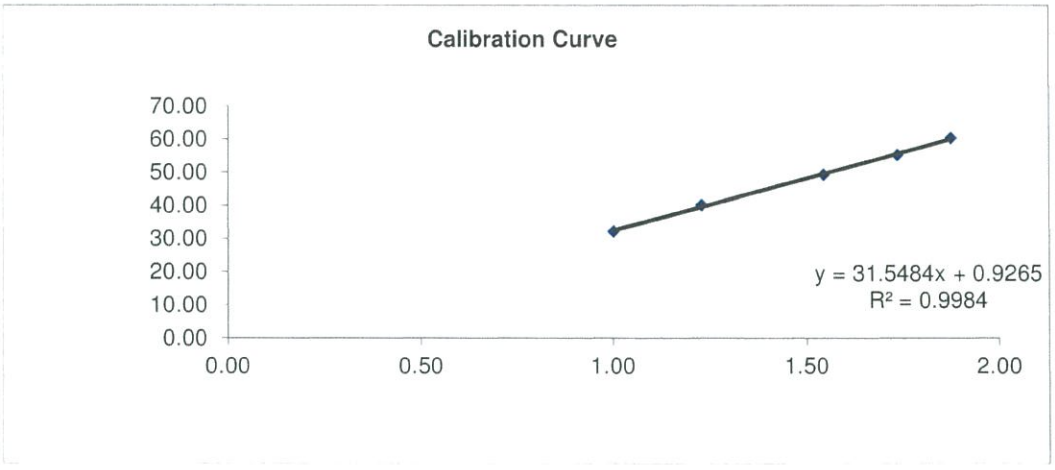
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	26-Feb-17	**Barometric pressure**	760 mm Hg
Next Calibration date	27-Apr-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	2.00576
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	4.00	32.00	1.00	32.22
7	6.00	40.00	1.23	40.27
10	9.50	49.00	1.54	49.33
13	12.00	55.00	1.74	55.37
18	14.00	60.00	1.88	60.41



Linear Regression

Sampler slope (m) :	**31.5484**
Sampler intercept (b) :	**0.9265**
Correlation coefficient (R^2) :	**0.9984**

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

Performed by: _____ Date: 26-Feb-2018

Checked by: _____ Date: 26/2/2019

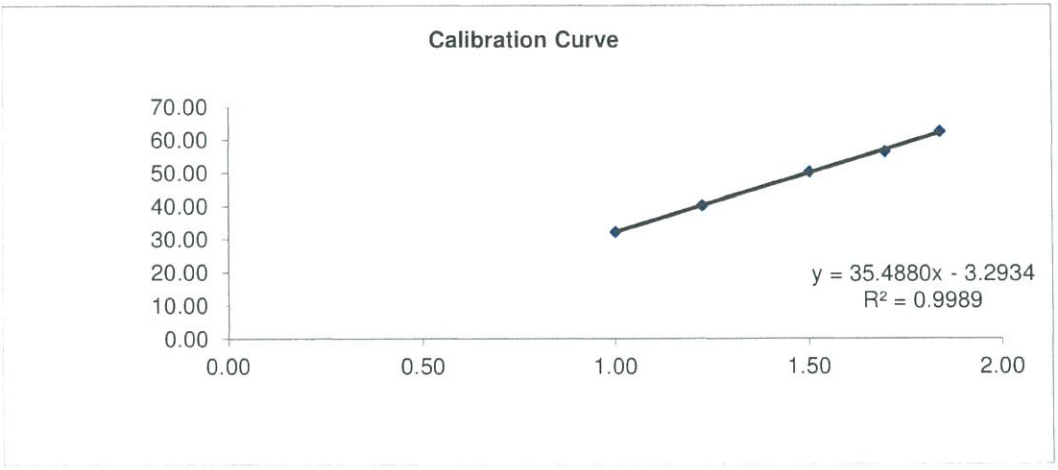
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	26-Feb-18	**Barometric pressure**	760 mm Hg
Next Calibration date	27-Apr-18	**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	2.00576
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	4.00	32.00	1.00	32.22
7	6.00	40.00	1.23	40.27
10	9.00	50.00	1.50	50.34
13	11.50	56.00	1.70	56.38
18	13.50	62.00	1.84	62.42



Linear Regression

Sampler slope (m) :	**35.4880**
Sampler intercept (b) :	**-3.2934**
Correlation coefficient (R^2) :	**0.9989**

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

Performed by: _____ Date: 26-Feb-2018

Checked by: _____ Date: 26/2/2018

TISCH Environmental

RECALIBRATION DUE DATE:
January 24, 2019

Certificate of Calibration

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

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

Data Tabulation

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

Calculations

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

For subsequent flow rate calculations:

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

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

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

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

RECALIBRATION

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

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

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

Appendix 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 (μg/m^3)	Action Level (μg/m^3)	Limit Level (μg/m^3)
			Start	Finish				Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish					
103700	Mar-18	5-Mar-18	0:00	0:00	DMS1	Fine	Normal Operation	759.3	762.9	25.1	19.8	38.0	38.0	2.5586	2.6011	0.0425	1.2337	1.2461	1.2399	7575.03	7599.03	1440.00	1785.46	23.8	148.7	260.0
103702	Mar-18	10-Mar-18	0:00	0:00	DMS1	Fine	Normal Operation	766.6	766.1	16.7	18.0	40.0	40.0	2.5701	2.6608	0.0907	1.3133	1.3103	1.3118	7599.04	7623.04	1440.00	1888.99	48.0	148.7	260.0
103704	Mar-18	16-Mar-18	0:00	0:00	DMS1	Fine	Normal Operation	761.1	759.9	22.7	19.5	42.0	42.0	2.5674	2.6653	0.0979	1.3549	1.3605	1.3577	7623.05	7647.05	1440.00	1955.09	50.1	148.7	260.0
103706	Mar-18	22-Mar-18	0:00	0:00	DMS1	Fine	Normal Operation	762.7	763.8	19.5	20.5	40.0	40.0	2.5747	2.6752	0.1005	1.3046	1.3035	1.3041	7647.06	7671.06	1440.00	1877.83	53.5	148.7	260.0
103708	Mar-18	28-Mar-18	0:00	0:00	DMS1	Fine	Normal Operation	761.0	760.7	22.7	22.9	44.0	44.0	2.5843	2.7124	0.1281	1.4126	1.4119	1.4123	7671.07	7695.07	1440.00	2033.64	63.0	148.7	260.0

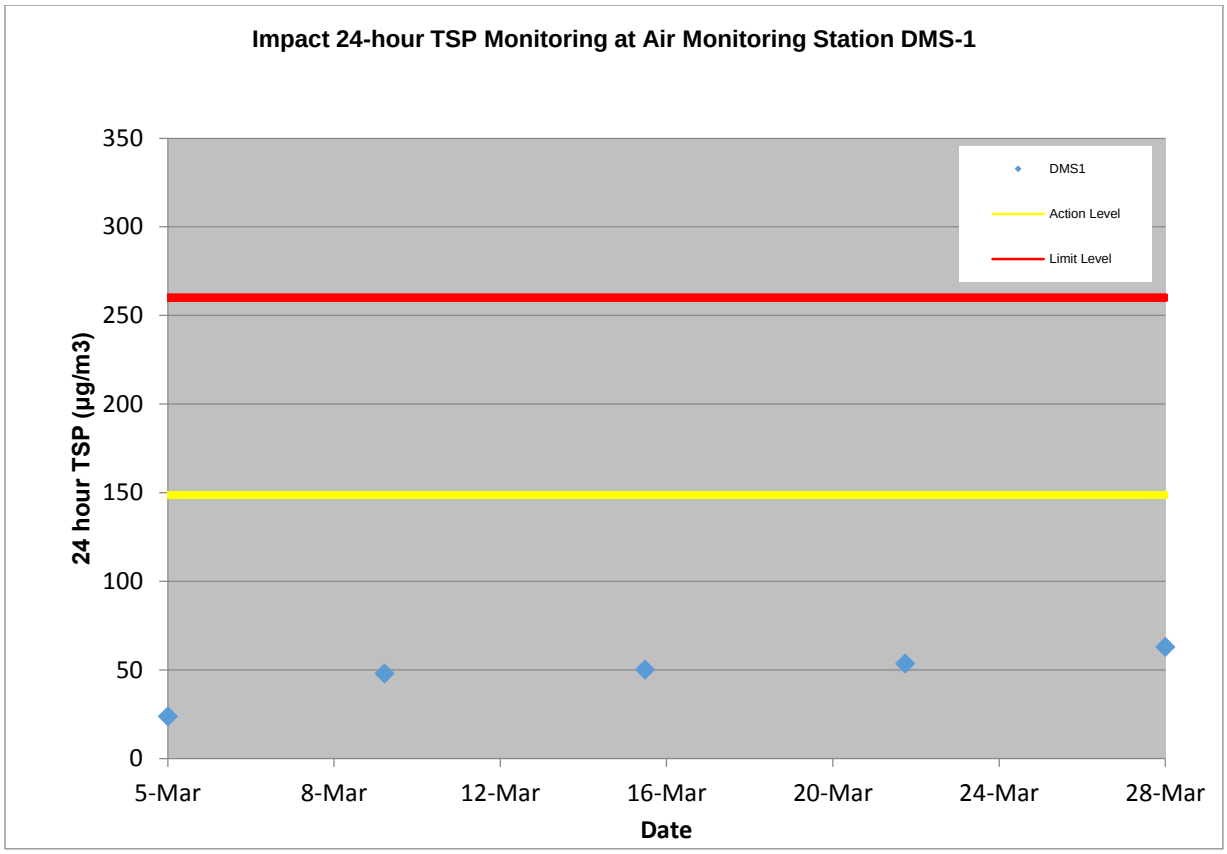
Average (μg/m3)	47.7
Max (μg/m3)	63.0
Min (μg/m3)	23.8

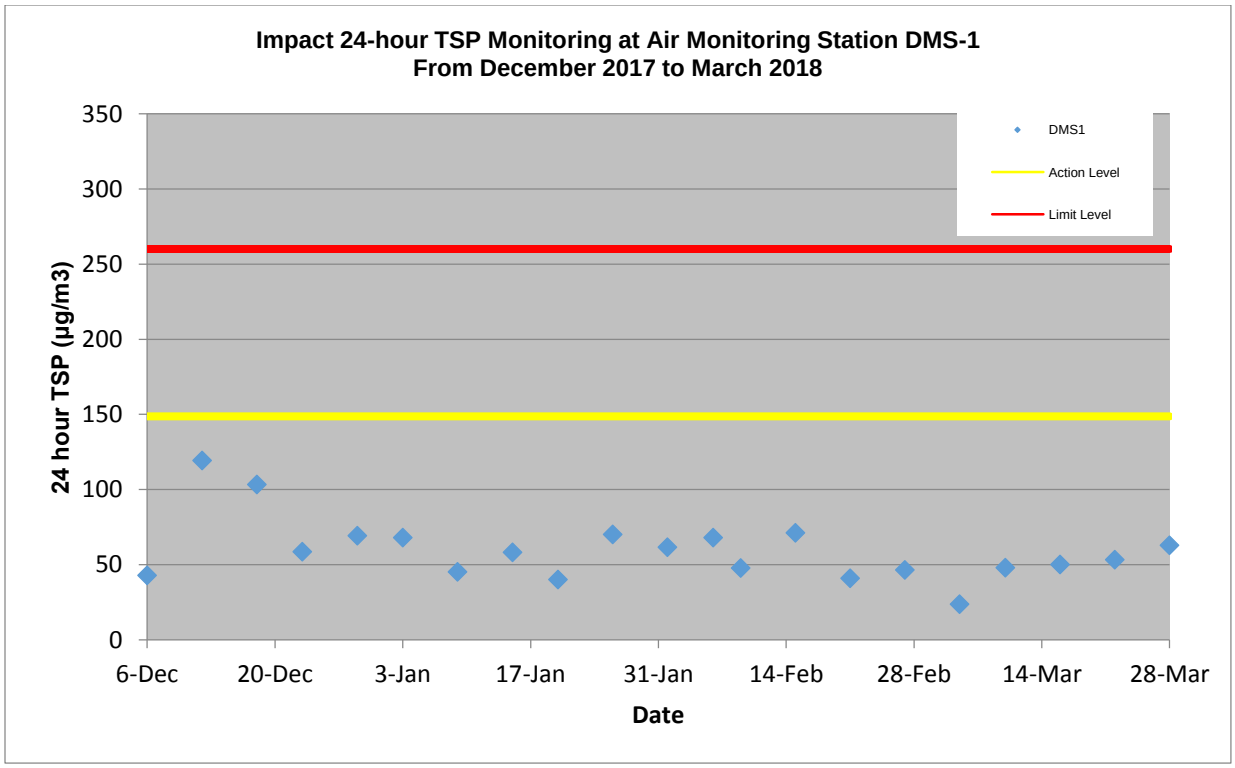
Location: DMS-2 Price Memorial Catholic Primary School

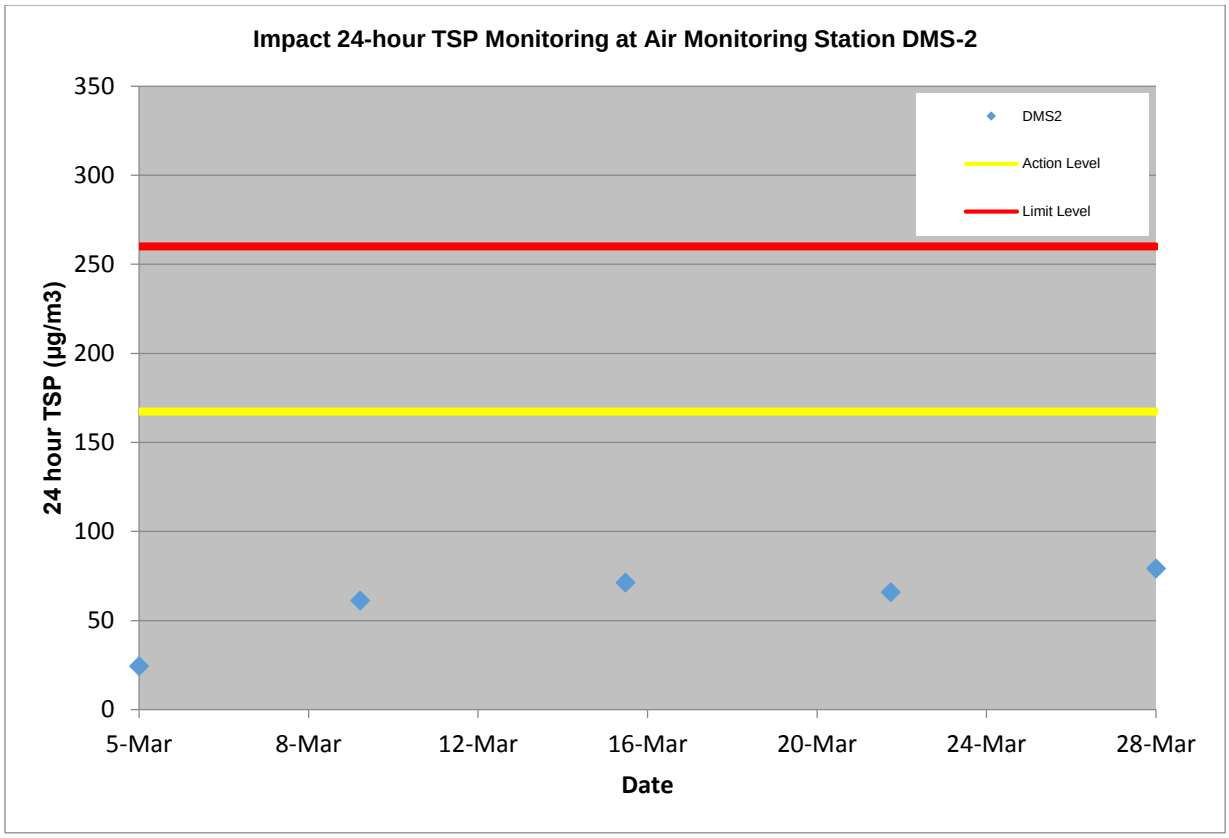
Details of 24-Hour TSP Monitoring

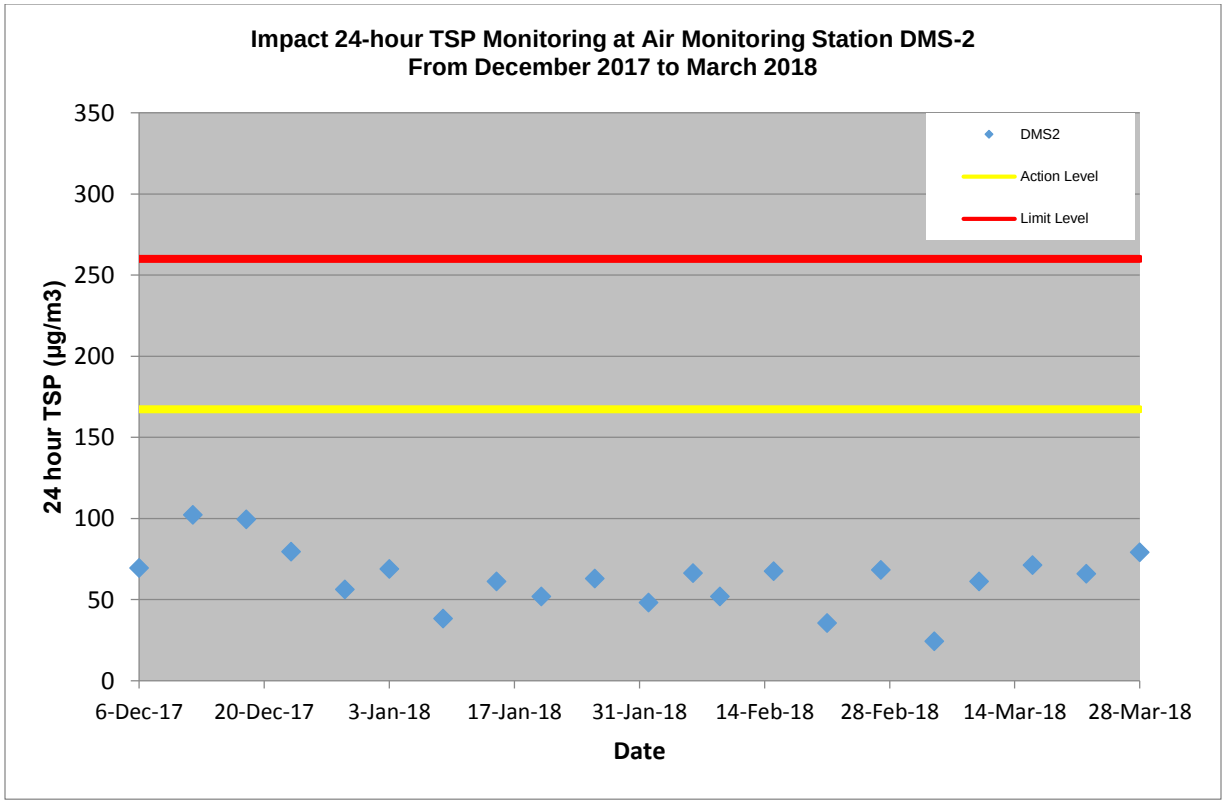
Filter No.	Month	Date	Time periods		Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m^3/min)		Average Flow Rate (m^3/min)	Elapse Time		Sampling Time (mins.)	Total vol. (m^3)	24-hour TSP Level (μg/m^3)	Action Level (μg/m^3)	Limit Level (μg/m^3)
			Start	Finish				Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish					
103701	Mar-18	5-Mar-18	0:00	0:00	DMS2	Fine	Normal Operation	759.3	762.9	25.1	19.8	44.0	44.0	2.5886	2.6403	0.0517	1.4552	1.4703	1.4628	6962.06	6986.06	1440.00	2106.4	24.5	167.4	260.0
103703	Mar-18	10-Mar-18	0:00	0:00	DMS2	Fine	Normal Operation	766.6	766.1	16.7	18.0	38.0	38.0	2.5542	2.6686	0.1144	1.2966	1.2937	1.2952	6986.07	7010.07	1440.00	1865.0	61.3	167.4	260.0
103705	Mar-18	16-Mar-18	0:00	0:00	DMS3	Fine	Normal Operation	761.1	759.9	22.7	19.5	40.0	40.0	2.5864	2.7246	0.1382	1.3411	1.3467	1.3439	7010.08	7034.08	1440.00	1935.22	71.4	167.4	260.0
103707	Mar-18	22-Mar-18	0:00	0:00	DMS2	Fine	Normal Operation	762.7	763.8	19.5	20.5	38.0	38.0	2.5674	2.6897	0.1223	1.2880	1.2869	1.2875	7034.09	7058.09	1440.00	1853.93	66.0	167.4	260.0
103709	Mar-18	28-Mar-18	0:00	0:00	DMS2	Fine	Normal Operation	761.0	760.7	22.7	22.9	42.0	42.0	2.5766	2.7365	0.1599	1.4016	1.4009	1.4013	7058.10	7082.10	1440.00	2017.80	79.2	167.4	260.0

Average (μg/m3)	60.5
Max (μg/m3)	79.2
Min (μg/m3)	24.5


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-1
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
5-Mar
8-Mar
12-Mar
16-Mar
20-Mar
24-Mar
28-Mar
Date
DMS1
Action Level
Limit Level


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-1
From December 2017 to March 2018
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
6-Dec
20-Dec
3-Jan
17-Jan
31-Jan
14-Feb
28-Feb
14-Mar
28-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)
DMS2
Action Level
Limit Level
5-Mar
8-Mar
12-Mar
16-Mar
20-Mar
24-Mar
28-Mar
Date

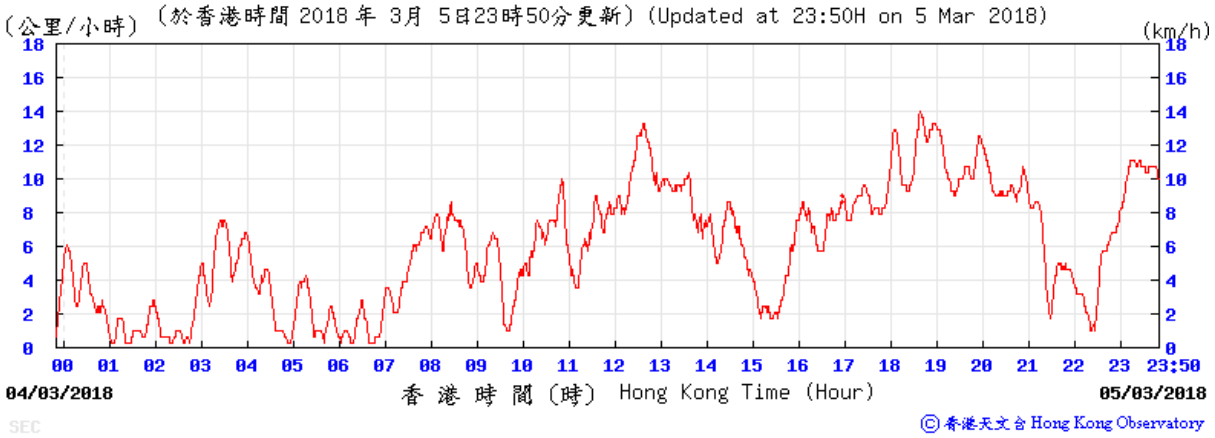

Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-2
From December 2017 to March 2018
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
DMS2
Action Level
Limit Level
6-Dec-17
20-Dec-17
3-Jan-18
17-Jan-18
31-Jan-18
14-Feb-18
28-Feb-18
14-Mar-18
28-Mar-18
Date

Appendix F

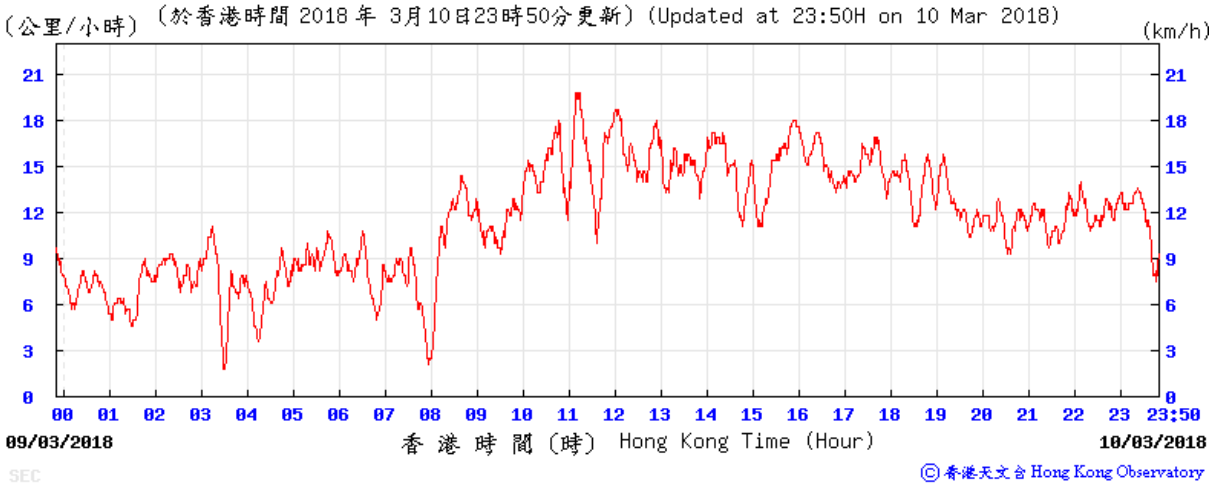
Wind data

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

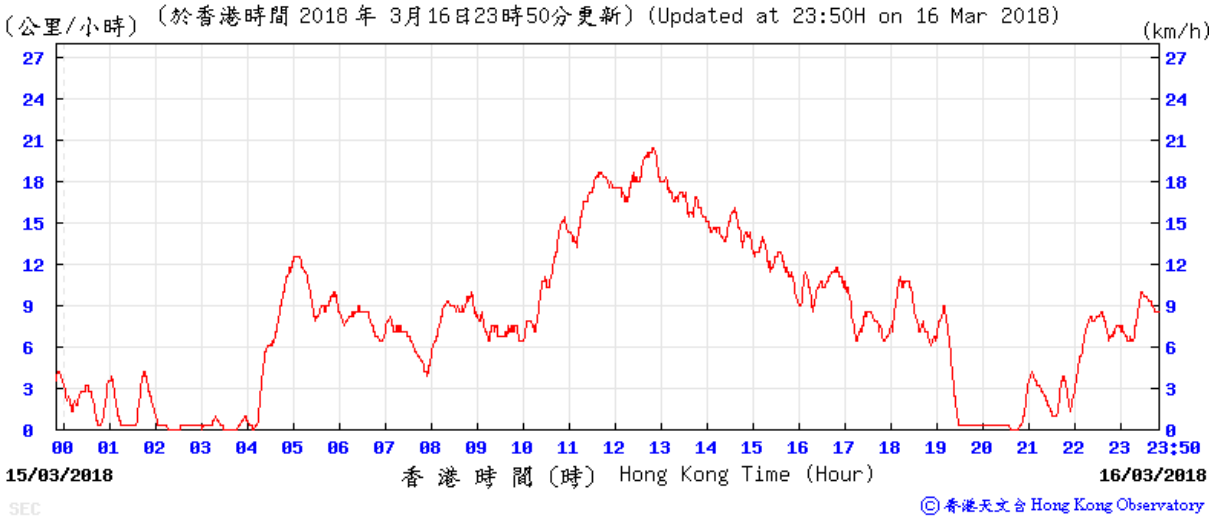
5 March 2018



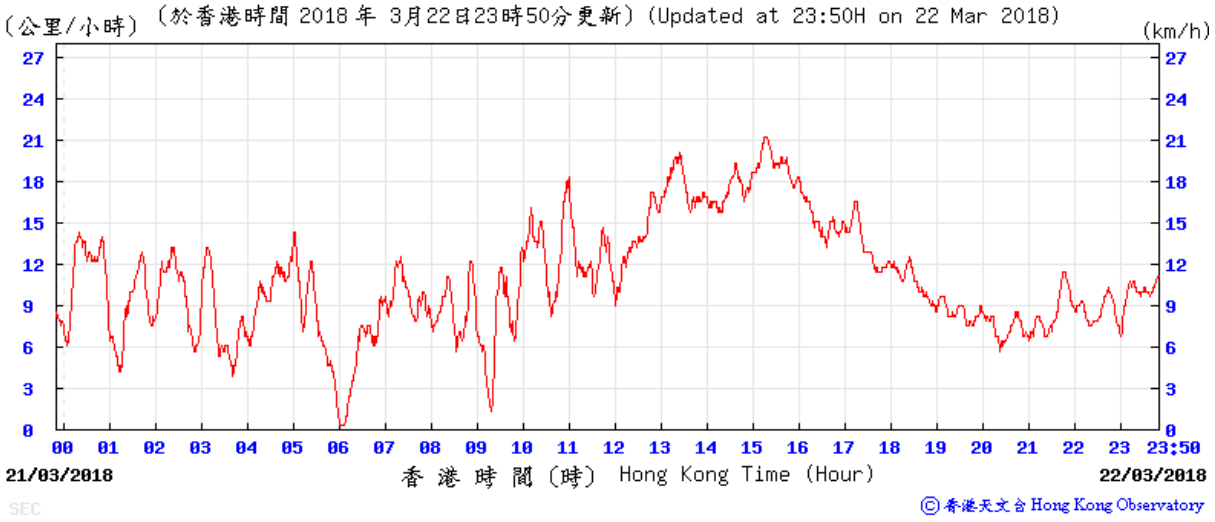
10 March 2018



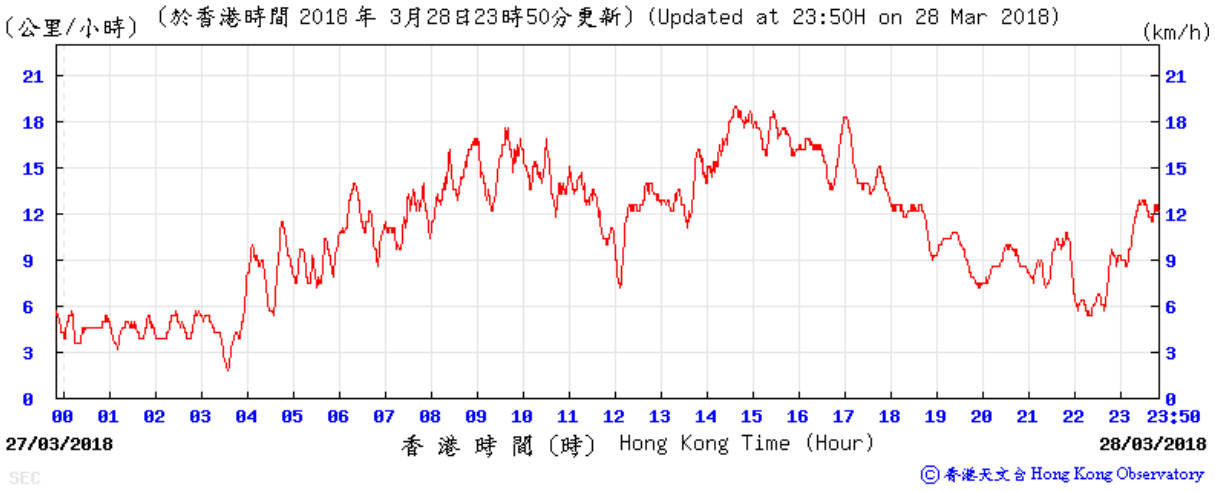
16 March 2018



22 March 2018

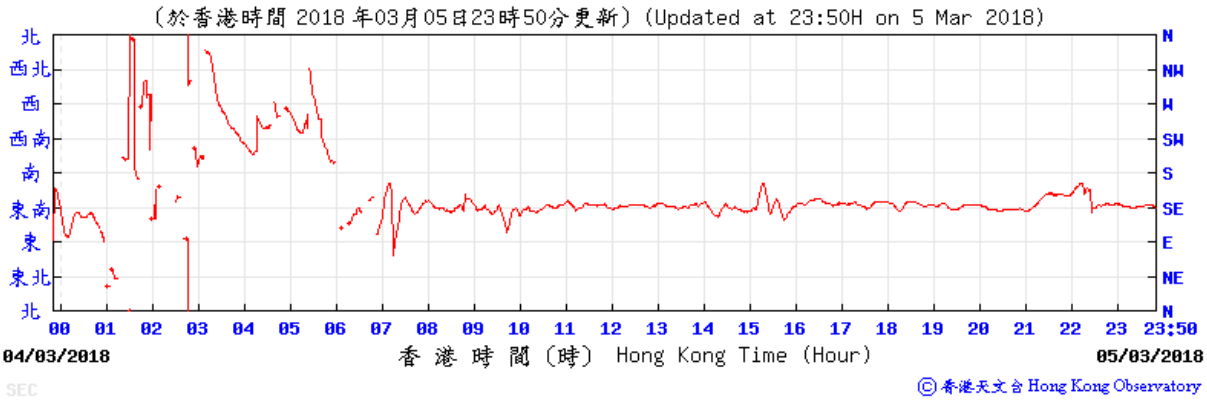


28 March 2018

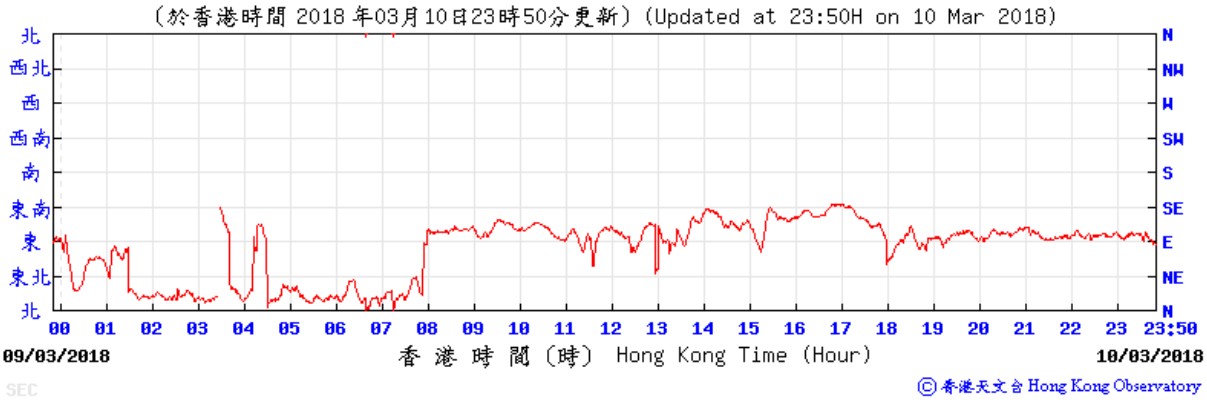


Average wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

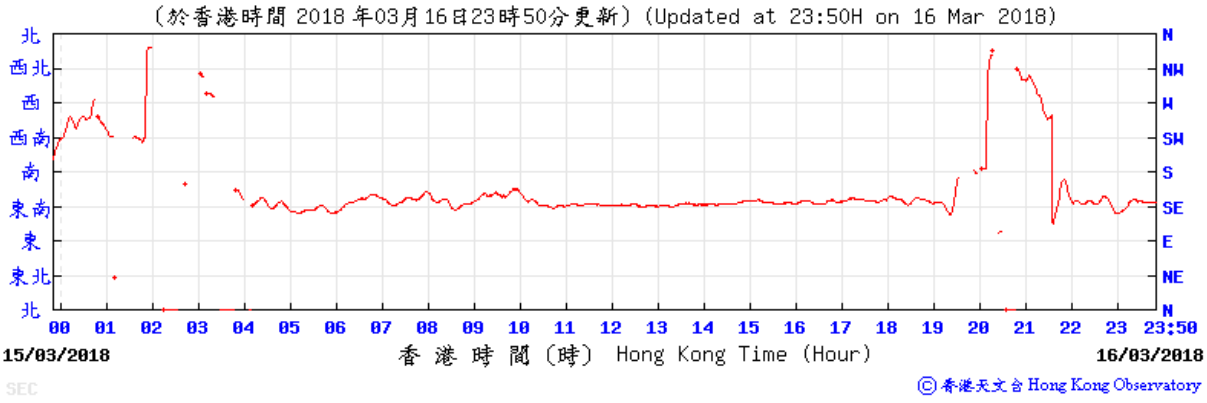
5 March 2018



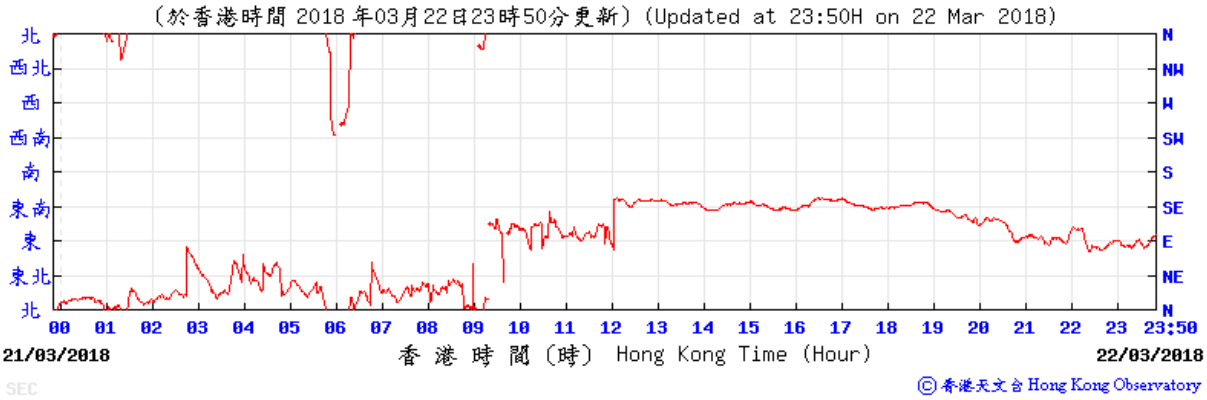
10 March 2018



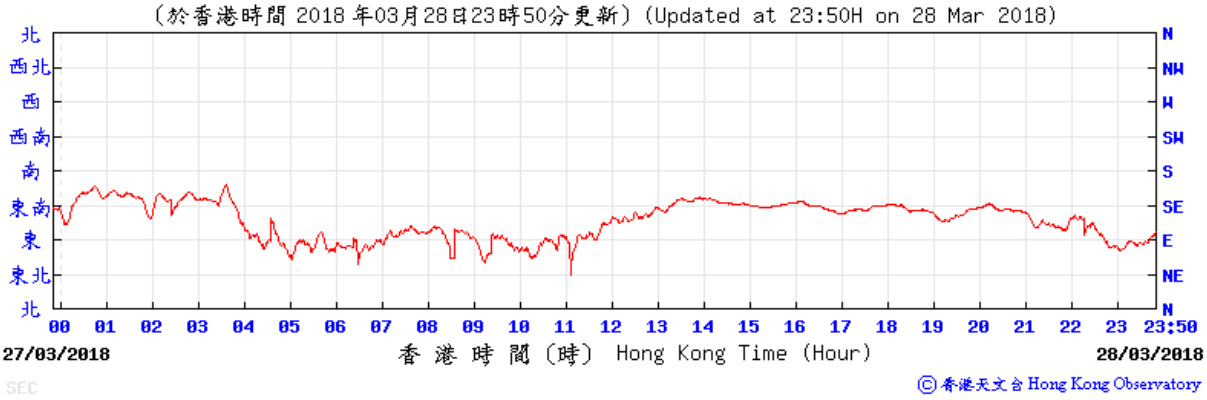
16 March 2018



22 March 2018

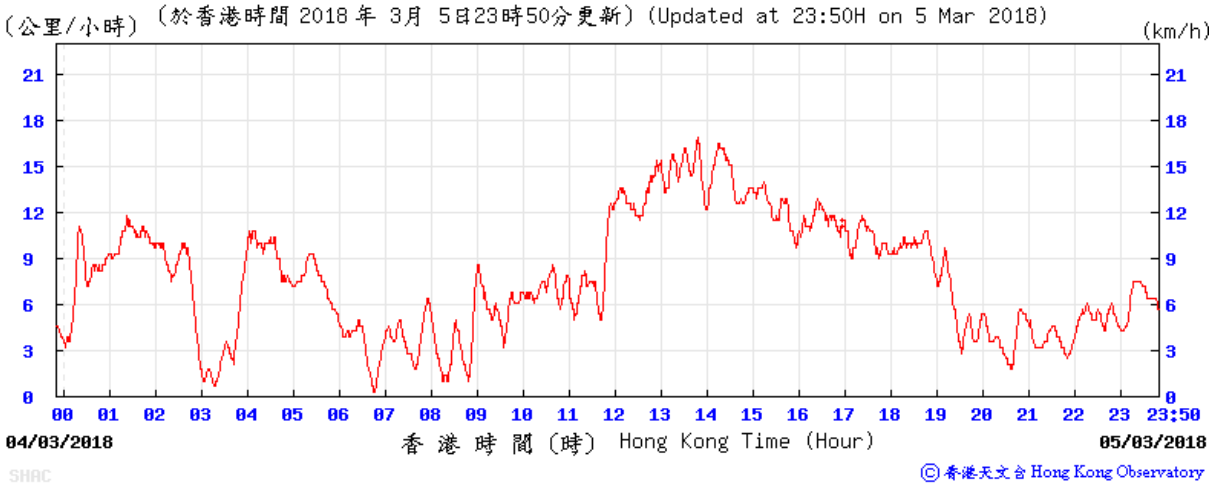


28 March 2018

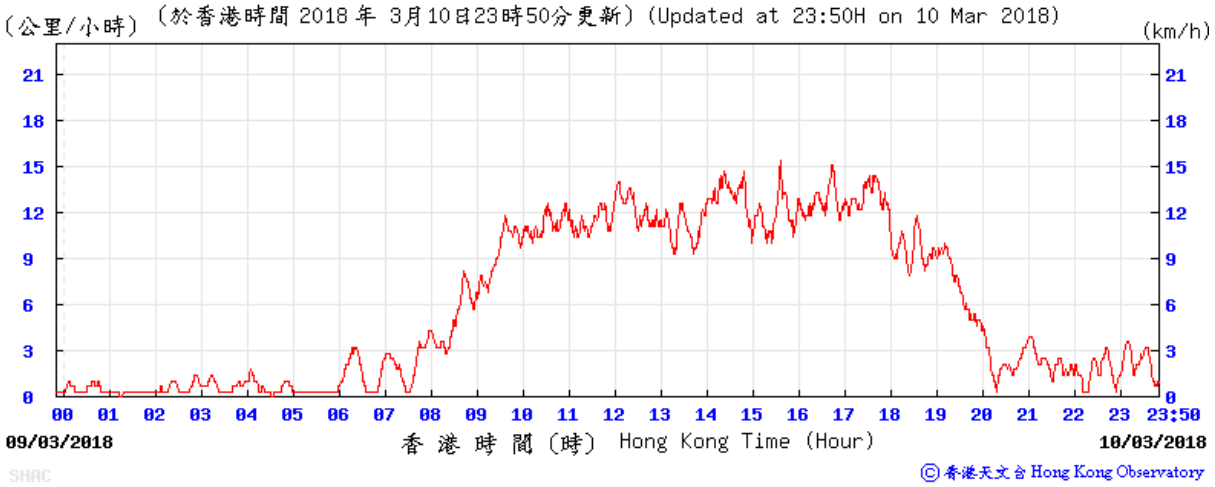


Average wind speed obtained from the meteorological station at Sha Tin from the Hong Kong Observatory (HKO)

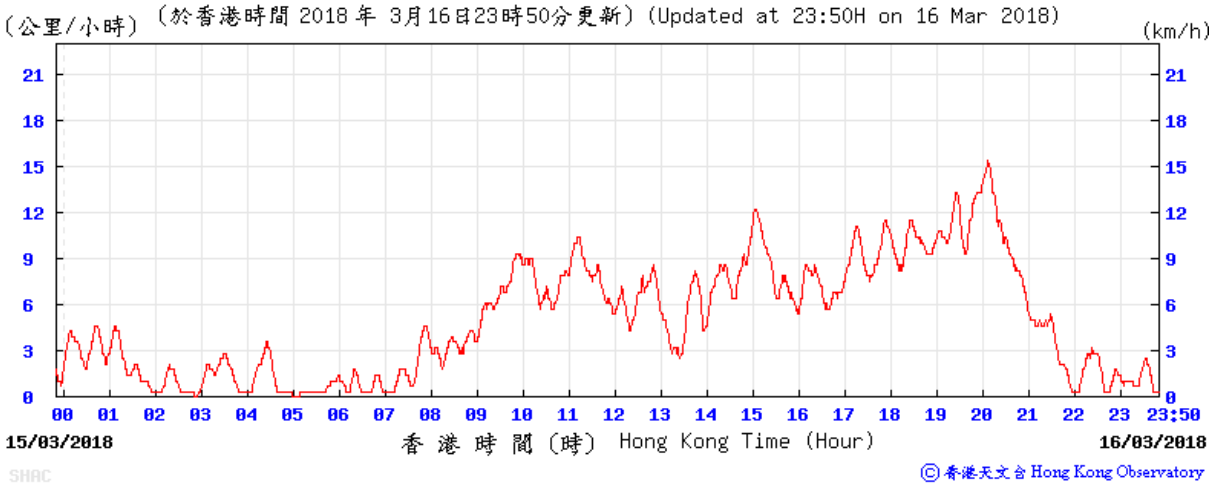
5 March 2018



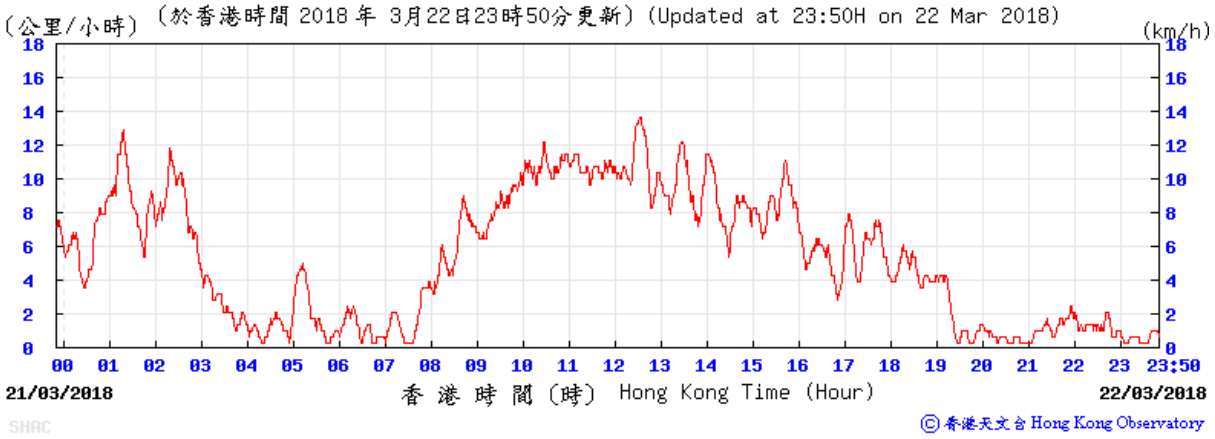
10 March 2018



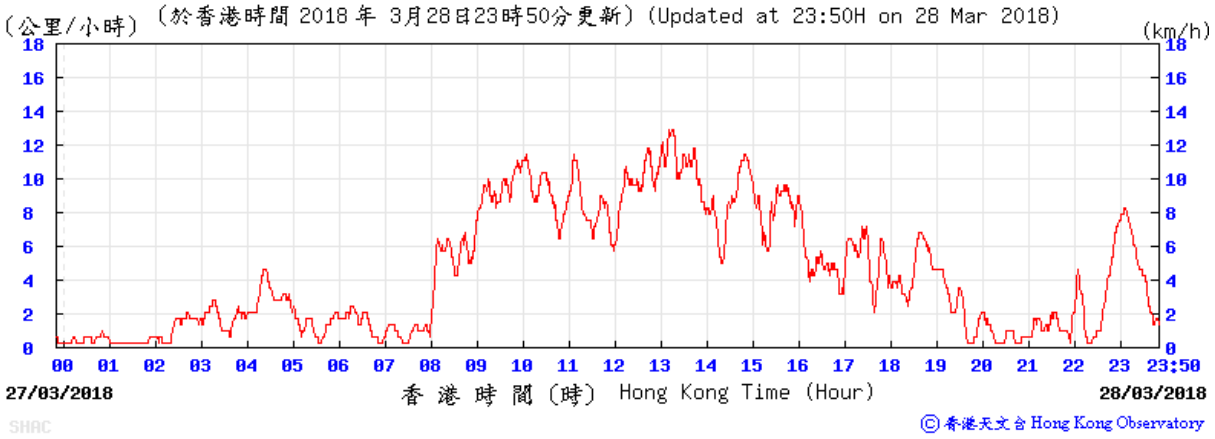
16 March 2018



22 March 2018

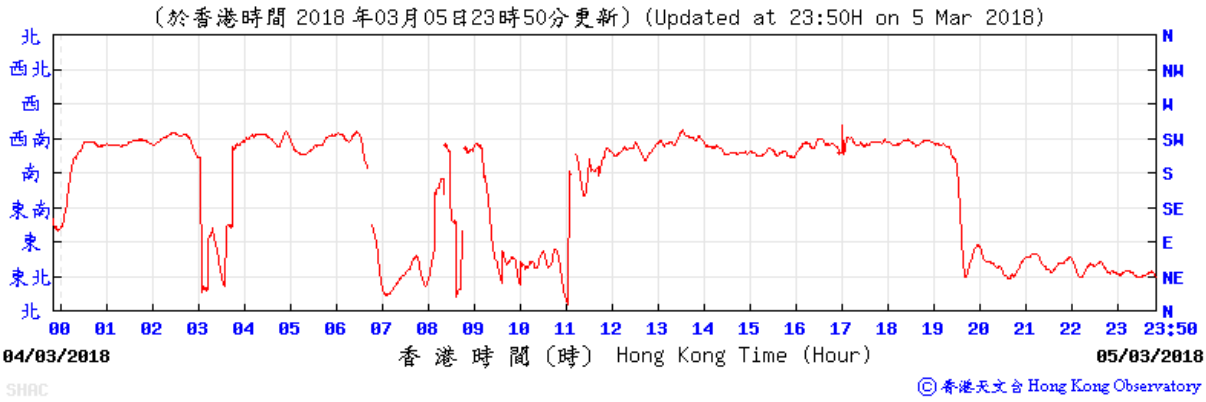


28 March 2018

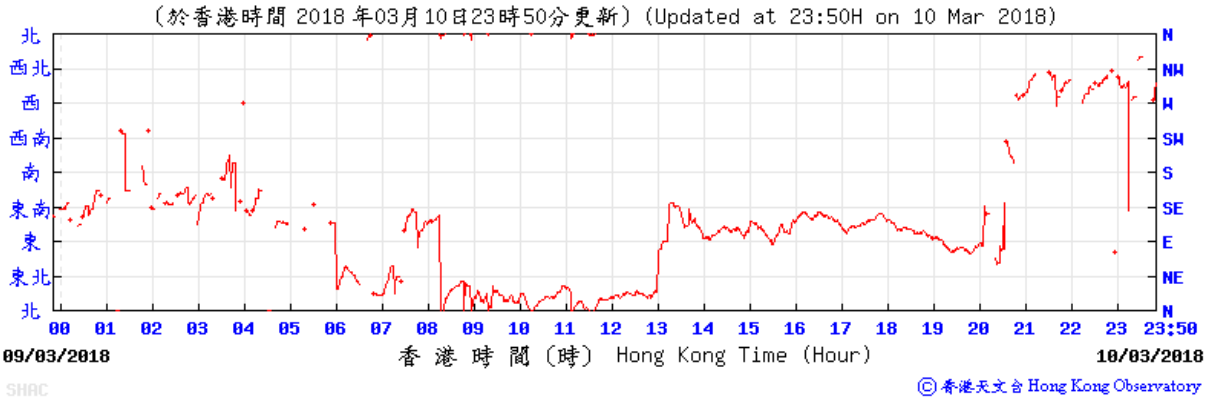


Average wind direction obtained from the meteorological station at Sha Tin from the Hong Kong Observatory (HKO)

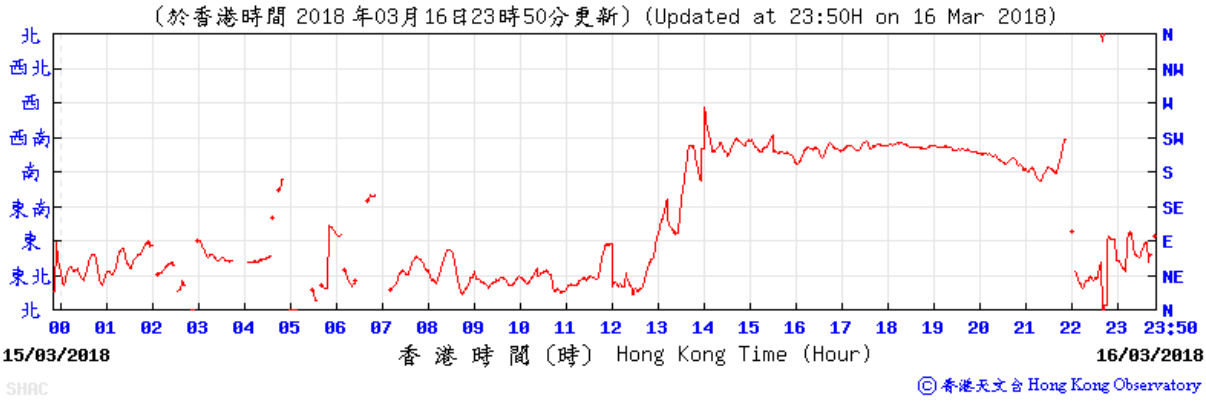
5 March 2018



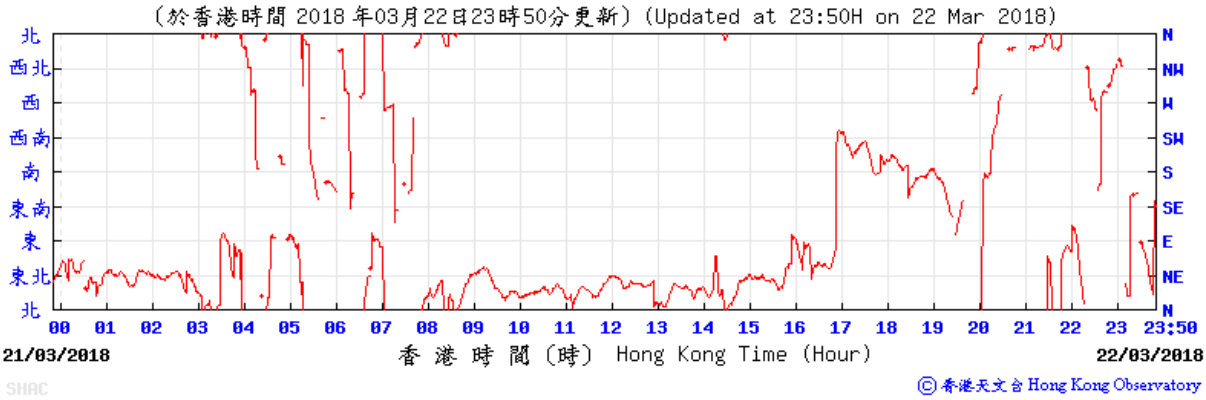
10 March 2018



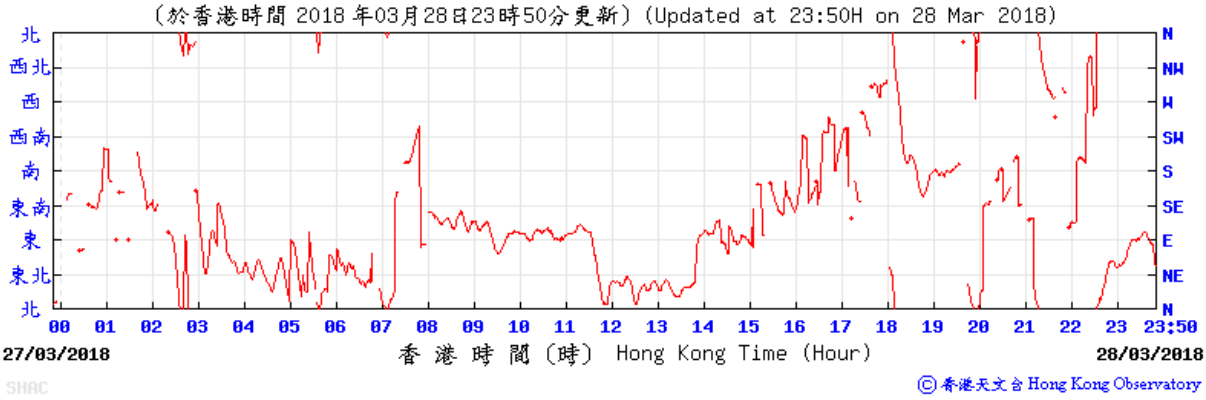
16 March 2018



22 March 2018



28 March 2018



Appendix G

Calibration Certificates of Noise Monitoring Equipment

Hong Kong Calibration Ltd.
香 港 校 正 有限公司

Calibration Certificate

Certificate No. 800854

Customer : Sun Fook Kong Construction Limited

Address : --

Order No. : Q80253 **Date of receipt :** 18-Jan-18

Item Tested

Description : Integrating Sound Level Meter

Manufacturer : Soundtek **I.D.** : --

Model : ST-106 **Serial No.** : J 70006

Test Conditions

Date of Test : 22-Jan-18 **Supply Voltage** : --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01, IEC 61672.

Test Results

All results were within the IEC 61672 Type 1 or manufacturer's specification.

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

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S017	Multi-Function Generator	C170120	SCL-HKSAR
S240	Sound Level Calibrator	703741	NIM-PRC & SCL-HKSAR

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

The test equipment used for calibration are traceable to International System of Units (SI), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by : _____
Elva Chong

Approved by : _____
Kin Wong

Date: 22-Jan-18

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

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Calibration Certificate

Results :

1. **Self-generated noise:** 22.5 dBA (Mfr's Spec ≤ 23 dBA)

2. **Acoustical signal test**

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range (dB)	Frequency Weighting	Time Weighting	Octave Filter		
30-130	A	F	OFF	94.0	94.3
		S	OFF		94.3
	C	F	OFF		94.3
	Z	F	OFF		94.3
	A	F	OFF	114.0	114.3
		S	OFF		114.3
	C	F	OFF		114.3
	Z	F	OFF		114.3

IEC 61672 Type 1 Spec. : ± 1.1 dB
Uncertainty : ± 0.1 dB

3 **Electrical signal tests of frequency weightings** (A weighting)

Frequency	Attenuation (dB)	IEC 61672 Type 1 Spec.
31.5 Hz	- 39.7	- 39.4 dB, ± 2 dB
63 Hz	- 26.3	- 26.2 dB, ± 1.5 dB
125 Hz	- 16.2	- 16.1 dB, ± 1.5 dB
250 Hz	- 8.6	- 8.6 dB, ± 1 dB
500 Hz	- 3.2	- 3.2 dB, ± 1.4 dB
1 kHz	0.0 (Ref)	0 dB, ± 1.1 dB
2 kHz	+ 1.3	+ 1.2 dB, ± 1.6 dB
4 kHz	+ 1.3	+ 1.0 dB, ± 1.6 dB
8 kHz	- 0.5	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	- 9.8	- 6.6 dB, + 3.5 dB ~ - 17.0 dB

Uncertainty : ± 0.1 dB

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Calibration Certificate

4. Frequency & Time weightings at 1 kHz

4.1 Frequency Weighting (Fast)

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

4.2 Time Weighting (A-weighted)

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

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1 023 hPa.
4. The UUT was adjusted with the supplied sound calibrator at the reference sound pressure level before the calibration.

---------- END ----------

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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. : C176170
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-2443) Date of Receipt / 收件日期 : 25 October 2017

Description / 儀器名稱 : Sound Calibrator
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-74
Serial No. / 編號 : 35236437
Supplied By / 委託者 : Sun Fook Kong Construction Limited
Room 3207-10, Great Eagle Centre, 23 Harbour Road,
Wanchai, 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 : 5 November 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
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試 : H T Wong
Technical Officer

Certified By 核證 : K C Lee
Engineer

Date of Issue 簽發日期 : 7 November 2017

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 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
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. : C176170
證書編號

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

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

3. Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C173864
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.3	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.002	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.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 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
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

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
6-Mar-18	16:00-16:30	56.4	70.0	59.6	52.7	57.0	< Baseline Level
13-Mar-18	11:30-12:00	56.4	70.0	59.1	52.4	57.0	< Baseline Level
19-Mar-18	11:30-12:00	56.4	70.0	60.0	51.5	57.0	< Baseline Level
29-Mar-18	10:00-10:30	61.3	70.0	63.0	58.8	57.0	59.3

Max	**L_{Aeq},30min**	61.3
Min	**L_{Aeq},30min**	56.4

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

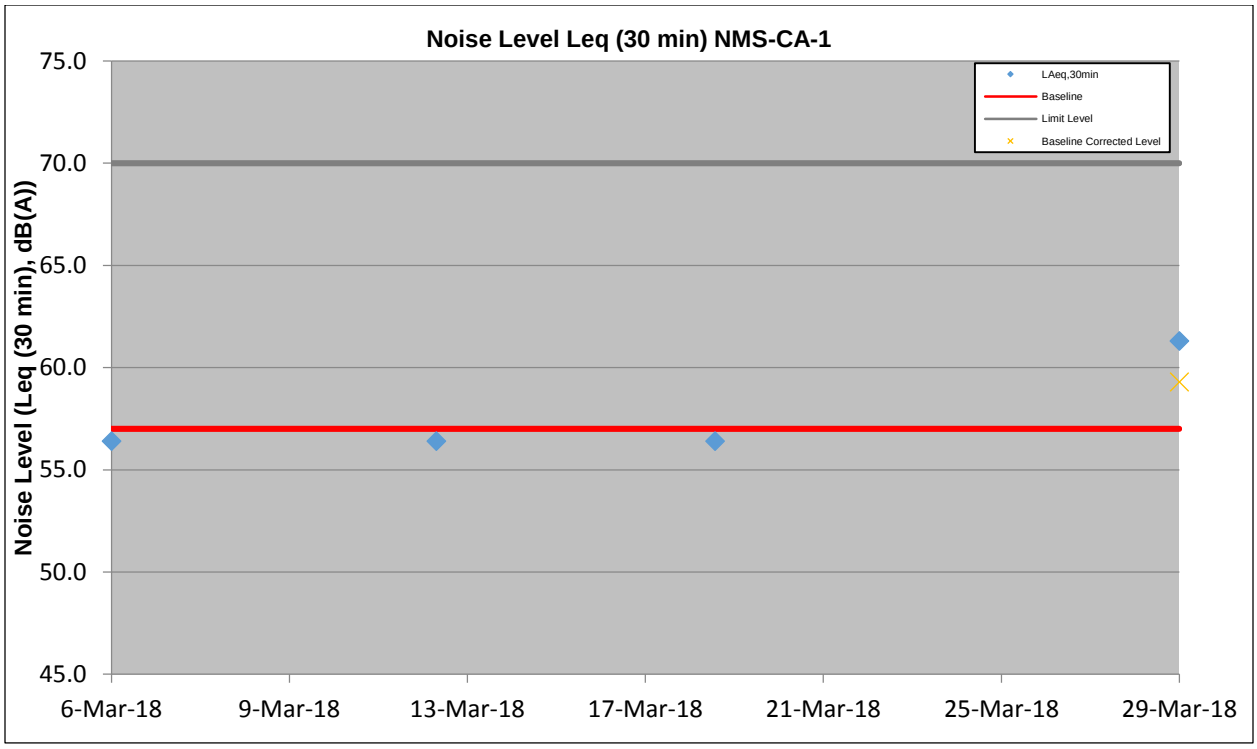
Location: NMS-CA-2 - Price Memorial Catholic Primary School

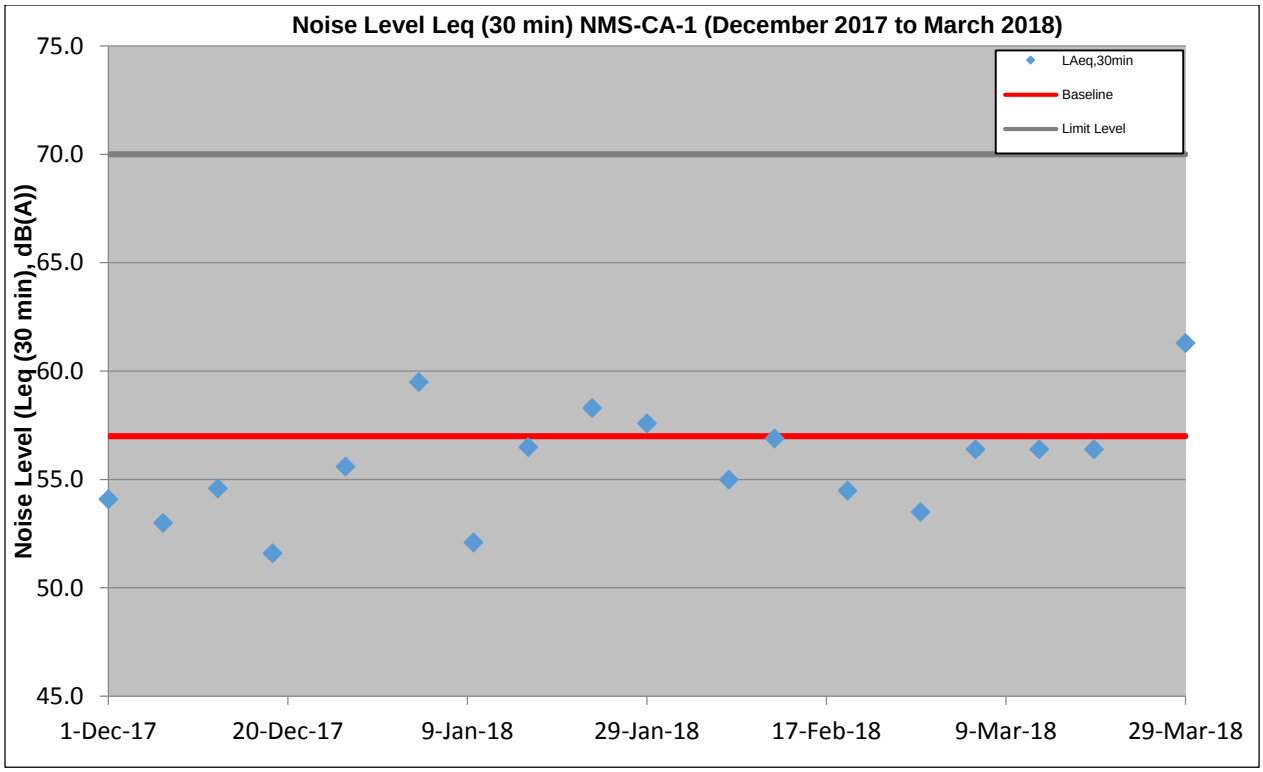
Daytime Noise Monitoring Results

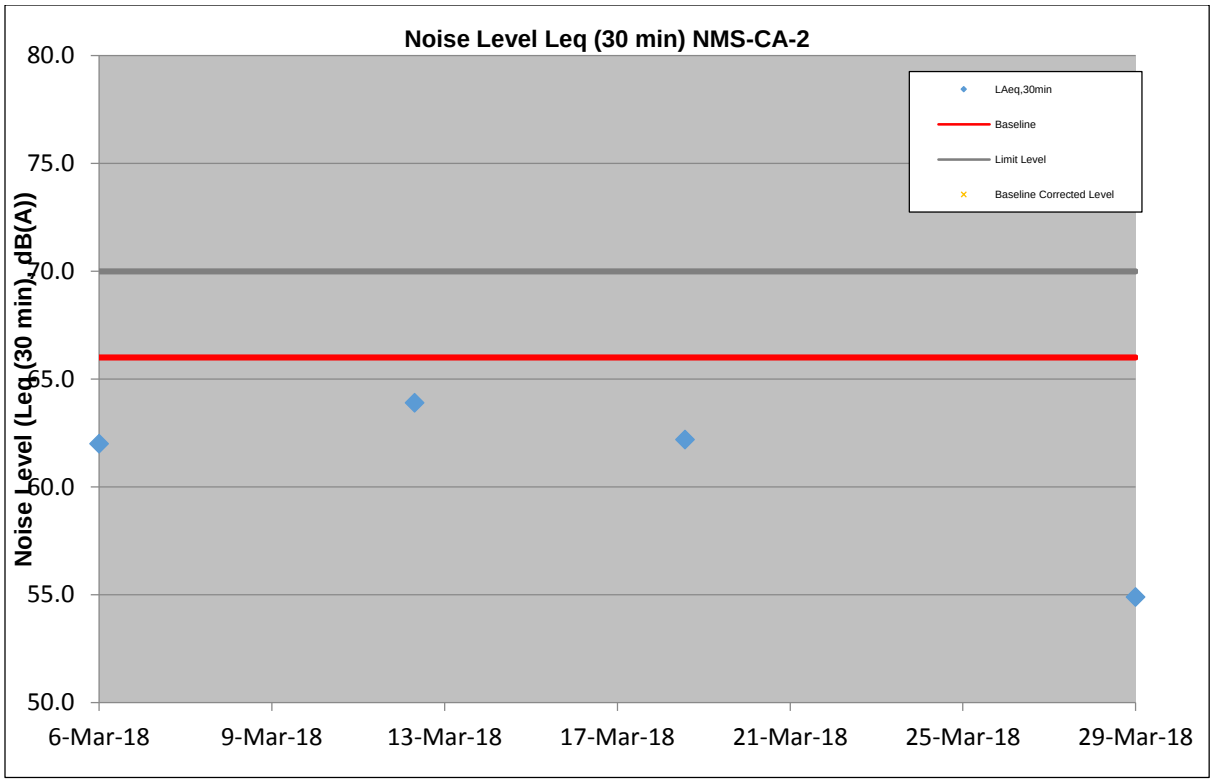
Date	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Baseline Corrected Level
		L_{Aeq},30min	Limit	L_{10},30min	L_{90},30min	L_{Aeq},30min	L_{Aeq},30min
6-Mar-18	15:00-15:30	62.0	70.0	63.7	59.9	66.0	< Baseline Level
13-Mar-18	10:00-10:30	63.9	70.0	64.3	60.5	66.0	< Baseline Level
19-Mar-18	10:00-10:30	62.2	70.0	63.8	59.9	66.0	< Baseline Level
29-Mar-18	11:30-12:00	54.9	70.0	57.2	51.6	66.0	< Baseline Level

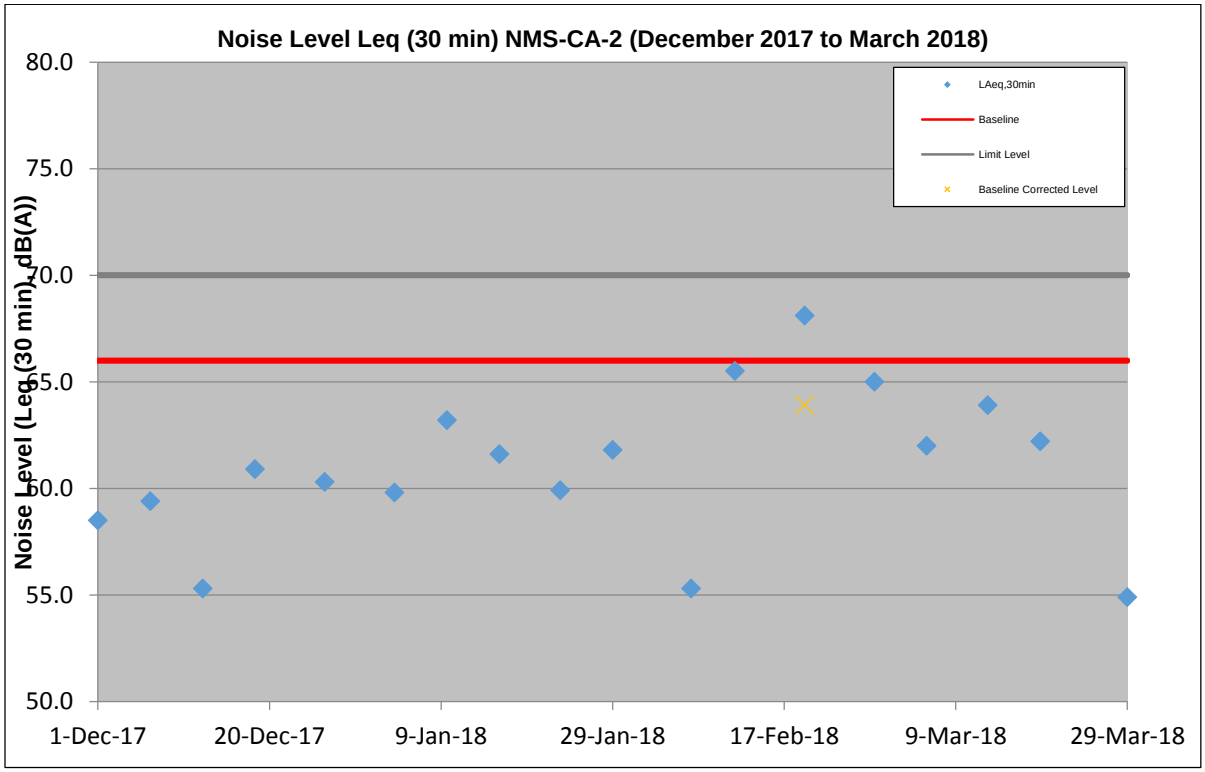
Max	**L_{Aeq},30min**	63.9
Min	**L_{Aeq},30min**	54.9

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
6-Mar-18
9-Mar-18
13-Mar-18
17-Mar-18
21-Mar-18
25-Mar-18
29-Mar-18
LAeq,30min
Baseline
Limit Level
Baseline Corrected Level


Noise Level Leq (30 min) NMS-CA-1 (December 2017 to March 2018)
Noise Level (Leq (30 min), dB(A))
75.0
70.0
65.0
60.0
55.0
50.0
45.0
1-Dec-17
20-Dec-17
9-Jan-18
29-Jan-18
17-Feb-18
9-Mar-18
29-Mar-18
LAeq,30min
Baseline
Limit 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
6-Mar-18
9-Mar-18
13-Mar-18
17-Mar-18
21-Mar-18
25-Mar-18
29-Mar-18
LAeq,30min
Baseline
Limit Level
Baseline Corrected Level


Noise Level Leq (30 min) NMS-CA-2 (December 2017 to March 2018)
Noise Level (Leq (30 min), dB(A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
1-Dec-17
20-Dec-17
9-Jan-18
29-Jan-18
17-Feb-18
9-Mar-18
29-Mar-18
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 2018

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	1.503	0.000	0.000	0.000	1.082	0.421	0.000	0.000	0.000	0.000	0.099
Feb	0.528	0.000	0.000	0.000	0.337	0.191	0.000	0.000	0.000	0.000	0.079
Mar	0.791	0.000	0.000	0.000	0.613	0.179	0.000	0.000	0.000	0.000	0.157
Apr											
May											
Jun											
Sub-total	2.823	0.000	0.000	0.000	2.032	0.791	0.000	0.000	0.000	0.000	0.335
July											
August											
September											
October											
November											
December											
Total	2.823	0.000	0.000	0.000	2.032	0.791	0.000	0.000	0.000	0.000	0.335

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 31/03/2018 for TKO137FB/TM38FB, NENT/SENT/WENT landfill.

3) The amount of waste in Mar is 156.78 tons for NENT/SENT/WENT Landfill, 1225.35 tons for TKO137FB/TM38FB.

4) The amount of C&D material reused in the Contract in Mar is 0 tons, for cut-off date as 31/03/2018.

5) The amount of chemical waste in Mar is 0L for cut-off date as 31/03/2018.

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 2018

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

	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 2018)

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

Ove Arup and Partners HK Ltd.

Environmental Complaint Log (Cumulative)

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

Ove Arup and Partners HK Ltd.

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
July 2016	0	0	0
August 2016	3	0	0
September 2016	0	0	0
October 2016	0	0	0
November 2016	0	0	0
December 2016	0	0	0
January 2017	0	0	0
February 2017	0	0	0
March 2017	1	0	0
April 2017	0	0	0
May 2017	0	0	0
June 2017	1	0	0
July 2017	0	0	0
August 2017	1	0	0
September 2017	0	0	0
October 2017	0	0	0
November 2017	1	0	0
December 2017	0	0	0
January 2018	0	0	0
February 2018	0	0	0
March 2018	0	0	0
Total	23	0	0

Appendix D

61st Monthly EM&A Report for Works Contract 1106 – Diamond Hill Station

Leader Joint Venture

Shatin to Central Link – Contract 1106 Diamond Hill Station

Monthly Environmental Monitoring and Audit Report for March 2018

(Version 1.0)

Certified By

Dr. Priscilla Choy
(Environmental Team Leader)

REMARKS:

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

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

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

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EXECUTIVE SUMMARY

Introduction

1. This is the 61th 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 2018.

Summary of Construction Works undertaken during the Reporting Month

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

- Superstructure works of SCL-DIH station;
- ABWF works at SCL-DIH station area;
- Foundation works, TTA for site access and temporary footpath diversion at Choi Hung Road and A2;
- Construction of Interchange Adit, West Unpaid Link Adit and East MOE;
- Alteration works for Entrance A2;
- Backfilling works;
- General site clearance;
- Modification of utilities and drainages at Lung Cheung Road; and
- Drainage works.

Environmental Monitoring and Audit Progress

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

Regular Construction Noise and Construction Dust Monitoring

- Regular construction noise monitoring during normal working hours
  Noise Monitoring Station ID
  - NMS-CA-3(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) 6 times
  - DMS-4(1)/ DMS-3(2) (Block 1, Rhythm Garden) 6 times

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

Cultural Heritage

4. An Archaeological Action Plan (AAP) for the survey-cum-excavation at the former Tai Hom Village site was approved by EPD on 8 April 2013. A Licence to Excavate and

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

5. The Conservation Plans for the two historic buildings, namely Former Royal Air Force Hangar and the Old Pillbox at the former Tai Hom Village site, were approved by EPD on 24 April 2013. Dismantling works on Former Royal Air Force Hangar was carried out in accordance with the approved Conservation Plan and completed in June 2013. Relocation works for the Old Pillbox had been completed in November 2013 in accordance with the approved Conservation Plan. 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. 30 m^3 inert C&D materials were generated from the Project and were sent to Tseung Kwan O Area 137 Fill Bank during the reporting month. 110 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 and no plastics and metal were generated in this reporting month.

Landscape and Visual

7. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 8 and 22 March 2018. 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 1, 8, 15, 22 and 29 March 2018. The representative of the IEC joined the site inspection on 29 March 2018. 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. One Project related environmental complaint concerning air quality 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, TTA for site access and temporary footpath diversion at Choi Hung Road and A2;
- Construction of Interchange Adit, West Unpaid Link Adit and East MOE;
- Alteration works for Entrance A2;
- Backfilling works;
- General site clearance;
- Drainage works; and
- Modification of utilities and drainages at Lung Cheung Road.

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 61th 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 2018.

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**.

- Superstructure works of SCL-DIH station;
- ABWF works at SCL-DIH station area;
- Foundation works, TTA for site access and temporary footpath diversion at Choi Hung Road and A2;
- Construction of Interchange Adit, West Unpaid Link Adit and East MOE;
- Alteration works for Entrance A2;
- Backfilling works;
- General site clearance;
- Modification of utilities and drainages at Lung Cheung Road; and
- Drainage works.

Project Organisation

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

Status of Environmental Licences, Notification and Permits

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

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

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-438/2012/K	04/10/2016	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
No.: 378656	28/08/2014	N/A	Valid
Billing Account for Construction Waste Disposal			
Account No.: 7016601	27/12/2012	N/A	Valid
Registration of Chemical Waste Producer			
5213-281-S3711-02	28/01/2015	N/A	De-register on 12 Feb 2018
5213-281-L2974 -01	07/02/2018	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00030249-2018	28/02/2018	31/01/2023	Valid
WT00016920-2013	09/06/2013	30/09/2018	Valid
Construction Noise Permit (CNP)			
GW-RE0791-17	22/10/2017	19/04/2018	Valid
GW-RE0929-17	10/12/2017	04/03/2018	Expired on 04/03/2018
GW-RE0165-18	16/03/2018	02/06/2018	Valid

Summary of EM&A Requirements

2.7 The EM&A programme under Works Contract 1106 requires regular dust and noise monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event / Action Plans;
- Environmental mitigation measures, as recommended in the Project EIA study final report; and
- Environmental requirements in contract documents.

2.8 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 6 of this report.

2.9 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely construction noise & dust monitoring as well as audit works for the Project in the reporting month.

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Regular Construction Noise Monitoring

3.1 In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring stations. Since access to some of the proposed monitoring locations stated in the EM&A Manual was rejected; alternative locations were proposed and agreed by the ER (Engineer's Representative), IEC (Independent Environmental Checker) and EPD (Environmental Protection Department). The construction noise monitoring locations are listed in **Table 3.1** and shown in **Figure 2**.

Table 3.1 Regular Construction Noise Monitoring Location

Regular Construction Noise Monitoring Location	Description	Type of Measurement
NMS-CA-3(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

Monitoring Equipment	Model (Serial no.)
Sound Level Meter	SVAN 955 (Serial no.: 12553)
	SVAN 955 (Serial no.: 12563)
	SVAN 957 (Serial no.: 21455)
	SVAN 957 (Serial no.: 21459)
	BSWA 801 (Serial no: 35921)
Calibrator	SV30A (Serial no.: 24803)
	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: 0993 / 2896	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 2018)	14th March 2018

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) in March 2018 exceeded the daytime construction noise criterion except 16 and 22 March 2018. However, the results are not considered as exceedance since the measured results were below the baseline noise levels.

5.3 The noise monitoring results recorded at (Block 1, Rhythm Garden (north-eastern façade)) in March 2018 did not exceed the daytime construction noise criterion.

5.4 The noise monitoring results recorded at NMS-CA-5(1)/NMS-CA-2(2) (Block 1, Rhythm Garden (northern façade)) in March 2018 exceeded the daytime construction noise criterion on 6 March 2018 only. However, the results is not considered as exceedance since the measured results were below the baseline noise levels.

5.5 Based on observation during the on-site monitoring, road traffic nearby, other construction site at Choi Hung Road and foundation works in other construction site at former Tai Hom Village in March 2018 are considered as potential noise source other than construction works of the Project that affects the monitoring results in the reporting month.

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

5.7 No exceedance of the Action and Limit Levels of construction noise due to the Project was recorded during the reporting period. The summary of exceedance in this reporting month is provided in **Appendix G**.

Regular Dust Monitoring

5.8 A total of 12 sets of 24-hour TSP monitoring were carried out at the designated monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. The monitoring results together with their graphical presentations are presented in **Appendix E**(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

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))	100.6	145.2	122.7	159.1	260
24-hr TSP (DMS-4(1)/ DMS-3(2))	40.6	87.3	60.4	160.4	260

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

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

5.9 Based on observation during the on-site monitoring, road traffic emission nearby, other construction site at Choi Hung Road and foundation works in other construction site at former Tai Hom Village in March 2018 are considered as potential dust source other than construction works of the Project that affects the monitoring results in the reporting month.

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

5.11 No exceedance of the Action and Limit Levels of the 24-hour TSP was recorded during the reporting period. The summary of exceedance in this reporting month is provided in **Appendix G**.

Cultural Heritage

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

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

Waste Management

5.14 Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, vegetative wastes and recyclable wastes like plastics and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in **Table 5.2**. 30 m^3 of C&D materials was generated during the reporting period and were disposed as public fill. 110 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 and no plastics and metal were generated in this reporting month. Detail of waste management data is presented in **Appendix K**.

Table 5.2 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	C&D Materials (inert) [a]	C&D Materials (non-inert) [b]				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
March 2018	*30 m^3*	*110 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 30 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

5.15 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 8 and 22 March 2018. 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 1, 8, 15, 22 and 29 March 2018. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 29 March 2018. 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	01, 08 March 2018	Observation: To remove the sediment at wheel washing bay with sufficient frequency to maintain the function of wheel washing bay.	As observed on 15 March 2018, sediment was removed.
	15 March 2018	Reminder: Treated water was observed slightly unclear. The contractor was reminded to enhance the sedimentation process to improve the treated water quality to comply with the criteria stated in the discharge license.	As observed on 22 March 2018, treated water was observed clear.
	22, 29 March 2018	Observation: To remove the sediment at wheel washing bay with sufficient frequency to maintain the function of wheel washing bay.	The follow up action will be reported in the next reporting month.
Noise	--	--	--
Landscape and Visual	08 March 2018	Reminder: To properly fenced off the retained tree at area near the first-aid station.	As observed on 15 March 2018, the retained tree was properly fenced off.
Cultural Heritage	--	--	--
Air Quality	22 February 2018	Reminder: Stockpile of dusty material between two ventilation shafts should be covered by the impervious sheet for dust suppression.	As observed on 01 March 2018, stockpile of dusty material were removed.
	01 March 2018	Observation: Stockpile of dusty material near the western ventilation shaft should be covered by the impervious sheet or sprayed with water for	As observed on 08 March 2018, stockpile of dusty material was observed wet.

Parameters	Date	Observations and Recommendations	Follow-up
		dust suppression.	
	08 March 2018	Observation: To remove the sand on the public road at Lung Cheung Road.	As observed on 15 March 2018, sand was removed.
	22, 29 March 2018	Reminder: Cement bags should be covered by the impervious material for dust suppression near eastern ventilation shaft	The follow up action will be reported in the next reporting month.
	29 March 2018	Reminder: Water spraying should be provided to haul road and unpaved area for dust suppression.	The follow up action will be reported in the next reporting month.
Waste/ Chemical Management	22 February 2018	Observation: To remove empty chemical container on the ground to avoid any chemical leakage at sub-contractor site office.	As observed on 01 March 2018, empty chemical containers were removed.
Permits/ Licenses	--	--	--

7 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

7.1 No exceedance of the Action and Limit Levels of the regular construction noise and 24-hour TSP monitoring was recorded during the reporting month. The summary of exceedance is provided in **Appendix G**.

Summary of Environmental Non-Compliance

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

Summary of Environmental Complaint

7.3 One environmental Project-related complaint concerning air quality 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:

- Superstructure works of SCL DIH station;
- ABWF works at SCL-DIH station area;
- Foundation works, TTA for site access and temporary footpath diversion at Choi Hung Road and A2;
- Construction of Interchange Adit, West Unpaid Link Adit and East MOE;
- Alteration works for Entrance A2;
- Backfilling works;
- General site clearance;
- Drainage works; and
- Modification of utilities and drainages at Lung Cheung Road.

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 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 2018 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 One Project related environmental complaint and no successful prosecution or notification of summons were received in the reporting month.

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

Recommendations

9.6 According to the environmental audit performed in the reporting month, the following recommendations were made:

Water Quality

- The contractor was reminded to enhance the sedimentation process to improve the treated water quality to comply with the criteria stated in the discharge license.
- To remove the sediment at wheel washing bay with sufficient frequency to maintain the function of wheel washing bay.

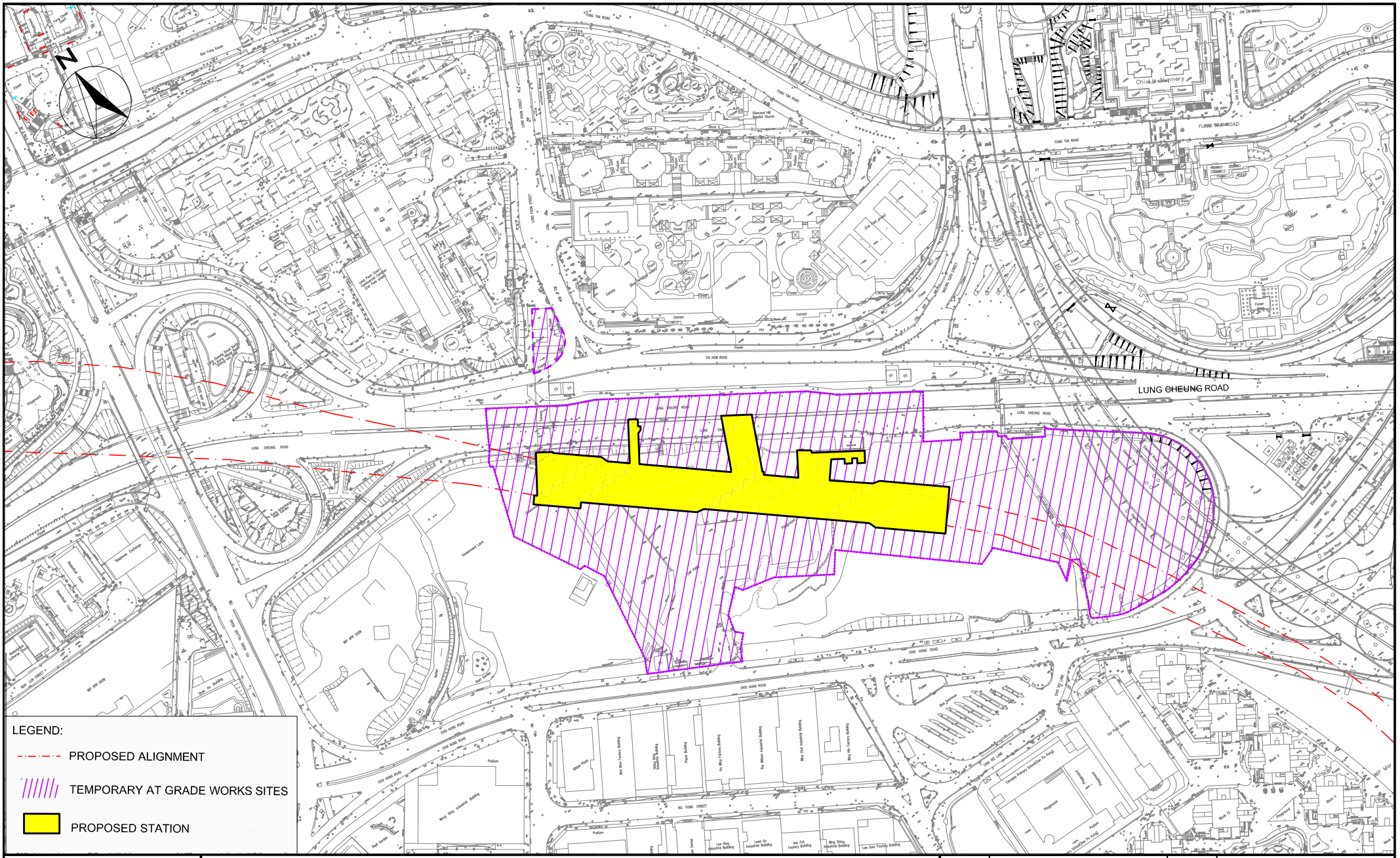
Air Quality

- Stockpile of dusty material, haul road and unpaved area should be sprayed with water frequently for dust suppression.
- Bagged cement should be properly covered to prevent dust generation.
- Proper measures should be provided at site boundaries to avoid any mud/sand trails left on public roads.

Landscape & Visual

- Storage of construction materials should be kept away from tree protection zones.

FIGURES



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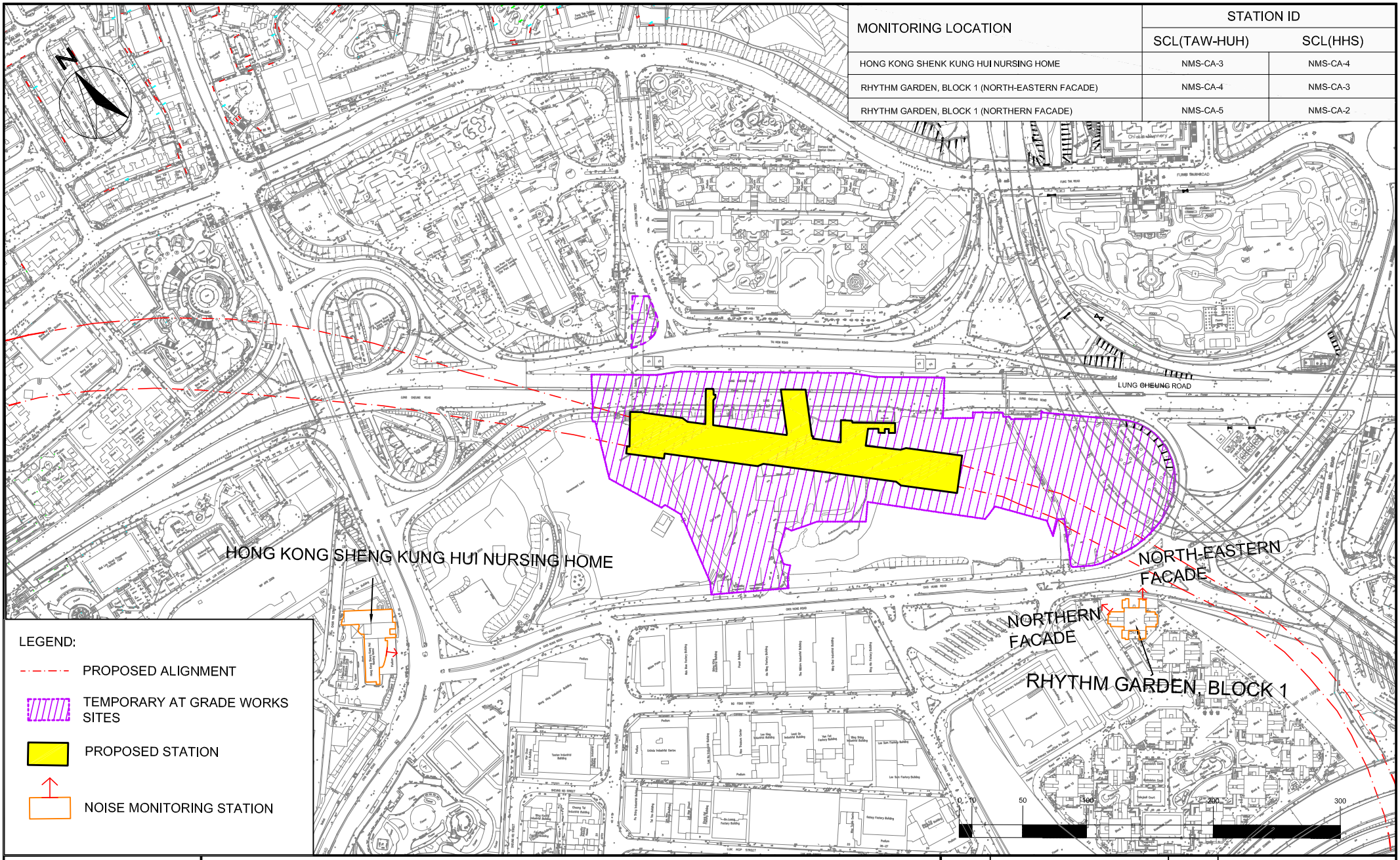
SHATIN TO CENTRAL LINK CONTRACT 1106
DIAMOND HILL STATION

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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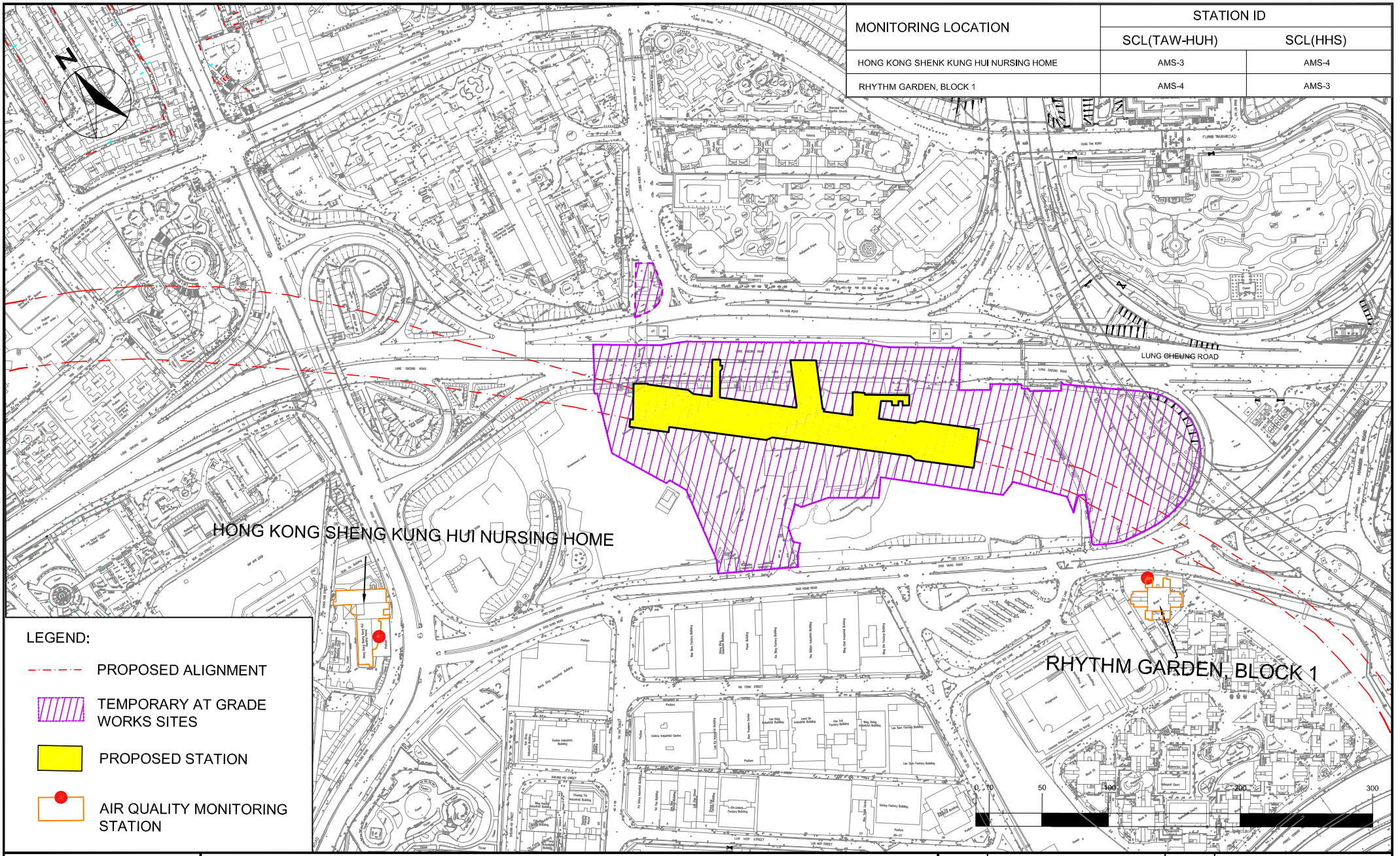
SHATIN TO CENTRAL LINK CONTRACT 1106
DIAMOND HILL STATION

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

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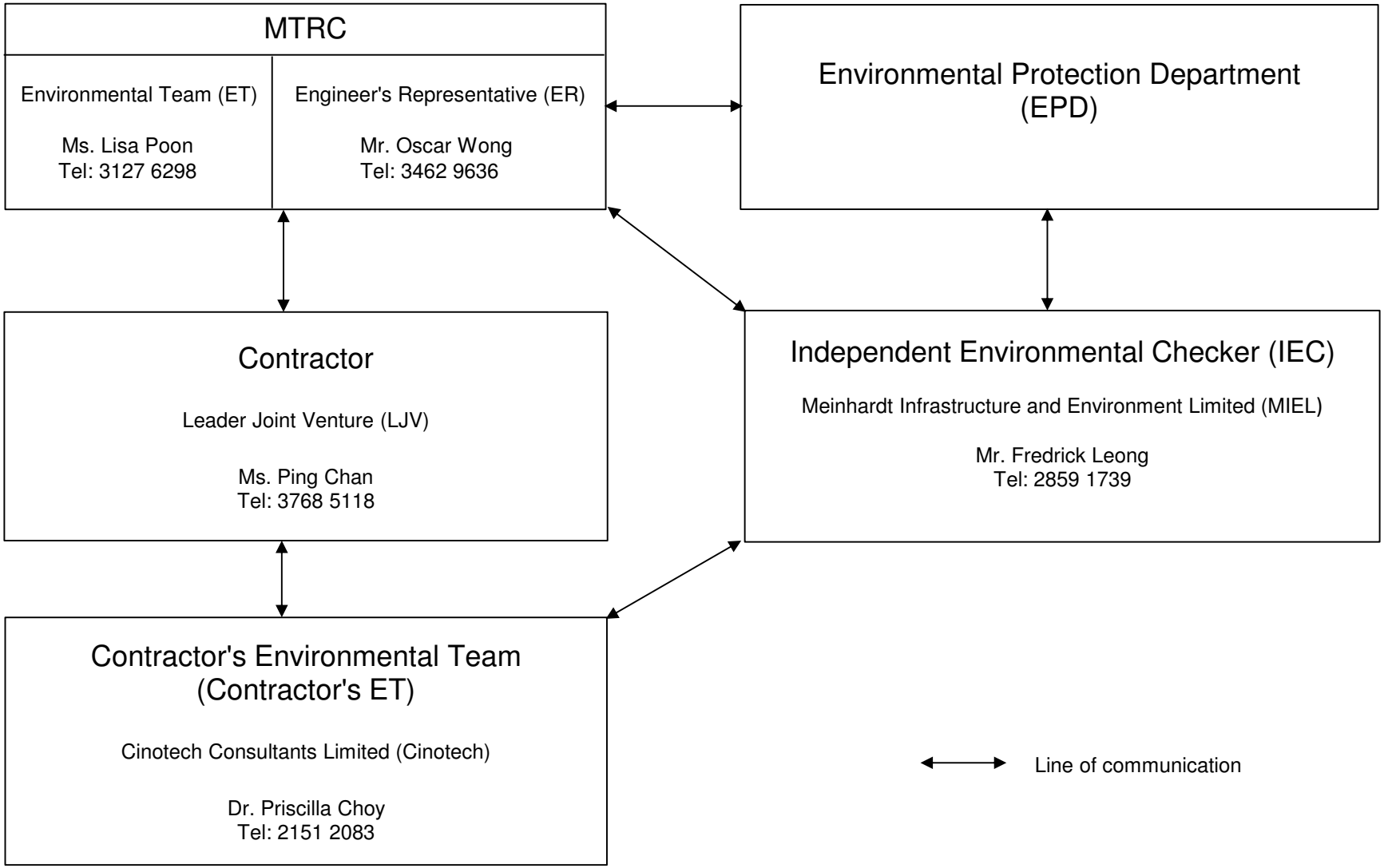
SHATIN TO CENTRAL LINK CONTRACT 1106
DIAMOND HILL STATION

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-18	Proposal No.: MA12051 Figure: 4

CINOTECH

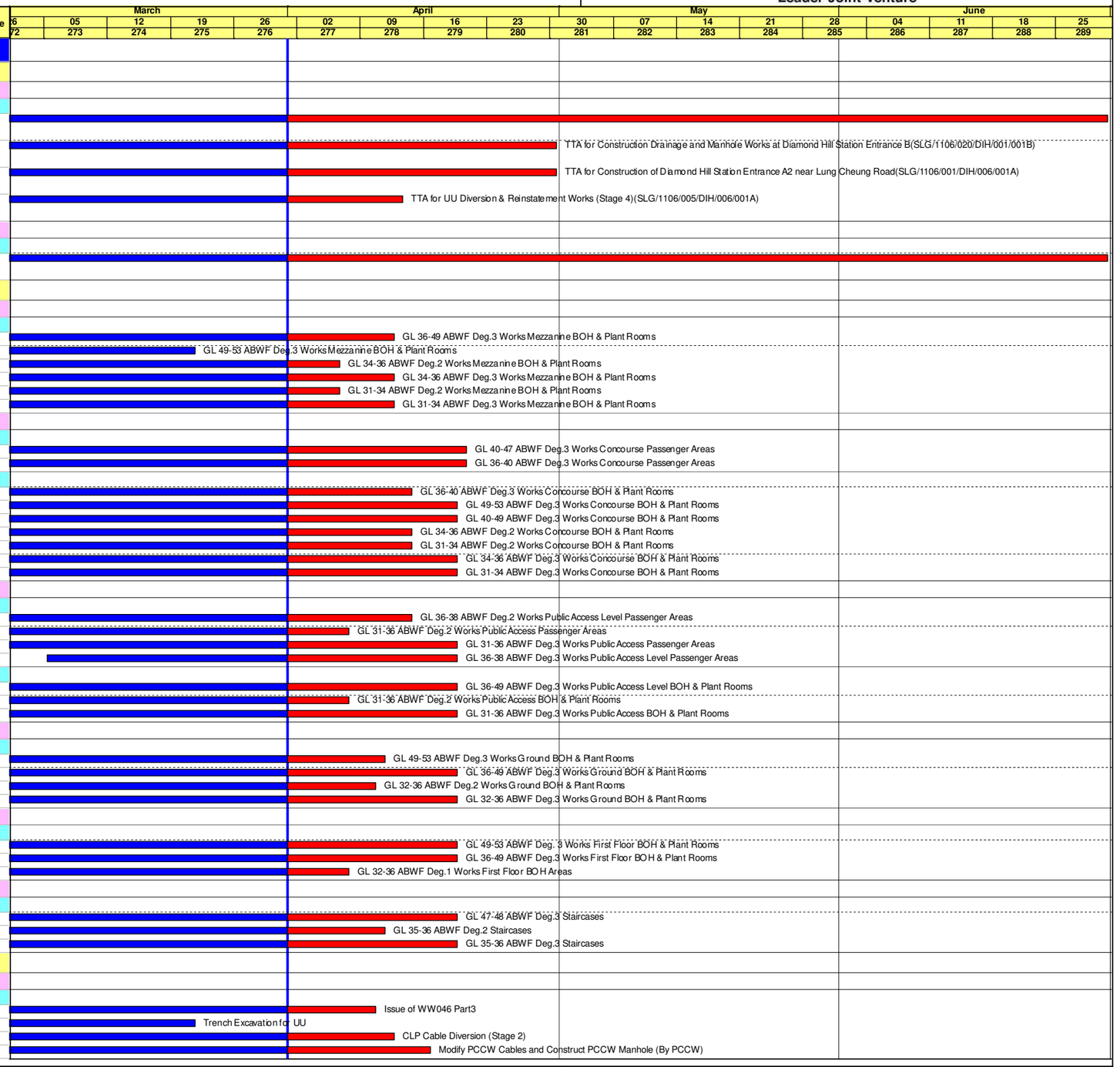
APPENDIX A
TENTATIVE CONSTRCUTION PROGRAMME

Contract 1106 - Diamond Hill Station

MTR

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-18	87%
C1106.TMS0606	TTA for Construction Drainage and Manhole Works at Diamond Hill Station Entrance B(SLG/1106/020/DIH/001/001B)	200	15-Mar-17 A	30-Apr-18	92%
C1106.TMS0608	TTA for Construction of Diamond Hill Station Entrance A2 near Lung Cheung Road(SLG/1106/001/DIH/006/001A)	212	01-Sep-17 A	30-Apr-18	72%
C1106.TMS0613	TTA for UU Diversion & Reinstatement Works (Stage 4)(SLG/1106/005/DIH/006/001A)	122	17-Dec-17 A	13-Apr-18	88%
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	30-Jun-18	87%
ABWF & Miscellaneous Works					
Mezzanine Level (Level L4)					
Back of House & Plant Rooms					
C1106.BMF3085	GL 36-49 ABWF Deg.3 Works Mezzanine BOH & Plant Rooms	206	01-Jun-16 A	12-Apr-18	54%
C1106.BMF3335	GL 49-53 ABWF Deg.3 Works Mezzanine BOH & Plant Rooms	178	22-Aug-16 A	21-Mar-18 A	100%
C1106.BMF3380	GL 34-36 ABWF Deg.2 Works Mezzanine BOH & Plant Rooms	35	14-Jul-17 A	06-Apr-18	97%
C1106.BMF3382	GL 34-36 ABWF Deg.3 Works Mezzanine BOH & Plant Rooms	45	24-Aug-17 A	12-Apr-18	37%
C1106.BMF3376	GL 31-34 ABWF Deg.2 Works Mezzanine BOH & Plant Rooms	21	24-Aug-17 A	06-Apr-18	97%
C1106.BMF3379	GL 31-34 ABWF Deg.3 Works Mezzanine BOH & Plant Rooms	19	24-Aug-17 A	12-Apr-18	37%
Concourse Level (Level L2)					
Passenger Areas					
C1106.BCF5230	GL 40-47 ABWF Deg.3 Works Concourse Passenger Areas	63	03-Aug-17 A	20-Apr-18	30%
C1106.BCF5267	GL 36-40 ABWF Deg.3 Works Concourse Passenger Areas	60	19-Aug-17 A	20-Apr-18	26%
Back of House & Plant Rooms					
C1106.BCF5324	GL 36-40 ABWF Deg.3 Works Concourse BOH & Plant Rooms	104	03-Mar-17 A	14-Apr-18	26%
C1106.BCF5335	GL 49-53 ABWF Deg.3 Works Concourse BOH & Plant Rooms	68	11-Sep-17 A	19-Apr-18	49%
C1106.BCF5260	GL 40-49 ABWF Deg.3 Works Concourse BOH & Plant Rooms	106	11-Sep-17 A	19-Apr-18	30%
C1106.BCF5349	GL 34-36 ABWF Deg.2 Works Concourse BOH & Plant Rooms	72	23-Oct-17 A	14-Apr-18	72%
C1106.BCF5346	GL 31-34 ABWF Deg.2 Works Concourse BOH & Plant Rooms	49	23-Oct-17 A	14-Apr-18	72%
C1106.BCF5357	GL 34-36 ABWF Deg.3 Works Concourse BOH & Plant Rooms	66	13-Nov-17 A	19-Apr-18	32%
C1106.BCF5354	GL 31-34 ABWF Deg.3 Works Concourse BOH & Plant Rooms	58	13-Nov-17 A	19-Apr-18	32%
Public Access Level (Level L1)					
Passenger Areas					
C1106.BPF6015	GL 36-38 ABWF Deg.2 Works Public Access Level Passenger Areas	36	15-Dec-17 A	14-Apr-18	65%
C1106.BPF7015	GL 31-36 ABWF Deg.2 Works Public Access Passenger Areas	28	02-Jan-18 A	07-Apr-18	81%
C1106.BPF7025	GL 31-36 ABWF Deg.3 Works Public Access Passenger Areas	31	12-Feb-18 A	19-Apr-18	30%
C1106.BPF6020	GL 36-38 ABWF Deg.3 Works Public Access Level Passenger Areas	22	05-Mar-18 A	19-Apr-18	5%
Back of House & Plant Rooms					
C1106.BPF7135	GL 36-49 ABWF Deg.3 Works Public Access Level BOH & Plant Rooms	103	27-May-17 A	19-Apr-18	47%
C1106.BPF7275	GL 31-36 ABWF Deg.2 Works Public Access BOH & Plant Rooms	42	18-Nov-17 A	07-Apr-18	81%
C1106.BPF7280	GL 31-36 ABWF Deg.3 Works Public Access BOH & Plant Rooms	43	18-Dec-17 A	19-Apr-18	30%
Ground Level (Level GL)					
Back of House & Plant Rooms					
C1106.BGF7430	GL 49-53 ABWF Deg.3 Works Ground BOH & Plant Rooms	117	03-Oct-17 A	11-Apr-18	64%
C1106.BGF7325	GL 36-49 ABWF Deg.3 Works Ground BOH & Plant Rooms	151	23-Oct-17 A	19-Apr-18	36%
C1106.BGF7515	GL 32-36 ABWF Deg.2 Works Ground BOH & Plant Rooms	40	18-Dec-17 A	10-Apr-18	50%
C1106.BGF7520	GL 32-36 ABWF Deg.3 Works Ground BOH & Plant Rooms	39	27-Dec-17 A	19-Apr-18	23%
First Floor Level (Level U1)					
Back of House & Plant Rooms					
C1106.BFF8150	GL 49-53 ABWF Deg. 3 Works First Floor BOH & Plant Rooms	46	31-May-17 A	19-Apr-18	64%
C1106.BFF8130	GL 36-49 ABWF Deg.3 Works First Floor BOH & Plant Rooms	75	16-Oct-17 A	19-Apr-18	40%
C1106.BFF8215	GL 32-36 ABWF Deg.1 Works First Floor BOH Areas	18	21-Dec-17 A	07-Apr-18	85%
Multi-Level					
Staircase - Fitout					
C1106.BSF5280	GL 47-48 ABWF Deg.3 Staircases	60	08-Jan-18 A	19-Apr-18	70%
C1106.BSF5545	GL 35-36 ABWF Deg.2 Staircases	45	15-Jan-18 A	11-Apr-18	90%
C1106.BSF5550	GL 35-36 ABWF Deg.3 Staircases	43	22-Jan-18 A	19-Apr-18	60%
Lung Cheung Road					
Preliminary Site Works					
Utilies and Drainages					
C1106.BSA105	Issue of WW046 Part3	21	04-Jan-18 A	10-Apr-18	85%
C1106.BIA6143	Trench Excavation for UU	7	17-Jan-18 A	21-Mar-18 A	100%
C1106.BIA6133	CLP Cable Diversion (Stage 2)	18	26-Jan-18 A	12-Apr-18	35%
C1106.BIA6095	Modify PCCW Cables and Construct PCCW Manhole (By PCCW)	25	05-Feb-18 A	16-Apr-18	27%



Remaining Work
Critical Remaining Work
Actual Work
Baseline Milestone
Milestone

1 of 2

MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 28 Feb 2018

3 Month Rolling Programme

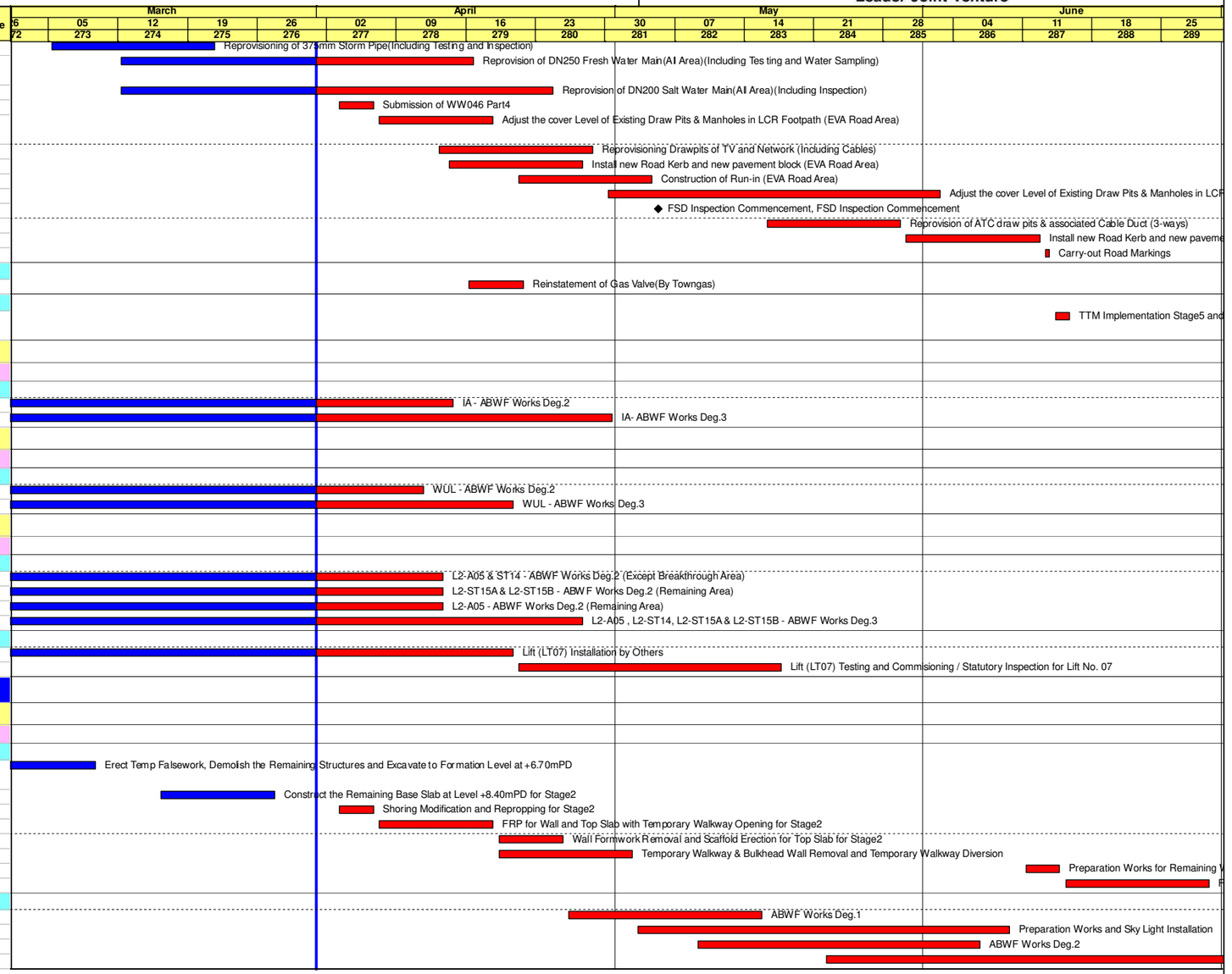
Date	Revision	Checked	Approved
31-Mar-18	C-1106-3MRP/ 63		

Contract 1106 - Diamond Hill Station

MTR

Leader Joint Venture

Activity ID	Activity Name	Orig Dur	Forecast Start	Forecast Finish	% Complete
C1106.BIA6148	Reprovisioning of 375mm Storm Pipe(Including Testing and Inspection)	13	05-Mar-18 A	21-Mar-18 A	100%
C1106.BIA6132	Reprovision of DN250 Fresh Water Main(All Area)(Including Testing and Water Sampling)	16	12-Mar-18 A	16-Apr-18	65%
C1106.BIA6128	Reprovision of DN200 Salt Water Main(All Area)(Including Inspection)	9	12-Mar-18 A	24-Apr-18	55%
C1106.BIA6141	Submission of WW046 Part4	3	03-Apr-18	06-Apr-18	0%
C1106.BIA6163	Adjust the cover Level of Existing Draw Pits & Manholes in LCR Footpath (EVA Road Area)	10	07-Apr-18	18-Apr-18	0%
C1106.BIA6168	Reprovisioning Drawpits of TV and Network (Including Cables)	14	13-Apr-18	28-Apr-18	0%
C1106.BIA6165	Install new Road Kerb and new pavement block (EVA Road Area)	12	14-Apr-18	27-Apr-18	0%
C1106.BIA6158	Construction of Run-in (EVA Road Area)	11	21-Apr-18	04-May-18	0%
C1106.BIA6153	Adjust the cover Level of Existing Draw Pits & Manholes in LCR Footpath	28	30-Apr-18	02-Jun-18	0%
C1106.BIA6137	FSD Inspection Commencement	0	05-May-18		0%
C1106.BIA6155	Reprovision of ATC draw pits & associated Cable Duct (3-ways)	12	16-May-18	29-May-18	0%
C1106.BIA6171	Install new Road Kerb and new pavement block	12	30-May-18	12-Jun-18	0%
C1106.BIA7103	Carry-out Road Markings	1	13-Jun-18	13-Jun-18	0%
Watermain, Gas Main and Foundation Works					
C1106.BIA6110	Reinstatement of Gas Valve(By Towngas)	6	16-Apr-18	21-Apr-18	0%
Lung Cheung Road Central Divider and Light Pole					
C1106.BIA6130	TTM Implementation Stage5 and Divert the Existing Traffic on Fast, Middle & SLow Lanes to diversion road	2	14-Jun-18	15-Jun-18	0%
Construction of Interchange Adit					
Construction of Interchange Adit					
ABWF Works					
C1106.BIA8560	IA - ABWF Works Deg.2	35	02-Jan-18 A	14-Apr-18	40%
C1106.BIA8565	IA- ABWF Works Deg.3	50	11-Jan-18 A	30-Apr-18	36%
Construction of West Unpaid Link Adit					
West Adit Link - South Section to North Section					
ABWF Works					
C1106.BWA8695	WUL - ABWF Works Deg.2	32	02-Jan-18 A	11-Apr-18	45%
C1106.BWA8698	WUL - ABWF Works Deg.3	43	11-Jan-18 A	20-Apr-18	40%
Construction of East MOE (Entrance B)					
East MOE					
ABWF Works					
C1106.BEB8840	L2-A05 & ST14 - ABWF Works Deg.2 (Except Breakthrough Area)	35	08-Jan-18 A	13-Apr-18	40%
C1106.BEB8860	L2-ST15A & L2-ST15B - ABWF Works Deg.2 (Remaining Area)	20	22-Jan-18 A	13-Apr-18	22%
C1106.BEB8842	L2-A05 - ABWF Works Deg.2 (Remaining Area)	12	22-Jan-18 A	13-Apr-18	17%
C1106.BEB8845	L2-A05 , L2-ST14, L2-ST15A & L2-ST15B - ABWF Works Deg.3	28	26-Feb-18 A	27-Apr-18	25%
Disable Lift (LT07)					
C1106.BEB9605	Lift (LT07) Installation by Others	60	29-Jan-18 A	20-Apr-18	57%
C1106.BEB9615	Lift (LT07) Testing and Commisioning / Statutory Inspection for Lift No. 07	21	21-Apr-18	17-May-18	0%
Cost Centre C: KTL - DIH Modification and Refurbishment Works					
Entrance A2 (Alteration Works)					
Existing Entrance A2					
Civil & Structural Works					
C1106.BEA2072	Erect Temp Falsework, Demolish the Remaining Structures and Excavate to Formation Level at +6.70mPD	34	08-Nov-17 A	09-Mar-18 A	100%
C1106.BEA2075	Construct the Remaining Base Slab at Level +8.40mPD for Stage2	11	16-Mar-18 A	27-Mar-18 A	100%
C1106.BEA2045	Shoring Modification and Repropping for Stage2	3	03-Apr-18	06-Apr-18	0%
C1106.BEA2076	FRP for Wall and Top Slab with Temporary Walkway Opening for Stage2	10	07-Apr-18	18-Apr-18	0%
C1106.BEA2077	Wall Formwork Removal and Scaffold Erection for Top Slab for Stage2	6	19-Apr-18	25-Apr-18	0%
C1106.BEA2086	Temporary Walkway & Bulkhead Wall Removal and Temporary Walkway Divers	11	19-Apr-18	02-May-18	0%
C1106.BEA2080	Preparation Works for Remaining Wall	4	11-Jun-18	14-Jun-18	0%
C1106.BEA2078	FRP for Remaining Wall for Stage2	12	15-Jun-18	29-Jun-18	0%
ABWF Works					
C1106.BEA2087	ABWF Works Deg.1	15	26-Apr-18	15-May-18	0%
C1106.BEA2097	Preparation Works and Sky Light Installation	32	03-May-18	09-Jun-18	0%
C1106.BEA2092	ABWF Works Deg.2	25	09-May-18	06-Jun-18	0%
C1106.BEA2100	ABWF Works Deg.3	56	22-May-18	27-Jul-18	0%



Remaining Work
Critical Remaining Work
Actual Work
Baseline Milestone
Milestone

MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 28 Feb 2018

3 Month Rolling Programme

Date	Revision	Checked	Approved
31-Mar-18	C-1106-3MRP/ 63		

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

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/170915
Date of Issue:	2017-09-18
Date Received:	2017-09-15
Date Tested:	2017-09-15
Date Completed:	2017-09-18
Next Due Date:	2018-09-17

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 955
Serial No.	: 12553
Microphone No.	: 35222
Equipment No.	: N-08-02

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 60%

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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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/170915A
Date of Issue:	2017-09-18
Date Received:	2017-09-15
Date Tested:	2017-09-15
Date Completed:	2017-09-18
Next Due Date:	2018-09-17
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 12563
Microphone No.	: 34377
Equipment No.	: N-08-03

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 60%

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
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/170825
Date of Issue:	2017-08-28
Date Received:	2017-08-25
Date Tested:	2017-08-25
Date Completed:	2017-08-28
Next Due Date:	2018-08-27
Page:	1 of 1

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

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	: 23 degree Celsius
Relative Humidity	: 60 %

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

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For and On Behalf of **WELLAB Ltd.**

Patrick Tse

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

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

Test Report No.:	C/N/170818
Date of Issue:	2017-08-21
Date Received:	2017-08-18
Date Tested:	2017-08-18
Date Completed:	2017-08-21
Next Due Date:	2018-08-20
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	: 22 degree Celsius
Relative Humidity	: 61 %

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

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For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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WELLAB LIMITED
Rms 1214, 1502, 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/171215A
Date of Issue:	2017-12-18
Date Received:	2017-12-15
Date Tested:	2017-12-15
Date Completed:	2017-12-18
Next Due Date:	2018-12-17
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Sound & Vibration Analyser
Manufacturer	: BSWA
Model No.	: BSWA 801
Serial No.	: 35921
Equipment No.	: N-13-02

Test conditions:

Room Temperatre	: 20 degree Celsius
Relative Humidity	: 64%

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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Rms 1214, 1502, 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/170929
Date of Issue:	2017-09-30
Date Received:	2017-09-29
Date Tested:	2017-09-29
Date Completed:	2017-09-30
Next Due Date:	2018-09-29

ATTN: **Mr. W.K. Tang** Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperatre	: 21 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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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/170818C
Date of Issue:	2017-08-21
Date Received:	2017-08-18
Date Tested:	2017-08-18
Date Completed:	2017-08-21
Next Due Date:	2018-08-20

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

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	: 22 degree Celsius
Relative Humidity	: 61 %

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

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High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA12051/64/0009

Station: DMS-3 - Hong Kong Sheng Kung Hui Nursing Home Operator: MH

Date: 23-Jan-18 Next Due Date: 22-Mar-18

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

Ambient Condition			
Temperature, Ta (K)	293.3	Pressure, Pa (mmHg)	761.8

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
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	17.6	4.23	74.13	10.9	3.33
2	14.2	3.80	66.67	8.7	2.98
3	10.8	3.32	58.25	6.5	2.57
4	7.0	2.67	47.06	4.6	2.16
5	4.3	2.09	37.07	3.0	1.75

By Linear Regression of Y on X

Slope , mw = 0.0423 **Intercept, bw :** 0.1635

Correlation coefficient* = 0.9986

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.86**

Remarks:

Conducted by: LEE MING HEI Signature: [signature] Date: 23-1-2018

Checked by: LAM Tang Signature: [signature] Date: 23-1-2018

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA12051/64/0010

Station: DMS-3 - Hong Kong Sheng Kung Hui Nursing Home Operator: MH

Date: 22-Mar-18 Next Due Date: 21-May-18

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

Ambient Condition			
Temperature, Ta (K)	293.1	Pressure, Pa (mmHg)	766.6

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	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	17.2	4.20	71.77	10.7	3.31
2	14.0	3.79	64.75	8.6	2.97
3	10.6	3.30	56.34	6.7	2.62
4	7.2	2.72	46.43	4.9	2.24
5	4.4	2.12	36.30	3.1	1.78

By Linear Regression of Y on X

Slope , mw = 0.0424 **Intercept, bw =** 0.2501

Correlation coefficient* = 0.9993

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.19**

Remarks:

Conducted by: Lee Man Hei Signature: hei Date: 22/3/2018

Checked by: Wk. Tang Signature: Kwai Date: 22/3/2018

CINOTECH

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA12051/57/0031

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

Date: 27-Feb-18 Next Due Date: 26-Apr-18

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

Ambient Condition			
Temperature, Ta (K)	291.9	Pressure, Pa (mmHg)	766.9

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	**mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$**			
Next Calibration Date:	13-Feb-19	**Qstd = $\{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	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	10.8	3.34	57.00	7.4	2.76
2	9.5	3.13	53.46	6.3	2.55
3	7.4	2.76	47.18	5.0	2.27
4	5.1	2.29	39.17	3.4	1.87
5	3.0	1.76	30.04	2.1	1.47

By Linear Regression of Y on X

Slope , mw = **0.0475** **Intercept, bw :** **0.0286**

Correlation coefficient* = **0.9993**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.17**

Remarks:

Conducted by: Lee Man Kit Signature: hei Date: 27/2/2018

Checked by: Wu Tang Signature: Kwok Date: 27/2/2018

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 - 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}

TISCH Environmental

RECALIBRATION DUE DATE:
February 13, 2019

Certificate of Calibration

Calibration Certification Information					
Cal. Date:	February 13, 2018	**Rootsmeter S/N:** 438320	**Ta:** 293	°K	
Operator:	Jim Tisch		**Pa:** 763.3	mm Hg	
Calibration Model #:	TE-5025A	**Calibrator S/N:** **2896**			

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4670	3.2	2.00
2	3	4	1	1.0380	6.4	4.00
3	5	6	1	0.9220	8.0	5.00
4	7	8	1	0.8840	8.8	5.50
5	9	10	1	0.7250	12.8	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
1.0172	0.6934	1.4293	0.9958	0.6788	0.8762
1.0129	0.9758	2.0213	0.9916	0.9553	1.2392
1.0107	1.0962	2.2599	0.9895	1.0732	1.3854
1.0097	1.1422	2.3702	0.9885	1.1182	1.4530
1.0043	1.3853	2.8586	0.9832	1.3562	1.7524
QSTD	**m=**	**2.06726**	**QA**	**m=**	**1.29448**
	b=	**-0.00045**		**b=**	**-0.00028**
	r=	**0.99992**		**r=**	**0.99992**

Calculations

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

For subsequent flow rate calculations:

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

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

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

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

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

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

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

APPENDIX D
IMPACT MONITORING SCHEDULE

Shatin to Central Link – Contract 1106 Diamond Hill Station
Impact Air Quality and Noise Monitoring Schedule for March 2018

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

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

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)

(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).

Shatin to Central Link – Contract 1106 Diamond Hill Station
Tentative Impact Air Quality and Noise Monitoring Schedule for April 2018

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

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)

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

APPENDIX E
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix E - 24-hour TSP Monitoring Results

Location DMS-3: - Hong Kong Sheng Kung Hui Nursing Home

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (μg/m^3)
					Initial	Final		Initial	Final		Initial	Final			
3-Mar-18	9:00	Cloudy	295.1	762.2	3.2923	3.5475	0.2552	4034.3	4058.3	24.0	1.22	1.22	1.22	1757.1	145.2
9-Mar-18	9:00	Cloudy	286.9	771.3	2.8521	3.0459	0.1938	2114.4	2138.4	24.0	1.25	1.25	1.25	1795.9	107.9
15-Mar-18	9:00	Sunny	294.6	763.7	3.3145	3.5474	0.2329	2138.4	2162.4	24.0	1.22	1.22	1.22	1760.7	132.3
21-Mar-18	9:00	Sunny	290.5	766.8	2.8056	2.9845	0.1789	2162.4	2186.4	24.0	1.24	1.23	1.23	1778.1	100.6
27-Mar-18	9:00	Sunny	295.9	765.9	2.9024	3.1477	0.2453	2186.4	2210.4	24.0	1.21	1.21	1.21	1744.0	140.7
29-Mar-18	9:00	Cloudy	295.4	764.2	2.8586	3.0490	0.1904	2210.4	2234.4	24.0	1.21	1.21	1.21	1743.5	109.2
														Min	100.6
														Max	145.2
														Average	122.7

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

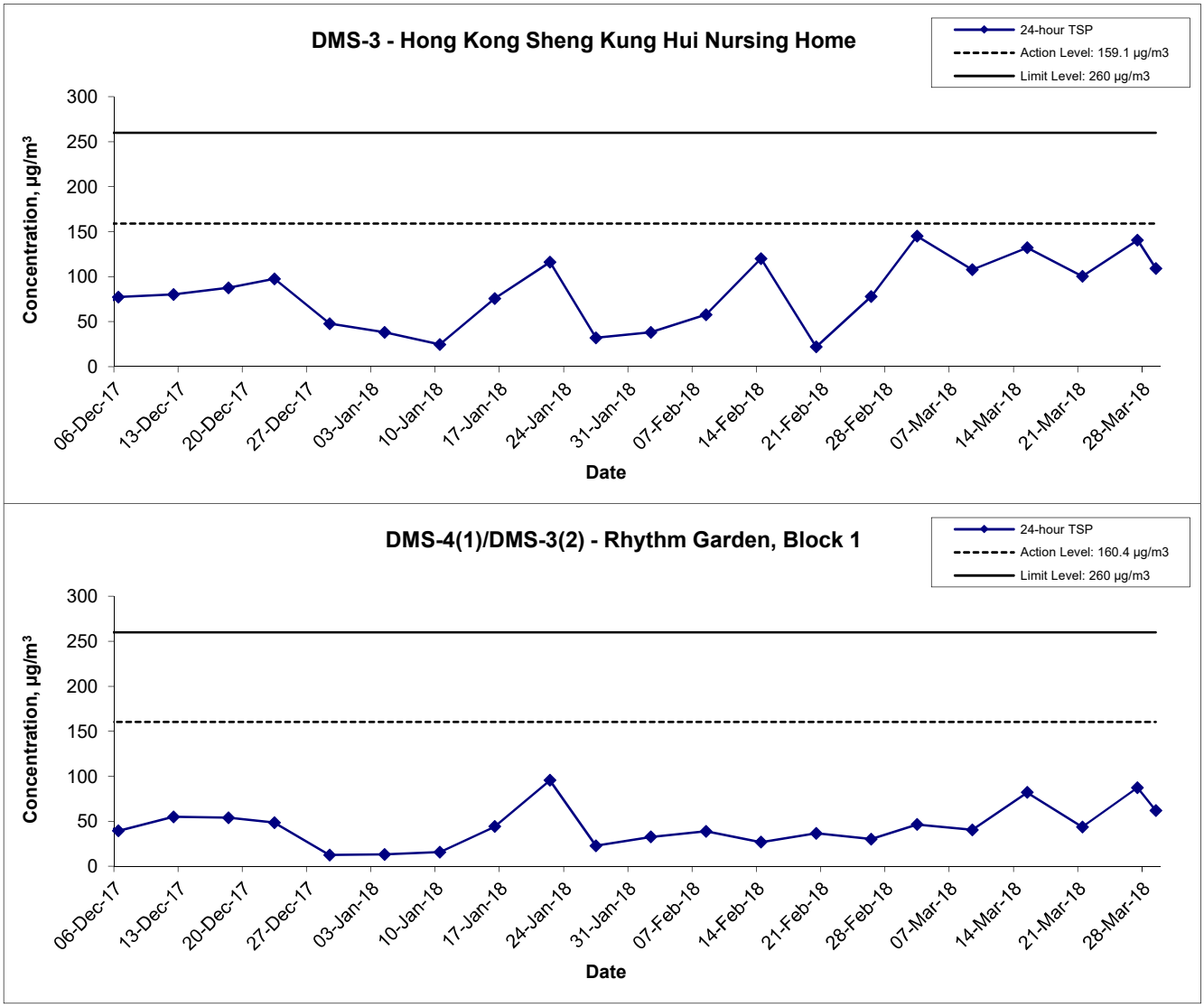
Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (μg/m^3)
					Initial	Final		Initial	Final		Initial	Final			
3-Mar-18	9:00	Cloudy	295.1	762.2	3.3756	3.4566	0.0810	8566.7	8590.7	24.0	1.21	1.21	1.21	1744.9	46.4
9-Mar-18	9:00	Cloudy	286.9	771.3	3.3998	3.4721	0.0723	8590.7	8614.7	24.0	1.24	1.24	1.24	1780.7	40.6
15-Mar-18	9:00	Sunny	294.6	763.7	3.2893	3.4328	0.1435	8614.7	8638.7	24.0	1.21	1.21	1.21	1748.1	82.1
21-Mar-18	9:00	Sunny	290.5	766.8	2.8146	2.8918	0.0772	8638.7	8662.7	24.0	1.23	1.22	1.23	1764.2	43.8
27-Mar-18	9:00	Sunny	295.9	765.9	2.8612	3.0137	0.1525	8665.6	8689.6	24.0	1.21	1.21	1.21	1746.8	87.3
29-Mar-18	9:00	Cloudy	295.4	764.2	2.8049	2.9134	0.1085	8689.6	8713.6	24.0	1.21	1.21	1.21	1746.3	62.1
														Min	40.6
														Max	87.3
														Average	60.4

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).

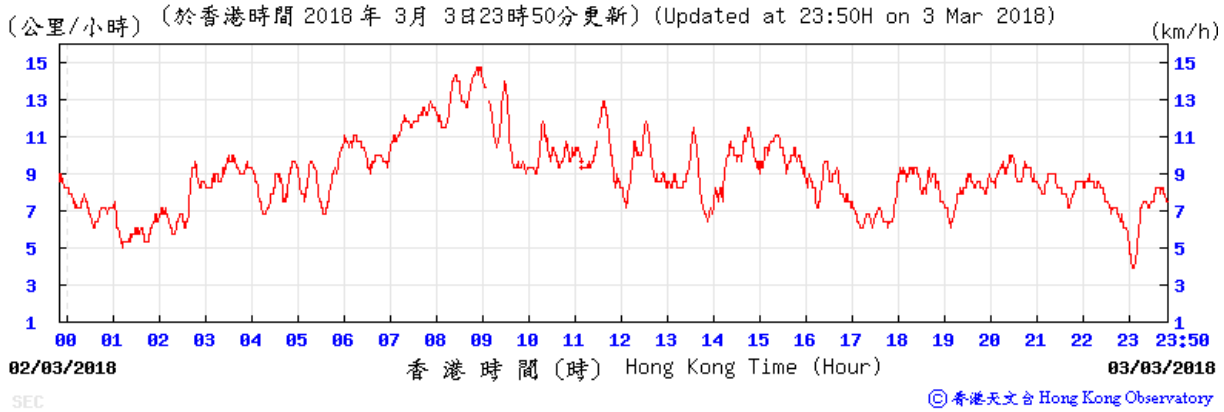
(2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

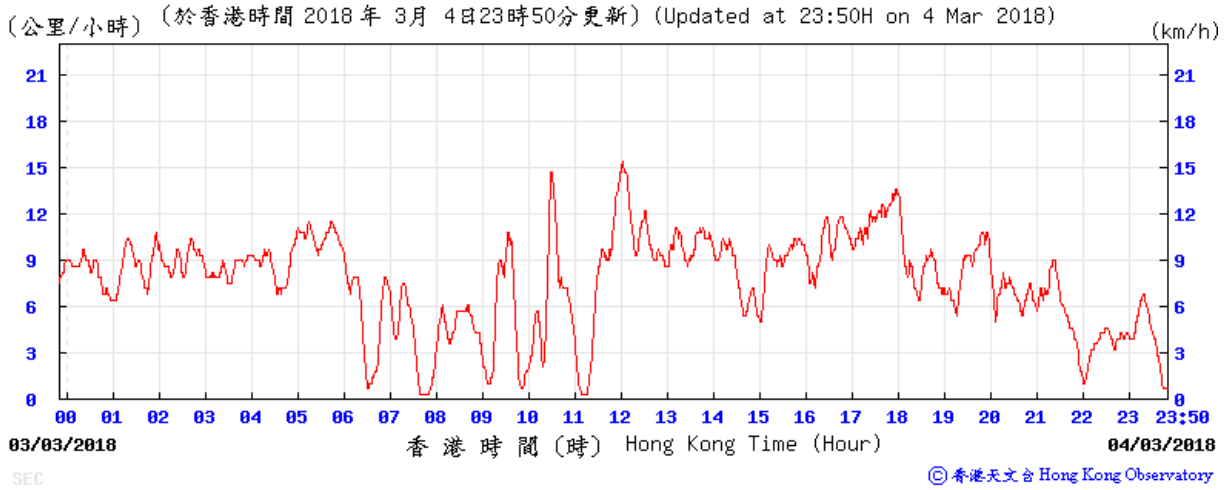
(3) 24 hours TSP concentration level of DMS-3 from July to September 2016 were extracted from the Project 1103.

Title		Scale	Project No.	
Shatin to Central Link – Contract 1106 Diamond Hill Station		N.T.S	MA12051	CINOTECH
Graphical Presentation of 24-hour TSP Monitoring Results		Date: Mar 18	Appendix: E	

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

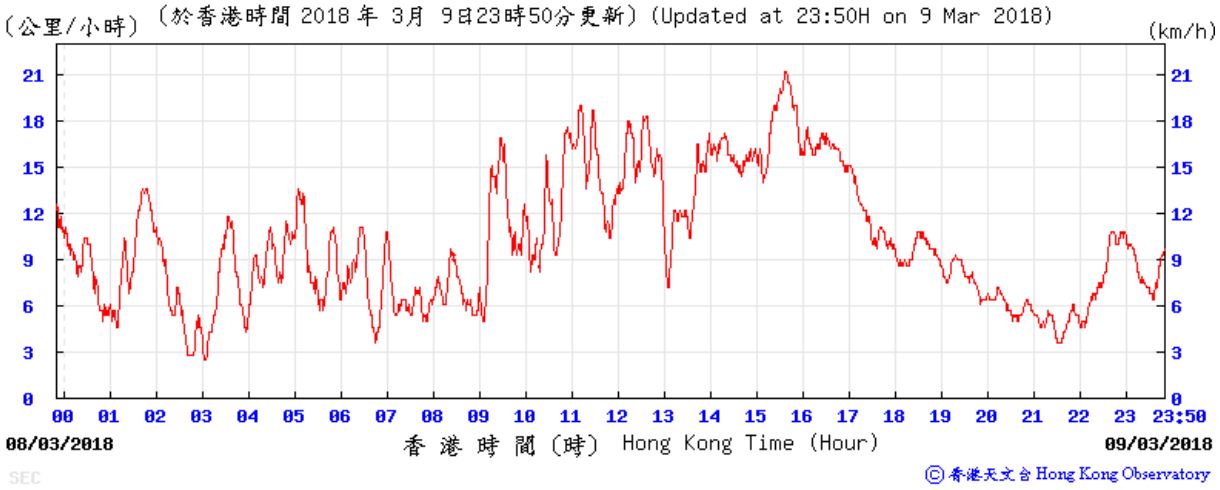
3-4 March 2018

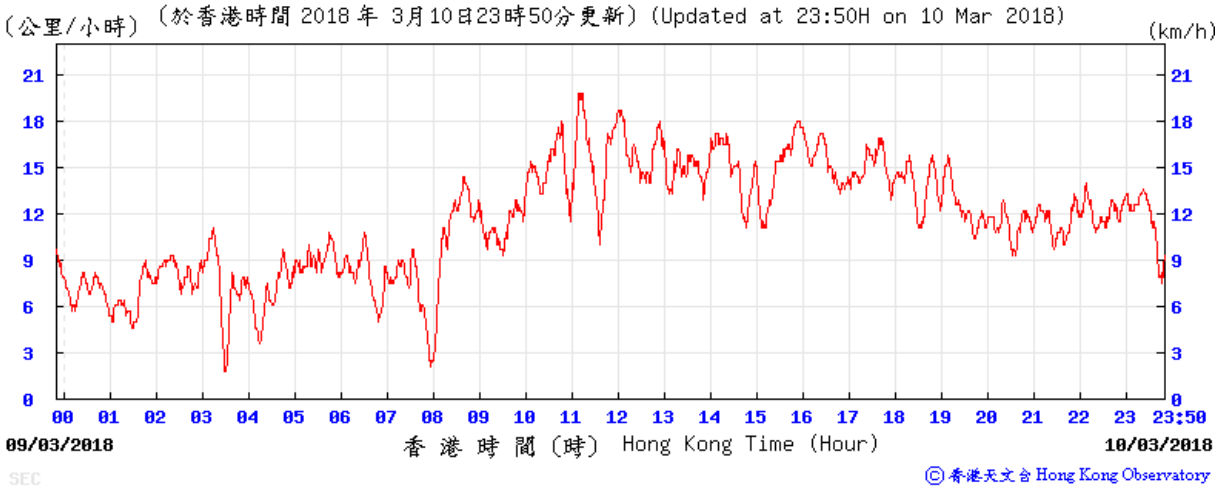




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

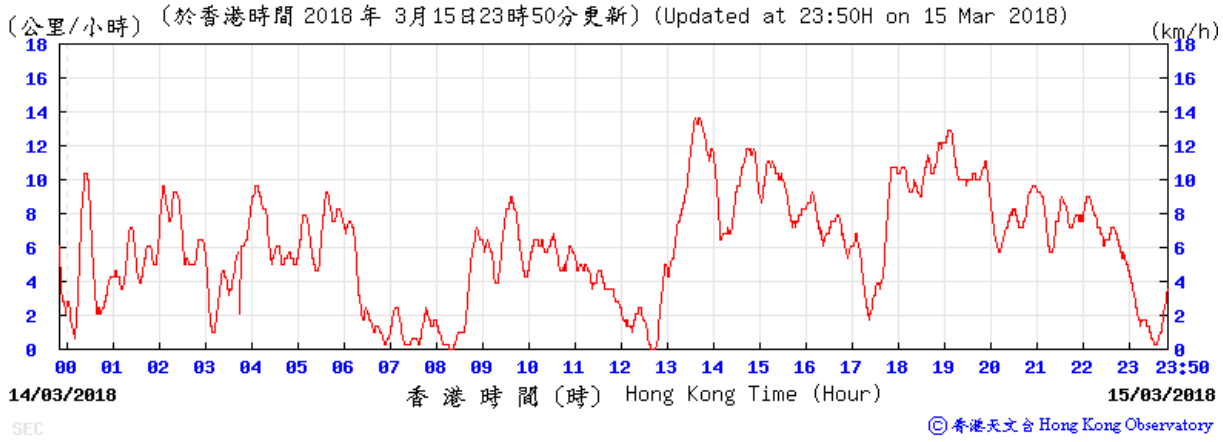
9-10 March 2018

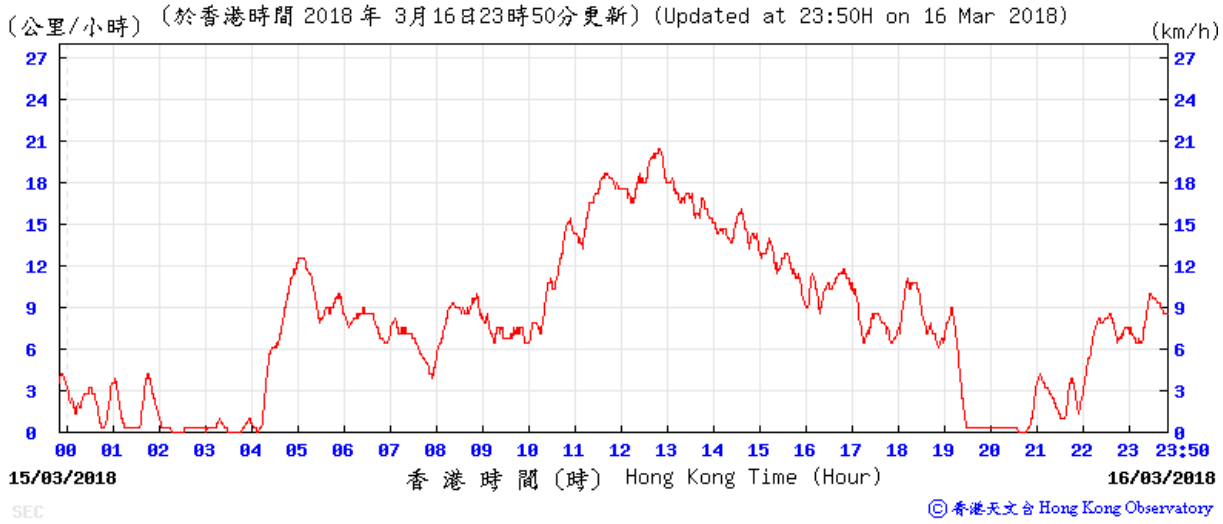




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

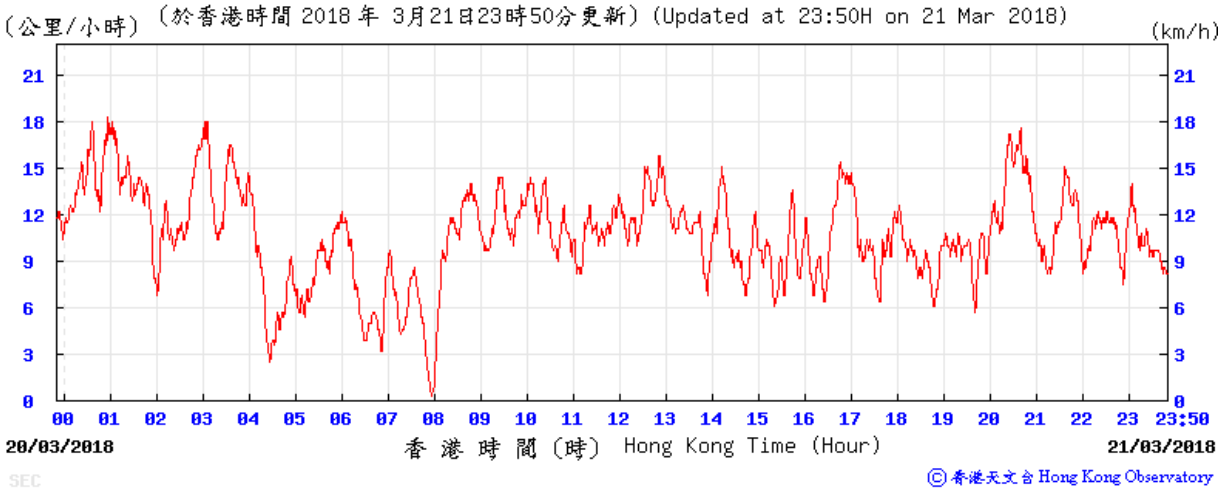
15-16 March 2018

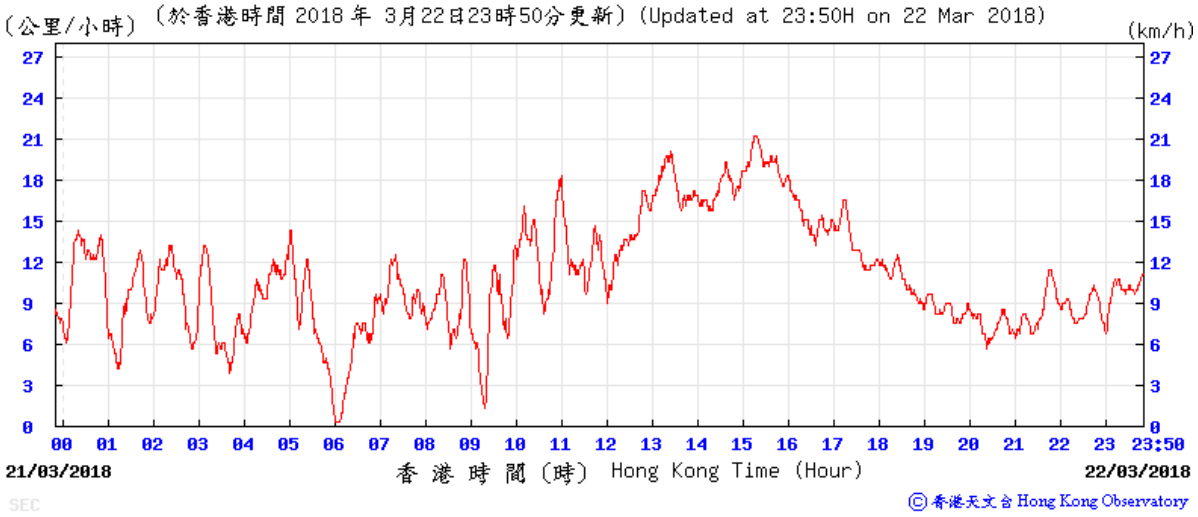




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

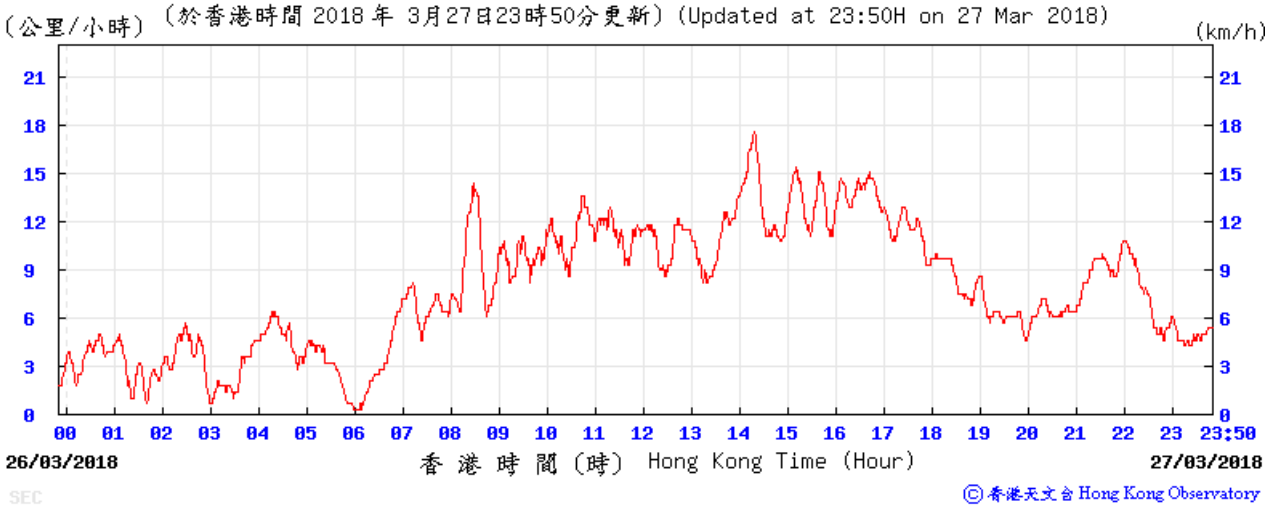
21-22 March 2018

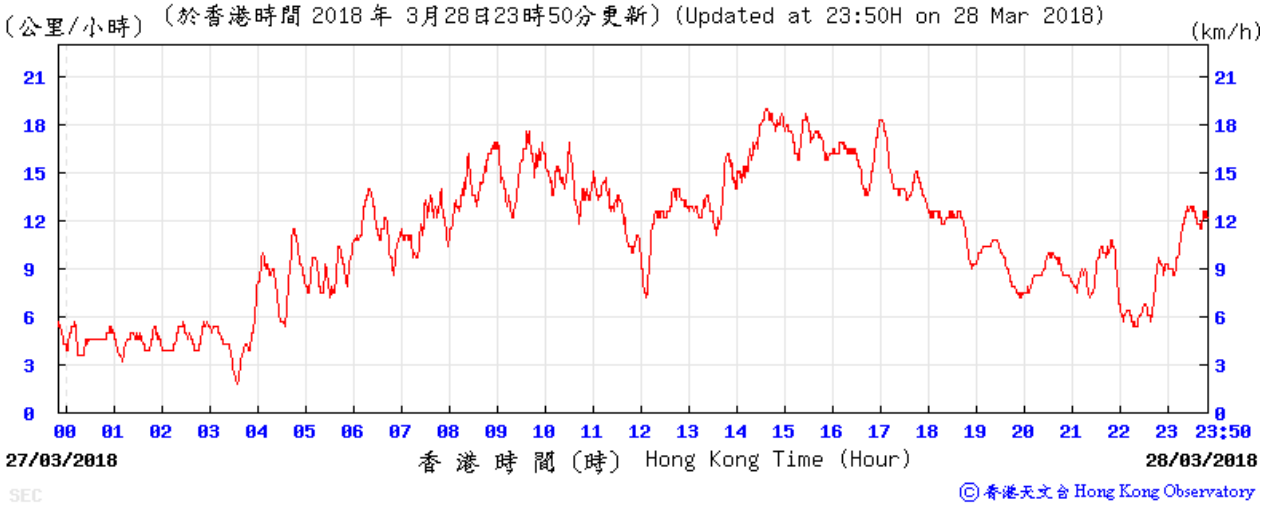




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

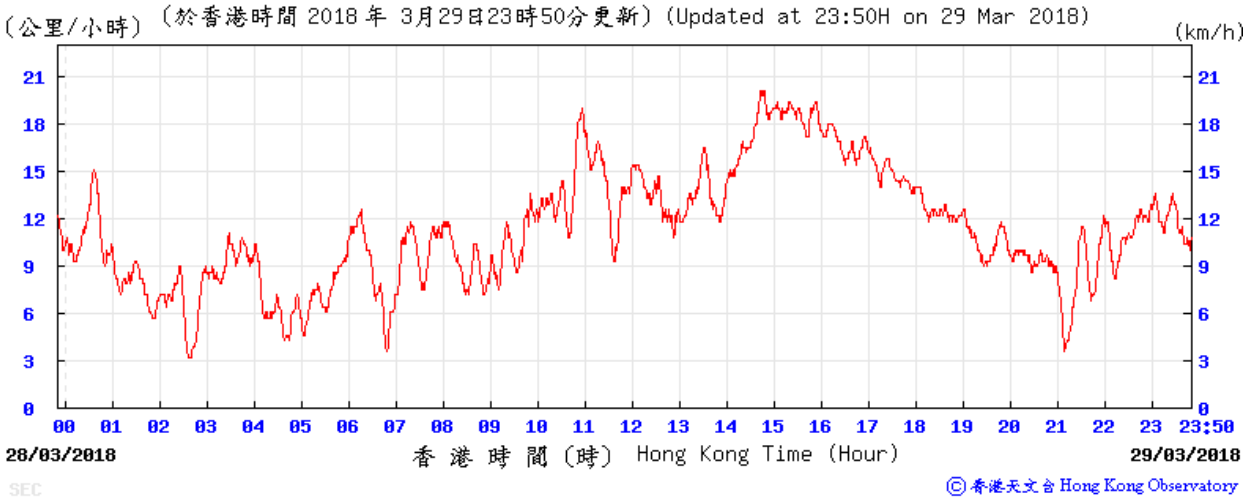
27-28 March 2018

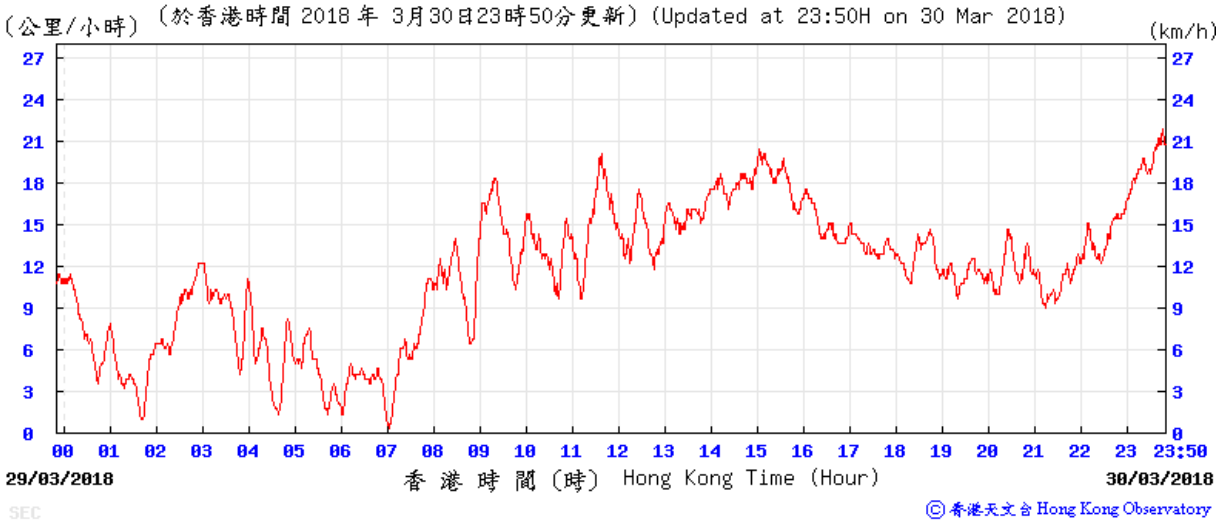




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

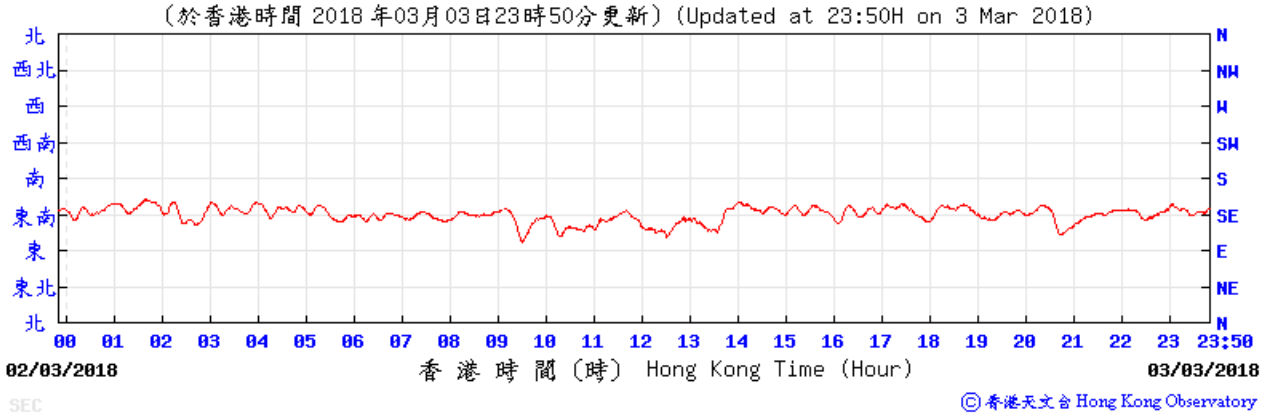
29-30 March 2018

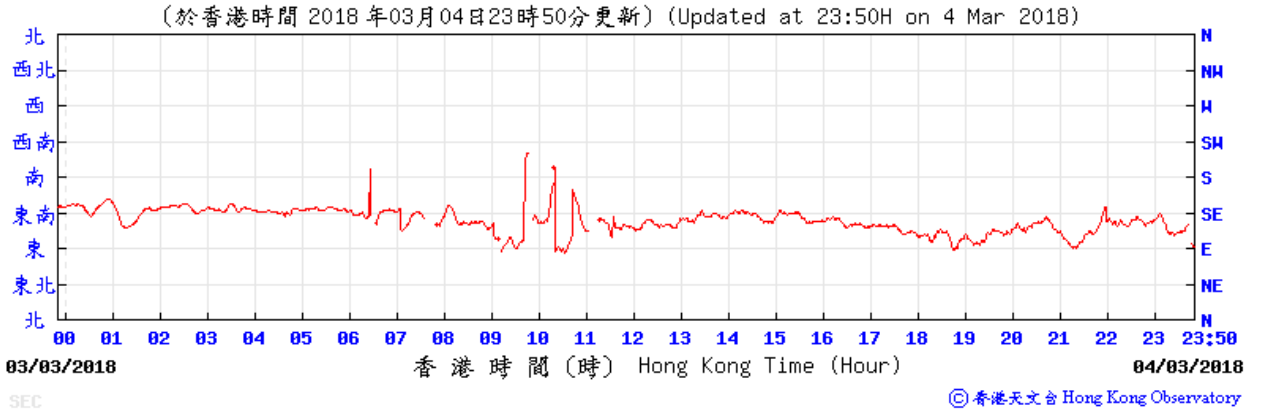




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

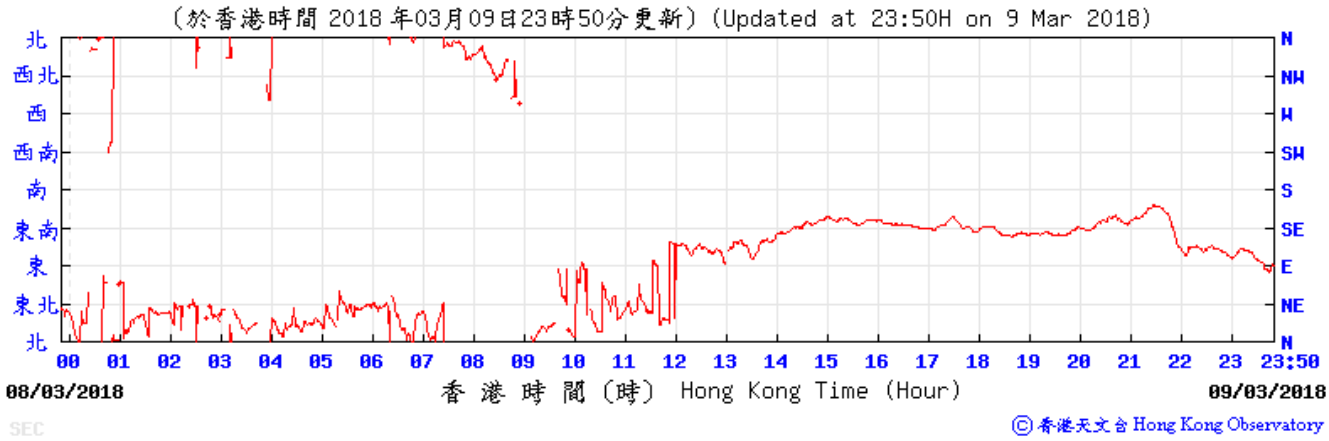
3-4 March 2018

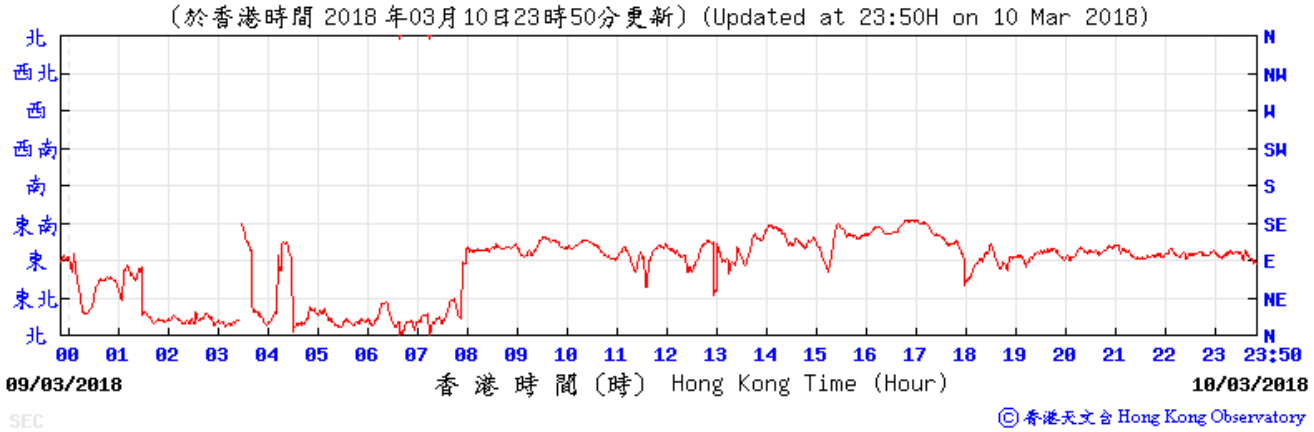




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

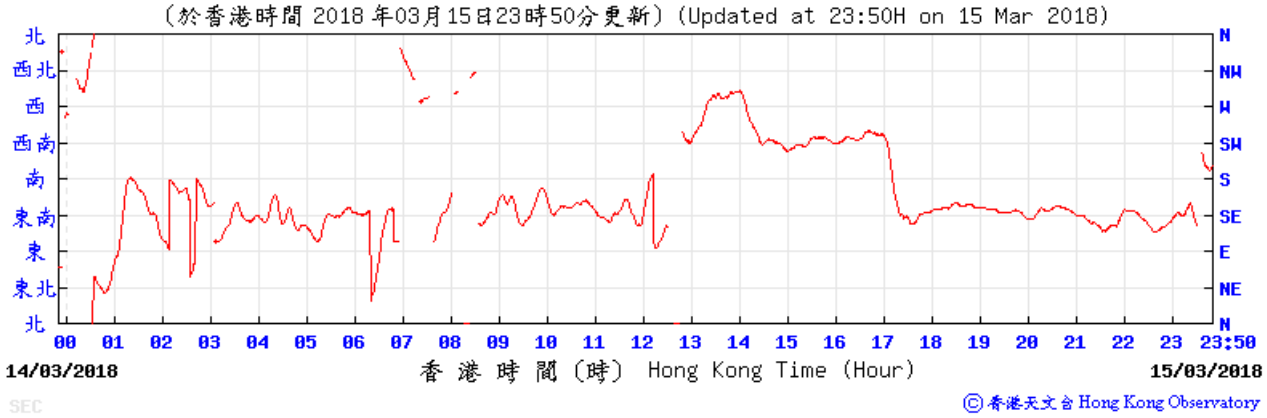
9-10 March 2018

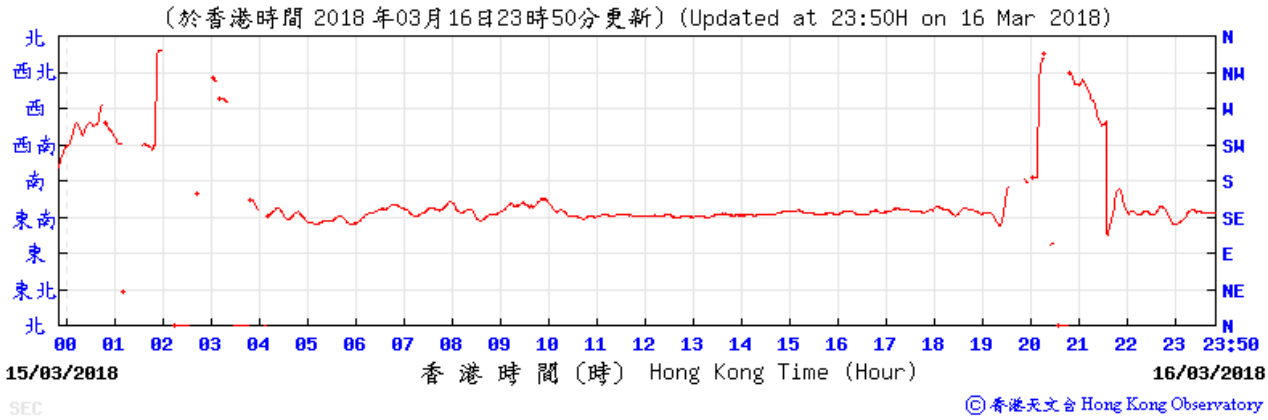




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

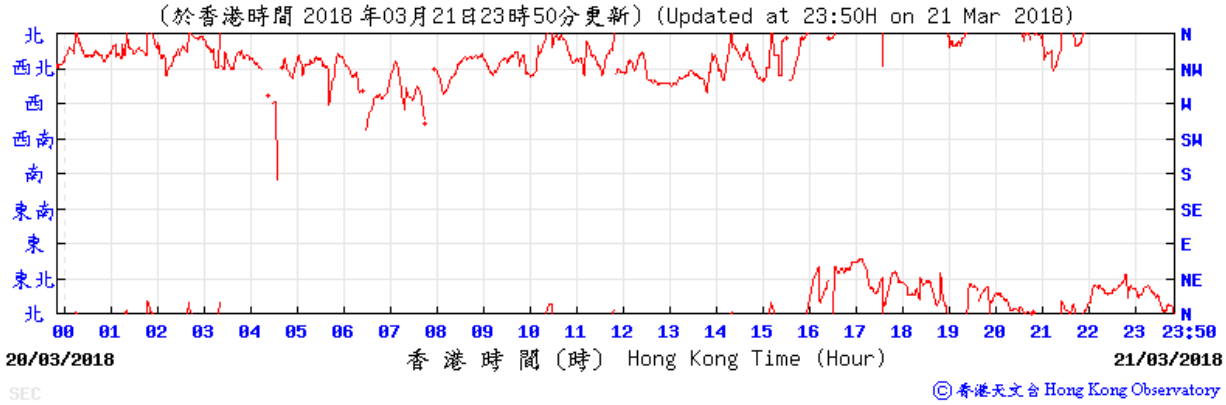
15-16 March 2018

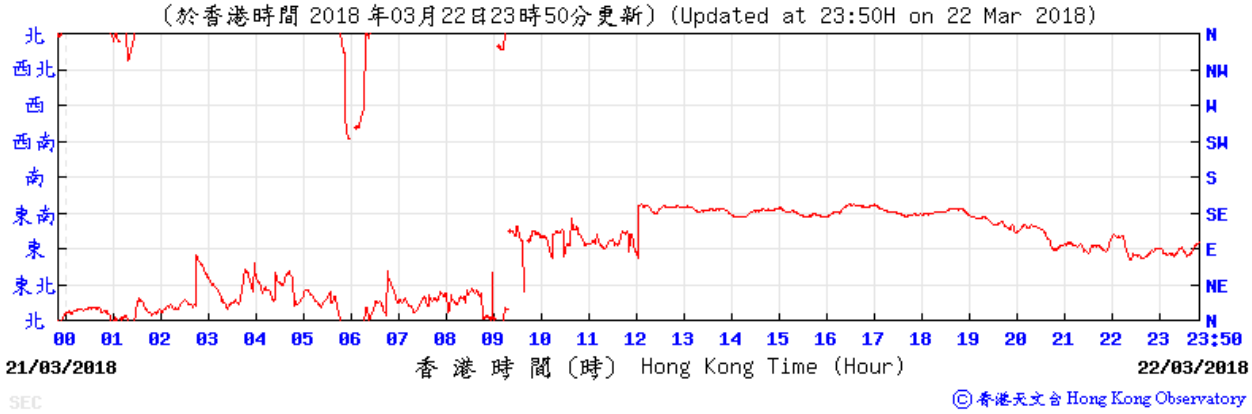




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

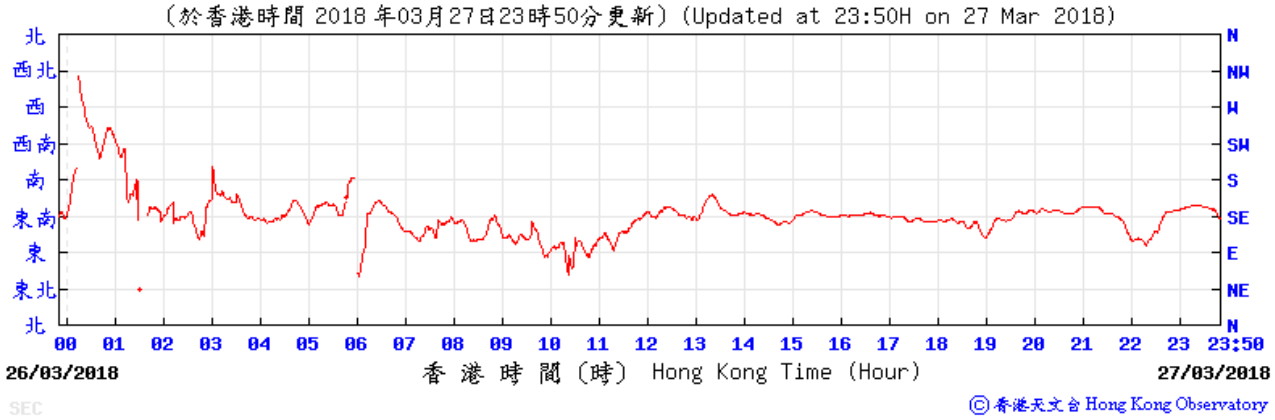
21-22 March 2018

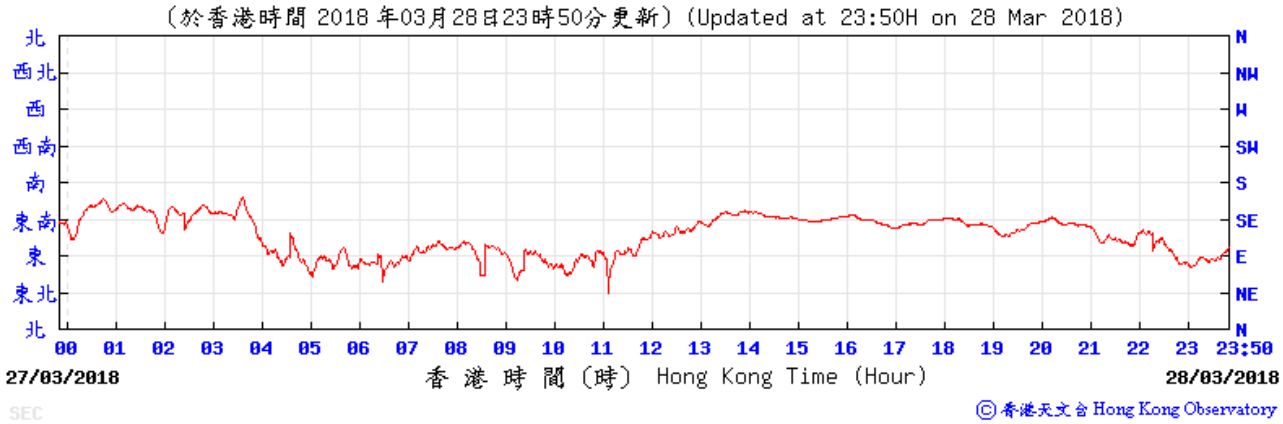




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

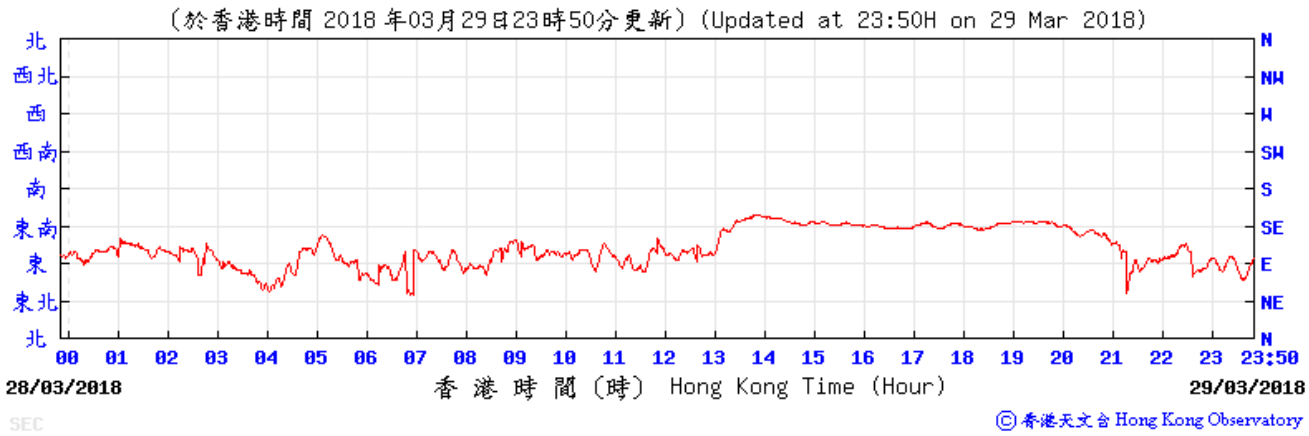
27-28 March 2018

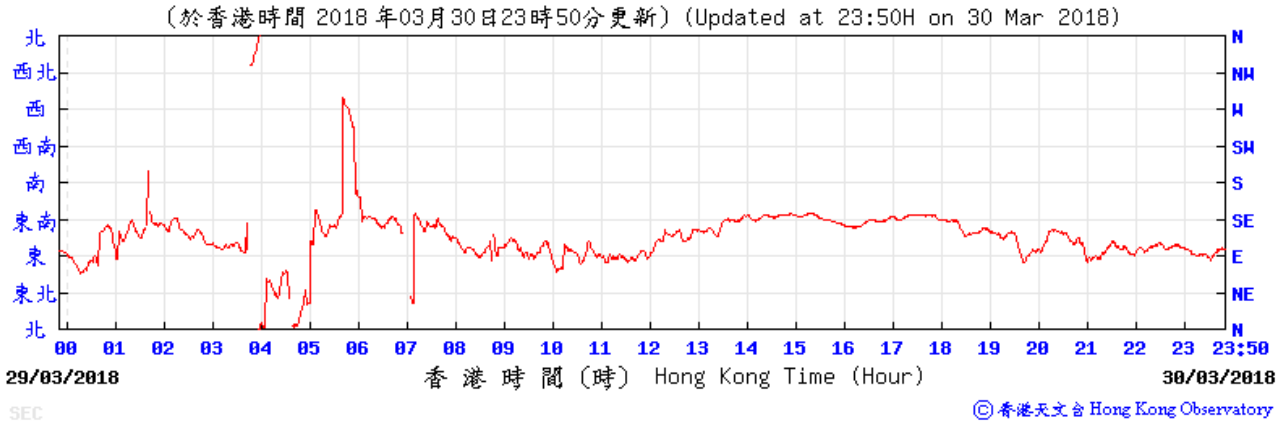




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

29-30 March 2018





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}
6-Mar-18	Cloudy	10:30	71.6	74.0	67.8	72.4	73	72.4 Measured ≦ Baseline Level
		10:35	72.4	74.9	68.5			
		10:40	72.8	75.0	69.7			
		10:45	72.7	75.1	69.3			
		10:50	72.3	74.6	68.7			
		10:55	72.3	74.9	69.0			
16-Mar-18	Sunny	11:30	54.6	57.7	49.7	55.0		55.0 Measured ≦ Baseline Level
		11:35	55.5	57.9	50.6			
		11:40	55.6	58.3	51.3			
		11:45	54.4	57.1	49.6			
		11:50	54.5	57.1	50.3			
		11:55	55.0	57.9	50.3			
22-Mar-18	Sunny	14:20	67.6	70.1	63.5	67.4		67.4 Measured ≦ Baseline Level
		14:25	67.8	70.5	63.2			
		14:30	67.2	70.3	63.4			
		14:35	67.7	70.8	63.5			
		14:40	67.2	70.1	63.0			
		14:45	67.0	70.0	63.2			
28-Mar-18	Sunny	13:20	72.0	74.4	68.0	72.0		72.0 Measured ≦ Baseline Level
		13:25	72.3	74.5	69.1			
		13:30	72.0	74.6	68.2			
		13:35	72.0	74.5	68.0			
		13:40	72.3	74.6	67.6			
		13:45	71.5	73.9	67.9			

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

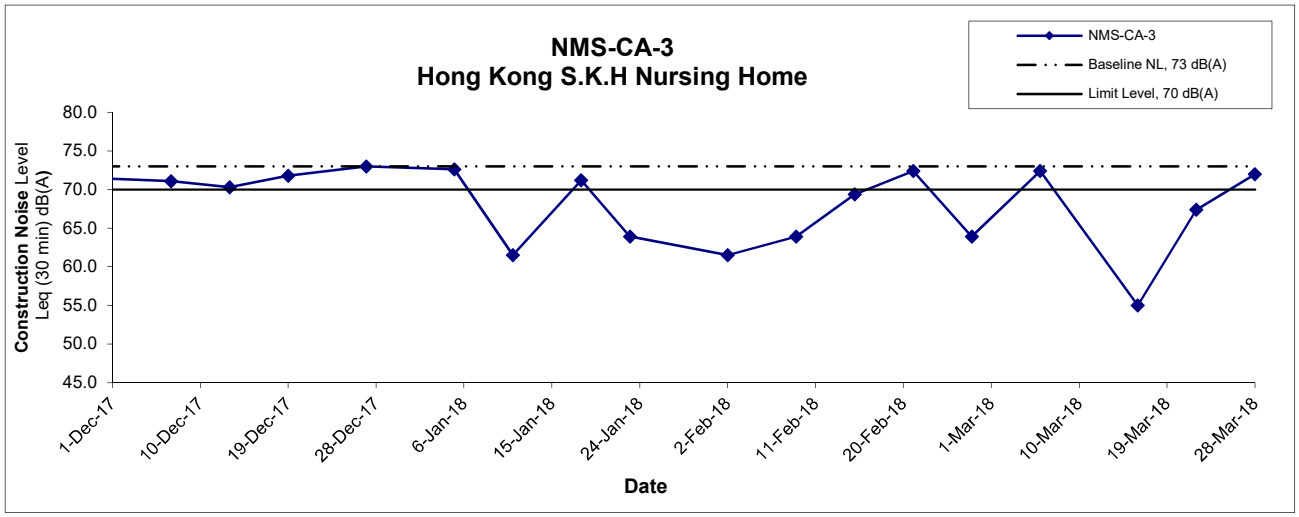
Location NMS-CA-4(1)/NMS-CA-3(2) - Block 1, Rhythm Garden (north-eastern façade)								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
6-Mar-18	Cloudy	11:05	72.1	74.1	68.9	71.0	71	71.0 Measured ≦ Baseline Level
		11:10	71.2	73.1	68.5			
		11:15	71.3	72.9	68.7			
		11:20	70.7	72.3	68.5			
		11:25	70.4	71.8	68.5			
		11:30	69.6	70.8	68.5			
16-Mar-18	Sunny	10:35	69.3	70.8	66.0	70.0		70.0 Measured ≦ Baseline Level
		10:40	70.5	71.6	68.5			
		10:45	69.9	71.0	68.3			
		10:50	70.1	71.2	68.5			
		10:55	70.2	71.6	68.6			
		11:00	70.2	71.4	69.0			
22-Mar-18	Sunny	15:50	70.9	72.4	69.6	70.7		70.7 Measured ≦ Baseline Level
		15:55	70.7	71.1	69.6			
		16:00	70.9	72.1	69.6			
		16:05	70.8	72.0	69.5			
		16:10	70.3	71.4	68.9			
		16:15	70.7	71.9	69.1			
28-Mar-18	Sunny	11:20	72.3	73.7	70.8	72.3		66.4
		11:25	72.6	73.8	71.1			
		11:30	72.4	73.6	71.1			
		11:35	71.9	73.0	70.5			
		11:40	72.5	73.5	70.9			
		11:45	72.0	73.1	70.5			

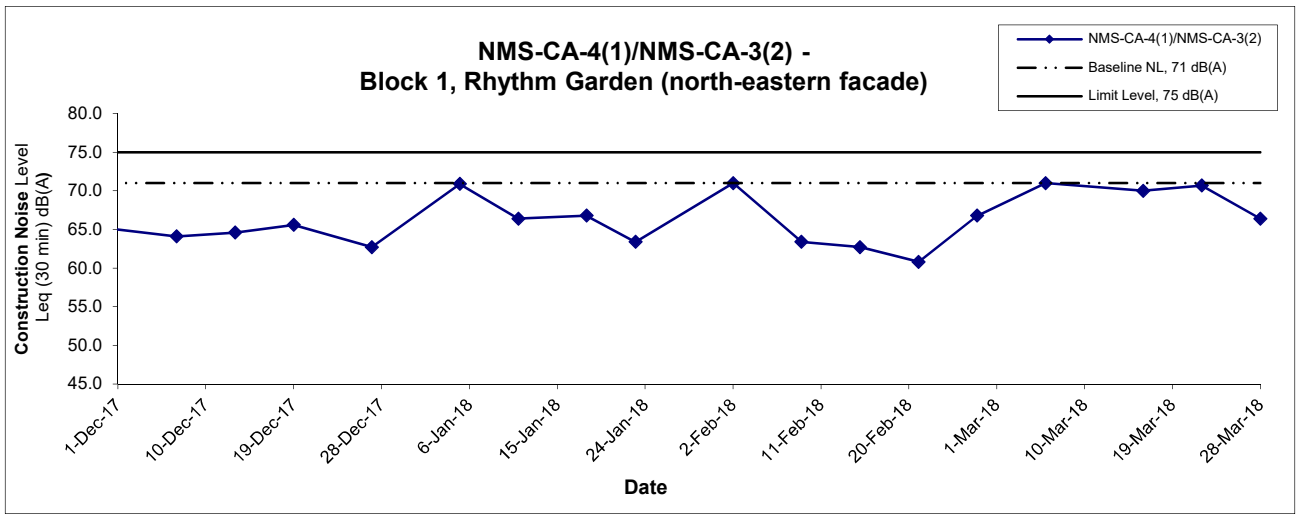
Remarks:
(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

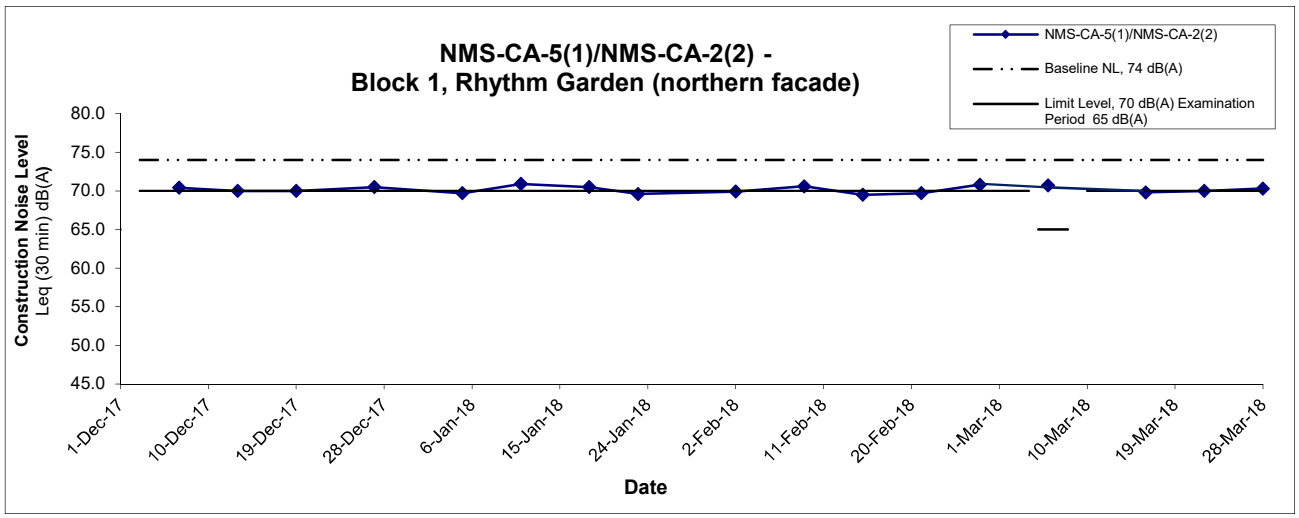
Appendix F - Noise Monitoring Results

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}
6-Mar-18	Cloudy	10:30	68.7	70.1	67.2	70.7	74	70.7 Measured ≦ Baseline Level
		10:35	68.7	70.0	67.4			
		10:40	71.7	74.4	68.2			
		10:45	71.1	73.6	67.9			
		10:50	71.7	74.4	67.9			
		10:55	71.4	74.0	67.9			
16-Mar-18	Sunny	10:00	70.7	72.6	68.1	69.8		69.8 Measured ≦ Baseline Level
		10:05	69.6	70.7	68.3			
		10:10	69.6	70.9	68.1			
		10:15	69.1	70.3	68.0			
		10:20	70.0	70.8	68.1			
		10:25	69.6	70.9	67.5			
22-Mar-18	Sunny	15:15	69.8	70.8	68.7	70.0		70.0 Measured ≦ Baseline Level
		15:20	69.7	70.8	68.6			
		15:25	69.8	71.0	68.4			
		15:30	70.0	71.1	68.8			
		15:35	70.3	71.4	69.0			
		15:40	70.3	71.3	69.0			
28-Mar-18	Sunny	10:45	69.7	70.8	68.2	70.3		70.3 Measured ≦ Baseline Level
		10:50	70.0	71.4	68.3			
		10:55	69.8	71.0	68.3			
		11:00	70.9	72.1	69.3			
		11:05	70.8	72.0	69.3			
		11:10	70.6	71.9	69.0			

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 18	Project No.: MA12051 Appendix: F	CINOTECH

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: March 2018

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	180301
Date	01 March 2018 (Thursday)
Time	13:30-16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
180301-O01	***Part B – Water Quality*** • To remove the sediment at wheel washing bay with sufficient frequency to maintain the function of wheel washing bay. ***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.	B14i ii
180301-O02	***Part E – Air Quality*** • Stockpile of dusty material near the western ventilation shaft should be covered by the impervious sheet or sprayed with water for dust suppression. ***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 session (Ref. No.: 180222), all the environmental deficiency was improved / rectified by the Contractor.	E6

	Name	Signature	Date
Recorded by	Andy Chan	Andy	01 March 2018
Checked by	Dr. Priscilla Choy		02 March 2018

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	180308
Date	08 March 2018 (Thursday)
Time	13:30-16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
180308-O01	***Part B – Water Quality*** • To remove the sediment at wheel washing bay with sufficient frequency to maintain the function of wheel washing bay.	B14i ii
	Part C – Ecology • No environmental deficiency was identified during the site inspection.	
180308-R03	***Part D – Landscape & Visual*** • To properly fenced off the retained tree at area near the first-aid station.	D2
180308-O02	***Part E – Air Quality*** • To remove the sand on the public road at Lung Cheung Road.	E3
	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 session (Ref. No.: 180301), item 180301-O01 was remarked as 180308-O01 and the follow-up action is needed to be reviewed.	

	Name	Signature	Date
Recorded by	Andy Chan		09 March 2018
Checked by	Dr. Priscilla Choy		09 March 2018

Shatin to Central Link -

Contract 1106 Diamond Hill Station

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	180315
Date	15 March 2018 (Thursday)
Time	13:30-16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
180315-R01	***Part B – Water Quality*** • Treated water was observed slightly unclear. The contractor was reminded to enhance the sedimentation process to improve the treated water quality to comply with the criteria stated in the discharge license. ***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 session (Ref. No.: 180308), all the environmental deficiency was improved / rectified by the Contractor.	B7

	Name	Signature	Date
Recorded by	Andy Chan	Andy	16 March 2018
Checked by	Dr. Priscilla Choy		16 March 2018

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	180322
Date	22 March 2018 (Thursday)
Time	13:30-16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
180322-O01	***Part B – Water Quality*** • To remove the sediment at wheel washing bay with sufficient frequency to maintain the function of wheel washing bay.	B14 i/ii
	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.	
180322-R02	***Part E – Air Quality*** • Cement bags should be covered by the impervious material for dust suppression near eastern ventilation shaft	E16
	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 session (Ref. No.: 180315), all the environmental deficiency was improved / rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Andy Chan	Andy	23 March 2018
Checked by	Dr. Priscilla Choy		23 March 2018

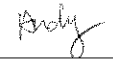
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	180329
Date	29 March 2018 (Thursday)
Time	13:30-16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
180329-O01	***Part B – Water Quality*** • To remove the sediment at wheel washing bay with sufficient frequency to maintain the function of wheel washing bay. ***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***	B14 i/ii
180329-R02	• Cement bags should be covered by the impervious material for dust suppression near eastern ventilation shaft	E16
180329-R03	• Water spraying should be provided to haul road and unpaved area for dust suppression. ***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 session (Ref. No.: 180322), item 180322-O01 and 180322-R02 were remarked as 180329-O01 and 180329-R02 and follow-up is needed to be reviewed.	E5

	Name	Signature	Date
Recorded by	Andy Chan		03 April 2018
Checked by	Dr. Priscilla Choy		03 April 2018

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	^ ^

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
		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	*

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
							impact to meet HKAQO and TM-EIA criteria	
S7.6.6	D2	Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road in the Kowloon area should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.8 L/m^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	* ^ ^ ^

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 ph 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						^ ^

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
		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 adequately covered and temporarily sealed so as to prevent silt,						* ^ ^ *

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 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						^ * 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 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 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	W5	<u>Accidental Spillage</u> 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	<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	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
		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; • Adopt 'Selective Demolition' technique to demolish the existing	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.	^ ^ ^ 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
		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					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	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
		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.						^
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.	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
		• 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 prevent rainfall entering; and be arranged so that incompatible	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
		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, 2018

Monthly Summary Waste Flow Table for 2018

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 (See Note 5)	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	0.269	0.000	0.000	0.000	0.269	0.000	0.000	0.564	0.000	0.000	0.124	
Feb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.070*(6)	
Mar	0.030	0.000	0.000	0.000	0.030	0.000	0.000	0.000 *(7)	0.000	0.000	0.110	
Apr												
May												
Jun												
Sub-total	0.299	0.000	0.000	0.000	0.299	0.000	0.000	0.564	0.000	0.000	0.304	
Jul												
Aug												
Sept												
Oct												
Nov												
Dec												
Total	0.299	0.000	0.000	0.000	0.299	0.000	0.000	0.564	0.000	0.000	0.304	

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) Imported Fill from HKAA Contract 3501.
6) * Data was updated.
7) * Data will be updated in the next report.

APPENDIX L
CUMULATIVE LOG FOR COMPLAINT LOGS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

Appendix L - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecution

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

May 2016	0	0	0
June 2016	1	0	0
July 2016	0	0	0
August 2016	3	0	0
September 2016	0	0	0
October 2016	0	0	0
November 2016	0	0	0
December 2016	1	0	0
January 2017	0	0	0
February 2017	0	0	0
March 2017	0	0	0
April 2017	0	0	0
May 2017	0	0	0
June 2017	1	0	0
July 2017	1	0	0
August 2017	0	0	0
September 2017	0	0	0
October 2017	1	0	0
November 2017	0	0	0
December 2017	0	0	0
January 2018	0	0	0
February 2018	0	0	0
March 2018	1	0	0
Total	**15**	**0**	**0**

Environmental Complaint Log (March 2018)

Contractor Log Ref.	Complaint Location/ Nature	Incoming Complaint Reference no.	Complainant/ Date or Period of Complaint Received	Date of Complaint received from EPD	Details of Complaint	Investigation/ Mitigation Action	Status
CP-35	The existing KTL-Diamond station / Air Quality	K11/RE/0 0005530-18	Public / March 2018	14th March 2018	The complaint concerned the air quality nuisance in existing KTL-Diamond Hill Station due to the station renovation works. Upon receipt of the complaint, EPD conducted site inspection in past two weeks and revealed that fugitive dust was escaping through gap at hoarding and doors for enclosing the works area.	According to information provided by the Contractor, only ABWF-work at interface areas was carried out during the time of complaint. Regular weekly site inspections were conducted. No fugitive dust was observed inside the existing KTL-Diamond station. Also, no gaps was found at hoarding and doors for enclosing the works areas. The air quality inside the existing KTL-Diamond station and the interface area was observed satisfactory. No environmental deficiency regarding air quality was recorded at interface area of SCL-Diamond Hill station during site inspection in late February and early March 2018. The Contractor had implemented environmental mitigation measures as follows:	Closed

						• Regular site cleaning was conducted by the worker at SCL-Diamond Hill Station; • Two layers of screening have been installed by the Contractor at the interface area; and • Blowers have been set up by the Contractor to lead air flows from existing KTL-Diamond Hill Station to the working area at the interface area. The following actions have been implemented immediately by the Contractor to enhance the dust control after receiving the complaint: • The Contractor has immediately reviewed and enhanced the sealing condition of all dust screen, door and hoarding; • Additional dust screen has been installed behind the door of the hoarding and the interface area of SCL-Diamond Hill Station; • Two additional blowers	

						have been set up at the interface area of SCL-Diamond Hill Station for good airflow and ventilation; • Wet carpets were placed in front of door at existing KTL-Diamond Hill Station; • Hotline number has been displayed to the existing KTL-Diamond Hill Station for public enquiry; and • Regular site cleaning with higher frequency was conducted by the worker at SCL-Diamond Hill Station. According to the regular air monitoring results, no Action / Limit Level Exceedance was recorded at Station DMS-3 and DMS-4 from February to early March 2018. With the implementation of environmental mitigation measures by Contractors on site, it is considered that dust nuisance by the works has been brought to ta minimum level and no adverse air quality impact was brought to the KTL-Diamond Hill interface area during the	

						time of complaint. The environmental conditions of the site and effectiveness of the implementation of mitigation measures will be continuously reviewed and monitored.	

Log for Notifications of Summons (March 2018)

Log Ref.	Location/Nature	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
--	--	--	--	--	--

Log for Successful Prosecutions (March 2018)

Log Ref.	Location/Nature	Subject	Status	Total no. Received in this reporting month	Total no. Received since the commencement of the project
--	--	--	--	--	--

Appendix E

58th 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 2018]

(April 2018)

Certified by: Vivian Chan

Position: Environmental Team Leader

Date: 11 April 2018

Member of the Surbana Jurong Group

58th Monthly EM&A Report for March 2018

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

April 2018

Project/Deliverable No.	7076187 | D223/01 – Revision No. 2
Project Name	Shatin to Central Link – Works Contract 1112 Hung Hom Station and Stabling Sidings
Report Name	58th Monthly EM&A Report for March 2018
Report Date	April 2018
Report for	Leighton Contractors (Asia) Limited

PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved by
1.0 (Draft)	April 2018	Joanne PONG	Vivian CHAN	Alexi BHANJA
2.0 (Final)	April 2018	Joanne PONG	Vivian CHAN	Alexi BHANJA

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SMEC COMPANY DETAILS

SMEC Asia Limited
27/F Ford Glory Plaza, 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
T +852 3995 8100 | **F** +852 3995 8101
smecasia@smec.com | www.smec.com

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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 58th Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 March 2018 in accordance with the EM&A manual.

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

- Drainage works/Building Service works at G.L J of HUH
- Platform ABWF and E&M works at HUH
- Modification of Hong Wan Path Ramp at SAT
- Roadworks at NAT
- 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 7 and 21 March 2018. 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, 27 and 29 March 2018. 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, 395,370 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 350 m^3 inert construction and demolition (C&D) materials were generated from the Project, 350 m^3 was reused in other projects. No chemical waste was disposed. No Type 1 and Type 2 marine sediments were generated from SCL1112. No paper/cardboard packaging, metals, plastics or asphalt were recycled from the Project.

Environmental Auditing

A total of 5 weekly environmental site audits were conducted on 1, 8, 15, 21 and 28 March 2018. The IEC joint site audit was undertaken on 21 March 2018.

Complaint, Notification of Summons and Successful Prosecution

No environmental complaint was received during the reporting month.

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

Future Key Issues

Major site activities for the coming reporting month will include:

- Drainage works/Building Service works at G.L J of HUH
- Platform ABWF and E&M works at HUH
- Modification of Hong Wan Path Ramp at SAT
- Green Roof Remaining Works near West Rail Line
- Roadworks 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. An application for variation of the EP for SCL (MKK-HUH) was approved and a varied EP (EP No. EP-437/2012/A) was issued on 28 November 2017.

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

1.2 Purpose of the Report

1.2.1 This is the 58th EM&A report which summarizes the monitoring results and audit findings during the reporting period from 1 to 31 March 2018.

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:

- Drainage work/Building Service work at G.L J of HUH
- Platform ABWF and E&M works at HUH
- Modification of Hong Wan Path Ramp at SAT
- Roadworks at NAT
- Modification works at Concourse level, mid-level walkway

2.3 Project Organisation

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

Table 2-1 Contact Information of Key Personnel

Company	Position	Name	Telephone	Fax
MTR	Construction Manager	Mr Michael FU	3127 6201	3127 6422
	SCL Project Environmental Team Leader	Ms Lisa POON	3127 6295	2993 7577
Meinhardt	Independent Environmental Checker	Mr Fredrick LEONG	2859 1739	2540 1580
Leighton	Environmental Manager	Mr Kevin HARMAN	3973 0270	2356 9355

Company	Position	Name	Telephone	Fax
SMEC	ET Leader	Ms Vivian CHAN	3995 8140	3995 8101

2.4 Status of Environmental Licences, Notification and Permits

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

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

Permit / Licence No. / Notification / Reference No.	Valid Period		Status	Remark
	From	To		
Environmental Permit				
EP-437/2012/A	28 Nov 2017	-	Valid	EP for SCL (MKK-HUH)
EP-438/2012/K	4 Oct 2016	-	Valid	EP for SCL (TAW-HUH)
Construction Noise Permit				
GW-RE1005-17	30 Dec 2017	29 Jun 2018	Valid	Works in Concourse
GW-RE0070-18	13 Feb 2018	14 Apr 2018	Valid until cancellation on 19 Mar 2018	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 4
GW-RE0132-18	28 Feb 2018	27 Aug 2018	Valid	Works for SAT, NAT and Under Podium
GW-RE0154-18	5 Mar 2018	10 Mar 2018	Valid until cancellation on 10 Mar 2018	EWL Stitch Joint Reconstruction Work (24hr with Noise Enclosure)
GW-RE0168-18	16 Mar 2018	28 Apr 2018	Valid until cancellation on 27 Mar 2018	Concrete Trimming within Wire Gates outside WRL (SAT)
GW-RE0179-18	15 Mar 2018	30 Apr 2018	Valid until cancellation on 27 Mar 2018	EWL Stitch Joint Reconstruction Work Extend Evening Time without Noise Mitigation

Permit / Licence No. / Notification / Reference No.	Valid Period		Status	Remark
	From	To		
GW-RE0189-18	20 Mar 2018	14 Apr 2018	Valid	External work for Concourse involving TTM + Mid-level Walkway+ Installation of Instrument near NAT Track + Painting outside Concourse for North East Corner+ Protective Barrier Removal adjoining NAT
GW-RE0192-18	23 Mar 2018	19 Aug 2018	Valid	Operation of Mobile Crane near Oi Sen Path
GW-RE0206-18	27 Mar 2018	15 May 2018	Valid	Green Roof and CAT Ladder Installation outside WRL (SAT)
GW-RE210-18	28 Mar 2018	30 Jun 2018	Valid	EWL Stitch Joint Reconstruction Work (Including Shunt Neck Track) Extend Evening Time without Noise Mitigation
Wastewater Discharge License				
WT00027487-2017	21 Apr 2017	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)	1785

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 2018 is provided in ***Appendix G***.

3.3 Construction Noise Monitoring

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

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

4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

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

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

Required Submission	Environmental Permit	Date of Submission	Status
EP Condition 3.4 - Monthly Environmental Monitoring & Audit (EM&A) Report	EP-437/2012/A	14 March 2018	Submitted
	EP-438/2012/K	14 March 2018	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 7 and 21 March 2018. 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/m³)	Range (µg/m³)	Action Level (µg/m³)	Limit Level (µg/m³)
AM2	45.6	35.1 – 51.7	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, 395,370 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 350 m³ inert construction and demolition (C&D) materials

were generated from the Project, 350 m^3 was reused in other projects. No chemical waste was disposed. No Type 1 and Type 2 marine sediments were generated from SCL1112. No paper/cardboard packaging, metals, plastics or asphalt were recycled from the Project. The waste flow table and marine sediment flow table were presented in ***Appendix K***.

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

6 ENVIRONMENTAL SITE INSPECTION AND AUDIT

6.1.1 Weekly site audits were conducted by the ET and attended by the ER and the Contractor to monitor the timely implementation of proper environmental management practices and mitigation measures at the site. 5 site audits were carried out on 1, 8, 15, 21 and 28 March 2018 during the reporting month. Representative of the IEC joined the site inspection on 21 March 2018. A summary of the implementation schedule of environmental mitigation measures is provided in ***Appendix H***.

6.1.2 No EPD inspections were conducted during the reporting month.

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	Haul roads were observed dry. The Contractor should provide sufficient water spraying to prevent dust emission.	SAT	8 February 2018	The item was rectified by the Contractor on 1 March 2018.
		SAT	21 March 2018	The item was rectified by the Contractor on 28 March 2018.
	More than 20 bags of cement were observed uncovered. The Contractor should cover the cement bags with impervious sheeting to prevent dust emission.	NSL Platform	8 February 2018	The item was rectified by the Contractor on 8 March 2018.
		EWL Trough Wall	21 February 2018	The item was rectified by the Contractor on 8 March 2018.
	Stockpile was observed uncovered. The Contractor should cover stockpile with impervious sheeting to prevent dust and silty runoff generation.	Gate 2	1 March 2018	The item was rectified by the Contractor on 8 March 2018.
		Gate 2	15 March 2018	The item will be followed-up in the next reporting month.
		SAT	28 March 2018	The item will be followed-up in the next reporting month.
Water Quality	Water Quality at the Aquased was observed unsatisfactory. The Contractor should ensure site effluent was properly treated before discharge.	Gate 3	1 March 2018	The item was rectified by the Contractor on 15 March 2018.

Parameters	Description	Works Area	Observation Date	Status
Waste/ Chemicals Management	General refuse was observed on the ground. The Contractor should remove the waste, provide garbage bins for collection and avoid waste accumulation.	SAT	1 March 2018	The item was rectified by the Contractor on 8 March 2018.
	Chemical containers were observed without secondary containment. The Contractor should provide secondary containment to all chemical containers to prevent land contamination.	HUH BoH East	14 February 2018	The item was rectified by the Contractor on 1 March 2018.
		JP01	1 March 2018	The item was rectified by the Contractor on 8 March 2018.
		NAT	8 March 2018	The item was rectified by the Contractor on 15 March 2018.

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 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:

- Drainage works/Building Service works at G.L J of HUH
- Platform ABWF and E&M works at HUH
- Modification of Hong Wan Path Ramp at SAT
- Green Roof Remaining Work near West Rail Line
- Roadworks 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 2018 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 58th Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 March 2018.

9.1.2 6 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

- Provide sufficient water spraying to prevent dust emission.
- Cover the cement bags with impervious sheeting to prevent dust emission.
- Cover stockpile with impervious sheeting to prevent dust and silty runoff generation

Water Quality Impact

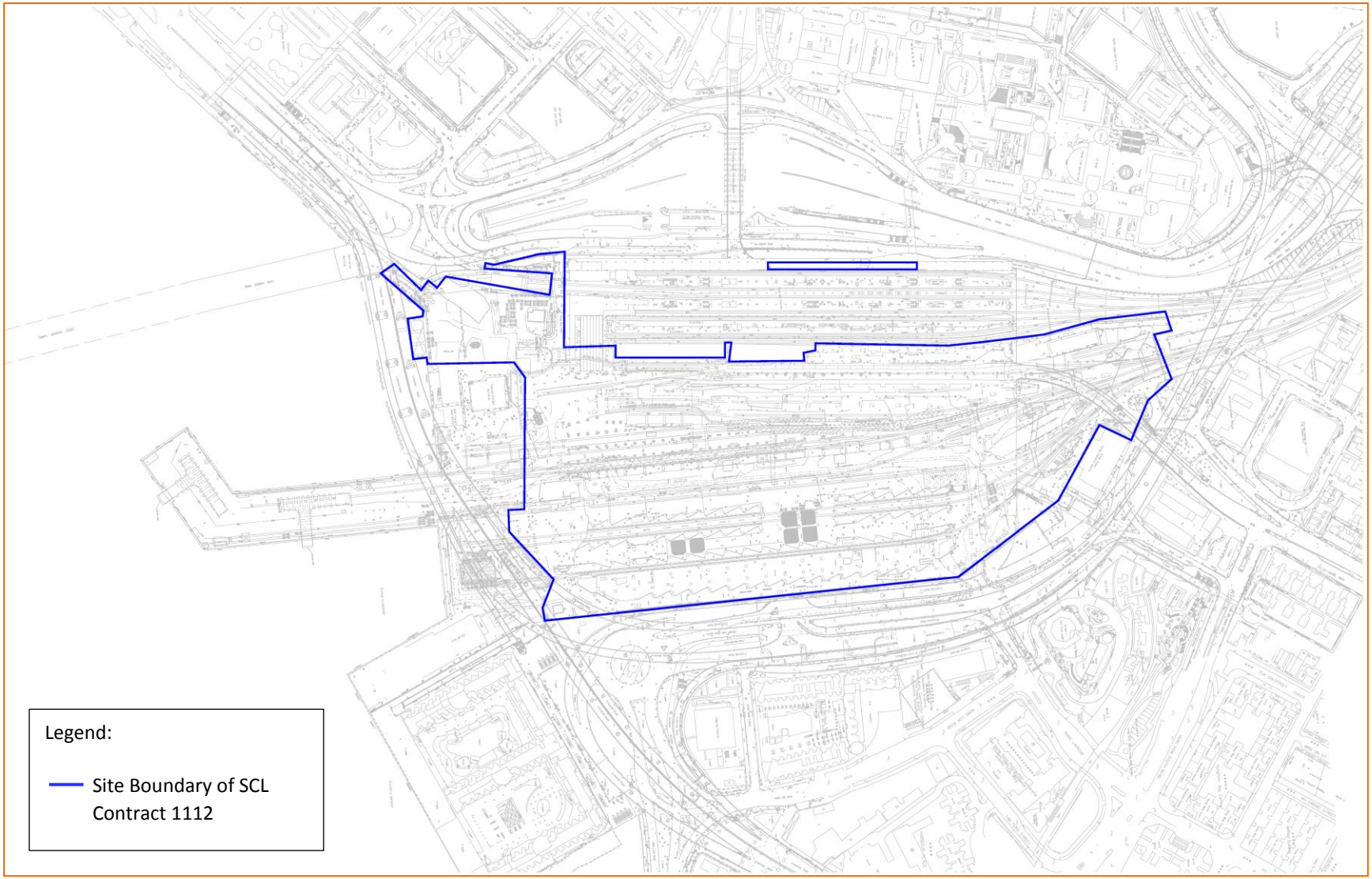
- Ensure site effluent was properly treated before discharge.

Chemical and Waste Management

- Remove the waste, provide garbage buns for waste collection and avoid waste accumulation.
- Provide secondary containment to all chemical containers to prevent land contamination.

APPENDIX A

Project Works Boundary


Legend:
Site Boundary of SCL Contract 1112

APPENDIX B

Construction Programme

Data Date : 25-Feb-18
Print Date : 06-Mar-18

MTR Shatin to Central Link - Contract 1112
Hung Hom Station and Stabling Sidings

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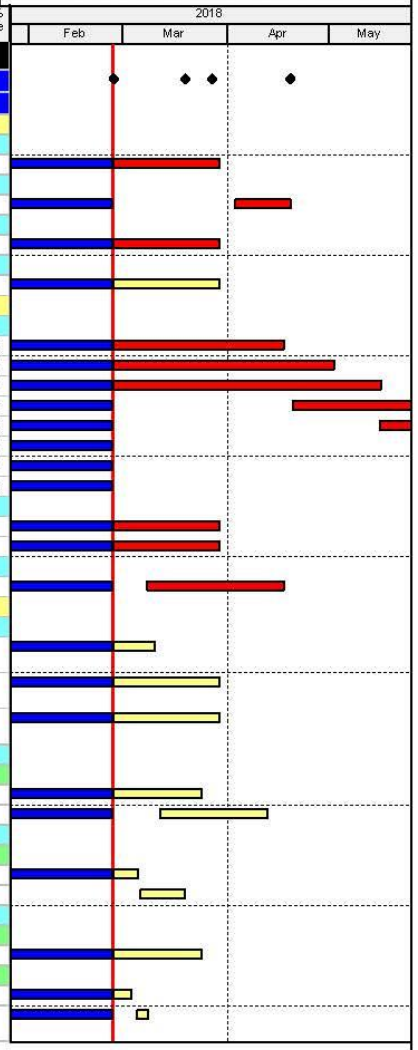
Activity ID	Activity Name	TCP1 Early Start	TCP1 Early Finish	Jan/2018 3MR Early Start	Jan/2018 3MR Early Finish	Jan/2018 Variance	Feb/2018 3MR Early Start	Feb/2018 3MR Early Finish	Feb/2018 Variance	Total Float	Activity % Complete
MTR SCL 1112 - February 18 Report (TCP)		03-May-14	04-Oct-17	26-Jan-18	13-Sep-18		26-Feb-18	09-Oct-18	-370	-117	
PRELIMINARIES		27-Apr-16	24-Jan-17	26-Jan-18	22-Mar-18		26-Feb-18	19-Apr-18	-450	-4	
HUNG HOM STATION (HOM)		03-May-14	19-Apr-17	26-Jan-18	13-Sep-18		26-Feb-18	09-Oct-18	-435	-134	
HUH South Approach Tunnel (SAT)		14-Jul-15	27-Apr-16	26-Jan-18	22-Mar-18		26-Feb-18	19-Apr-18	-579	-4	
Utilities		25-Feb-16	13-Apr-16	26-Jan-18	06-Mar-18		26-Feb-18	29-Mar-18	-577	-452	
01112.33010	SAT - Storm Drain DSDD-1112-117 Hong Wan Path	25-Feb-16	13-Apr-16	26-Jan-18	06-Mar-18	-432	26-Feb-18	29-Mar-18	-577	-452	90%
Modification of Hong Wan Path Ramp		21-Apr-16	27-Apr-16	07-Mar-18	22-Mar-18		03-Apr-18	19-Apr-18	-579	-452	
01112.32780	HWP - Construct New Roadworks	21-Apr-16	27-Apr-16	07-Mar-18	22-Mar-18	-432	03-Apr-18	19-Apr-18	-579	-452	75%
Building Services Works		23-Jan-16	31-Mar-16	26-Jan-18	06-Mar-18		26-Feb-18	29-Mar-18	-587	-452	
A3170	P/O - Installation of new RWO (DR)	23-Jan-16	31-Mar-16	26-Jan-18	06-Mar-18	-432	26-Feb-18	29-Mar-18	-587	-452	75%
EVA and Fireman Access		14-Jul-15	27-Jul-15	26-Jan-18	06-Mar-18		26-Feb-18	29-Mar-18	-785	10	
01112.32910	SAT - EVA Street Furniture & Signage	14-Jul-15	27-Jul-15	26-Jan-18	06-Mar-18	30	26-Feb-18	29-Mar-18	-785	10	95%
HUH (New NSL and EWL)		28-Nov-15	19-Apr-17	26-Jan-18	13-Sep-18		26-Feb-18	09-Oct-18	-435	-146	
Platform ABWF and E&M (Degree 2 & Degree 3 Works)		01-Aug-16	19-Apr-17	26-Jan-18	13-Sep-18		26-Feb-18	09-Oct-18	-435	-204	
01112.29120	HUH - EWL Platform Level BOH ABWF to 4F Degree 2	05-Sep-16	16-Nov-16	26-Jan-18	20-Mar-18	-390	26-Feb-18	17-Apr-18	-410	-410	63.96%
01112.29110	HUH - NSL Platform Level ABWF to 4B Degree 2	01-Aug-16	30-Sep-16	26-Jan-18	07-Apr-18	-418	26-Feb-18	02-May-18	-460	-438	81.41%
01112.29170	HUH - NSL Platform Level BOH ABWF to 4A Degree 2	01-Aug-16	17-Oct-16	26-Jan-18	21-Apr-18	-121	26-Feb-18	16-May-18	-460	-141	81.41%
01112.29270	HUH - EWL Platform Level ABWF to 4G Degree 2	05-Sep-16	14-Nov-16	23-Mar-18	15-May-18	-432	20-Apr-18	08-Jun-18	-455	-452	63.96%
01112.29010	HUH - NSL Platform Level BOH ABWF to 4A Degree 3	03-Jan-17	17-Mar-17	21-Apr-18	30-Jun-18	-121	16-May-18	25-Jul-18	-396	-141	63.31%
01112.29140	HUH - NSL Platform Level ABWF to 4B Degree 3 (Phase 1)	03-Jan-17	25-Feb-17	12-Jun-18	31-Jul-18	-418	07-Jul-18	23-Aug-18	-438	-438	63.31%
01112.29130	HUH - EWL Platform Level BOH ABWF to 4F Degree 3	04-Feb-17	19-Apr-17	05-Jun-18	15-Aug-18	-160	29-Jun-18	07-Sep-18	-410	-180	60.21%
01112.29240	HUH - EWL Platform Level ABWF to 4G Degree 3 (Phase 1)	04-Feb-17	25-Mar-17	26-Jul-18	13-Sep-18	-432	18-Aug-18	09-Oct-18	-452	-452	60.21%
Utilities		28-Nov-15	04-Jul-16	26-Jan-18	06-Mar-18		26-Feb-18	29-Mar-18	-511	-2	
01112.29080	HUH - Water WM-1112-107	18-Jun-16	04-Jul-16	26-Jan-18	06-Mar-18	18	26-Feb-18	29-Mar-18	-511	-2	60%
01112.29090	HUH - Telecom TEL-1112-104	28-Nov-15	28-Dec-15	26-Jan-18	06-Mar-18	18	26-Feb-18	29-Mar-18	-658	-2	90%
Reinstatement		30-Jun-16	08-Sep-16	06-Feb-18	20-Mar-18		08-Mar-18	17-Apr-18	-466	-2	
01112.29210	HUH - Reinstatement	30-Jun-16	08-Sep-16	06-Feb-18	20-Mar-18	18	08-Mar-18	17-Apr-18	-466	-2	92%
HUH North Approach Tunnel (NAT) & North Fan Area (NFA)		03-May-14	18-Oct-16	26-Jan-18	15-Mar-18		26-Feb-18	12-Apr-18	-431	14	
Utilities		03-May-14	06-Jun-15	26-Jan-18	06-Mar-18		26-Feb-18	29-Mar-18	-826	22	
01112.31910	NFA - Storm Drain DSDD-112-118 Cheung Wan Road Drainage Connect to New Box Culvert	24-Apr-15	06-Jun-15	26-Jan-18	08-Feb-18	58	26-Feb-18	10-Mar-18	-810	38	90%
01112.31960	NFA - Sewer DSDS-1112-117, Temporary Support & Abandon DSDS-1112-007	12-Sep-14	12-Nov-14	26-Jan-18	06-Mar-18	30	26-Feb-18	29-Mar-18	-988	10	95%
01112.31970	NFA - Sewer DSDS-1112-118, Temporary Support & Abandon DSDS-1112-008	03-May-14	30-Jun-14	26-Jan-18	06-Mar-18	30	26-Feb-18	29-Mar-18	-1100	10	95%
NSL/EWL Area 1 - NSL U100+347 to U100+408		04-Aug-16	29-Sep-16	26-Jan-18	15-Mar-18		26-Feb-18	12-Apr-18	-445	2	
Noise Barrier - Option 1		04-Aug-16	29-Sep-16	26-Jan-18	15-Mar-18		26-Feb-18	12-Apr-18	-445	2	
01112.31410	N1 - Noise Barrier Erect Steel Structure	04-Aug-16	31-Aug-16	26-Jan-18	01-Mar-18	22	26-Feb-18	24-Mar-18	-457	2	95%
01112.31420	N1 - Install Absorptive Panels	01-Sep-16	29-Sep-16	09-Feb-18	15-Mar-18	22	12-Mar-18	12-Apr-18	-445	2	95%
Noise Enclosure & Stabling Siding Track		22-Aug-16	18-Oct-16	26-Jan-18	23-Feb-18		26-Feb-18	19-Mar-18	-414	19	
Noise Enclosure		22-Aug-16	18-Oct-16	26-Jan-18	23-Feb-18		26-Feb-18	19-Mar-18	-414	19	
01112.55120	NFA - Noise Metal Cladding	22-Aug-16	03-Oct-16	26-Jan-18	02-Feb-18	39	26-Feb-18	05-Mar-18	-414	19	98%
01112.55060	NFA - Acoustic Test	04-Oct-16	18-Oct-16	03-Feb-18	23-Feb-18	39	06-Mar-18	19-Mar-18	-414	19	0%
NSL/EWL Area 2 - NSL U100+408 to U100+466		06-Aug-16	24-Sep-16	26-Jan-18	01-Mar-18		26-Feb-18	24-Mar-18	-437	14	
ELS and Tunnel Structure		06-Aug-16	02-Sep-16	26-Jan-18	01-Mar-18		26-Feb-18	24-Mar-18	-455	14	
01112.81090	N2 - Install Noise Absorptive Panels	06-Aug-16	02-Sep-16	26-Jan-18	01-Mar-18	34	26-Feb-18	24-Mar-18	-455	14	95%
Noise Barrier - Option 1		13-Sep-16	24-Sep-16	26-Jan-18	06-Feb-18		26-Feb-18	08-Mar-18	-423	28	
01112.31590	N2 - Noise Barrier Erect Steel Structure	13-Sep-16	20-Sep-16	26-Jan-18	01-Feb-18	48	26-Feb-18	03-Mar-18	-423	28	95%
01112.31592	N2 - Install Absorptive Panels (Final Works to be completed after System Works)	21-Sep-16	24-Sep-16	02-Feb-18	06-Feb-18	48	05-Mar-18	08-Mar-18	-423	28	95%



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

Three Month Rolling Programme
(25-February-2018)

Project ID : 01112-3M60
Layout : February 2018 MPR
Page 1 of 2

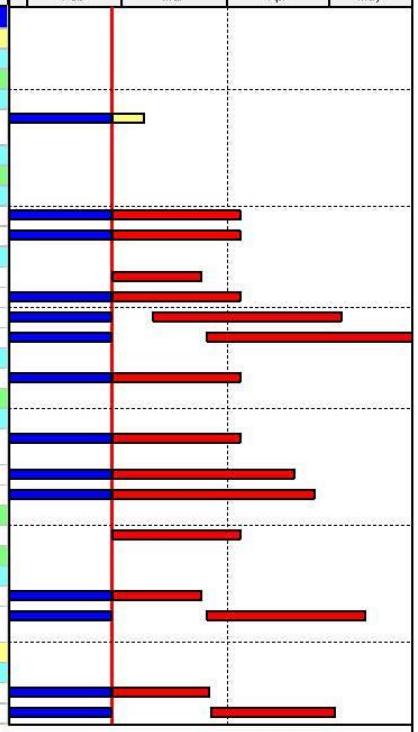
Date	Revision	Checked	Approved
13-May-13	Revision 1 - Recalled		
25-Jun-13	Revision 1		
10-Oct-13	Revision 2		

Data Date : 25-Feb-18
Print Date : 06-Mar-18

MTR Shatin to Central Link - Contract 1112
Hung Hom Station and Stabling Sidings

LEIGHTON 禮頓

Activity ID	Activity Name	TCP1 Early Start	TCP1 Early Finish	Jan/2018 3MR Early Start	Jan/2018 3MR Early Finish	Jan/2018 Variance	Feb/2018 3MR Early Start	Feb/2018 3MR Early Finish	Feb/2018 Variance	Total Float	Activity % Complete
HUH MODIFICATION		28-Oct-14	04-Oct-17	26-Jan-18	03-May-18		26-Feb-18	28-May-18	-236	17	
Modification Podium Concourse Level		28-Oct-14	04-Oct-17	26-Jan-18	03-May-18		26-Feb-18	28-May-18	-185	15	
Stage 1		28-Oct-14	20-Dec-14	26-Jan-18	05-Feb-18		26-Feb-18	07-Mar-18	-936	79	
Area M35		28-Oct-14	20-Dec-14	26-Jan-18	05-Feb-18		26-Feb-18	07-Mar-18	-936	79	
Modification of Smoke Extract Duct and Revise MOE Staircase at G.L. 23-25/B-C		28-Oct-14	20-Dec-14	26-Jan-18	05-Feb-18		26-Feb-18	07-Mar-18	-936	79	
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	26-Jan-18	05-Feb-18	99	26-Feb-18	07-Mar-18	-936	79	70%
Stage 3		03-Apr-17	04-Oct-17	26-Jan-18	03-May-18		26-Feb-18	28-May-18	-185	-35	
Area M26		03-Apr-17	28-Sep-17	26-Jan-18	03-May-18		26-Feb-18	28-May-18	-189	-35	
Construction of New Concession area at G.L. 28-32/E-J1		26-May-17	23-Sep-17	26-Jan-18	08-Mar-18		26-Feb-18	04-Apr-18	-150	-119	
01112.36490	S3 - ABWF works	26-May-17	10-Aug-17	26-Jan-18	08-Mar-18	-103	26-Feb-18	04-Apr-18	-188	-119	75%
01112.36500	S3 - Building services works (by 1173)	09-Jun-17	23-Sep-17	26-Jan-18	08-Mar-18	-103	26-Feb-18	04-Apr-18	-150	-119	80%
Civil and ABWF works for escalator U2-ESC 03, 04, 11-14 at G.L. 26-34/L-L1		03-Apr-17	22-Aug-17	26-Jan-18	03-May-18		26-Feb-18	28-May-18	-221	-35	
01112.36507	S3 - Install new seating area	28-Apr-17	27-May-17	26-Jan-18	01-Mar-18	-146	26-Feb-18	24-Mar-18	-244	-162	0%
01112.36510	S3 - Installation of new escalators (by 1172)	03-Apr-17	04-Jul-17	26-Jan-18	08-Mar-18	-127	26-Feb-18	04-Apr-18	-220	-119	95%
01112.36520	S3 - Associated ABWF works	22-May-17	01-Aug-17	08-Feb-18	10-Apr-18	-127	10-Mar-18	04-May-18	-220	-16	95%
01112.36508	S3 - Building services works (by 1173)	29-May-17	22-Aug-17	02-Mar-18	03-May-18	-146	26-Mar-18	28-May-18	-221	-162	85%
Civil and ABWF works for Lift U2-LT-01 at G.L.29-30/K1-M1		26-Jul-17	28-Sep-17	26-Jan-18	08-Mar-18		26-Feb-18	04-Apr-18	-146	-119	
01112.36560	S3 - Installation of lift (by 1159) [UT-LT-01]	26-Jul-17	28-Sep-17	26-Jan-18	08-Mar-18	-103	26-Feb-18	04-Apr-18	-146	-119	95%
Area M28		22-May-17	03-Oct-17	26-Jan-18	29-Mar-18		26-Feb-18	26-Apr-18	-161	-137	
Extension of new F&B M/F & civil provision for escalator U2-ESC-20 & 21 at G.L. 37-39/		22-May-17	03-Oct-17	26-Jan-18	29-Mar-18		26-Feb-18	26-Apr-18	-161	-137	
01112.36370	S3 - Construction of new decking and associated ABWF works	22-May-17	01-Aug-17	26-Jan-18	08-Mar-18	-121	26-Feb-18	04-Apr-18	-196	-137	95%
01112.36400	S3 - Installation of new escalators (by 1172)	02-Aug-17	03-Oct-17	26-Jan-18	23-Mar-18	-116	26-Feb-18	20-Apr-18	-156	-132	95%
01112.36380	S3 - Building services work (by 1173)	26-Jun-17	03-Oct-17	26-Jan-18	29-Mar-18	-121	26-Feb-18	26-Apr-18	-161	-137	95%
Building Services		30-Aug-17	04-Oct-17	26-Jan-18	08-Mar-18		26-Feb-18	04-Apr-18	-142	-119	
01112.36620	BS - S3 Testing and Commissioning	30-Aug-17	04-Oct-17	26-Jan-18	08-Mar-18	-99	26-Feb-18	04-Apr-18	-142	-119	0%
Area M19-M25		04-May-17	14-Jul-17	26-Jan-18	17-Apr-18		26-Feb-18	11-May-18	-241	-149	
Upgrading wall Finishes at G.L. C-E/26-28		04-May-17	14-Jul-17	26-Jan-18	17-Apr-18		26-Feb-18	11-May-18	-241	-149	
01112.36580	S3 - ABWF works (Install cladding)	04-May-17	31-May-17	26-Jan-18	01-Mar-18	-133	26-Feb-18	24-Mar-18	-241	-149	90%
01112.36590	S3 - Installation of Advertising panel and associated BS works	01-Jun-17	14-Jul-17	02-Mar-18	17-Apr-18	-133	26-Mar-18	11-May-18	-241	-149	80%
Area M33, M34		06-Sep-16	09-Nov-16	26-Jan-18	07-Apr-18		26-Feb-18	02-May-18	-428	-311	
Modification Walkway Level (Mid Level)		06-Sep-16	09-Nov-16	26-Jan-18	07-Apr-18		26-Feb-18	02-May-18	-428	-311	
01112.99986	ENT E - Floor finish (NTH)	06-Sep-16	06-Oct-16	26-Jan-18	02-Mar-18	-304	26-Feb-18	26-Mar-18	-429	-311	30%
01112.99988	ENT E - Wall finish & ceiling (NTH) up to 4K Degree 1 Completion	08-Oct-16	09-Nov-16	03-Mar-18	07-Apr-18	-304	27-Mar-18	02-May-18	-428	-311	80%



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

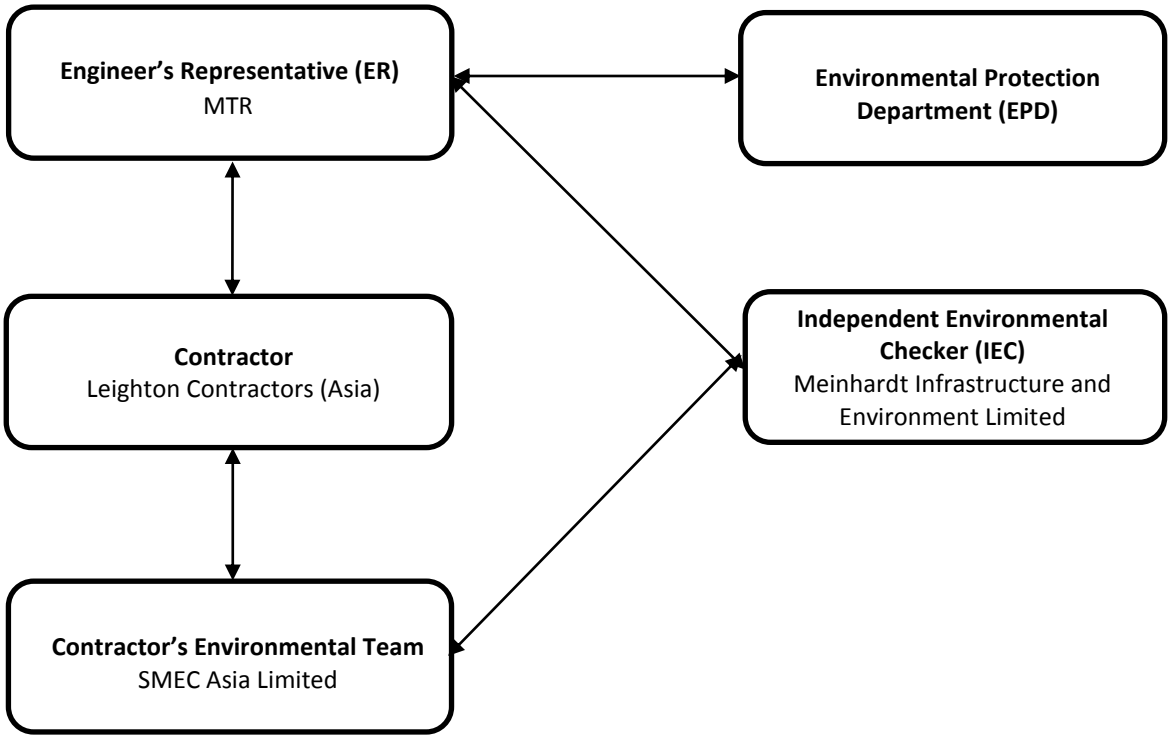
Three Month Rolling Programme
(25-February-2018)

Project ID : 01112-3M60
Layout : February 2018 MPR
Page 2 of 2

Date	Revision	Checked	Approved
13-May-13	Revision 1 - Recalled		
25-Jun-13	Revision 1		
10-Oct-13	Revision 2		

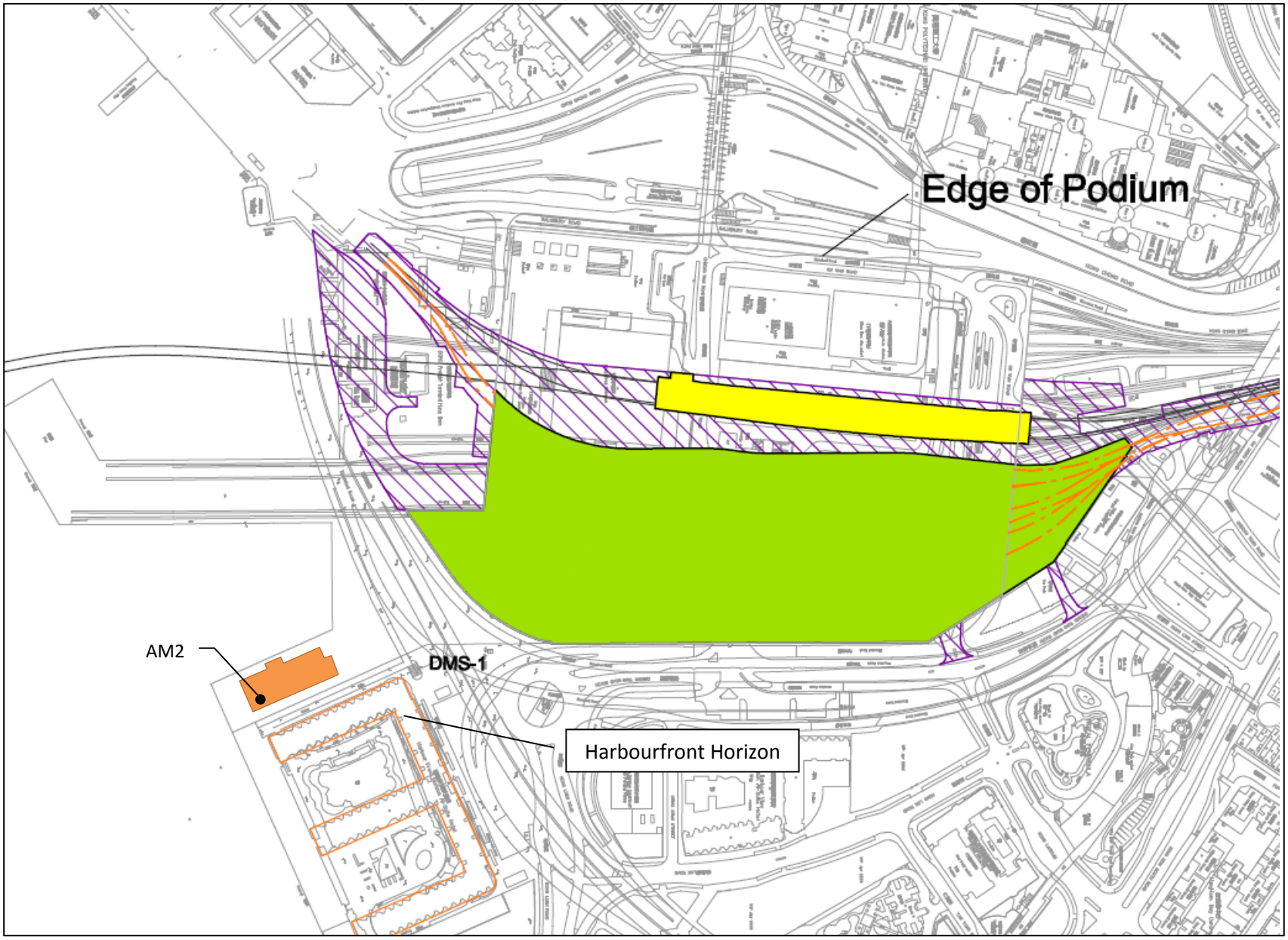
APPENDIX C

Project Organisation for Environmental Works


Engineer's Representative (ER)
MTR
Environmental Protection Department (EPD)
Contractor
Leighton Contractors (Asia)
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:	January 16, 2018
Sampler:	Hunghom MTR TSP	Next Calibration Date:	March 16, 2018
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

-2017-2017-2017-2017-2017

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.11965
Model:	TE-5025A	Qstd Intercept:	-0.02696
Serial#:	1941	Date Certified:	February 28, 2017

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	12.00	1.918	58.0	67.63	Slope =	34.9050
2	10.00	1.752	54.0	62.97	Intercept =	1.3158
3	7.80	1.549	48.0	55.97	Corr. coeff.=	0.9992
4	5.00	1.243	38.0	44.31		
5	3.00	0.966	30.0	34.98	# of Observations:	5

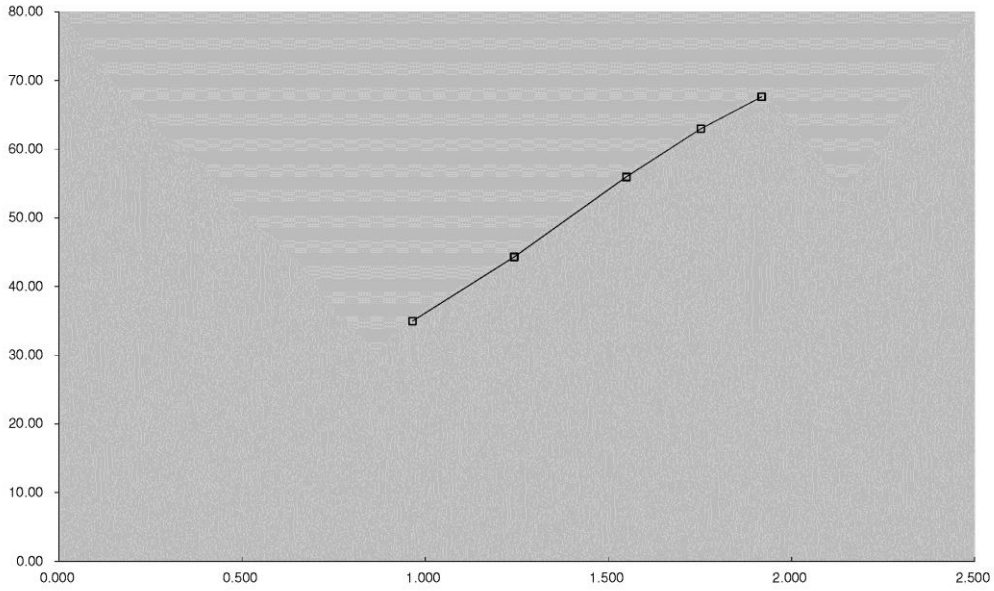
Calculations

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: January 16, 2018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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 16, 2018
Sampler:	Hunghom MTR TSP	Next Calibration Date:	May 16, 2018
Serial No	694-0665	Tech:	Sam Wong

CONDITIONS

Barometric Pressure (in Hg):	39.95	Corrected Pressure (mm Hg):	1015
Temperature (deg F):	79	Temperature (deg K):	299
Average Press. (in Hg):	39.95	Corrected Average (mm Hg):	1015
Average Temp. (deg F):	79	Average Temp. (deg K):	299

-2017-2017-2017-2017-2017

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	1.99748
Model:	TE-5025A	Qstd Intercept:	-0.00957
Serial#:	1785	Date Certified:	May 19, 2017

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	12.00	2.005	58.0	66.89	Slope =	32.8932
2	10.00	1.831	54.0	62.28	Intercept =	1.5830
3	7.80	1.617	48.0	55.36	Corr. coeff.=	0.9992
4	5.00	1.296	38.0	43.83		
5	3.00	1.005	30.0	34.60	# of Observations:	5

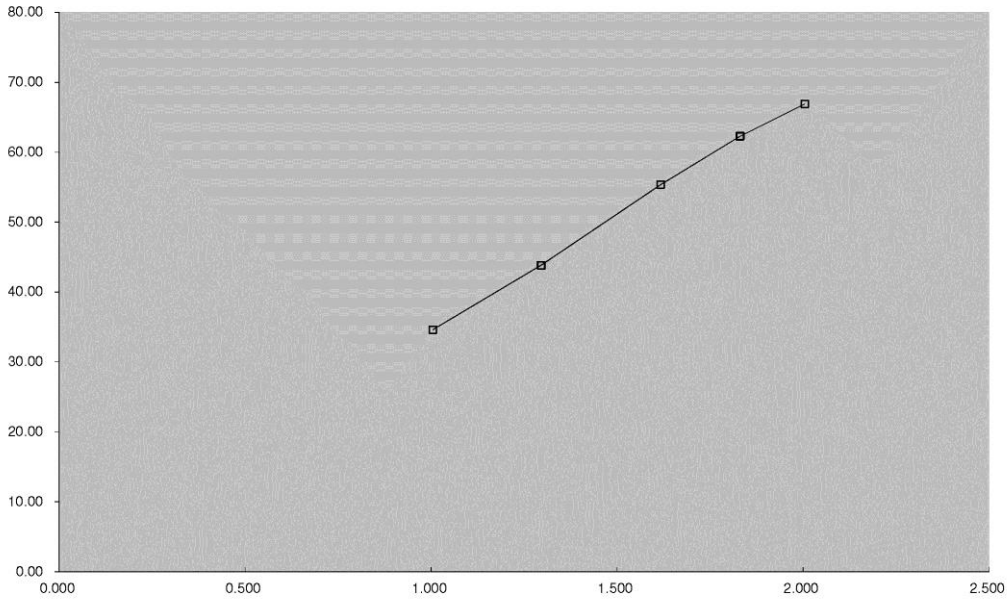
Calculations

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 16, 2018


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

TISCH Environmental

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 19, 2017 Rootsmeter S/N 0438320 Ta (K) - 296
Operator Tisch Orifice I.D. - 1785 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	1.3960	3.2	2.00
2	NA	NA	1.00	0.9790	6.4	4.00
3	NA	NA	1.00	0.8760	7.9	5.00
4	NA	NA	1.00	0.8390	8.8	5.50
5	NA	NA	1.00	0.6900	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9900	0.7092	1.4102		0.9957	0.7133	0.8881
0.9858	1.0070	1.9943		0.9915	1.0128	1.2560
0.9837	1.1230	2.2296		0.9894	1.1294	1.4042
0.9826	1.1712	2.3385		0.9883	1.1779	1.4728
0.9775	1.4167	2.8203		0.9832	1.4249	1.7762
Qstd slope (m) =		1.99748		Qa slope (m) =		1.25079
intercept (b) =		-0.00957		intercept (b) =		-0.00603
coefficient (r) =		0.99985		coefficient (r) =		0.99985
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

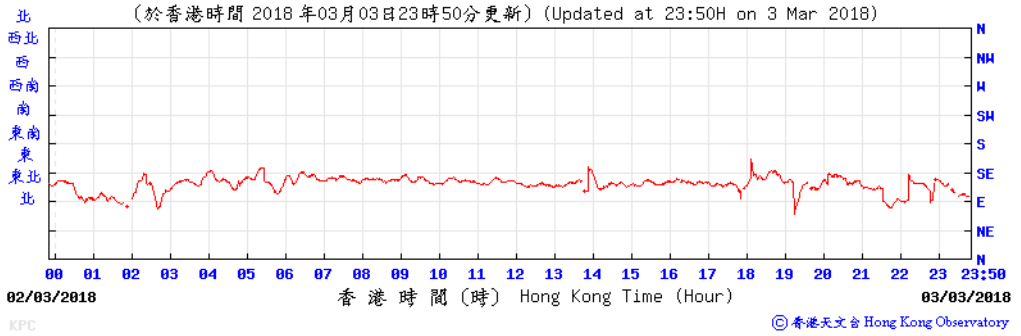
For subsequent flow rate calculations:

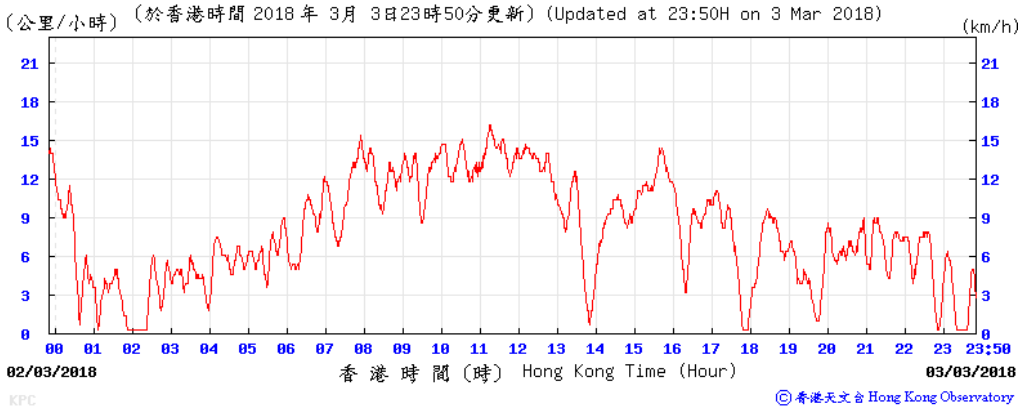
Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

APPENDIX F

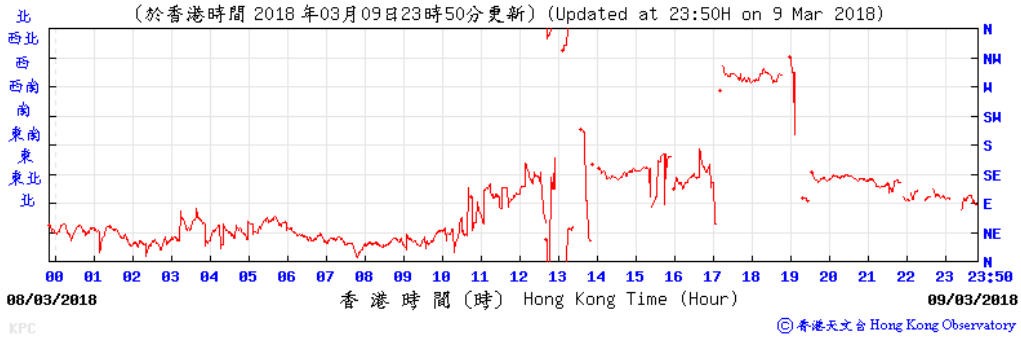
Wind Data

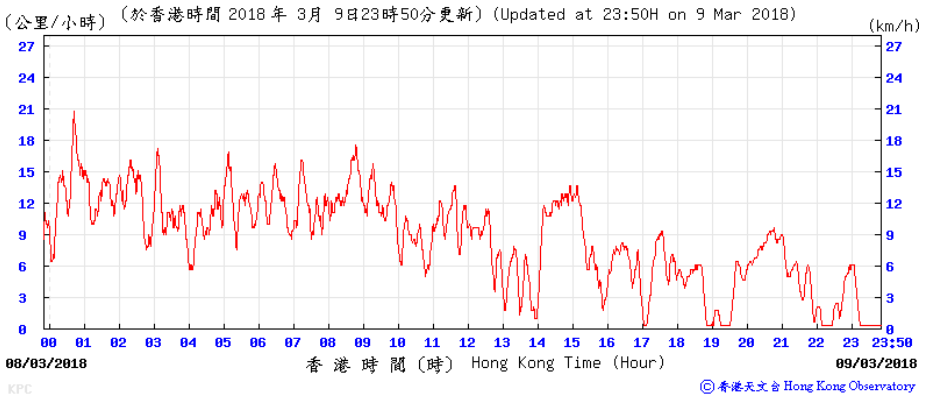
3 March 2018



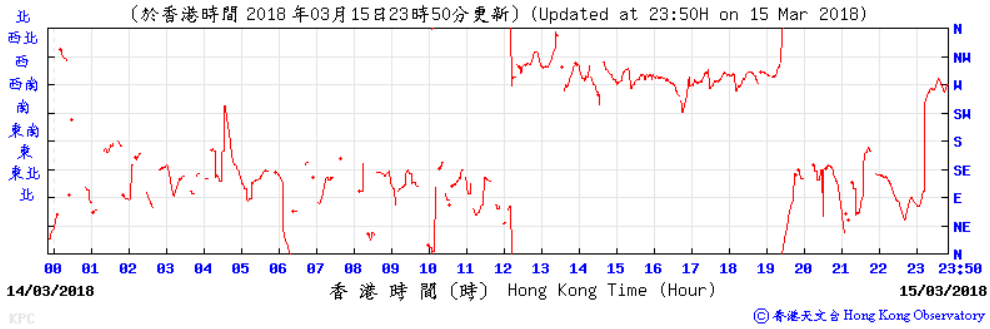


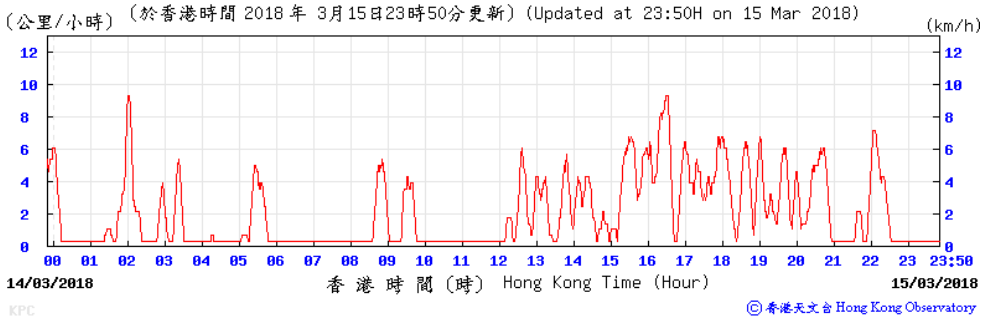
9 March 2018



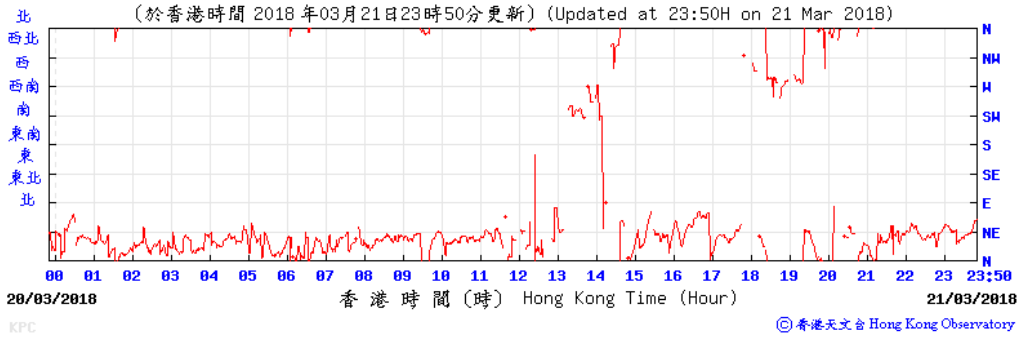


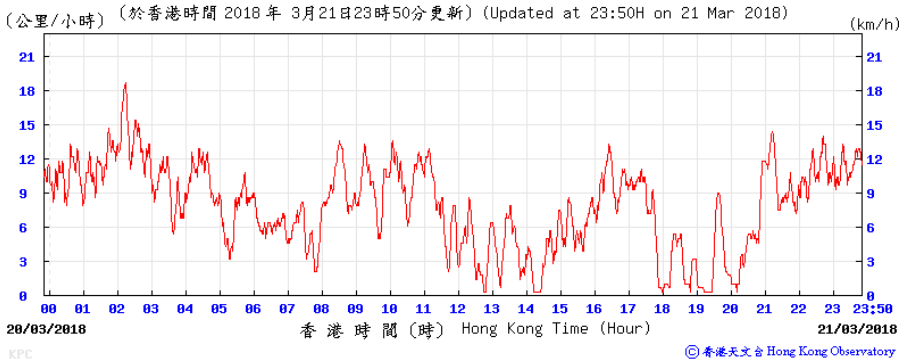
15 March 2018



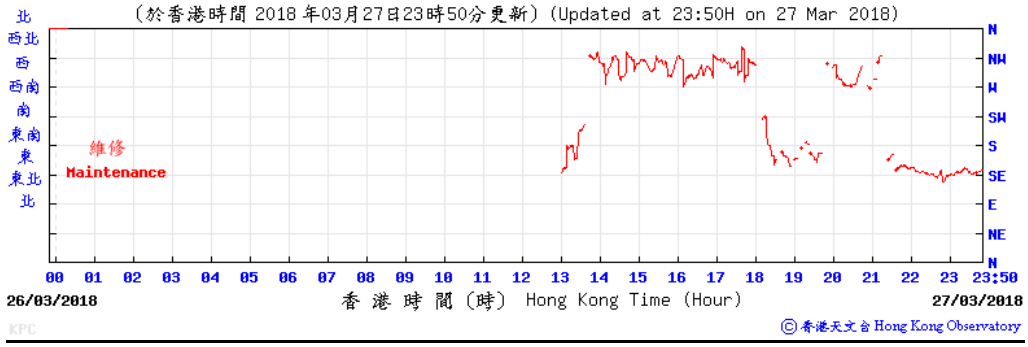


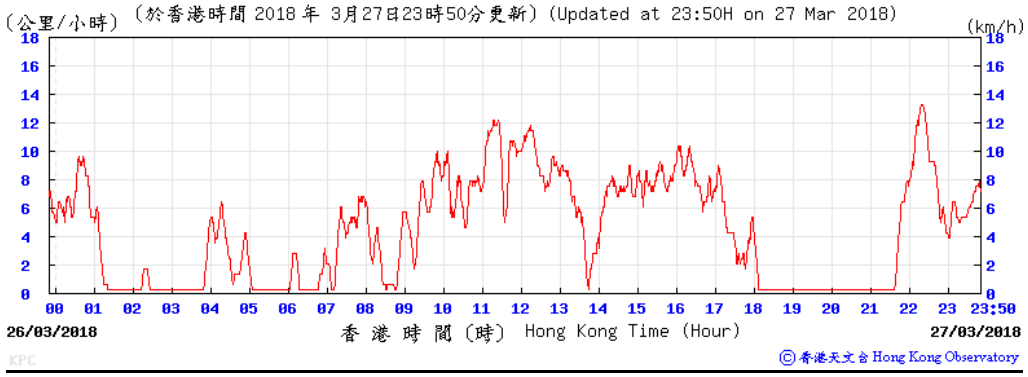
21 March 2018



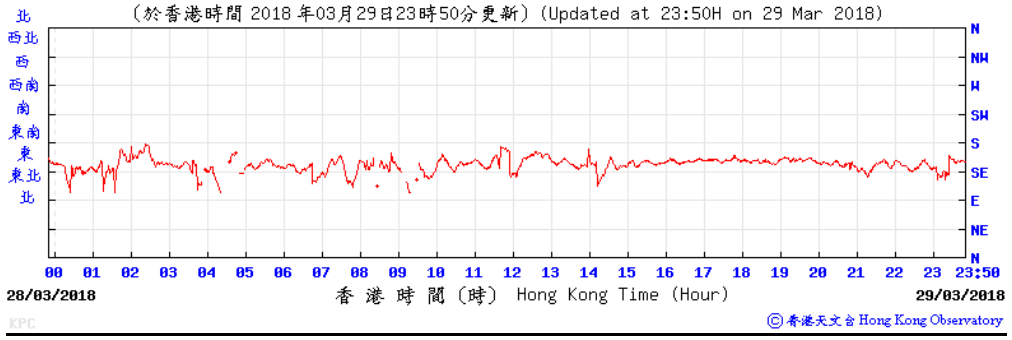


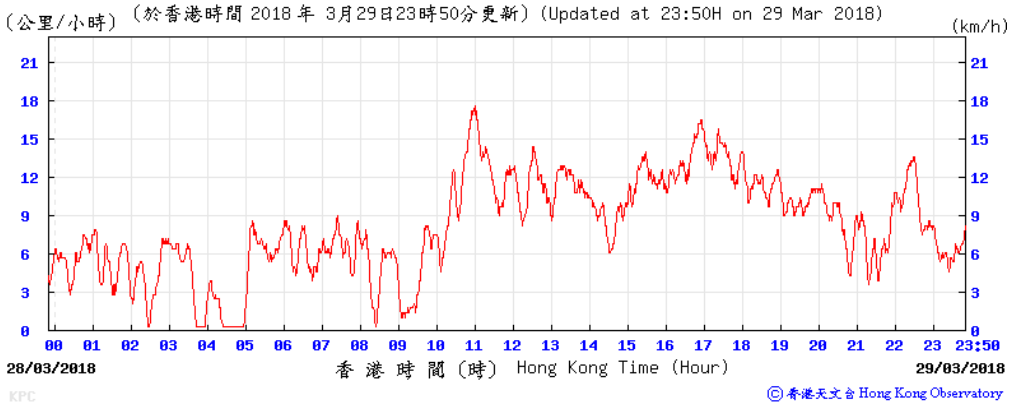
27 March 2018





29 March 2018





Appendix G

Environmental Monitoring Programme

Environmental Monitoring Schedule for SCL1112 in March 2018

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 24 hr TSP	30	31

Environmental Monitoring Schedule for SCL1112 in April 2018

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

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	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	^

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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	^

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	• 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	^

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Water Quality (Construction Phase)							
S10.7.1 of Ref. 1;S8.41 – 8.39 and S8.50 of Ref. 2; S10.7.1 of Ref. 3	In accordance with the Practice 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						^ ^ ^ ^ ^ ^

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	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	^ ^ ^ ^

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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

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	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	^

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	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	^

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Waste Management (Construction Phase)							
S11.4.1.1 of Ref. 1; S9.80 – 9.83 of Ref. 2; S11.4.1.1 of Ref.3	<u>Onsite sorting of C&D material</u> Geological assessment will be carried out by competent persons onsite during excavation to identify materials which are not suitable to use as aggregate in structural concrete (eg, volcanic rock, Aplite dyke rock, etc). Volcanic rock and Aplite dyke rock will be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator will also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use. Details regarding control measures at source site and crushing facilities will be submitted by the Contractors for the Engineer to review and agree. In addition, site records will also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) ref: 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc will also be explored.	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	Contractor	All construction sites	Construction stage	DEVB TC(W) ref. 6/2010	^
S11.5.1 of Ref.1; S9.72 – 9.74 of Ref. 2; S11.5.1 of Ref.3	<u>Construction and demolition material</u> • 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	^ ^ ^ ^ ^ ^ ^

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	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	* ^ ^ ^

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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

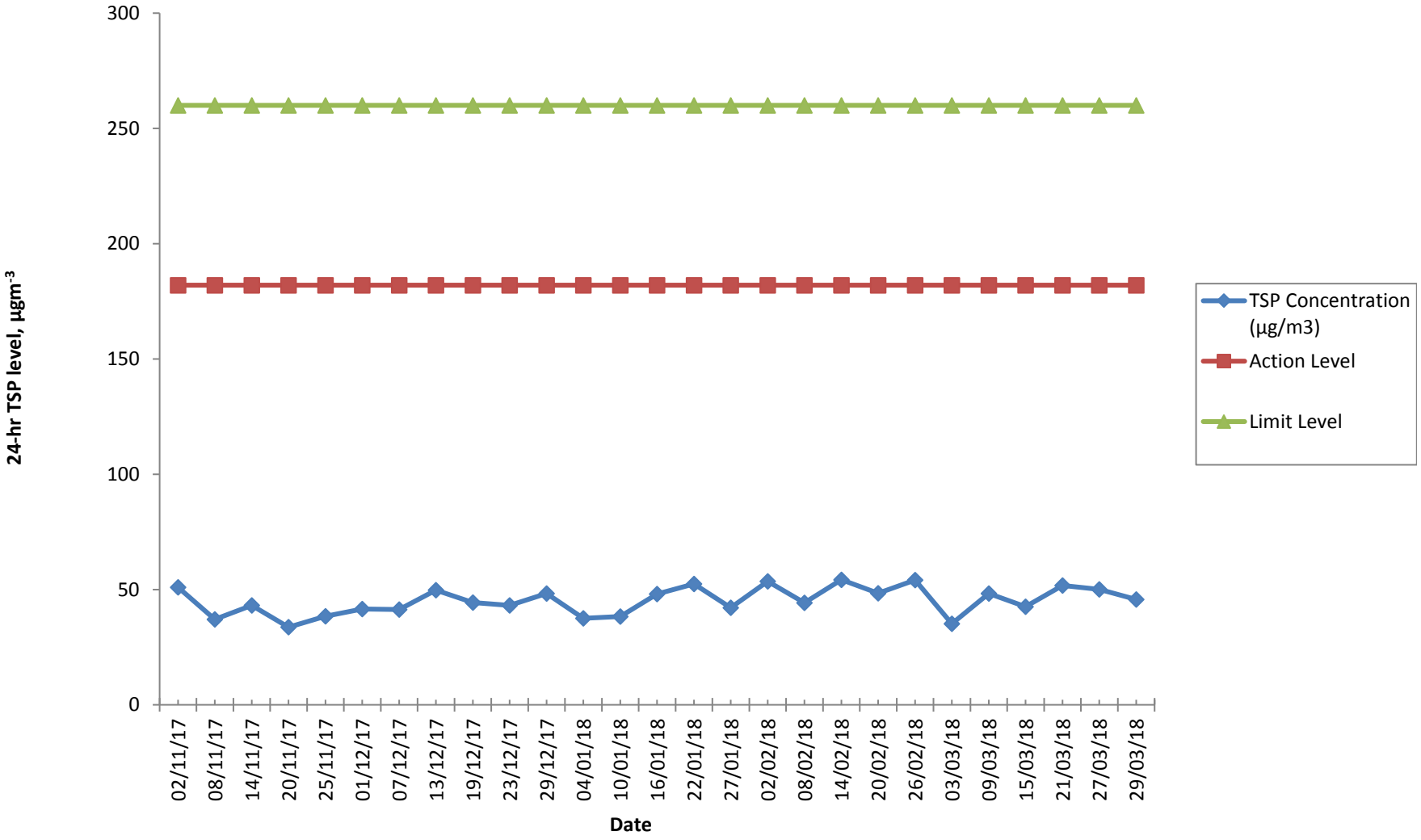
APPENDIX J

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				
03/03/18	C421	2.7966	2.8539	0.0573	16929.30	16953.30	24.00	40	40	40.0	1631.05	35.1307	Sunny	-
09/03/18	C422	2.8888	2.9676	0.0788	16953.30	16977.30	24.00	40	40	40.0	1631.05	48.3124	Sunny	-
15/03/18	C423	2.8453	2.9147	0.0694	16977.30	17001.30	24.00	40	40	40.0	1631.05	42.5493	Sunny	-
21/03/18	C424	2.8532	2.9376	0.0844	17001.30	17025.30	24.00	40	40	40.0	1631.05	51.7458	Sunny	-
27/03/18	C504	2.8057	2.8874	0.0817	17025.30	17049.30	24.00	40	40	40.0	1631.05	50.0904	Sunny	-
29/03/18	C505	2.8013	2.8759	0.0746	17049.30	17073.30	24.00	40	40	40.0	1631.05	45.7374	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 '000m³)									(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 '000m³)									(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 '000m³)									(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
Apr-17	-	-	0.83	0	0	0.83[Note39]	0	0	0	0	0.36	0	0	0	0	567.73
May-17	-	-	1.23	0	0	1.23[Note40]	0	0	0	0	0.16	0	0	0	0	597.93
Jun-17	-	-	0.70	0	0	0.70[Note41]	0	0	0	0	0.17	0	0	0	0	440.50
Jul-17	-	-	0.98	0	0	0.98[Note42]	0	0	0	0	0.31	0	0	0	0	371.00
Aug-17	-	-	0.63	0	0	0.63[Note43]	0	0	0	0	0.17	0	0	0	0	393.48
Sep -17	-	-	0.21	0	0	0.21[Note44]	0	0	0	0	0.23	0	0.11	0	0	362.47
Oct-17	-	-	0.25	0	0	0.25[Note45]	0	0	0	0	0.10	0	0	0	0	377.69
Nov-17	-	-	0.66	0	0	0.66[Note46]	0	0	0	11.77	0.35	0	0	0	0	788.65
Dec-17	-	-	0.91	0	0	0.91[Note47]	0	0	0	0	0	0	0	0	0	446.48
Jan-18	-	-	0.83	0	0	0.83[Note48]	0	0	0	0	0	0	0	0	0	571.95
Feb-18	-	-	0.35	0	0	0.35[Note49]	0	0	0	0	0	0	0	0	0	395.37
Mar-18	-	-	0.66	0	0	0	0	0	0.66	0	0	0	0	0	0	760.13
TOTAL	40.35	0.09	453.56	0.00	0.42	239.63	4.86	3.36	205.94	9671.01	21.30	3790.76	3.18	6.74	8.11	18504.43

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.
39. 830 m^3 of the Inert C&D materials were reused in SCL1121.
40. 1,230 m^3 of the Inert C&D materials were reused in SCL1121.
41. 700 m^3 of the Inert C&D materials were reused in SCL1121.
42. 980 m^3 of the Inert C&D materials were reused in SCL1121.
43. 630 m^3 of the Inert C&D materials were reused in SCL1121.
44. 210 m^3 of the Inert C&D materials were reused in SCL1121.
45. 250 m^3 of the Inert C&D materials were reused in SCL1121.
46. 660 m^3 of the Inert C&D materials were reused in SCL1121.
47. 910 m^3 of the Inert C&D materials were reused in SCL1121.
48. 830 m^3 of the Inert C&D materials were reused in SCL1121.
48. 350 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	-
Apr-17	-	0	-	-	0	-
May-17	-	0	-	-	0	-
Jun-17	-	0	-	-	0	-
Jul-17	-	0	-	-	0	-
Aug-17	-	0	-	-	0	-
Sep-17	-	0	-	-	0	-
Oct-17	-	0	-	-	0	-
Nov-17	-	0	-	-	0	-
Dec-17	-	0	-	-	0	-
Jan-18	-	0	-	-	0	-
Feb-18	-	0	-	-	0	-
Mar-18	-	0	-	-	0	-
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	19 January 2018	Public comment received by EPD, EPD's Ref. No. K01/RE/00002030-18 & K01/RE/00002056-18	General construction noise except renovation (within Restricted Hours)	Hung Hom MTR Station	• Environmental performance at the site and implementation status of proposed noise mitigation measures were immediately reviewed by the Contractor on 19 January 2018. • Ceiling panel works involving elevated working platforms (scissor lifts or cherry pickers) inside the concourse was carried out on 19 and 20 January 2018. All works were carried out behind the door leaves with the concourse entrance closed. • On 19 January 2018, there was also works carried out outside the concourse which required the use of a scissor lift for hoarding removal at North Concourse and paint removal at East Concourse. • The scissor lift platform mobilization sound, i.e. "beeping" sound, has already been muted to minimise sound since the working area was already fenced off with a lookout man provided. However, the level sensor of the scissor lift would be activated as a safety warning signal whenever the platform is at a high position with balance at risk. • All works carried out by SCL Contract 1112 on 19 and 20 January 2018 were covered by valid CNPs. • Investigation report submitted to EPD on 26 January 2018.

	Date Received	Reference No.	Subject	Location of Concern	Status
Environmental Complaints	7 December 2017	Public comment received by EPD, EPD's Ref. No. K01/RE/ 00039690-17	Dust Nuisance	Hong Kong Coliseum, 9 Cheong Wan Road, Hung Hom	• The Contractor immediately reviewed environmental performance at the site and implementation status of dust mitigation measures upon receipt of Notice of Complaint from EPD. • The Contractor confirmed that remediation work of concrete wall on top of the vent shaft was on-going at SAT (near the podium of the Hong Kong Coliseum). • Tarpaulin sheet as a construction dust barrier was implemented as dust mitigation measures during the course of the remediation work, and additional mitigation measure in the form of water spraying for dust suppression in the works area was immediately provided by the Contractor after site review. • Given the fact that remediation works surrounding the podium are completed and mitigation measures in place are considered sufficient and effective, the construction works for Contract 1112 is unlikely to cause any dust nuisance. • Investigation report submitted to EPD on 15 December 2017.
Environmental Complaints	10 April 2017	Public comment received by EPD, EPD's Ref. No. K01/RE/00010598 -17	General construction noise except renovation (within Restricted Hours)	The Metropolis, No. 7-10 Metropolis Drive, Tsim Sha Tsui	• ET conducted inspection to examine the environmental performance of the site on 13 April 2017. • The Contractor confirmed bulkhead wall demolition work using coring machine at SAT was carried out on 7 & 8 April 2017 during 1 am – 5 am behind the door leaves and no machinery that would generate beeping sound was involved. • On the two nights from 6 to 8 April 2017, installation of smoke barrier was conducted under podium which required the use of a cherry picker. During cherry picker platform mobilization, safety warning signal, i.e. "beeping" sound, would be emitted. Since the cherry

	Date Received	Reference No.	Subject	Location of Concern	Status
					picker was located under the podium with no direct line of sight from the Metropolis Residence, safety warning signal should not be audible from above the podium or at the Metropolis Residence. • There was works involving the use of scissor lifts inside the concourse during April 2017 from 1 am – 5 am. However, such works were carried out with the main door closed. • On 6 & 7 April 2017, there were loading and unloading works using a crane lorry at the north side outside the Concourse from 1 am – 5 am. Backwards movement of the crane lorry would also emit a "beeping" sound as the safety warning signal to alert nearby worker of the movement of the vehicle. • All works carried out by SCL Contract 1112 in early April 2017 are covered by valid CNPs. • Investigation report submitted to EPD on 2 May 2017.
Environmental Complaints	13 March 2017	Public comment received by EPD, EPD's Ref. No. EP3/K01/RE/0000 7049-17	General construction noise except renovation (within Restricted Hours)	Hong Kong Coliseum at No. 9 Cheong Wan Road, Tsim Sha Tsui	• ET conducted inspection to examine the environmental performance of the site on 16 March 2017. • 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

	Date Received	Reference No.	Subject	Location of Concern	Status
					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.
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
Environmental Complaints	11 April 2016	Public comment received by EPD, EPD's Ref. No. K01/RE/00008149 -16	Complaint of other air nuisance at Hung Hom Station, Tsim Sha Tsui	Hung Hom Station, Tsim Sha Tsui	• Complaint confirmed to be irrelevant to the construction works of the Project, no follow up required.
Environmental Complaints	24 March 2016	Public comment received by EPD, EPD's Ref. No. K01/RE/00006851 -16	"General construction noise except renovation (within Restricted Hours) from Hung Hom Station, Tsim Sha Tsui"	Hung Hom Station, Tsim Sha Tsui	• The Contractor confirmed that only mobilization, i.e. transportation of the equipment itself, of the scissor lift platforms were carried out during night time. During scissor lift platforms mobilization, safety warning signal (the "beeping" noise) would be emitted. The audible warning signal device cannot be switched off so as to alert nearby workers of the movement of the equipment. Silencing the device could induce safety concern and not advisable. • 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. • 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.

	Date Received	Reference No.	Subject	Location of Concern	Status
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.
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

	Date Received	Reference No.	Subject	Location of Concern	Status
Environmental Complaints	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 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
Environmental Complaints	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

	Date Received	Reference No.	Subject	Location of Concern	Status
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 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. Remarks: The summon was only sent to the individual. Neither Palgo Company Limited nor Leighton Contractors (Asia) Limited received the summons.
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 F

58th 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. 58

[Period from 1 to 31 March 2018]

Works Contract 1108 – Kai Tak Station and Associated Tunnels

(April 2018)

Certified by: Goldie Fung

Position: Environmental Team Leader

Date: 11 April 2018

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 2018

The Contents of this report have been certified by:

Ms. Goldie Fung
(Environmental Team Leader)

Environmental Pioneers & Solutions Limited
Flat A, 19/F, Chaiwan Industrial Centre,
20 Lee Chung Street, Chai Wan, Hong Kong
Tel: 2556 9172 Fax: 2856 2010

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Executive Summary

This is the fifty eighth 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 2018 to 31st March 2018.

Summary of the Construction Works undertaken during the Reporting Month

The major site activities in this reporting period were including:

- Open cut tunnel: General cleaning and defect rectification and SUA EVA construction.
- Cut and cover tunnel: General cleaning and defect rectification.
- Station: Leveling to F.F.L. in Area 3, installation of roof cladding and reflected ceiling at Entrance A, B & D, installation of glass canopy at DEE and SEE, installation of aluminum fins and external cladding at NVS and SVS, and installation of metal screen wall at DEE and SEE.

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. 17m^3 of general refuse were generated and disposed at landfill site. 18kg of paper, 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 1st, 6th, 13th, 20th and 27th March 2018. The representative of the IEC joined the site inspection on 20th March 2018. Details of the audit findings and implementation status are presented in Section 6.

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

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: General cleaning and defect rectification, SUA EVA construction.
- Cut and cover tunnel: General cleaning and defect rectification.
- Station: Installation of roof cladding and reflected ceiling at Entrance A, B & D, leveling to F.F.L in Area 3, installation of aluminum fins and external cladding at NVS and SVS, and installation of metal screen wall at DEE and SEE.

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 fifty eighth monthly EM&A Report which summarises the audit findings for the EM&A programme during the reporting period from 1st March 2018 to 31st March 2018.

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: General cleaning and defect rectification and SUA EVA construction.
- Cut and cover tunnel: General cleaning and defect rectification.
- Station: Leveling to F.F.L. in Area 3, installation of roof cladding and reflected ceiling at Entrance A, B & D, installation of glass canopy at DEE and SEE, installation of aluminum fins and external cladding at NVS and SVS, and installation of metal screen wall at DEE and SEE.

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-RE0033-18	26/01/2018	25/07/2018	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	Fifty seventh EM&A Report	14th March 2018

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
March 2018	0 m^3	17 m^3	0 kg	18 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 1st, 6th, 13th, 20th and 27th March 2018. The representative of the IEC joined the site inspection on 20th March 2018. 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	23 Jan 18 1, 6, 13 & 22 Feb 18 1, 6 Mar 18	Open stockpile was observed at Area 1.	Contractor was reminded to cover the open stockpile with tarpaulin sheets for dust suppression.	Open stockpile at Area 1 was removed by contractor.	13 Mar 18	/
	6, 13, 20 & 27 Mar 18	Haul road at Area 3 was observed dry and dusty.	Contractor was reminded to increase watering frequencies on haul road to prevent dust generation.	Follow-up action will be inspected during next reporting month.	/	/
Water	N/A	N/A	N/A	N/A	N/A	/
Waste / Chemical Management	6, 13 & 22 Feb 18 1, 6 & 13 Mar 18	Chemical residual was observed inside the drip tray at Area 1.	Contractor was reminded to remove the chemical waste to prevent chemical leakage.	Chemical residual at Area 1 was removed by contractor.	20 Mar 18	/
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

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: General cleaning and defect rectification, SUA EVA construction.
- Cut and cover tunnel: General cleaning and defect rectification.
- Station: Installation of roof cladding and reflected ceiling at Entrance A, B & D, leveling to F.F.L in Area 3, installation of aluminum fins and external cladding at NVS and SVS, and installation of metal screen wall at DEE and SEE.

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 fifty eighth monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works undertaken during 1st March 2018 to 31st March 2018 in accordance with the EM&A Manual and the requirement under EP-438/2012/K.

5 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.

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:

Noise Impact

- N/A

Air Quality Impact

- Cover the open stockpiles with tarpaulin sheet to prevent dust generation.
- Increase watering frequencies on haul road to prevent dust generation.

Water Quality Impact

- Remove the chemical waste to prevent chemical leakage.

Chemical Management

- N/A

Waste Management

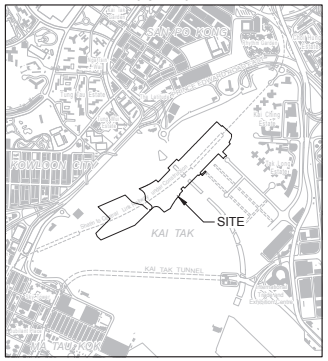
- N/A

Cultural Heritage

- N/A

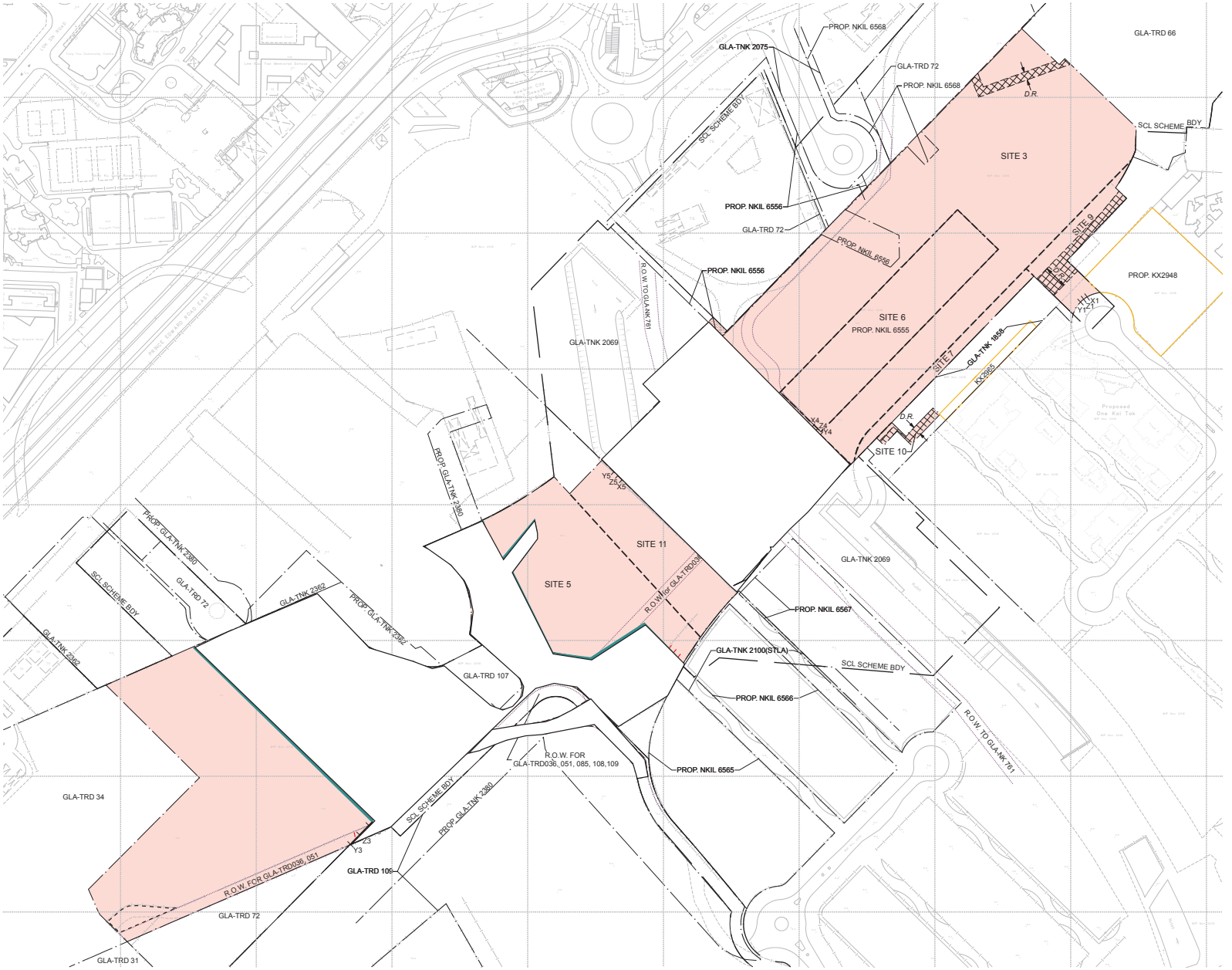
Appendix A – Site Location Plan

LOCATION



SCALE 1:20 000

SCL Works Area



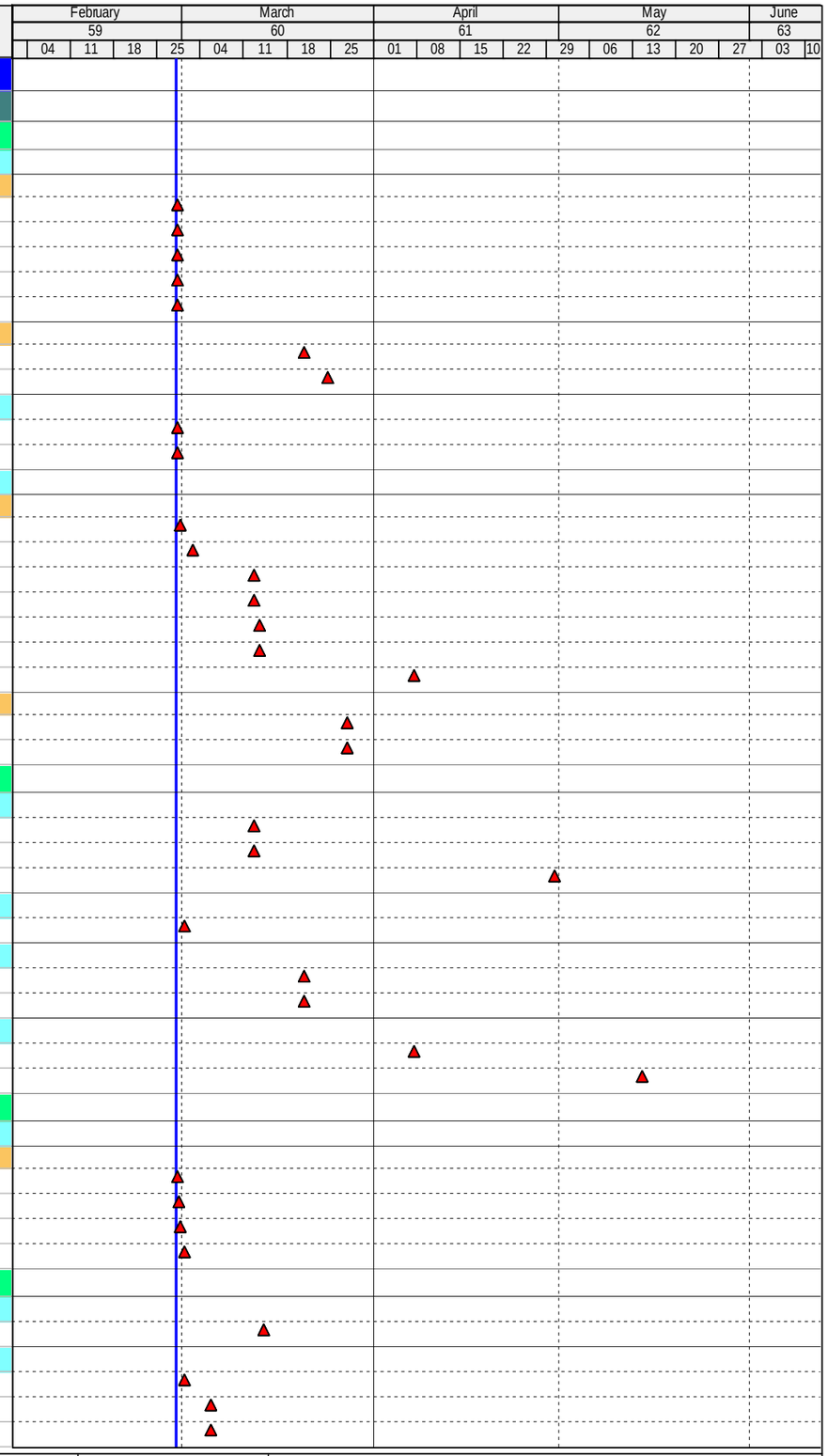
SCALE 1:2 000

metres 40 0 40 80 120 160 200 metres

* SCL/P/SCL/MTR/P01/202F (MTRCL)
SCL/P/SCL/MTR/P01/203C (MTRCL)
SKETCH 620 (MTRCL)
SK-259A (CEDD)
SK-787 (MTRCL)

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%	28-Feb-18*	
01108.CDO1b-ED	Option 1b - Temporary passenger acces road to connect Entrance D - Latest Exercising Date (31-Dec-15)	0%	28-Feb-18*	
01108.CDO2a-ED	Option 2a - Roads L9 & L16 & Associated Works, except the works in Options 2b & 2c - Latest Exercising Date (31-Mar-15)	0%	28-Feb-18*	
01108.CDO2b-ED	Option 2b - Landscape hardwork, irrigation facilities, softworks & pavers - Latest Exercising Date (31-Mar-15)	0%	28-Feb-18*	
01108.CDO2c-ED	Option 2c - Establishment works of the landscape softworks in Option 2b - Latest Exercising Date (31-Mar-15)	0%	28-Feb-18*	
Completion Date				
01108.CDO1a-CD	Option 1a - Temporary passenger acces roads within KTD & EVA above KAT- Completion Date (Wk.25/16, 26-Jun-16)	0%		20-Mar-18*
01108.CDO1b-CD	Option 1b - Temporary passenger acces rd. to connect Entrance D for H/O to CEDD-Completion Date (Wk.34/16, 28-Aug-16)	0%		24-Mar-18*
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%		28-Feb-18*
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%		28-Feb-18*
Specified Degrees of Completion (General Damages / * Liquidated Damages Applicable)				
Structures				
01108.CD4A3	4A3 - Deg3, KAT Platform level (Week No. 48/15, 29-Nov-15)	0%		28-Feb-18*
01108.CD4C1	4C1 - Deg1, KAT Entrances & Supplementary Emergency Entrance (Week No. 44/15, 01-Nov-15)	0%		02-Mar-18*
01108.CD4C2	4C2 - Deg2, KAT Entrances & Supplementary Emergency Entrance (Week No. 08/16, 28-Feb-16)	0%		12-Mar-18*
01108.CD4C3	4C3 - Deg3, KAT Entrances & Supplementary Emergency Entrance (Week No. 22/16, 05-Jun-16)	0%		12-Mar-18*
01108.CD4B2	4B2 - Deg2, KAT Concourse level, exclude 4G (Week No. 52/15, 27-Dec-15)	0%		13-Mar-18*
01108.CD4B3	4B3 - Deg3, KAT Concourse level, exclude 4G (Week No. 20/16, 22-May-16)	0%		13-Mar-18*
01108.CD4F2	4F2 - Deg2, Sung Wong Toi Emergency Egress Point (Week No. 39/15, 27-Sep15)	0%		07-Apr-18*
Trackwork Accesses				
01108.CD4J1	4J1 - Deg1, Trackwork Access - Down Track Tunnel- CH.D99275.225~D99175.225 (Wk.No.08/16, 28-Feb-16)	0%		27-Mar-18*
01108.CD4K1	4K1 - Deg1, Trackwork Access - Up Track Tunnel- CH.D99257.140~U99157.140 (Wk.No.08/16, 28-Feb-16)	0%		27-Mar-18*
IPS Milestone Dates				
Cost Centre B - Kai Tak Station, Entrances and Adits				
01108.MSB09	B9 - All floor, wall & ceiling finishes to all area on Concourse Level completed (Week No. 52/15, 27-Dec-15)	0%		12-Mar-18
01108.MSB10	B10 - All floor, wall & ceiling finishes to all area on Above-Ground Level completed (Week No. 08/16, 28-Feb-16)	0%		12-Mar-18
01108.MSB11	B11 - Complete the EVA of station (Week No. 16/16, 24-Apr-16)	0%		30-Apr-18
Cost Centre D - Associated Works				
01108.MSD020	D2 - Complete External Drainage (Week No. 52/15, 27-Dec-15)	0%		01-Mar-18
Cost Centre E - Option 1 - Temporary Passenger Access Road				
01108.MSE03a	E3 - Complete temp.passenger rd(stn.entrances w/adj.carriageworks),pedestrian strip KTD&EVA above KAT(WN25/16,26-Jun-16)	0%		20-Mar-18
01108.MSE03b	E3 - Complete temp.passenger access rd.connecting EntranceD w/pedestrian strip @SW to KAT-MTRCInspet (WN25/16,26-Jun-16)	0%		20-Mar-18
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%		07-Apr-18
01108.MSF02	F2 - Shop drawings & material submissions approved (Week No. 50/15, 13-Dec-15)	0%		14-May-18
Schedule of Access & Vacate Dates for Works Areas				
Vacation Dates				
Works Areas				
01108.VAWA1	Works Area 1108.A1 (31-Dec-16)	0%		28-Feb-18*
01108.VAW13	Works Area 1108.W13 (25-Aug-17)	0%		28-Feb-18*
01108.VAWA2	Works Area 1108.A2 (31-Dec-16)	0%		28-Feb-18*
01108.VAWA3	Works Area 1108.A3 (31-Dec-14)	0%		01-Mar-18*
Schedule of Access Dates for Designated Contractors				
DC 1159 Lifts & DC 1172 Escalator				
01108.IF1172.2	DC1172 Escalator - KAT - Concourse Station Computer Room, SCR (Week No. 53/15, 04-Jan-16)	0%	14-Mar-18*	
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%	01-Mar-18*	
01108.IF1166	DC1166 MCS - KAT - SCR, SCPR (Week No. 17/16, 02-May-16)	0%	05-Mar-18*	
01108.IF1169A	DC1166A Comm.Systems-SCLPhase1-KAT-Ticket M.Rm, AFCGate,PL,CL,MCL,All entrances,SCR,TER,CTR,CTER (Wk.No.17/16,02-May	0%	05-Mar-18*	



Milestone
Critical Milestone
Critical Remaining Work
Remaining Work
Remaining Level of Effort
RMP Rev F
Last Report
Actual Work

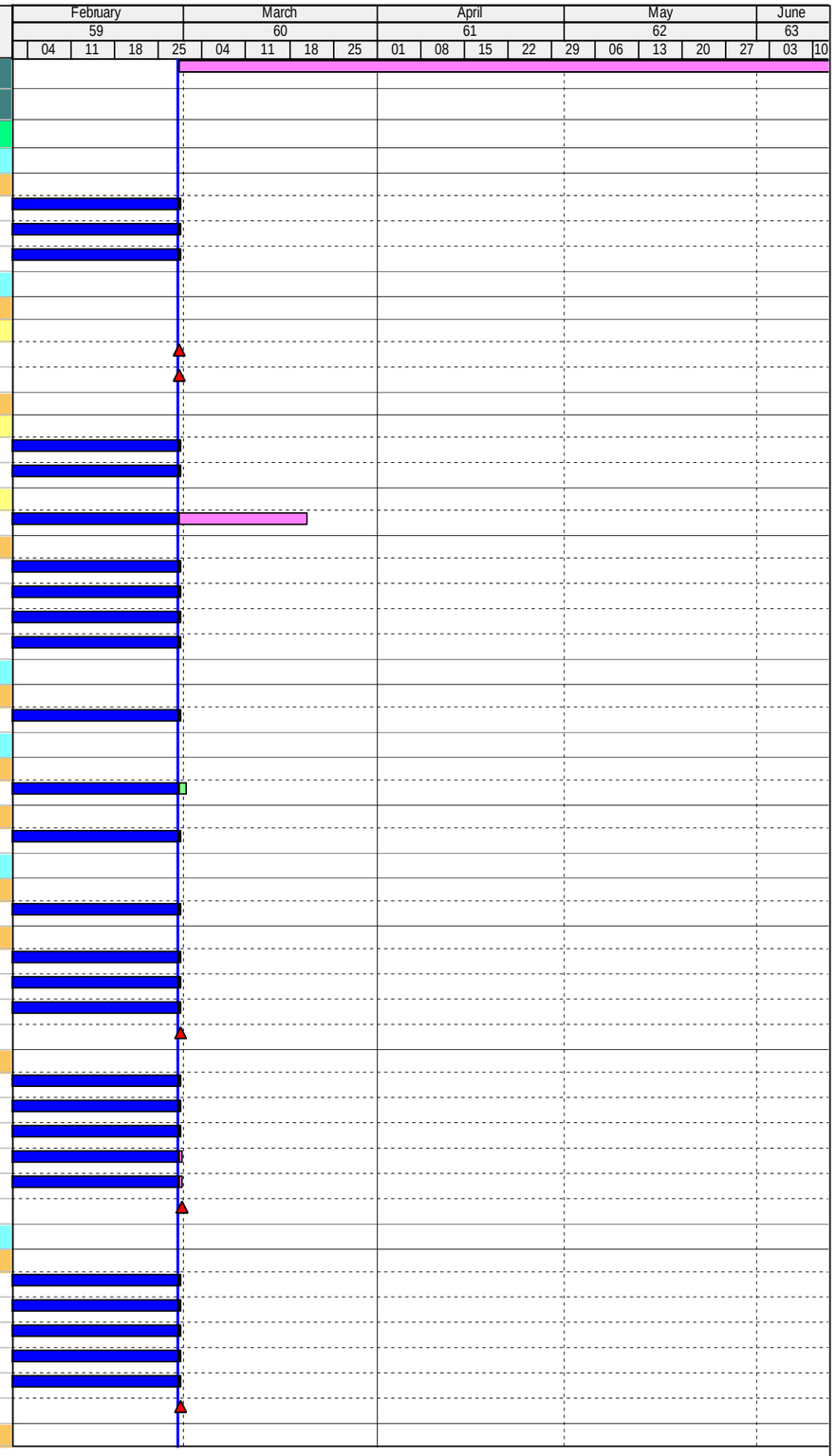
Contract 1108

Kai Tak Station and Associated Tunnels

3-months Rolling Programme (Feb 2018)

Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
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	99%	28-Feb-15 A	28-Feb-18
01108.STN.BW00-04	GL 00-04 BWIC and BS works	99%	28-Feb-15 A	28-Feb-18
01108.STN.BW04-12	GL 04~12 BWIC and BS works	99%	28-Feb-15 A	28-Feb-18
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%		28-Feb-18
01108.CD3DP	Completion of Station backfill to ex. ground level of necessary atation for CLP cable lead-in - Programmed	0%		28-Feb-18
Water Tanks & CLP Transformer Rooms				
CLP Transformer Rooms				
01108.STN.CP215	CLP Transformer Rooms Dedicated Access 2 - AWBF Works	98%	23-Feb-16 A	28-Feb-18
01108.STN.CP115	CLP Transformer Rooms Dedicated Access 2 - BS Works	98%	31-Oct-17 A	28-Feb-18
CLP Interface Works				
01108.STN.CP620	CLP Transformer Rooms 1~2 - Installation Works (By CLP)	70%	14-Mar-16 A	20-Mar-18
Metalworks, BWIC with Services and BS Works				
01108.STN.BW120	KAT Concourse level - BWIC with services	99%	15-Jul-15 A	28-Feb-18
01108.STN.BW130	KAT Concourse level - BS works	99%	15-Jul-15 A	28-Feb-18
01108.STN.BW220	KAT Concourse level - BWIC with services	99%	15-Jul-15 A	28-Feb-18
01108.STN.BW230	KAT Concourse level - BS works	99%	15-Jul-15 A	28-Feb-18
B1.5 Station - A/G C&S Works (Vent Shaft)				
Souther Vent Shaft				
01108.STN.SS030	Drainage	98%	04-Dec-15 A	28-Feb-18
B1.6 Station - Station - A/G C&S Works (Entrance D & DEE)				
Entrance D				
01108.STN.ED040	Metal works	98%	01-Sep-17 A	01-Mar-18
Designated Emergency Entrance (DEE)				
01108.STN.DE030	Drainage	98%	31-Aug-17 A	28-Feb-18
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.	99%	28-Feb-15 A	28-Feb-18
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	99%	02-Jun-15 A	28-Feb-18
01108.STN.CD4A2P2a	KAT Platform level - GL 12~4 Degree 2 of completeion - Door frame, m. staircase, strut. steel, fixture, etc.	99%	03-Aug-15 A	28-Feb-18
01108.STN.CD4A2P1a	KAT Platform level - GL 24~12 Degree 2 of completeion - Door frame, m. staircase, strut .steel, fixture, etc	99%	03-Aug-15 A	28-Feb-18
01108.CD4A2P	KAT Platform level - Degree 2 of completion (Week No. 33/15, 16-Aug-15) - Programmed	0%		28-Feb-18
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.	99%	03-Oct-15 A	28-Feb-18
01108.STN.CD4A3P2a	KAT Platform level GL 12~4 Degree 3 of completeion - Int.&ext. to ceiling/ wall/ floor finish, incl.lift lobby, etc.	99%	07-Oct-15 A	28-Feb-18
01108.STN.CD4A3P3a	KAT Platform level GL 4~1 Degree 3 of completion - Int&ext. to ceiling/ wall/ floor finish, incl.lift lobby, tc.	99%	11-Nov-15 A	28-Feb-18
01108.STN.CD4A3P1b	KAT Platform level GL 24~12 Degree 3 of completeion - Glazing, permanent door, ironmongery, etc.	98%	29-Aug-16 A	28-Feb-18
01108.STN.CD4A3P2b	KAT Platform level GL 12~4 Degree 3 of completeion - Glazing, permanent doors, ironmongery, etc.	98%	29-Aug-16 A	28-Feb-18
01108.CD4A3P	KAT Platform level - Degree 3 of completion (Week No. 48/15, 29-Nov-15) - Programmed	0%		28-Feb-18
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.	99%	10-Feb-15 A	28-Feb-18
01108.STN.CD4B1P2a	KAT Concourse level, exclude 4G - GL 12~4 Degree 1 of completion - Blockwork, partition wall, plastering, etc.	99%	10-Feb-15 A	28-Feb-18
01108.STN.CD4B1P3a	KAT Concourse level, exclude 4G- GL 4~1 Degree 1 of completion- Blockwork, part.wall, plastering, finish, staircase, etc	99%	03-Oct-15 A	28-Feb-18
01108.STN.CD4B1P2b	KAT Concourse level, exclude 4G - GL 12~4 Degree 1 of completion - E&M opening, finish, staircase, shaft&pit, etc.	99%	17-May-16 A	28-Feb-18
01108.STN.CD4B1P1b	KAT Concourse level, exclude 4G - GL 24~12 Degree 1 of completion - E&M opening, finish, staircase, shaft&pit, etc.	99%	17-May-16 A	28-Feb-18
01108.CD4B1P	KAT Concourse level, exclude 4G - Degree 1 of completion (Week No. 36/15, 06-Sep-15) - Programmed	0%		28-Feb-18
ABWF Works - Degree 2 of Completion				



Milestone
Critical Milestone
Critical Remaining Work
Remaining Work
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Contract 1108

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Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.STN.CD4B2P2a	KAT Concourse level, exclude 4G - GL 12~4 Degree 2 of completeion - Blockwall, partition wall, plastering, etc.	99%	22-Sep-15 A	28-Feb-18
01108.STN.CD4B2P1a	KAT Concourse level, exclude 4G - GL 24~12 Degree 2 of completeion - Blockwork, partition wall, plastering, etc.	99%	22-Sep-15 A	28-Feb-18
01108.STN.CD4B2P3a	KAT Concourse level, exclude 4G - GL 4~1 Degree 2 of completeion - Blockwork, p.wall, platering, finish, staircase, etc.	99%	20-Oct-15 A	28-Feb-18
01108.STN.CD4B2P3b	KAT Concourse level, exclude 4G - GL 4~1 Degree 2 of completeion - E&M opening, finish, staircase, shaft&pit, etc.	98%	20-Jun-16 A	01-Mar-18
01108.STN.CD4B2P1b	KAT Concourse level, exclude 4G - GL 24~12 Degree 2 of completeion - E&M opening, finish, staircase, shaft&pit, etc.	98%	20-Jun-16 A	01-Mar-18
01108.STN.CD4B2P2b	KAT Concourse level, exclude 4G - GL 12~4 Degree 2 of completeion - E&M opening, finish, staircase, shaft&pit, etc.	98%	20-Jun-16 A	01-Mar-18
01108.CD4B2P	KAT Concourse level, exclude 4G - Degree 2 of completion (Week No. 52/15, 27-Dec-15) - Programmed	0%		01-Mar-18
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.	98%	20-Oct-15 A	01-Mar-18
01108.STN.CD4B3P3a	KAT Concourse level, exclude 4G - GL 4~1 Degree 3 of completeion - Int.&ext. to ceiling/wall/floor finish, lobby, etc.	97%	20-Oct-15 A	01-Mar-18
01108.STN.CD4B3P1a	KAT Concourse level, exclude 4G - GL 24~12 Degree 3 of completeion - Int.&ext. to ceiling/wall/floor finish, lobby, etc.	98%	20-Oct-15 A	01-Mar-18
01108.STN.CD4B3P1b	KAT Concourse level, exclude 4G - GL 24~12 Degree 3 of completeion - Glazing, permanent door, ironmongery, etc.	98%	18-Apr-16 A	01-Mar-18
01108.STN.CD4B3P2b	KAT Concourse level, exclude 4G - GL 12~4 Degree 3 of completeion - Glazing, permanent door, ironmongery, etc.	98%	18-Apr-16 A	01-Mar-18
01108.STN.CD4B3P3b	KAT Concourse level, exclude 4G - GL 4~1 Degree 3 of completeion - Glazing, permanent door, ironmongery, etc.	98%	18-Apr-16 A	01-Mar-18
01108.CD4B3P	KAT Concourse level, exclude 4G - Degree 3 of Completion (Week No. 22/16, 22-may-16) - Programmed	0%		13-Mar-18
B1.9 Station- ABWF Works (A/G Vent Shaft)				
01108.STN.VS120	Wall finishes	99%	25-Apr-16 A	28-Feb-18
01108.STN.VS140	External wall finishes	99%	13-Jun-16 A	28-Feb-18
01108.STN.VS110	Floor finishes	98%	28-Mar-17 A	01-Mar-18
01108.STN.VS160	Metal works and architectural elements	98%	13-Apr-17 A	01-Mar-18
01108.STN.VS130	Ceiling finishes	98%	31-May-17 A	01-Mar-18
01108.STN.VS150	External roof finishes	98%	08-Jul-17 A	01-Mar-18
B1.10 Station - ABWF (A/G Entrance D & DEE)				
01108.STN.DE060	Lift - ABWF Works	95%	31-Oct-17 A	02-Mar-18
01108.STN.ED060	Escalators - ABWF Works	90%	01-Nov-17 A	06-Mar-18
01108.STN.DE070	E&M Works for Lift installation	80%	30-Nov-17 A	13-Mar-18
01108.STN.ED070	E&M Works for Escalators installation	80%	02-Jan-18 A	13-Mar-18
01108.IF1184	DC1172 Station Escalators & All Entrances (21-Dec-15) - Programmed	0%		13-Mar-18
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	98%	01-Apr-16 A	28-Feb-18
01108.STN.PF600	Backfill and compaction, 3165 m3 for Entrance A	98%	01-Apr-16 A	28-Feb-18
01108.STN.EA100	Drainage for Adit & See	98%	07-Apr-17 A	28-Feb-18
01108.STN.EA90	Metal works and finishes for Adit & See	95%	31-Aug-17 A	03-Mar-18
01108.STN.EA030	Drainage for Entrance A	95%	31-Aug-17 A	01-Mar-18
01108.STN.EA040	Metal works and finishes for Entrance A	95%	31-Aug-17 A	02-Mar-18
B2.3 Entrance A, Adit & SEE - ABWF Works				
Entrance A, Adit and SEE				
01108.STN.EA050	ABWF Works	98%	31-May-16 A	01-Mar-18
01108.STN.EA070	E&M Works for Escalators installation	0%	03-Mar-18	02-Jun-18
KAT Entrances & SEE ABWF				
01108.STN.CD4C1	KAT Entrances & SEE - Works for Degree 1 of completion	99%	14-Sep-16 A	28-Feb-18
01108.STN.CD4C2	KAT Entrances & SEE - Works for Degree 2 of completion	95%	04-May-17 A	03-Mar-18
01108.STN.CD4C3	KAT Entrances & SEE - Works for Degree 3 of completion	93%	27-Oct-17 A	05-Mar-18
01108.CD4C1P	KAT Entrances & SEE - Degree 1 of Completion (01-Nov-15) - Programmed	0%		02-Mar-18
01108.CD4C2P	KAT Entrances & SEE- Degree 2 of Completion (28-Feb-16) - Programmed	0%		03-Mar-18
01108.CD2BP	Complete works at Works Area 1108.W1 & ready for handover	0%		05-Mar-18
01108.CD4C3P	KAT Entrances & SEE - Degree 3 of Completion (01-Aug-16) - Programmed	0%		12-Mar-18
01108.IF1159P	DC1159 Lifts - KAT Station - All lift shats (Entrance) (01-Aug-16) - Programmed	0%		13-Mar-18
B3 Entrance B and Adit				
B3.1 Entrance B and Adit - C&S Works				
Entrance B and Adit				
01108.STN.EB050	Drainage	95%	10-Apr-17 A	01-Mar-18
01108.STN.EB060	Metal works and finishes	85%	19-Sep-17 A	12-Mar-18

△ Milestone
▲ Critical Milestone
Critical Remaining Work
Remaining Work
Remaining Level of Effort
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Actual Work

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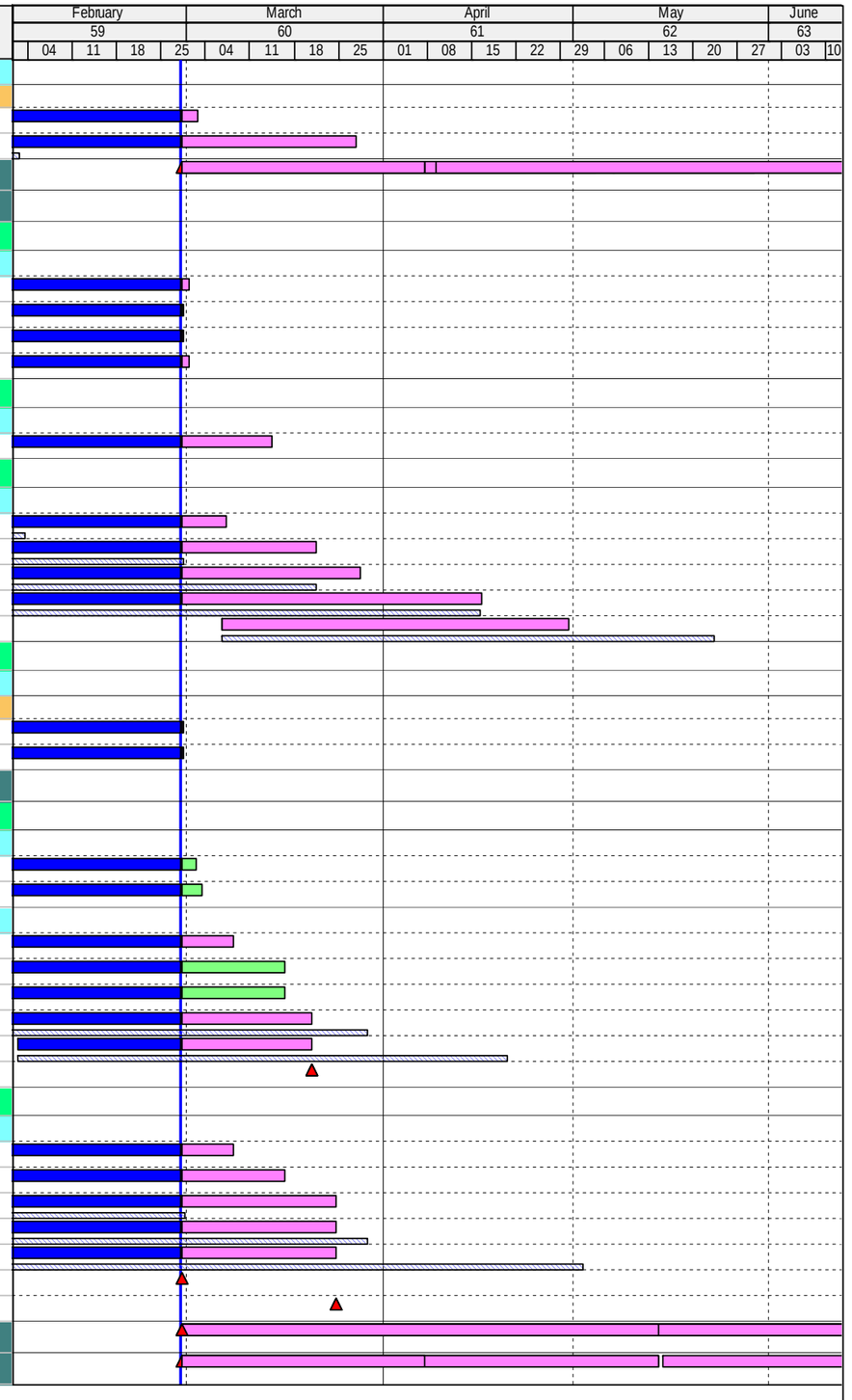
Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
B3.2 Entrance B and Adit - ABWF Works				
Entrance B and Adit				
01108.STN.EB110	ABWF Works	95%	04-Jan-16 A	02-Mar-18
01108.STN.EB120	E&M Works for Escalators installation	60%	20-Nov-17 A	27-Mar-18
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	99%	15-Dec-15 A	01-Mar-18
01108.AWD.F010	Foul sewer, F1.3~F1.4~MH10, F1.7~F.14: 180m, 6 nr. MH	99%	15-Dec-15 A	28-Feb-18
01108.AWD.S020	Storm sewer, S1.1~S1.2: 35m, 1 nr. MH	97.99%	15-Nov-16 A	28-Feb-18
01108.AWD.C010	U-channels, 197 m straight, 24 m curved	95%	03-Jul-17 A	01-Mar-18
D3 Instrumentation and Monitoring				
Instrumentation Installation and Monitoring				
01108.AWM.0030	Regular Monitorings and Submit Monitoring Reports (weekly for 50 months)	99%	01-Aug-13 A	14-Mar-18
D4 Landscape				
External Road and Paving				
01108.AWR.0010	Filling to road formation level, 5430 m3	90%	20-Nov-17 A	07-Mar-18
01108.AWR.0020	Kerb foundation, concrete kerbs & edgings, 830 m	70%	12-Dec-17 A	21-Mar-18
01108.AWR.0030	Type 1 granular sub-base, road base, sand base, geotextile soil & copping layer, 2537 m2	60%	05-Jan-18 A	28-Mar-18
01108.AWR.0040	Recycle aggregate concrete blocks, heavy duty 2537 m2 & light duty 84 m2	40%	26-Jan-18 A	16-Apr-18
01108.AWR.0050	Chainlink fence, 1747 m; traffic signs, 33 nr.; manholes & utilities pits frames & covers, etc.	30%	06-Mar-18 A	30-Apr-18
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	28-Feb-18
01108.AWD.DN09.5.3	KTND Temporary Channel - Design - No-adverse-comment by DSD & RDO/ BD/ GEO	98%	16-Jan-14 A	28-Feb-18
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	90%	31-Aug-17 A	02-Mar-18
01108.O1A.PRE.020	Submission of shop drawings & materials & Approval	85%	28-Sep-17 A	03-Mar-18
Temporary Passenage Access Road ER3, 4, 5, 7 & 8				
01108.O1A.TPA.010	Formation leveling, 2280 m2	90%	31-Aug-17 A	08-Mar-18
01108.O1A.TPA.020	Kerb foundation, concrete kerbs & edgings, 976 m	80%	30-Sep-17 A	16-Mar-18
01108.O1A.TPA.030	Type 1 granular sub-base, sand base, geotextile soil & copping layer, 2280 m2	80%	31-Oct-17 A	16-Mar-18
01108.O1A.TPA.040	Recycle aggregate concrete blocks, 2280 m2	70%	16-Jan-18 A	20-Mar-18
01108.O1A.TPA.050	Chain link fence & 1m r/c concrete footing, 976m, & temporary lighting and testing	70%	02-Feb-18 A	20-Mar-18
01108.O1A.TPA.CDP	Option 1a SCL Works - Temp. Passenger Access Road Completeion Date (26-Jun-16) - Programmed	0%		20-Mar-18
Option 1b Temp. Passenger Access Roads connecting Entrance D with Pedestrain Strip				
Temporary Passenage Acces Road ER6				
01108.O1B.TPA.010	Formation leveling, 2343 m2	90%	07-Oct-17 A	08-Mar-18
01108.O1B.TPA.020	Kerb foundation, concrete kerbs & edgings, 368 m	80%	31-Oct-17 A	16-Mar-18
01108.O1B.TPA.030	Type 1 granular sub-base, sand base, geotextile soil & copping layer, 2343 m2	70%	30-Nov-17 A	24-Mar-18
01108.O1B.TPA.040	Recycle aggregate concrete blocks, 2343 m2	70%	02-Jan-18 A	24-Mar-18
01108.O1B.TPA.050	Chain link fence & 1m r/c concrete footing, 368m, & temporary lighting and testing	70%	30-Jan-18 A	24-Mar-18
01108.CDO1B.EDP	Option 1b SCL Works - Temp. Passenger Access Road - Latest Exercinsg Date (31-Dec-15)	0%	28-Feb-18	
01108.O1B.TPA.CDP	Option 1b SCL Works - Temp. Passenger Access Road - Completeion Date (28-Aug-16) - Programmed	0%		24-Mar-18
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
Critical Milestone
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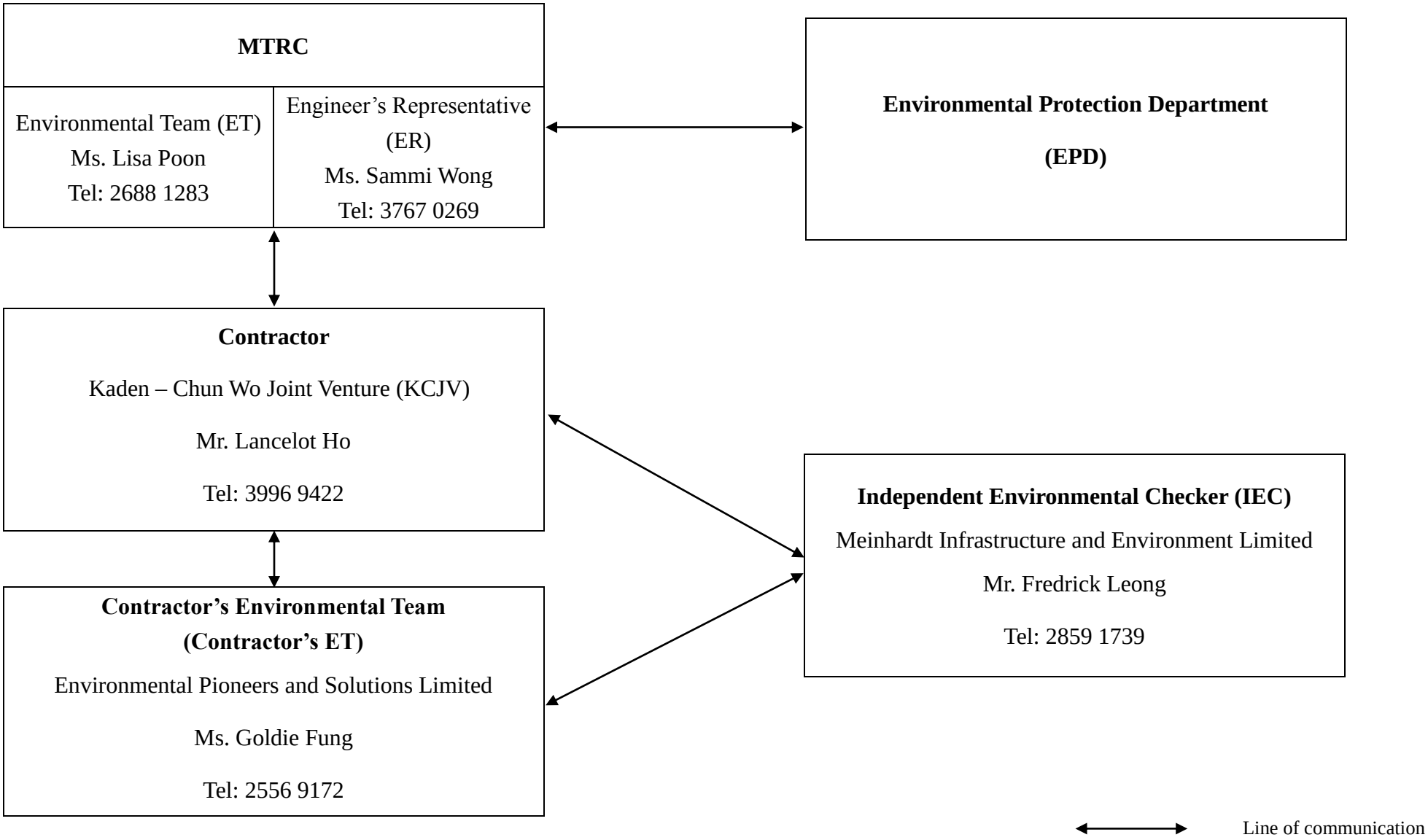
Contract 1108

Kai Tak Station and Associated Tunnels

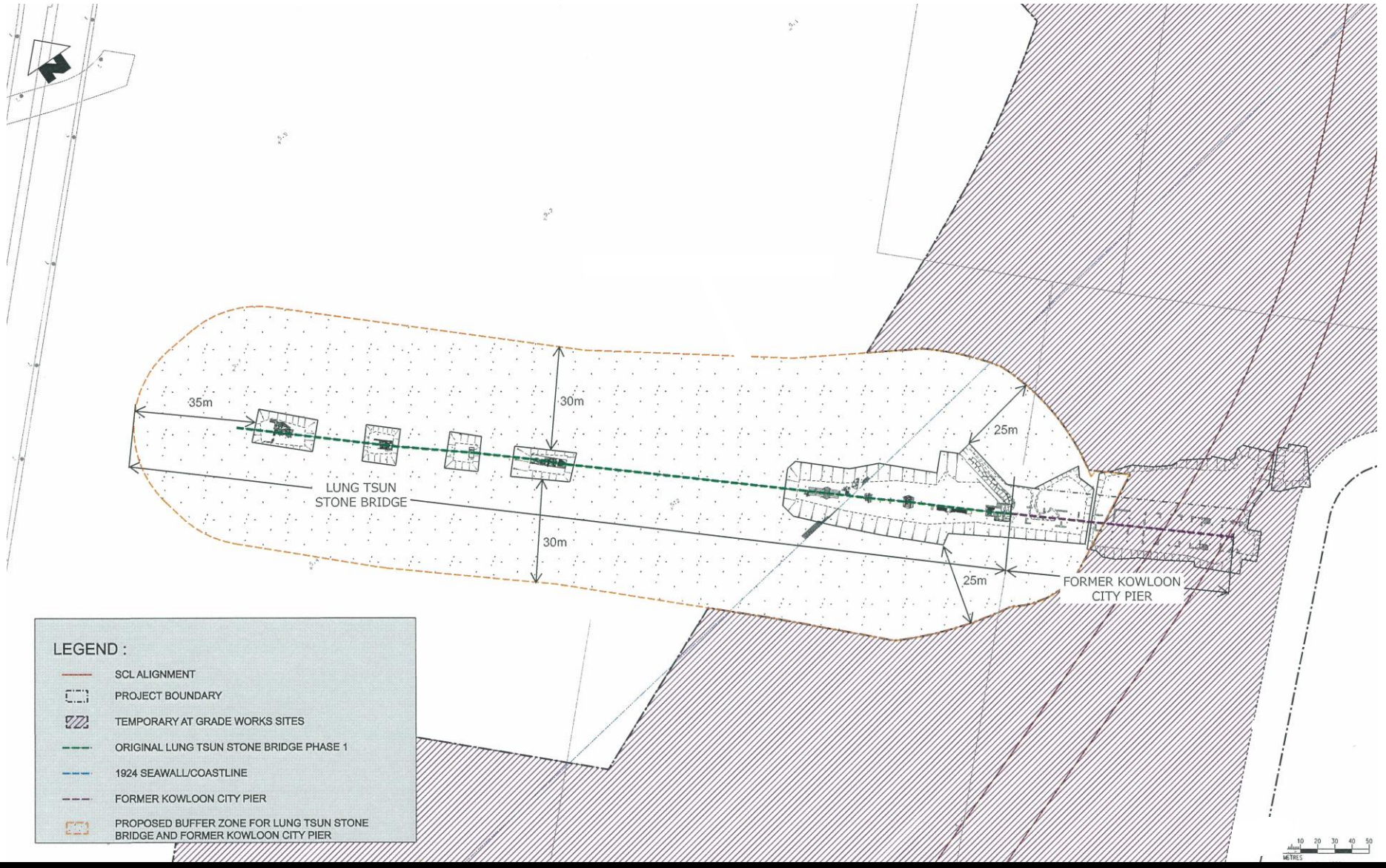
3-months Rolling Programme (Feb 2018)

Kaden – Chun Wo Joint Venture

Appendix C –Project Organization Chart & Contact Details


MTRC
Environmental Team (ET)
Ms. Lisa Poon
Tel: 2688 1283
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 _2018_ (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	0.068	0.000	0.000	0.077
Feb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.000	0.000	0.020
Mar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.000	0.000	0.017
Apr											
May											
Jun											
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.097	0.000	0.000	0.114
July											
August											
September											
October											
November											
December											
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.097	0.000	0.000	0.114
Year 2017	0.093	0.000	0.093	0.000	0.000	0.000	0.000	0.888	0.002	0.000	1.217
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	3.839	0.229	4.300	9.296

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;					✔
		• 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;					N/A
		• 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	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
		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.					✔ ✔ ✔
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	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
			noise				
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	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
		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 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					✔ ✔ ✔ ✔

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 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 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					✔ ✔ ✔ ✔

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
		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					✔ ✔ ✔

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
		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	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.	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
		• 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.					✔
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	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
		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 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					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
		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	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) (General) Regulation.					
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	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
		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; • 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>	Good site practice to	Contractor	All construction sites	Construction	

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
		• 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 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.	minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal			stage	✔ ✔
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	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
		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.					✔ ✔
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	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
		dumped into the sea except at the approved locations; • Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action. • 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; • 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; • The material shall be placed into the disposal pit by bottom dumping; • 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; • 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					N/A N/A ✔ N/A N/A 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
		closed until the barge returns to the disposal site. • 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	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
		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.					✔
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 2018	0	0	0	0
February 2018	0	0	0	0
March 2018	0	0	0	0
Total	0	0	0	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
Year 2017	0	0	1	1
Grand Total	0	25	2	1

Appendix G

54th 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. 54

[Period from 1 to 31 March 2018]

Works Contract 1102 –

Hin Keng Station and Approach Structures

(April 2018)

Certified by: Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 12th April 2018

Penta-Ocean Construction Co. Ltd.

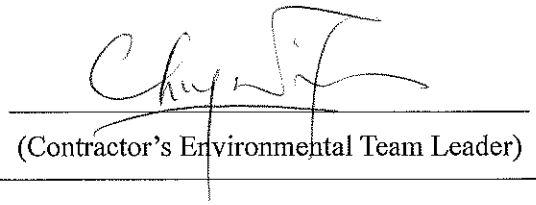
Shatin to Central Link –

Contract 1102
Hin Keng Station and Approach Structures

Monthly Environmental Monitoring and Audit Report

(Version 1.0)

March 2018

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.

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

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EXECUTIVE SUMMARY

Introduction

1. This is the 54th 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 2018.

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;
- E&M Works; and
- Backfilling 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) 4 times

- Construction Dust (24-hour TSP) Monitoring
  Dust Monitoring Station ID
  - DMS-1(1) (C.U.H.K.A.A Thomas Cheung School) 5 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 80 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 6 m^3 general refuse were disposed of at NENT Landfill. 0 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 6 and 20 March 2018. 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 1, 6, 13, 22 and 26 March 2018. The representative of the IEC conducted the site inspection on 22 March 2018. 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 public complaint referred from Environmental Protection Department (EPD) was received in this reporting period.

Future Key Issues

11. Major site activities for the coming reporting month will include:

- Soft Landscaping;
- Modification of Retaining Wall and Installation of Noise Barrier;
- E&M Works;
- Artificial Granite Tile Laying; and
- Backfilling 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 54th 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 2018.

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;
- E&M Works; and
- Backfilling 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-RN0699-17	6/11/2017	24/4/2018	Valid
GW-RN0711-17	6/11/2017	24/4/2018	Valid
GW-RN0053-18	6/2/2018	31/3/2018	Expired
GW-RN0109-18	13/3/2018	31/3/2018	Expired

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 2018)	14 March 2018

5 MONITORING RESULTS

Regular Construction Noise Monitoring

5.1 A total of 4 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	56.4	61.3	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 5 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 $\mu g/m^3$	Maximum $\mu g/m^3$	Average $\mu g/m^3$	Action Level, $\mu g/m^3$	Limit Level, $\mu g/m^3$
24-hr TSP	23.8	63.0	47.7	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 2018[c]	80 m^3	6 m^3	0 *kg*	0 *kg*	0 *kg*	0 *kg*

Notes:
(a) Inert C&D materials include excavated soil and rock. 80 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 31 March 2018.

Landscape and Visual

5.10 Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted on 6 and 20 March 2018. 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 1, 6, 13, 22 and 26 March 2018 by ET. A joint site audit with the representative with IEC and ER was carried out on 22 March 2018. 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	N/A	There was no observation in the reporting period.	N/A
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	1 March 2018	To cover the dusty stockpile in front of the station with impervious material.	The dusty stockpiles was covered on 6 March 2018.
Waste / Chemical Management	23 February 2018	Reminder: To dispose the refuse bin in front of the station more frequently.	The refuse bin in front of the station was disposed on 1 March 2018.
	23 February 2018	Reminder: To store chemical containers placed under the viaduct properly in storage area.	Chemical containers were covered on 1 March 2018.

Parameters	Date	Observations and Recommendations	Follow-up
	1 March 2018 and 6 March 2018	To provide drip tray to the chemical containers placed under the viaduct and in front of the station.	Drip tray was provided to chemical containers on 13 March 2018.
	26 March 2018	Reminder: To dispose the refuse bin in front of the station frequently.	Follow up actions will be reported in the next month.
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;
- Modification of Retaining Wall and Installation of Noise Barrier;
- E&M Works;
- Artificial Granite Tile Laying; and
- Backfilling 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 2018 in accordance with EM&A Manual and the requirement under EP.

9.2 No exceedance of the Action and Limit Levels of regular construction noise and 24-hour TSP monitoring was recorded at the designated monitoring stations during the reporting month.

9.3 5 times of joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET and 2 times of bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted during the reporting period.

9.4 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

- Discharge of untreated wastewater should be avoided. Sedimentation tanks or other wastewater treatment facilities should be used to treat any discharge of wastewater out of the Site.

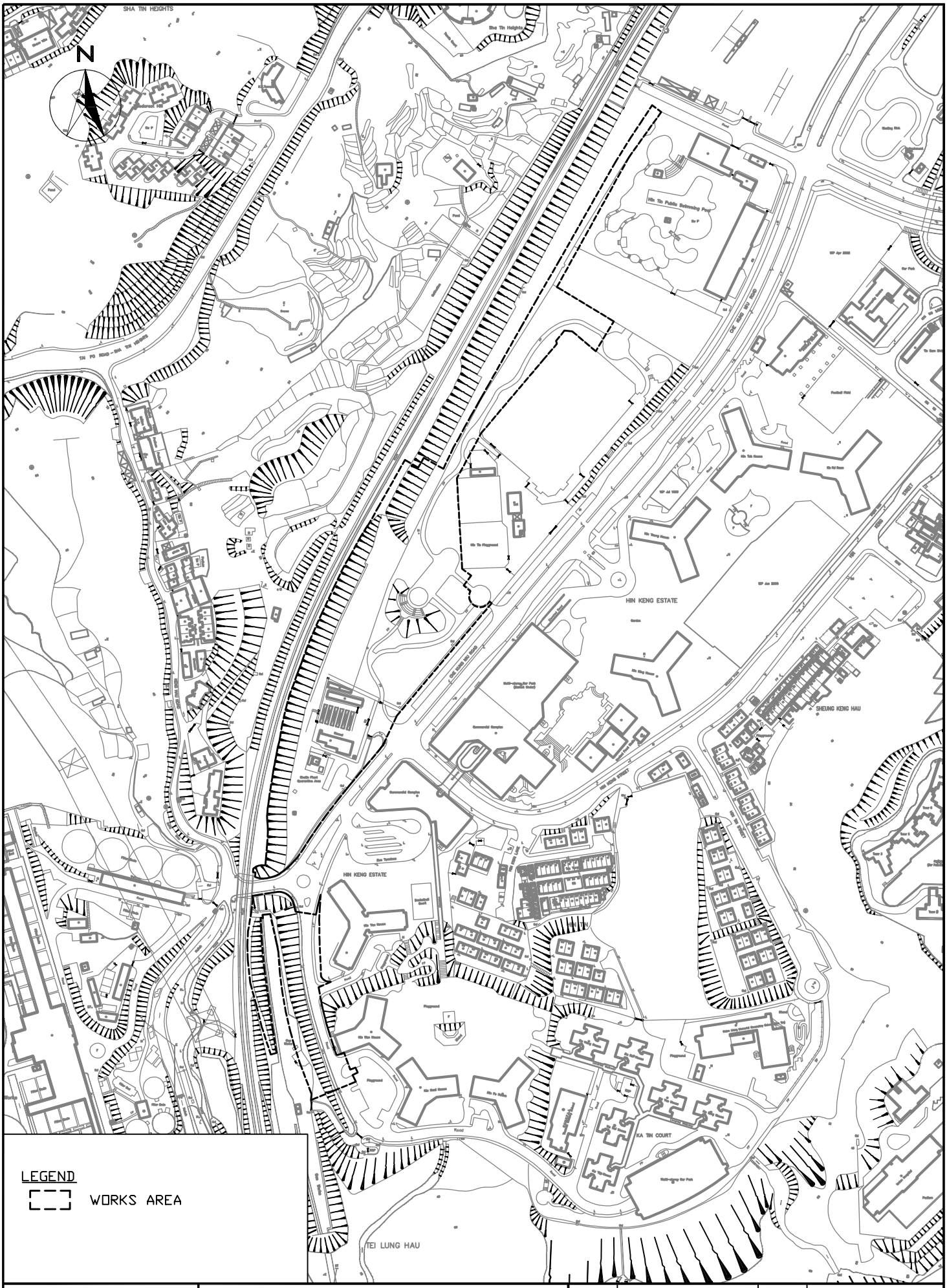
Air Quality

- Stockpiles or dusty materials should be completely covered with impervious sheets to prevent dust generation.
- Water spraying should be provided frequently to prevent dust generation.

Waste / Chemical Management

- Refuse bin should be cleaned up regularly.

FIGURES

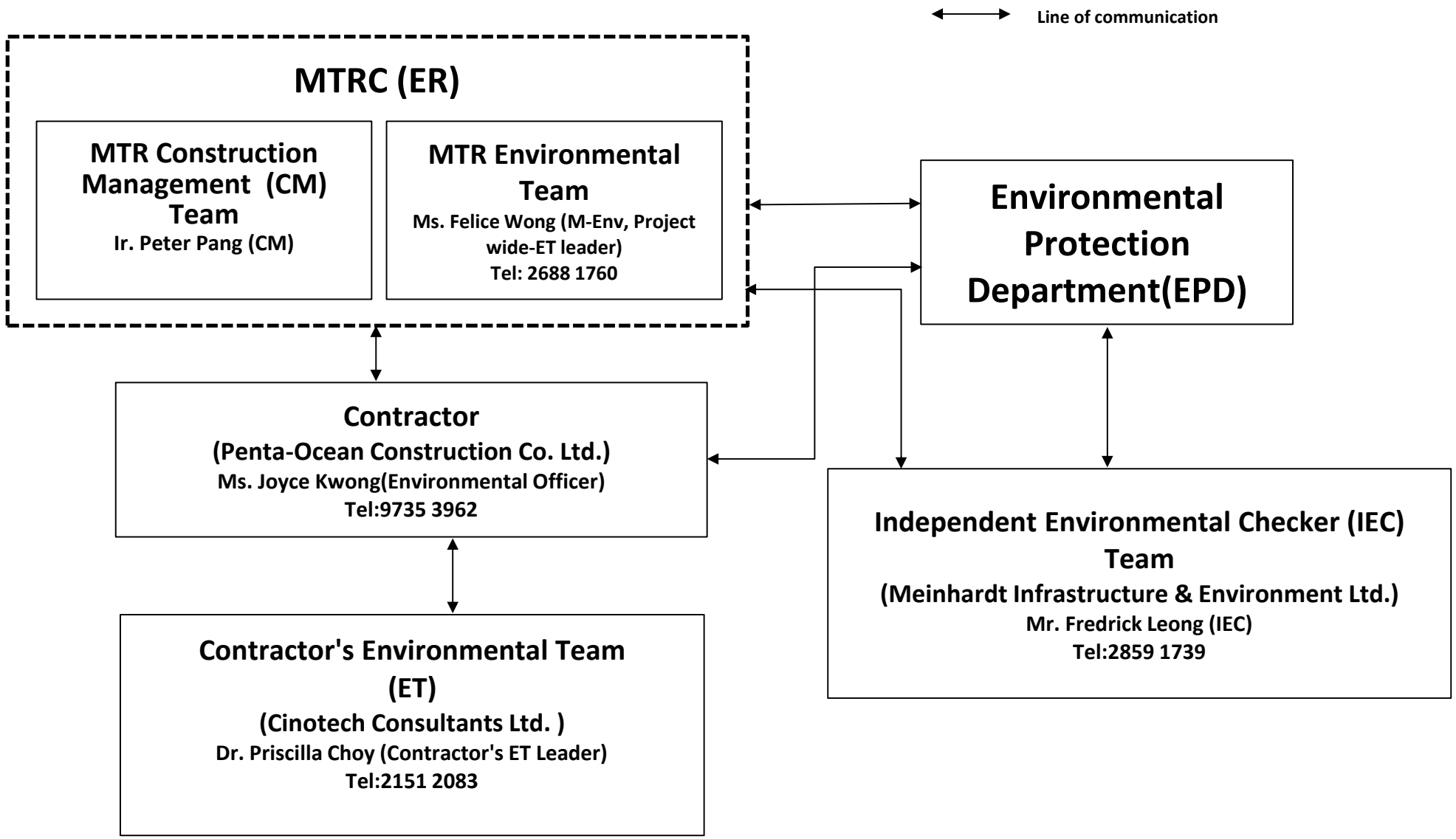


CINOTECH
Cinotech Consultants Limited

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	Scale	Project
SCL Contract 1102 The Shatin to Central Link - Hin Keng Station and Approach Structures Organization Chart and Key Contact of the Project	N.T.S	No. MA13040
	Date: Jan-17	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	-

CINOTECH
Cinotech Consultants Limited

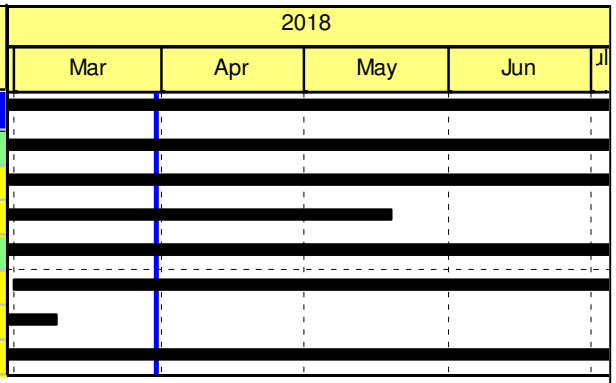
SCL CONTRACT 1102
THE SHATIN TO CENTRAL LINK –
HIN KENG STATION AND APPROACH STRUCTURES

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	950.00	113.77	21-Oct-13 A	03-Oct-18
	Ma On Shan Line & Tail Track	378.00	85.00	21-Oct-13 A	27-Jul-18
	Noise Barrier behind Hin Tin Swimming Pool	378.00	10.00	21-Oct-13 A	27-Jul-18
	Noise Barrier Work	157.00	26.00	15-Jul-14 A	19-May-18
	Hin Tin Playground	416.80	14.00	02-May-17 A	03-Oct-18
	Artificial Granite Tile Laying	84.00	14.00	01-Mar-18 A	29-Aug-18
	E&M Works	137.80	0.00	02-May-17 A	10-Mar-18 A
	Soft Landscape	87.00	0.00	25-Sep-17 A	03-Oct-18 A



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

3 Months Rolling Programme

Summary

(Period - Apr to Jun 2018)

Date	Revision	Checked	Approved
03-Apr-18	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 2018

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	180301
Date	1 March 2018 (Thursday)
Time	9:30 – 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***	
180301-O01	• To cover the dusty stockpile in front of the station with impervious material.	E6
	Part F – Construction Noise Impact • No environmental deficiency was identified during the site inspection. ***Part G – Waste/Chemical Management***	
180301-O02	• To provide drip tray to the chemical containers placed under the viaduct and in front of the station.	G10
	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	Donley Fung	Donley	1 March 2018
Checked by	Dr. Priscilla Choy		1 March 2018

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	180306
Date	6 March 2018 (Tuesday)
Time	9:30 – 11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
180306-O01	***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 – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part G – Waste/Chemical Management*** • To provide drip tray to the chemical containers placed under the viaduct and in front of the station. ***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.	G10

	Name	Signature	Date
Recorded by	Donley Fung		6 March 2018
Checked by	Dr. Priscilla Choy		6 March 2018

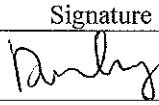
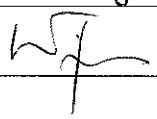
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	180313
Date	13 March 2018 (Tuesday)
Time	9:30 – 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*** • 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*** • No environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Donley Fung		13 March 2018
Checked by	Dr. Priscilla Choy		13 March 2018

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	180322
Date	22 March 2018 (Tuesday)
Time	9:00 – 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*** • 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*** • No environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Donley Fung		22 March 2018
Checked by	Dr. Priscilla Choy		23 March 2018

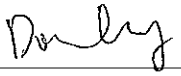
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	180326
Date	26 March 2018 (Monday)
Time	11:00 – 12:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
180326-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 – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part G – Waste/Chemical Management*** • To dispose the refuse bin in front of the station frequently. ***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.	G1iii

	Name	Signature	Date
Recorded by	Donley Fung		26 March 2018
Checked by	Dr. Priscilla Choy		27 March 2018

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 under construction, effective dust screens, sheeting or netting						^ ^ ^ ^ ^

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 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 construction site or part of the construction site where 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
		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 structures should be effectively utilised, where practicable, to	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
		screen noise from on-site construction activities.						
S8.3.6	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIA	^
S8.3.6	N3	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressor, generators and saw.	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	^
S8.3.6	N4	Use “Quiet plants”	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	^
S8.3.6	N5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	^
S8.3.6	N6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise	Construction stage	• TM-EIA	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
					monitoring station			
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 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	• 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
		• 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. • All drainage facilities and erosion and sediment control						^ ^ ^ ^

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 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. • Precautions be taken at any time of year when rainstorms are						^ ^ ^ ^

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
		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						^ ^

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
		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	<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;	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) for Investigation and Remediation of Contaminated Land • 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 the operational phase the emergency plan should also include adequate procedures for controlling the tunnel ventilation system and stopping of the SCL train traffic in order to prevent the trains moving into the affected areas.)	To reduce the risks to the SCL staff, construction workers and passengers	MTRC/ Contractor	-	Construction and operation phases		^
Chapter 13.13	A13C.8	Safety/emergency response/evacuation training and drills for all personnel	To reduce the risks to the SCL staff, construction workers and passengers	MTRC/ Contractor	-	Construction and operation phases		^
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

Month	Actual Quantities of Inert C&D Materials Generated Monthly ('000 m3)										Actual Quantities ofC&D Materials Generated Monthly ('000 m3)				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as TM38 Sorting Facility	Disposed as TKO137 Sorting Facility	Disposed as TM38 Public Fill	Disposed as TKO137 Public Fill			Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
							Mixed Rock & Soil	Building Debris	Mixed Rock & Soil	Soil					
Sep-13	1.1288	0.0428	0	0		0.0631		0	0.7175	0.3054	0	0	0	0	0.0147
Oct-13	0.2601	0.0087	0	0		0		0.0077	0.2061	0.0377	0	0	0	0	0.0199
Nov-13	1.8030	0.0225	0	0.2517		0		0.0054	1.1590	0.3697	0	0	0	0	0.0309
Dec-13	1.0411	0.0062	0	0.0463		0		0.0039	0.7978	0.1908	0	0	0	0	0.0571
Jan-14	1.3004	0	0	0.1714		0.0025		0	1.1265	0	0	0	0	0	0.0442
Feb-14	0.1766	0	0	0.1483		0.0238		0	0.0044	0	0	0	0	0	0.0069
Mar-14	2.7538	0	0	0.3543		0.0248		0	2.3748	0	0	0	0	0	0.0479
Apr-14	1.0369	0	0	0.0806	NA	0.0120	NA	0	0.9444	0	0	0	0	0	0.0215
May-14	2.5399	0	0	0.8866		0.0143		0	1.6390	0	0	0	0	0	0.0360
Jun-14	6.6293	0	0	4.1629		0.0117		0	2.4548	0	0	0	0	0	0.0233
Jul-14	6.4539	0	0	0.2108		0		0	6.2431	0	0	0	0	0	0.0307
Aug-14	5.0614	0	0	0		0.0052		0	5.0562	0	0	0	0	0	0.0433
Sep-14	1.9695	0	0	0		0.0042		0	1.9652	0	0	0	0	0	0.0502
Oct-14	1.5148	0	0	0		0.0194		0	1.4954	0	0	0	0	0	0.0484
Nov-14	2.4905	0	0	0		0.0082		0	2.4823	0	0	0	0	0	0.0567
Dec-14	1.5042	0	0	0.0223	0.0133	0.0100	0.4724	0	0.9863	0	0	0	0	0	0.0640
Jan-15	1.5370	0	0	0	0	0.0093	1.0321	0	0.4956	0	0	0	0	0	0.1224
Feb-15	1.3199	0	0	0	0.0022	0.0023	1.2674	0	0.0482	0	0	0	0	0	0.0876
Mar-15	2.0981	0	0	0.3023	0	0.0235	1.7088	0	0.0636	0	0	0	0	0	0.1674
Apr-15	0.5166	0	0	0	0.0080	0.0029	0.4874	0	0.0184	0	0	0	0	0	0.1784
May-15	0.4987	0	0	0	0	0.0039	0.4948	0	0	0	0	0	0	0	0.1224
Jun-15	2.5555	0	0	0	0	0.0029	2.5526	0	0	0	0	0	0	0	0.1182
Jul-15	3.5247	0	0	0	0	0.0000	3.5187	0	0.0060	0	0	0	0	0	0.1394
Aug-15	1.9326	0	0	0.0152	0	0	1.9040	0	0.0133	0	0	0	0	0	0.1209
Sep-15	2.8848	0	0	0.5667	0	0	2.3181	0	0	0	0	0	0	0	0.1338
Oct-15	2.3297	0	0	0.7575	0	0	1.5665	0	0.0057	0	0	0	0	0	0.0867
Nov-15	1.3884	0	0	0.2990	0	0	1.0894	0	0	0	0	0	0	0	0.1122
Dec-15	1.9444	0	0	1.4959	0	0	0.4485	0	0	0	0	0	0	0	0.1788
Jan-16	0.0367	0	0	0	0	0	0.0367	0	0	0	0	0	0	0	0.0954
Feb-16	0.1511	0	0	0	0	0	0.1511	0	0	0	0	0	0	0	0.0725
Mar-16	0.1069	0	0	0	0	0	0.1045	0	0.0024	0	0	0	0	0	0.1999
Apr-16	0.4183	0	0	0	0	0	0.4150	0	0.0032	0	0	0	0	0	0.1447
May-16	0.1738	0	0	0	0	0	0.1738	0	0	0	0	0	0	0	0.0738
Jun-16	1.2267	0	0	0	0	0	0.8631	0	0.3636	0	0	0	0	0	0.2254
Jul-16	0.7840	0	0	0	0	0	0.7770	0	0.0070	0	0	0	0	0	0.0238
Aug-16	0.5080	0	0	0	0	0	0.5080	0	0.5080	0	0	0	0	0	0.0234
Sep-16	0.3151	0	0	0	0	0	0.3066	0	0.0085	0	0	0	0	0	0.0404
Oct-16	0.0883	0	0	0	0	0	0.0883	0	0	0	0	0	0	0	0.0153
Nov-16	0.2790	0	0	0	0	0	0.2790	0	0	0	0	0	0	0	0.0370
Dec-16	0.4206	0	0	0	0	0	0.4206	0	0	0	0	0	0	0	0.0232
Jan-17	0.2040	0	0	0	0	0	0.2040	0	0	0	0	0	0	0	0.0660
Feb-17	0.5803	0	0	0	0	0.0153	0.4570	0	0.1080	0	0	0	0	0	0.1602
Mar-17	0.2185	0	0	0	0	0	0.2122	0	0.0063	0	0	0	0	0	0.0610
Apr-17	0.2893	0	0	0	0	0	0.1460	0	0.1433	0	0	0	0	0	0.0543
May-17	0.4862	0	0	0	0	0	0.2922	0	0.1940	0	0	0	0	0	0.0488
Jun-17	0.2659	0	0	0	0	0	0.2154	0	0.0505	0	0	0	0	0	0.0410
Jul-17	0.1273	0	0	0	0	0	0.0976	0	0.0297	0	0	0	0	0	0.0211
Aug-17	0.5045	0	0	0	0	0	0.4010	0	0.0155	0	0	0	0	0	0.0880
Sep-17	0.1997	0	0	0	0	0	0.1955	0	0.0042	0	0	0	0	0	0.0540
Oct-17	0.6426	0	0	0	0.4408	0	0.1955	0	0.0063	0	0	0	0	0	0.0454
Nov-17	0.2193	0	0	0	0	0	0.2163	0	0.0030	0	0	0	0	0	0.0580
Dec-17	0.0650	0	0	0	0	0	0.0650	0	0	0	0	0	0	0	0.0631
Jan-18	0.0720	0	0	0	0	0.0120	0.0600	0	0	0	0	0	0	0	0.0847
Feb-18	0.0162	0	0	0	0	0	0.0162	0	0	0	0	0	0	0	0.0300
Mar-18	0.0800	0	0	0	0.0800	0	0	0	0	0	0	0	0	0	0.0060

Remarks The Waste Flow Table was updated till 31 Mar 2018

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 2018

Complaint Log

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	Status
--	--	--	--	--	--

Log for Notifications of Summons

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
--	--	--	--	--	--

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

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
April 2017	0	0	0
May 2017	0	0	0
June 2017	1	0	0
July 2017	0	0	0
August 2017	0	0	0

Reporting Month	Number of Complaints	Number of Notifications of Summons	Number of Successful Prosecution
September 2017	0	0	0
October 2017	0	0	0
November 2017	0	0	0
December 2017	0	0	0
January 2018	0	0	0
February 2018	0	0	0
March 2018	0	0	0
Total	2	0	0

Appendix H

Final EM&A Review Report for Works Contract 11240 – Excavation, Sorting and Disposal of Stockpiled Spoils to Approved Receptor Site

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Final EM&A Review Report

Works Contract 11240 - Excavation, Sorting and Disposal of Stockpiled Spoils to Approved Receptor Site

Certified by: Lisa Poon

Position: Environmental Team Leader

Date: 12 April 2018

Shatin to Central Link -
Works Contract 11240
Excavation, Sorting and Disposal of
Stockpiled Spoils to Approved Receptor Site

Final EM&A Report

[April 2018]

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EXECUTIVE SUMMARY

Shatin to Central Link Contract 11240 – Excavation, Sorting and Disposal of Stockpiled Spoils to Approved Receptor Site (hereafter called "the Contract") which comprise the excavation, sorting and delivery of stockpiled spoils from stockpiling area; and provide landing pontoon services for dump truck unloading material to approved receptor sites.

The construction works of the Contract commenced on 3 October 2017 and completed on 3 January 2018.

This is the Final EM&A Review Report for Contract 11240 which documents the findings of EM&A works of the Contract over the entire construction period.

Summary of Construction Works undertaken in the Construction Period

The major activities undertaken in the construction period include:

- Sorting and handling of spoil material and operation of barging point.
- Marine transportation of spoil to approved receptor sites for beneficial reuse.
- Site clearance.

Summary of Environmental monitoring and Audit Works

Waste Management

Wates generated from this Project mainly inert construction and demolition (C&D) materials. Details of waste management data is presented in **Section 5** and **Appendix A**.

Landscape and Visual

Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted throughout the construction period. The necessary mitigation measures have been implemented by the Contractor.

Ecology

Weekly inspection of the implementation of mitigation measures for ecology was conducted throughout the construction period. The necessary mitigation measures have been implemented by the Contractor.

Environmental Site Inspection

Joint Weekly site inspections were conducted by representatives of the Contractor, Engineer and ET throughout the construction period. The representative of the IEC joined the site inspection once per month.

Non-compliance/ Complaint/ Summons and Successful Prosecution

No non-compliance event was recorded during the construction period.

No environmental complaint and notification of summons/successful prosecution was received in the construction period.

Conclusion

The EM&A programme were found to be effective in monitoring impacts arising from the Contract. The findings of the environmental monitoring program suggest that no adverse environmental impact was arisen by the Contract. In conclusion the Contract was environmentally acceptable.

1 INTRODUCTION

Crown Asia Engineering Limited (CAEL) was commissioned by MTR as the Civil Contractor for Works Contract 11240. MTR act as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Contract.

1.1 Purpose of the Report

1.1.1 This is the final EM&A Review Report which summaries audit findings for the Contract during the construction period between 3 October 2017 and 3 January 2018.

1.2 Report Structure

1.2.1 This final EM&A Review Report is organized as follows:

- Section 1: Introduction
- Section 2: Project Information
- Section 3: Environmental Monitoring Requirement
- Section 4: Implementation Status of Environmental Mitigation Measures
- Section 5: Summary of EM&A Works
- Section 6: Environmental Non-conformance
- Section 7: Comments, Conclusions and Recommendations

2 PROJECT INFORMATION

2.1 Background

2.1.1 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).

2.1.2 The construction of the SCL (TAW-HUH) has been divided into a series of civil construction Works Contracts. In addition to the temporary work site in the vicinity of the tunnel and station structures, there are some off-site temporary works sites/areas to facilitate the construction process. This Works Contract 11240 which comprise the excavation, sorting and delivery of stockpiled spoils from stockpiling area; and provide landing pontoon services for dump truck unloading material to approved receptor sites.

2.1.3 The construction works of the Contract commenced on 3 October 2017 and completed on 3 January 2018. The whole site was vacated and handed back to relevant parties.

2.1.4 The site layout plan is shown in **Figure 1.1**.

2.2 Construction Programme and Activities

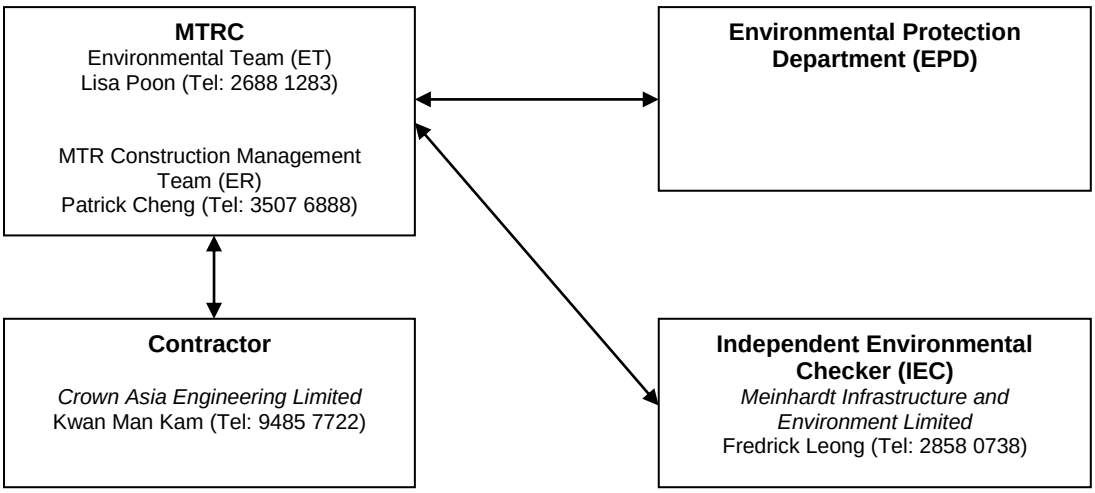
2.2.1 The major activities undertaken in the construction period are summarised below:

- Sorting and handling of spoil material and operation of barging point.
- Marine transportation of spoil to approved receptor sites for beneficial reuse.
- Site clearance.

2.3 Project Organisation

2.3.1 The project organization structure and contact details are shown in **Table 2.1.**

Table 2.1 Project Organization structure



2.4 Summary of EM&A Requirements

EM&A programme under 11240 require construction phase environmental site audits. The advices on the implementation status of environmental protection and pollution control/mitigation measures summarized in Section 5 of this report.

3 ENVIRONMENTAL MONITORING REQUIREMENTS

3.1 Landscape and Visual

3.1.1 As per the EM&A Manual, the landscape and visual mitigation measures was implemented and site inspections was undertaken once every two weeks during the construction period.

3.2 Ecology

3.2.1 As per the EM&A Manual, weekly site audits was conducted by the ET during construction phase of the Project to check the recommended mitigation measures was properly implemented.

3.3 Cultural Heritage

3.3.1 According to the location of the Contract and EIA report, there are no terrestrial archaeological resources and built heritage resources in vicinity of the Contract. Archaeological monitoring works and the implementation of mitigation measures during the construction and operation phases of the Contract is, therefore, not required.

3.3.2 However, the Contractor shall allow a 25m separation distance between the proposed dredging area and the Kowloon Rock as specified in the approved SCL (TAW-HUH) EIA Report.

4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

4.1.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the EP and EM&A Manual. The implementation status of the environmental mitigation measures during the construction period is summarized in **Appendix A.** Status of required submissions under the EP during the construction 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	EM&A Report (October 2017)	14 November 2017
	EM&A Report (November 2017)	14 December 2017
	EM&A Report (December 2017)	12 January 2018
	EM&A Report (January 2018)	14 February 2018

5 SUMMARY OF EM&A WORKS

5.1 Waste Management

5.1.1 The quantities of C&D materials generated during the construction period are summarized in **Table 5.1**. The waste flow table with detail breakdown are annexed in **Appendix C.**

Table 5.1 Quantities of Waste Generated from the Contract

Whole Construction Period	Quantity					
	C&D Materials (inert) [(a)]	C&D Materials (non-inert)[(b)]	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
	55045.8m^3	*0m^3*	*0Kg*	*0Kg*	*0Kg*	*0Kg*

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. Steel materials generated from the Contract are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.

5.2 Landscape and Visual

5.2.1 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted and no observation and recommendation was made throughout the construction period.

5.3 Ecology

5.3.1 Weekly inspection of the implementation of ecology mitigation measures was conducted and no observation and recommendation was made throughout the construction period.

5.4 Site Inspection

5.4.1 Site audit was carried out by representatives of the Contractor, Engineer and ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The representative of the IEC joined the site inspections once per month.

5.4.2 No non-compliance was recorded during the site inspections throughout the construction period. Observations and recommendations recorded during the site inspections were summarized in each of the Monthly EM&A Reports. All relevant environmental mitigation measures for construction stages as stated in the EM&A Manual was carried out properly during the construction period. A summary of the mitigation measures implementation schedule is provided in **Appendix A**.

5.4.3 The major findings and the corresponding recommendations given during the site inspections are summarized in **Table 5.2**.

Table 5.2 Observations and Recommendations of Site Audit

Parameters	Observations	Corresponding Recommendations
Air Quality	Haul road was observed dry and dusty.	To provide watering to the dusty road.
	Site area was observed dry.	To provide watering to the dusty area.
	Parts of stockpile were not covered properly.	To properly cover and provide watering to the dusty stockpile.
Noise	Nil	Nil
Water Quality	Soil was observed accumulating at the edge of the barge.	To provide proper mitigation measure to avoid soil dropping to the edge of barge and remove the soil properly.

Parameters	Observations	Corresponding Recommendations
	Silty water accumulated on the tipping hall was observed.	To remove the water ponding and provide sufficient mitigation measures to avoid potential site runoff.
Waste/ Chemical Management	Oil mixture was observed on ground and oil container without drip tray was observed at tipping hall.	To dispose the oil mixture as chemical waste and storage the oil container with drip tray properly.
Ecology/ Landscape and Visual	Nil	Nil
Permits/ Licenses	Nil	Nil

6 ENVIRONMENTAL NON-CONFORMANCE

6.1 Summary of Environmental Non-Compliance

6.1.1 No environmental non-compliance was recorded throughout the construction period.

6.2 Summary of Environmental Complaints

6.2.1 No environmental complaint was recorded throughout the construction period.

6.3 Summary of Environmental Summon and Successful Prosecutions

6.3.1 No environmental related prosecution or notification of summons was received throughout the construction period.

7 COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

7.1 Validity of EIA Predictions

7.1.1 It is predicted in the EIA Report that with the implementation of the recommended mitigation measures, there would be no unacceptable or residual air quality and noise environmental impacts arising from the Project-related construction works.

7.1.2 There is no major environmental deficiency in terms of ecology and landscape and visual was recorded during the site inspections throughout the construction period.

7.1.3 Throughout the entire construction period, neither project-related environmental complaint, notification of summon nor successful prosecution was received, and no non-conformance of implementation of environmental mitigation measures was identified in weekly site inspections. These demonstrate no adverse environmental impacts arisen from the actual construction activities of the Contract which are in-line with the EIA predictions.

7.2 Comments on Overall EM&A Programme

7.2.1 The mitigation measures detailed in the Environmental Permit, the EM&A Manual and in the EIA report were implemented and site inspections were carried out to directly ensure the timely implementation of mitigation measures during the construction period. The environmental performance of the Contract was acceptable.

7.2.2 The overall performance of the environmental management system in this Contract was effective.

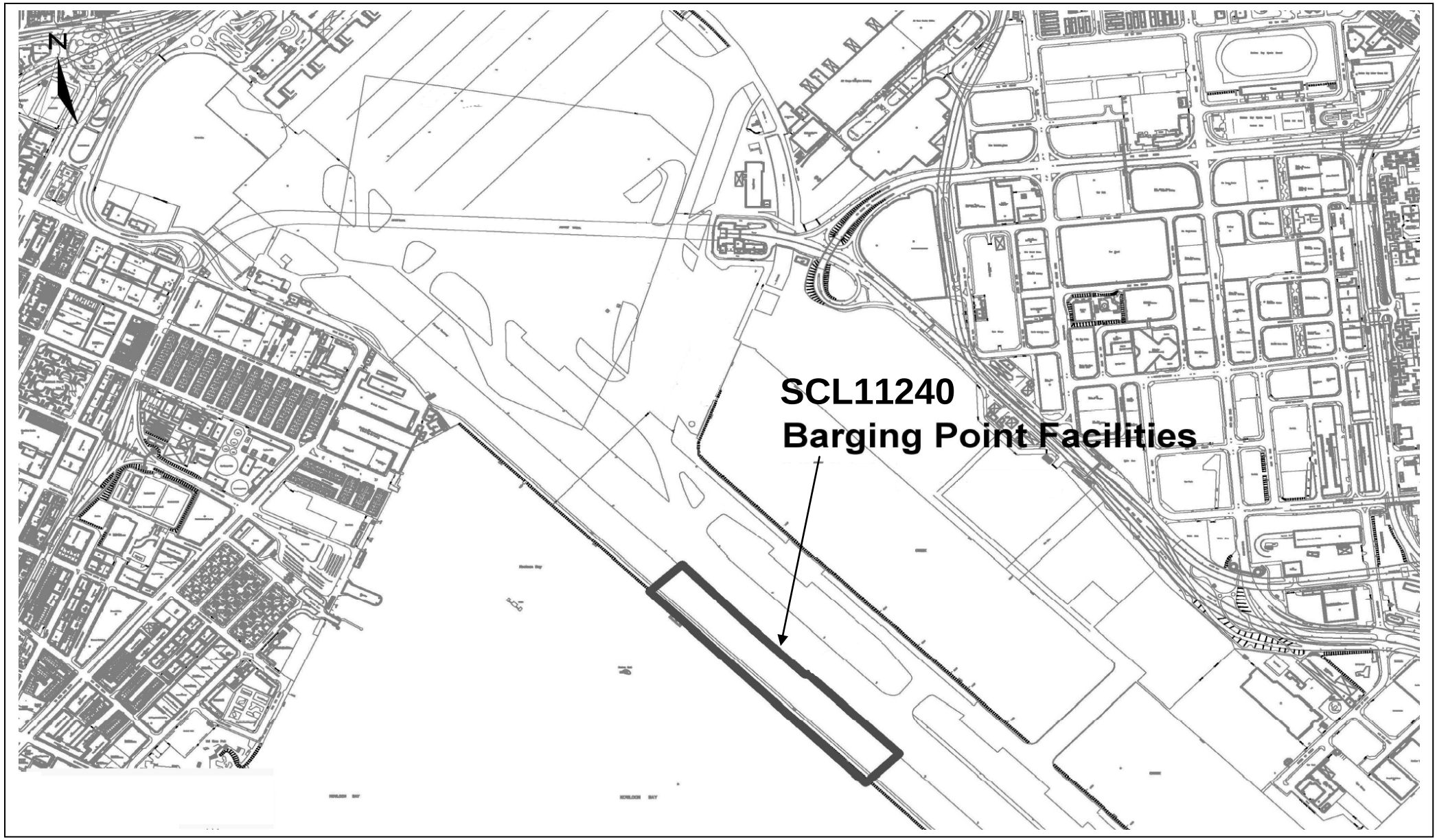
7.3 Recommendations and Conclusions

7.3.1 The EM&A programme was found to be effective in monitoring impacts arising from the Contract. The findings of the environmental site inspections suggest that no adverse impacts arise by the Contract. In conclusion the Contract was environmentally acceptable.

7.3.2 With the success of the overall EM&A programme, the deterioration of the environment caused by the Contract was cost-effectively identified and necessary prompt effective mitigation measures were implemented to avoid any unacceptable impacts.

Figure 1.1

Site Layout Plan


N
SCL11240
Barging Point Facilities

Appendix A

Environmental Mitigation Implementation Schedule

Environmental Mitigation Implementation Schedule

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
Ecology (Construction Phase)							
S5.7	E5	<u>Good Site Practices</u> Impact on any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, containment of contaminated soils for removal from the site, appropriate storage of chemicals and chemical waste away from sites of ecological value and the provision of sanitary facilities for on-site workers. Adoption of such measures should permit waste to be suitably contained within the site for subsequent removal and appropriate disposal. The following good site practices should also be implemented: • Erection of temporary geotextile silt or sediment fences/oil traps around earthmoving 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.	Minimise ecological impacts	Contractor	All construction sites	Construction stage	✔
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 ground may be set up on-site as necessary.	Minimize visual & landscape impact	Contractor	Within Project Site	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
		<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,					N/A N/A N/A
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 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	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
		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;					N/A
		• 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;					N/A
		• Any skip hoist for material transport should be totally enclosed by impervious sheeting;					N/A
		• 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
		• 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
		• 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					

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
		months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.					
S7.6.5	D4	The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point: • All road surface within the barging facilities will be paved; • Dust enclosures will be provided for the loading ramp; • Vehicles will be required to pass through designated wheels wash facilities; and • Continuous water spray at the loading points	Control construction dust	Contractor	Kai Tak Barging Points	Construction stage	 ✔ ✔ ✔ ✔
S7.6.5	D5	For the unloading of spoil from trucks at barging point, installation of 3-sided screen with top tipping hall and operating water spraying and flexible dust curtains at the discharge point for dust suppression.	Minimize dust impact at the nearby sensitive receivers	Contractor	Barging Points	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 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	Contractor	All construction sites	Construction stage	 ✔ ✔ ✔ N/A ✔ N/A
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	Screen the noisy plant items to be	Contractor	All construction sites	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
		absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressor, generators and saw.	used at all construction sites		where practicable		
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	N/A
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	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	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
		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 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					✔

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
		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.					N/A
		• 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	To minimize water quality from sewage effluent	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
		appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.					
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 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 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	To minimize groundwater quality impact from contaminated area	Contractor	Excavation areas where contamination is found	Construction stage	N/A 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
		licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.					
S10.7.1	W6	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; • Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water; and • Mitigation measures as outlined in W1 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	✔ ✔ ✔ * ✔
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	N/A
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.	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	N/A ✔ 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
		• 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. • 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.	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	✔ N/A
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 should be considered by the Contractor.	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
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; • Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action. • 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; • 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; • The material shall be placed into the disposal pit by bottom dumping; • 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; • 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. • 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	To control pollution due to marine sediment	Contractor	Within Project Site Area	Construction Stage	N/A N/A N/A N/A N/A N/A N/A N/A N/A 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
		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.					
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.	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 B
Summary 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 Wastes Generated Monthly				
	Total Quantity Generated	Hark 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)
	(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	--	--	--	--	--	--	--	--	--	--
Feb	--	--	--	--	--	--	--	--	--	--
Mar	--	--	--	--	--	--	--	--	--	--
Apr	--	--	--	--	--	--	--	--	--	--
May	--	--	--	--	--	--	--	--	--	--
June	--	--	--	--	--	--	--	--	--	--
July	--	--	--	--	--	--	--	--	--	--
Aug	--	--	--	--	--	--	--	--	--	--
Sept	--	--	--	--	--	--	--	--	--	--
Oct	32,742.949	0.000	0.000	32,742.949	0.000	0.000	0.000	0.000	0.000	0.000
Nov	7,394.742	0.000	0.000	7,394.742	0.000	0.000	0.000	0.000	0.000	0.000
Dec	13,857.750	0.000	0.000	13,857.750	0.000	0.000	0.000	0.000	0.000	0.000
Total	53,995.441	0.000	0.000	53,995.441	0.000	0.000	0.000	0.000	0.000	0.000

Monthly Summary Waste Flow Table for 2018 (Year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated	Hark 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)
	(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	1,050.418	0.000	0.000	1,050.418	0.000	0.000	0.000	0.000	0.000	0.000
Feb	--	--	--	--	--	--	--	--	--	--
Mar	--	--	--	--	--	--	--	--	--	--
Apr	--	--	--	--	--	--	--	--	--	--
May	--	--	--	--	--	--	--	--	--	--
June	--	--	--	--	--	--	--	--	--	--
July	--	--	--	--	--	--	--	--	--	--
Aug	--	--	--	--	--	--	--	--	--	--
Sept	--	--	--	--	--	--	--	--	--	--
Oct	--	--	--	--	--	--	--	--	--	--
Nov	--	--	--	--	--	--	--	--	--	--
Dec	--	--	--	--	--	--	--	--	--	--
Total	1,050.418	0.000	0.000	1,050.418	0.000	0.000	0.000	0.000	0.000	0.000

Appendix I

Final EM&A Review Report for Works Contract 1107 – Diamond Hill to Kai Tak Tunnels

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Final EM&A Review Report

Works Contract 1107 – Diamond Hill to Kai Tak Tunnels

(April 2018)

Certified by: Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 12th April 2018

Chun Wo – SELI Joint Venture

Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels

Final Environmental Monitoring & Audit Review Report

(March 2018)

(Version 1.0)

Certified By

Dr. Priscilla Choy
(Environmental Team Leader)

REMARKS:

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

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

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

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EXECUTIVE SUMMARY

Introduction

1. This is the Final Environmental Monitoring and Audit (EM&A) Review 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 of the Project.

2. The major construction works for Contract 1107 commenced on 27th May 2013 and was completed on 22nd February 2018. Noise and dust monitoring works would be taken up by SCL Works Contract 1106 after the completion of Contract 1107.

Summary of Construction Works undertaken in the Construction Period

3. The major site activities undertaken in the construction period include:

- Site investigation works;
- Investigation and removal of old function works;
- Hoarding erection;
- D-wall construction;
- Preparation works for site access and drainage;
- Sheet piling works;
- Tree transportation;
- Shaft exaction;
- Site preparation works;
- Nullah diversion;
- Pipe pile works;
- King Post installation works;
- Grouting works;
- TBM excavation;
- Tunnels construction at Cut and Cover tunnels;
- Site preparation works for TBM excavation;
- Reprovision of Box culvert;
- Backfilling works at cut and cover tunnels;
- Reinstatement and Backfilling works of Box Culvert;
- Reinstatement and Backfilling works of Drainage;
- General reinstatement works;
- CCTV High Mast reinstatement works at Choi Hung Road;
- ELS the K509 CCTV High permanent footing;
- Preparation works for site hand over;
- C&D materials storage;
- Concrete breaking works; and
- Site clearance.

Variation in Construction Method

4. 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.

Environmental Monitoring and Audit Works

5. A summary of the baseline and impact monitoring activities is listed below:

- Construction noise monitoring

Noise Monitoring Station ID

- Near Kai Ching Estate
  - Baseline Monitoring — 7th May – 25th May 2013
- NMS-CA-4(1)(3)/NMS-CA-3(2)(3) (Block 1, Rhythm Garden (north-eastern façade))
  - Impact Monitoring — 29th May 2013 – 27th February 2018
- NMS-CA-5(1)(4)/NMS-CA-2(2)(4) (Block 1, Rhythm Garden (northern façade))
  - Impact Monitoring — 29th May 2013 – 27th February 2018

- Construction Dust (1-hour TSP) Monitoring

Dust Monitoring Station ID

- Near Kai Ching Estate
  - Baseline Monitoring — 7th May – 20th May 2013

- Construction Dust (24-hour TSP) Monitoring

Dust Monitoring Station ID

- Near Kai Ching Estate
  - Baseline Monitoring — 7th May – 20th May 2013
- DMS-4(1)(5)/ DMS-3(2)(5) (Block 1, Rhythm Garden)
  - Impact Monitoring — 28th May 2013 – 26th February 2018

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

6. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. Details of waste management data is presented in Section 5 and **Appendix F**.

Landscape and Visual

7. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted throughout the construction period. Most of the necessary mitigation measures have been implemented and recommended follow-up actions have been discharged by the Contractor.

Environmental Site Inspection

8. Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET throughout the construction period. The representative of the IEC joined the site inspections once per month.

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

9. No exceedance of the Action and Limit Levels of regular construction noise monitoring and 24-hour TSP monitoring was recorded during the whole construction period.

10. No non-compliance event was recorded during the construction period.

11. 6 of Project related environmental complaints and notifications of summons/successful prosecutions were received in this construction period. The effectiveness of mitigation measures implemented by the Contractor for each complaint was observed to be satisfactory. The details of all received complaints are present in **Appendix G.**

Conclusion

12. The EM&A programme were found to be effective in monitoring impacts arising from the Project. The findings of the environmental monitoring program suggest that no adverse impacts on sensitive receivers at the designated monitoring locations were brought about by the Project.

13. In conclusion the Project was environmentally acceptable in terms of air quality and noise impact.

1 INTRODUCTION

1.1 Cinotech Consultants Limited (Cinotech) was appointed by 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 Final Environmental Monitoring and Audit (EM&A) Review 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 of the Project.

Structure of the Report

1.3 The structure of the report is as follows:

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

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

Section 5: **Summary of EM&A Works** - summarises the EM&A works and results obtained in the construction period.

Section 6: **Environmental Non-conformance -** summarises any monitoring exceedance, environmental complaints and environmental summons within the construction period.

Section 7: **Comments, Conclusions and Recommendations**

2 PROJECT INFORMATION

Background

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

2.2 The construction of the SCL (TAW-HUH) 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 the construction period is shown as follows.

- Site investigation works;
- Investigation and removal of old function works;
- Hoarding erection;
- D-wall construction;
- Preparation works for site access and drainage;
- Sheet piling works;
- Tree transportation;
- Shaft exaction;
- Site preparation works;
- Nullah diversion;
- Pipe pile works;
- King Post installation works;
- Grouting works;
- TBM excavation;
- Tunnels construction at Cut and Cover tunnels;
- Site preparation works for TBM excavation;
- Reprovision of Box culvert;
- Backfilling works at cut and cover tunnels;
- Reinstatement and Backfilling works of Box Culvert;
- Reinstatement and Backfilling works of Drainage;
- General reinstatement works;
- CCTV High Mast reinstatement works at Choi Hung Road;
- ELS the K509 CCTV High permanent footing;
- Preparation works for site hand over;
- C&D materials storage;

- Concrete breaking works; and
- Site clearance.

Project Organisation

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

Summary of EM&A Requirements

2.6 The EM&A programme under Works Contract 1107 require regular dust and noise quality monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event / Action Plans;
- Environmental mitigation measures, as recommended in the Project EIA study final report; and
- Environmental requirements in contract documents.

2.7 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely regular dust and noise quality monitoring as well as audit works for the Project in the construction period.

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Construction Noise Monitoring

3.1 In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring 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 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.

Noise Monitoring Parameter and Frequency

3.2 Baseline noise monitoring at near Kai Ching Estate and impact monitoring at alternative noise monitoring locations was conducted in accordance with the requirements stipulated in the EM&A Manual. **Table 3.2** summarises the monitoring parameters, frequency and duration of baseline and impact noise monitoring.

Table 3.2 Noise Monitoring Parameters, Frequency and Duration

Monitoring Period	Time Period	Parameters	Frequency	Duration, minute
Baseline Monitoring	Daytime: 0700-1900 hours on normal weekdays	L_{eq}, L_{10} & L_{90}	Continuously for 14 consecutive days	30 ($L_{eq\ (30min)}$)
	Evening: 1900-2300 hours on normal weekdays			15 (Average of three consecutive $L_{eq\ (5min)}$)
	General Holidays and Sundays: 0700-2300 hours			
	Night-time: 2300-0700 hours on all days			
Impact Monitoring	Daytime: 0700-1900 hours on normal weekdays		Weekly	30 ($L_{eq\ (30min)}$)

Compliance Checking for Impact Monitoring

3.3 Baseline noise monitoring at near Kai Ching Estate was conducted between 7th and 25th May 2013. The Baseline noise monitoring results (L_{eq}(30min.) dB(A)) during the period without construction works on normal weekdays ranged from 53.8dB(A) to 72.3dB(A). Result of the monitoring (i.e. 64.7dB(A)) was used for correcting the measured noise level during the construction stage of the Project for normal weekdays by this formula:

Measured L_{eq} at near Kai Ching Estate – Baseline Noise Level (64.7 dB(A))

= Construction Noise Level at near Kai Ching Estate

Construction Dust Monitoring

3.4 The dust baseline and impact 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.

Dust Monitoring Parameter and Frequency

3.5 The dust baseline and impact monitoring (in terms of Total Suspended Particulates (TSP)) was conducted at the designated monitoring 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**.

Table 3.4 Dust Monitoring Parameters and Frequency and Duration

Monitoring Period	Duration	Parameter	Frequency
Baseline Monitoring	Consecutive days of at least 2 weeks before commencement of major construction works	24-hour TSP	Daily
		1-hour TSP	Three times per day
Impact Monitoring(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.

Action and Limit Levels

3.6 The action and limit levels for air quality and noise monitoring are presented in **Appendix A**.

Event and Action Plan

3.7 Should non-compliance of the criteria occur, action in accordance with the Event and Action Plan in **Appendix B** was carried out.

Landscape and Visual

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

4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

4.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit, EM&A Manual and the ERR. The implementation status of the environmental mitigation measures of the construction period is summarized in **Appendix E**. Status of required submissions under the Environmental Permit (EP) of this Project is presented in **Table 4.1**.

Table 4.1 Status of Required Submissions under EP

EP Condition	Submission	Submission Date
Condition 2.1	Employment of Environmental Team	27th August 2012
Condition 2.2	Employment of Independent Environmental Checker	1st August 2012
	Replacement of Independent Environmental Checker	29th May 2013
Condition 2.7	Management Organization of Main Construction Companies	30th April 2013
Condition 2.8	Construction Programme and EP Submission Schedule	27th July 2012
Condition 2.9	Construction Noise Mitigation Measures Plan	11th June 2013
Condition 2.10	Continuous Noise Monitoring Plan	11th June 2013
Condition 2.13	Visual, Landscape, Tree Planting & Tree Protection Plan	7th March 2018
Condition 3.3	Baseline Monitoring Report (Noise and Air Quality)	31st July 2012
Condition 3.4	Monthly EM&A Report (May 2013)	14th June 2013
	Monthly EM&A Report (June 2013)	10th July 2013
	Monthly EM&A Report (July 2013)	12th August 2013
	Monthly EM&A Report (August 2013)	13th September 2013
	Monthly EM&A Report (September 2013)	15th October 2013
	Monthly EM&A Report (October 2013)	14th November 2013
	Monthly EM&A Report (November 2013)	13th December 2013
	Monthly EM&A Report (December 2013)	14th January 2014
	Monthly EM&A Report (January 2014)	14th February 2014
	Monthly EM&A Report (February 2014)	14th March 2014
	Monthly EM&A Report (March 2014)	14th April 2014
	Monthly EM&A Report (April 2014)	14th May 2014

	Monthly EM&A Report (May 2014)	13th June 2014
	Monthly EM&A Report (June 2014)	14th July 2014
	Monthly EM&A Report (July 2014)	14th August 2014
	Monthly EM&A Report (August 2014)	12th September 2014
	Monthly EM&A Report (September 2014)	14th October 2014
	Monthly EM&A Report (October 2014)	14th November 2014
	Monthly EM&A Report (November 2014)	12th December 2014
	Monthly EM&A Report (December 2014)	14th January 2015
	Monthly EM&A Report (January 2015)	13th February 2015
	Monthly EM&A Report (February 2015)	13th March 2015
	Monthly EM&A Report (March 2015)	14th April 2015
	Monthly EM&A Report (April 2015)	14th May 2015
	Monthly EM&A Report (May 2015)	11th June 2015
	Monthly EM&A Report (June 2015)	14th July 2015
	Monthly EM&A Report (July 2015)	14th August 2015
	Monthly EM&A Report (August 2015)	14th September 2015
	Monthly EM&A Report (September 2015)	14th October 2015
	Monthly EM&A Report (October 2015)	13th November 2015
	Monthly EM&A Report (November 2015)	14th December 2015
	Monthly EM&A Report (December 2015)	14th January 2016
	Monthly EM&A Report (January 2016)	12th February 2016
	Monthly EM&A Report (February 2016)	14th March 2016
	Monthly EM&A Report (March 2016)	14th April 2016
	Monthly EM&A Report (April 2016)	13th May 2016
	Monthly EM&A Report (May 2016)	14th June 2016
	Monthly EM&A Report (June 2016)	14th July 2016
	Monthly EM&A Report (July 2016)	12th August 2016
	Monthly EM&A Report (August 2016)	14th September 2016
	Monthly EM&A Report (September 2016)	14th October 2016

	Monthly EM&A Report (October 2016)	14th November 2016
	Monthly EM&A Report (November 2016)	14th December 2016
	Monthly EM&A Report (December 2016)	13th January 2017
	Monthly EM&A Report (January 2017)	14th February 2017
	Monthly EM&A Report (February 2017)	14th March 2017
	Monthly EM&A Report (March 2017)	12th April 2017
	Monthly EM&A Report (April 2017)	12th May 2017
	Monthly EM&A Report (May 2017)	14th June 2017
	Monthly EM&A Report (June 2017)	14th July 2017
	Monthly EM&A Report (July 2017)	14th August 2017
	Monthly EM&A Report (August 2017)	14th September 2017
	Monthly EM&A Report (September 2017)	13th October 2017
	Monthly EM&A Report (October 2017)	14th November 2017
	Monthly EM&A Report (November 2017)	14th December 2017
	Monthly EM&A Report (December 2017)	12th January 2018
	Monthly EM&A Report (January 2018)	14th February 2018
	Monthly EM&A Report (February 2018)	14th March 2018

5 SUMMARY OF EM&A WORKS

Construction Noise Monitoring

5.1 The Baseline noise monitoring was conducted by ET of SCL Works Contract 1106 between 7th and 25th May 2013 at near Kai Ching Estate. The Baseline Noise Level has been established accordingly. Action and Limit Levels for noise is summarised in **Appendix A**.

5.2 Impact construction noise measurements were carried out at the monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106.

5.3 Based on observation during the on-site monitoring, construction activities and weather condition were the major factors which might affect the monitoring result. Other than construction activities and weather condition, road traffic nearby is considered as a potential noise source that affects the monitoring results of the construction period. No other major factor which might affect the monitoring result was observed on-site.

5.4 The noise monitoring results together with their graphical presentations and statistical analysis of the trends over the course of the Project are presented in **Appendix D** and a summary of the noise monitoring results in the construction period is given in **Table 5.1**.

Table 5.1 Summary Table of Noise Impact Monitoring Results

Parameter (1)	**Location**	**Range, dB(A),** $L_{eq\ (30\ mins)}$	**Limit Level, dB(A),** $L_{eq\ (30\ mins)}$
NMS-CA-4(1)(3)/ NMS-CA-3(2)(3)	Block 1, Rhythm Garden (north-eastern façade)	54.7 - 73.5	75dB(A)
NMS-CA-5(1)(4)/ NMS-CA-2(2)(4)	Block 1, Rhythm Garden (northern façade)	57.7 – ≤ Baseline	65 / 70 dB(A)

(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.

5.5 With reference to the trends of monitoring parameters shown in **Appendix D**, the linear trends at the impact monitoring stations are steady and in line with the baseline noise level (at near Kai Ching Estate).

5.6 No exceedance of the Action and Limit Levels of construction noise due to the Project was recorded during the construction period. Therefore, it is considered that no adverse noise impact was brought to the nearby noise monitoring station by this Project.

Construction Dust Monitoring

5.7 Baseline dust monitoring was conducted during May 2013. Action and Limit Levels for air quality monitoring have been established accordingly and summarised in **Appendix A**.

5.8 24-hour TSP monitoring were carried out at the designated monitoring station during normal weekdays of the construction period by ET of SCL Works Contract 1107. The monitoring results together with their graphical presentations and statistical analysis of the trends over the course of the Project are presented in **Appendix C** and a summary of the dust monitoring results in the construction period is given in **Table 5.2**.

Table 5.2 Summary Table of Dust Impact Monitoring Results

Parameter	Minimum µg/m³	Maximum µg/m³	Average µg/m³	Action Level, µg/m³	Limit Level, µg/m³
DMS-4(1)(5)/ DMS-3(2)(5)	11.1	152.8	47.5	160	260

Remarks:
(6) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(7) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(8) 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.
(9) 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.
(10) Dust monitoring on DMS-4(1)/ DMS-3(2) (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.

5.9 The trends (linear) of the monitoring parameter at the monitoring stations are slightly increasing yet no exceedance of the Action and Limit Levels of the 24-hour TSP was recorded by the end of the construction period. Construction activities and weather condition were the major factors which might affect the monitoring result. It is considered that no adverse air quality impact was brought to the nearby air quality monitoring station by this Project.

Waste Management

5.10 Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials are made up of general refuse and recyclable wastes like plastics and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the construction are summarised in **Table 5.3**. Details of waste management data is presented in **Appendix F**.

Table 5.3 Quantities of Waste Generated from the Project

Whole Construction Period	Quantity					
	C&D Materials (inert) (a)	C&D Materials (non-inert) (b)				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
	123,190m³	*2,709 m³*	*19,663 kg*	*5,104 kg*	*5,560 kg*	*76,670 kg*

Notes:
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil,
(b) Non-inert C&D materials include steel, paper/cardboard packaging waste, plastics and other wastes such as general refuse and vegetative wastes. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.

Landscape and Visual

5.11 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted throughout the construction period. The observations and recommendations made during the audit sessions are summarized in each of the Monthly EM&A Report.

Site Audit

5.12 Site audit was carried out by representatives of the Contractor, Engineer and Contractor's ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The representative of the IEC joined the site inspections once per month.

5.13 No non-compliance was recorded during the site inspections throughout the construction period. Observations and recommendations recorded during the site inspections were summarized in each of the Monthly EM&A Reports.

5.14 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix E**.

5.15 The major findings and the corresponding recommendations given during the site audits are summarized in **Table 5.4**.

Table 5.4 Major Findings and Corresponding Recommendations given during Site Audits

Parameters	Observations / Reminders	Corresponding Recommendations
Water Quality	No Re-circulation system of water was provided in wheel washing facility.	Re-circulation system of water in wheel washing facility should be properly set up.
	The debris and rubbish were observed in U-channel.	The U-channel should be properly maintained to avoid/minimize runoff out if the construction site.
	Muddy/Silty water was observed discharge out of site area through U-channel.	The sand bags should be provided for U-channel to avoid untreated runoff discharge. The wastewater should be treated before discharging.
	pH value of treated discharge was observed not in the range of 6-9.	The dosage of chemical enhancement should be controlled well.
	The stockpile was observed without coverage after rain event.	The impervious sheeting should be provided for stockpile to avoid silty surface runoff.
	The sediment / muddy materials were observed in sediment tank / AquaSed.	The sediment tank / AquaSed should be checked and maintained regularly to remove the sediment to prevent turbid discharge.
	The silty leakage was observed from wheel washing facilities.	The wheel washing facilities should be maintained well to avoid silty leakage.
Noise	Noisy mechanical equipment was observed without noise enclosure.	The Proper noise enclosure should be provided to minimise the noise level.
	The less amount of noise barriers were observed in the site boundary.	The noise barriers should be erected to reduce noise impact.
Landscape and Visual	The construction materials were observed inside the tree protection zone and no fencing was provided to the zone.	All the tree within site boundary should be properly fenced off as tree protection zone.
Air Quality	The dusty materials were observed without coverage.	The impervious sheeting should be provided to prevent the dust generation.
	Dust generation observed from grouting plant.	The proper enclosure should be provided to avoid dust generation.
	The haul road was observed dry.	The sufficient water spray should be provided.
	Black smoke was observed from PME	The PME should be checked and maintained well to avoid black smoke emission.
Waste/Chemical Management	Oil leakage was observed from PME.	The PME should be checked and maintained regularly. And oil should be cleared and disposed as of chemical waste.
	No drip tray was provided for generator.	Drip tray with adequate capacity should be provided to avoid fuel leakage.
	C&D waste was observed to be placed in	The chemical storage waste area should

	the chemical waste storage area.	be labelled.
	Stagnant water was observed to be accumulated in drip tray.	The wastewater should be cleared and treated as chemical waste.
	Chemical containers were observed to be placed on the unpaved ground.	Drip tray with adequate capacity should be provided to prevent leakage.
	The accumulation of general refuse and C&D waste was observed within the site area.	The C&D waste should be sorted and disposed properly.
Permits/Licenses	No Environmental permit was observed to be display at site entrance.	The Environmental permit should be display conspicuously at site entrance.

6 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

6.1 No exceedance of the Action and Limit Levels of regular construction noise monitoring and 24-hour TSP monitoring was recorded during the construction period.

Summary of Environmental Non-Compliance

6.2 No environmental non-compliance was recorded in the construction period.

Summary of Environmental Complaint

6.3 6 of environmental Project-related complaints were received in the construction period.

Summary of Environmental Summon and Successful Prosecution

6.4 There was no successful environmental prosecution or notification of summons received since the Project commencement.

7 COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

Validity of EIA Predictions

7.1 It is predicted in the EIA Report that with the implementation of the recommended mitigation measures, there would be no unacceptable or residual air quality and noise impacts arising from the Project-related construction works. The impact monitoring data obtained was in-line with the predictions as no Action/Limit Level exceedance was caused by the Project.

Comments on Overall EM&A Programme

7.2 The mitigation measures detailed in the Environmental Permit, the EM&A Manual and the EIA report were implemented throughout the whole project period. With the environmental monitoring and site inspection to directly ensure the timely implementation of mitigation measures during the Project, the environmental performance of the Project was acceptable. Analysis of all EM&A data collected throughout the construction periods also demonstrated the environmental acceptability of the Project.

7.3 The overall performance of the monitoring methodology adopted and environmental management system in this Project was effective.

Overall EM&A Data

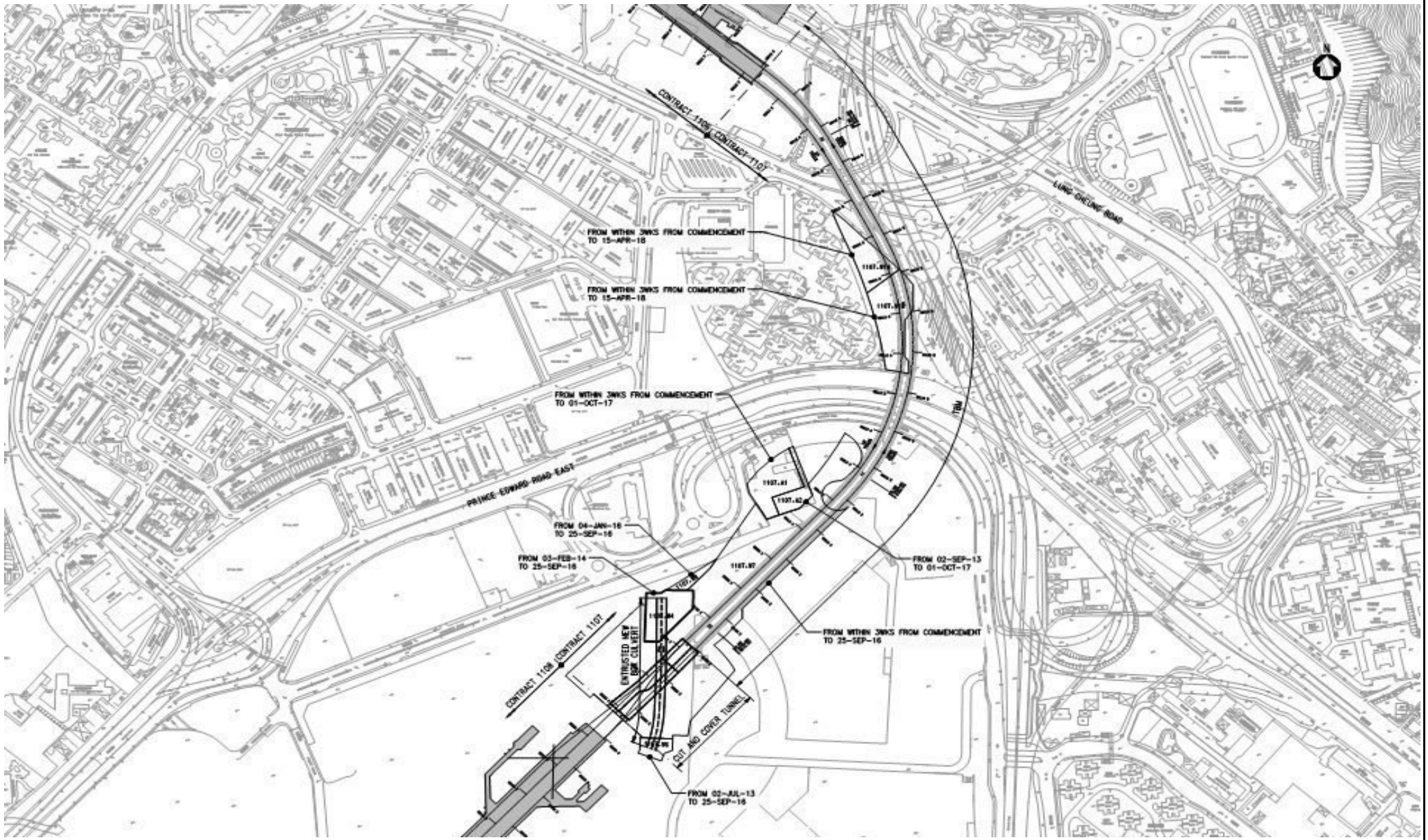
7.4 Baseline and impact air quality and noise monitoring were carried out according to the requirements in the EM&A Manual. No exceedance of the Action and Limit Levels of air quality and noise monitoring was recorded at the designated monitoring stations during the whole construction period.

Recommendations and Conclusions

7.5 The EM&A programme was found to be effective in monitoring impacts arising from the Project. The findings of the environmental monitoring program suggest that no adverse impacts on sensitive receivers were brought about by the Project. In conclusion the Project was environmentally acceptable in terms of air quality and noise.

7.6 With the success of the overall EM&A programme, the deterioration of the environment caused by the Project was cost-effectively identified and necessary prompt effective mitigation measures were implemented to avoid any unacceptable impacts.

FIGURES



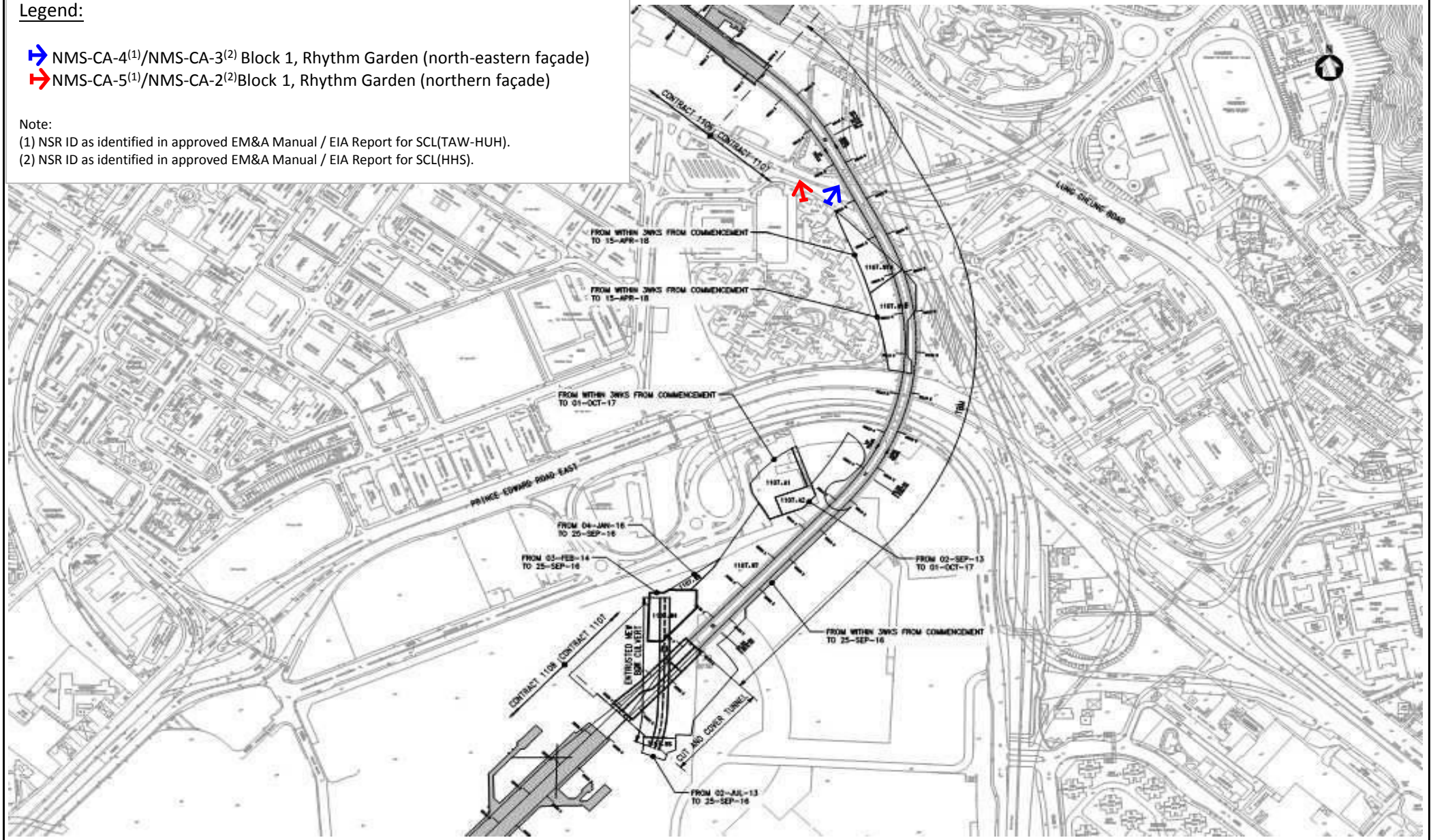
Title	MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Site Layout Plan	Scale N.T.S Date May-13	Project No. MA13018 Figure 1

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).

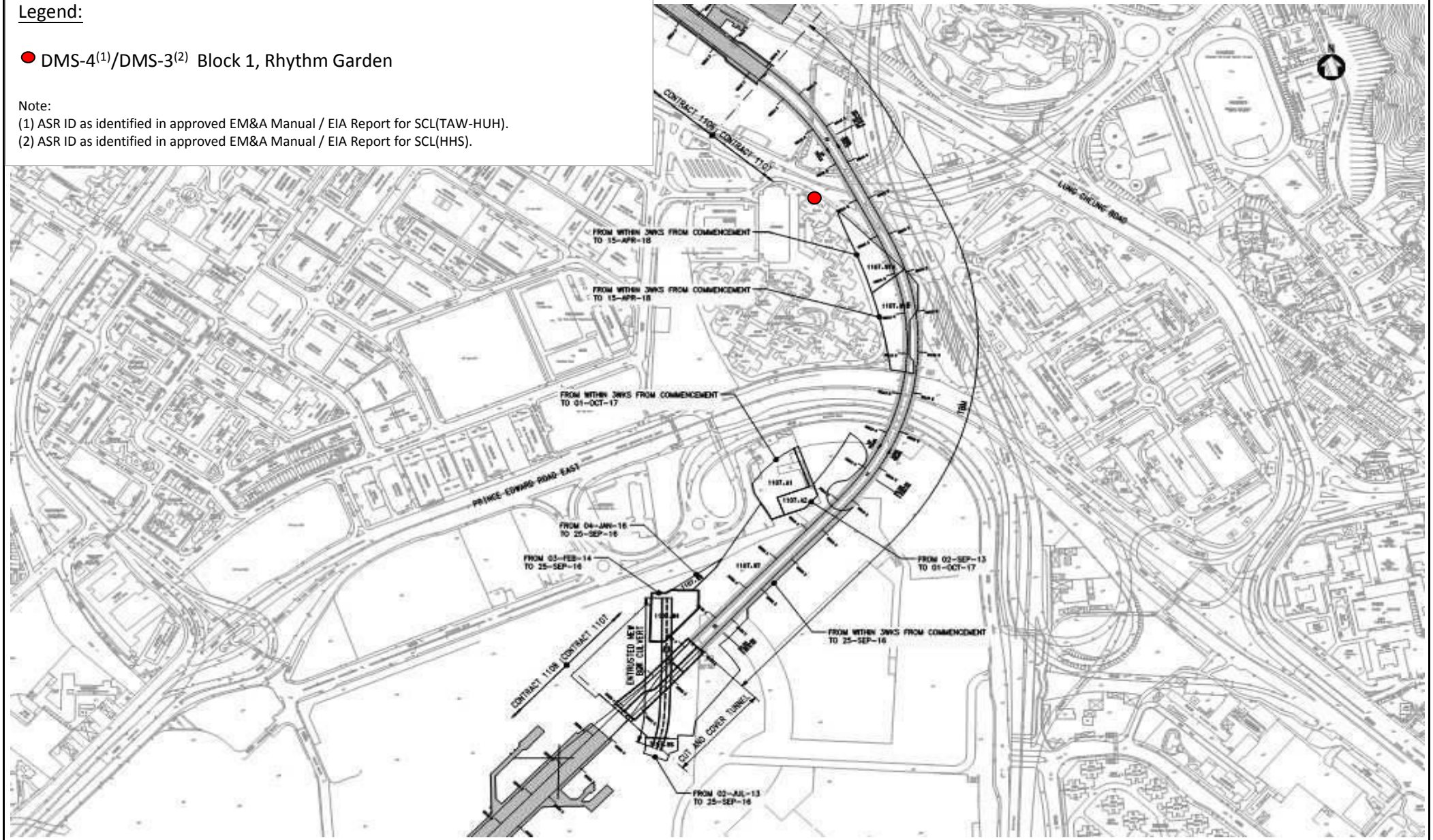


Title	MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Locations of Construction Noise Monitoring	Scale N.T.S	Project No. MA13018	CINOTECH
		Date May-13	Figure 2	

Legend:

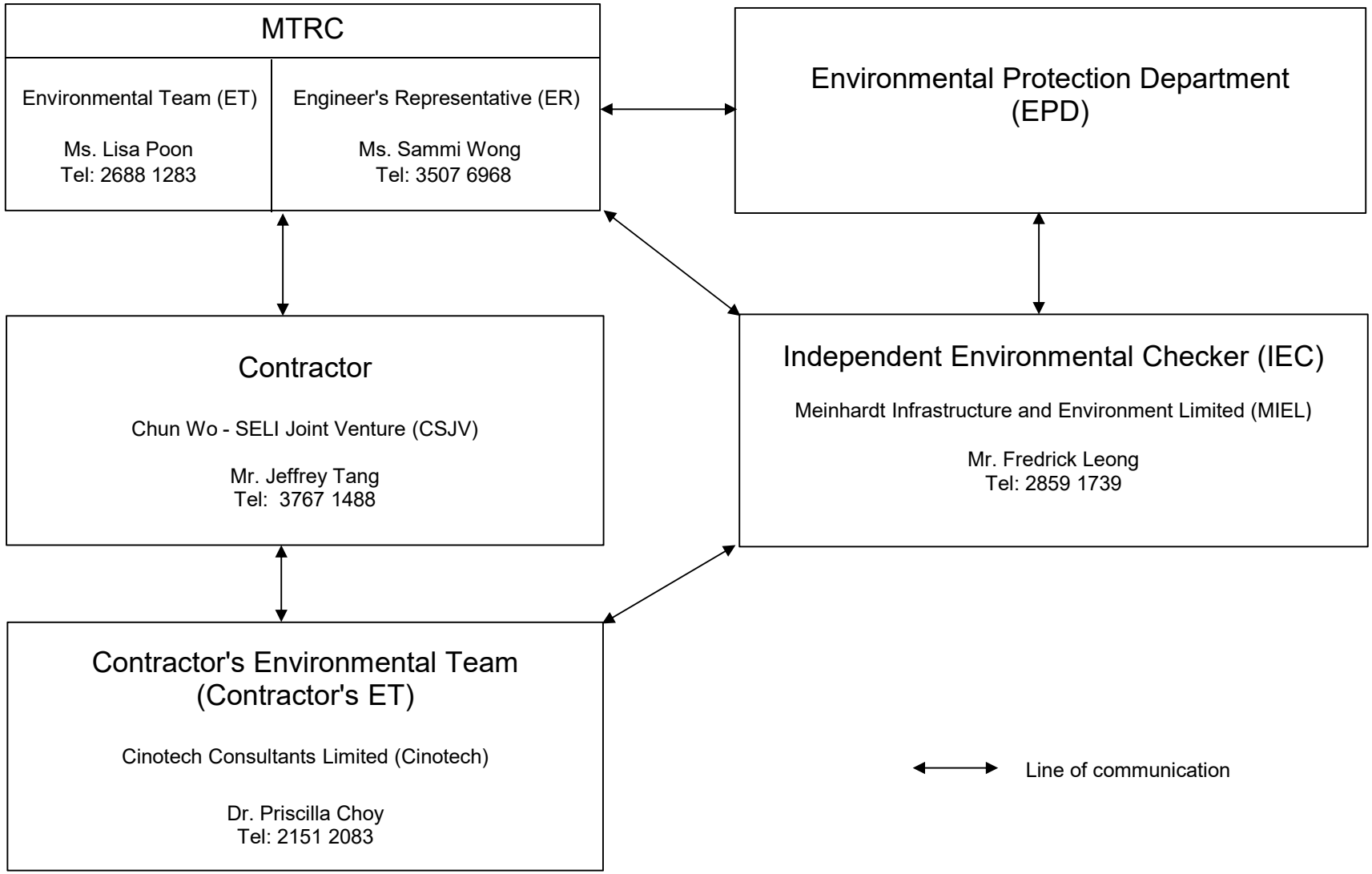
● DMS-4(1)/DMS-3(2) Block 1, Rhythm Garden

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 2018	Figure 4

CINOTECH

APPENDIX A
ACTION AND LIMIT LEVELS

APPENDIX A – 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 B
EVENT AND ACTION PLAN

Appendix B - 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 B - 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 B - Event and Action Plan for Air Quality Monitoring during Construction Phase

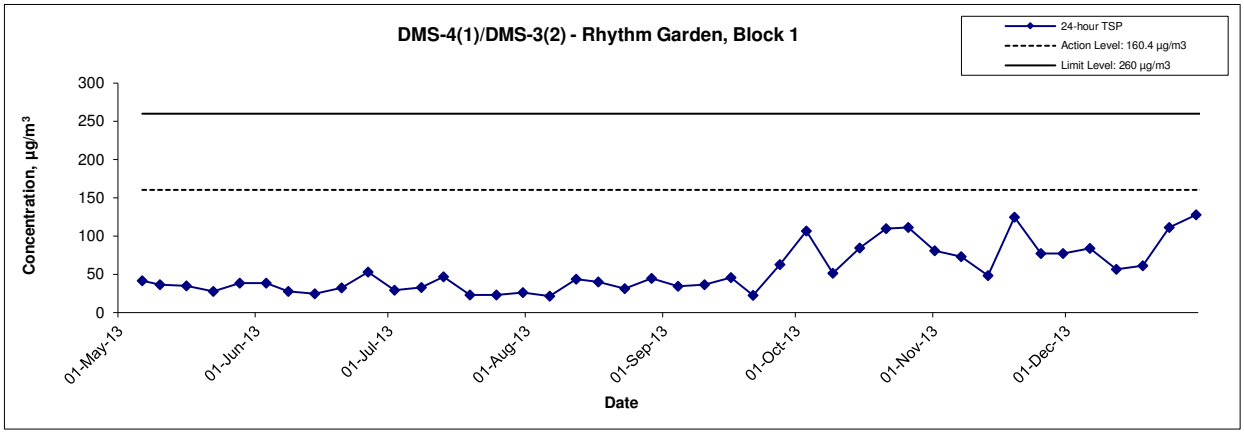
LIMIT LEVEL				
1.Exceedance for one sample	1. Inform the IEC, Contractor and ER; 2. Repeat measurement to confirm findings; 3. Increase monitoring frequency to daily; 4. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness.	1. Check monitoring data submitted 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 B - 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 C
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

24-hour TSP Concentration Levels



Remarks:

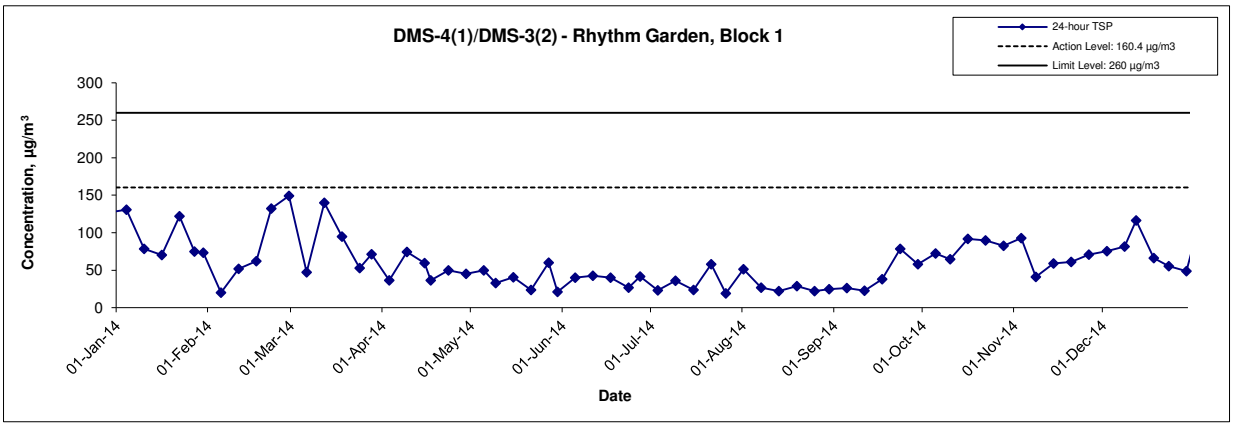
(1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

(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	Scale	N.T.S	Project No. MA13018
	Graphical Presentation of 24-hour TSP Monitoring Results	Date	Mar-18	Appendix C

24-hour TSP Concentration Levels



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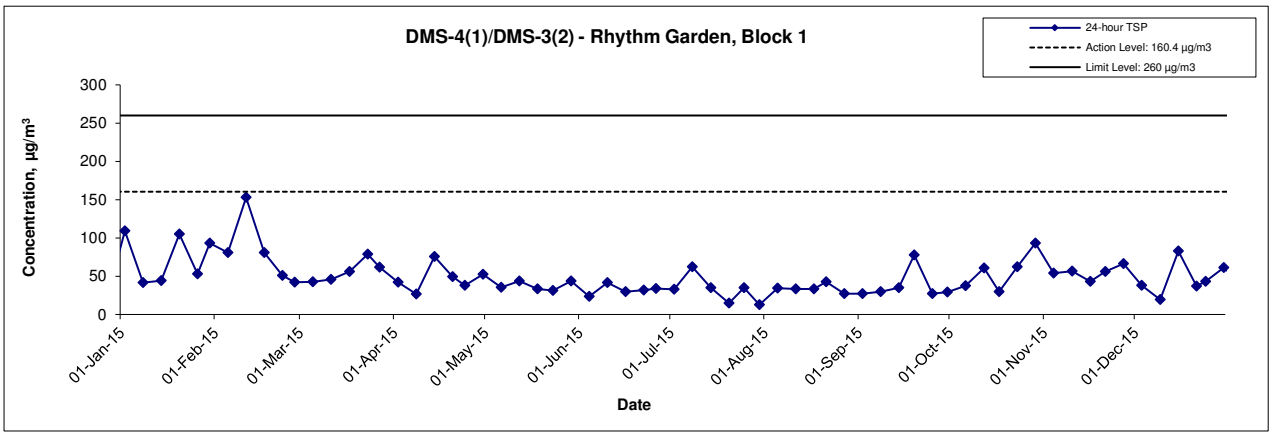
Title: Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Mar-18	Project No.: MA13018 Appendix: C	CINOTECH

24-hour TSP Concentration Levels



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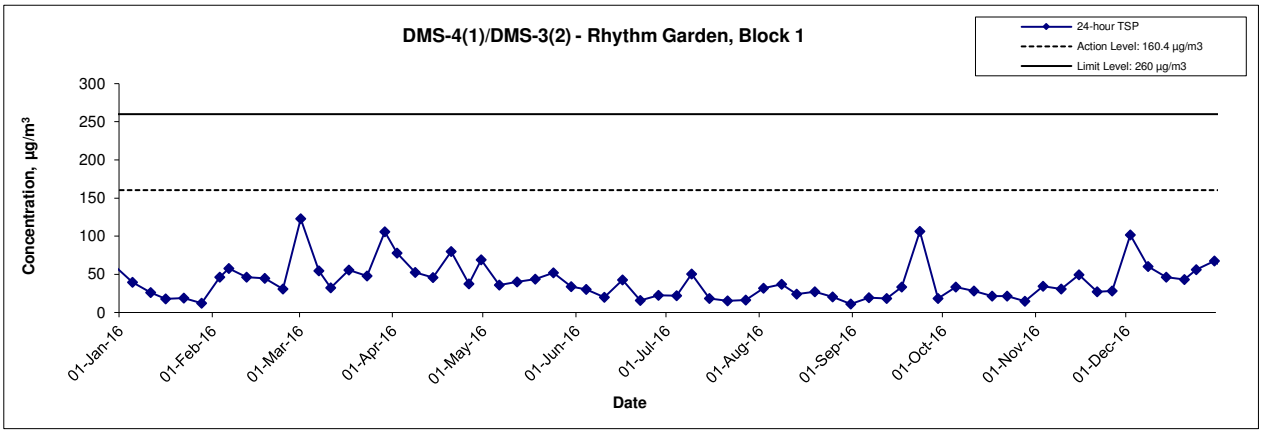
Title	Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels	Scale	N.T.S	Project No. MA13018
	Graphical Presentation of 24-hour TSP Monitoring Results	Date	Mar-18	Appendix C

24-hour TSP Concentration Levels



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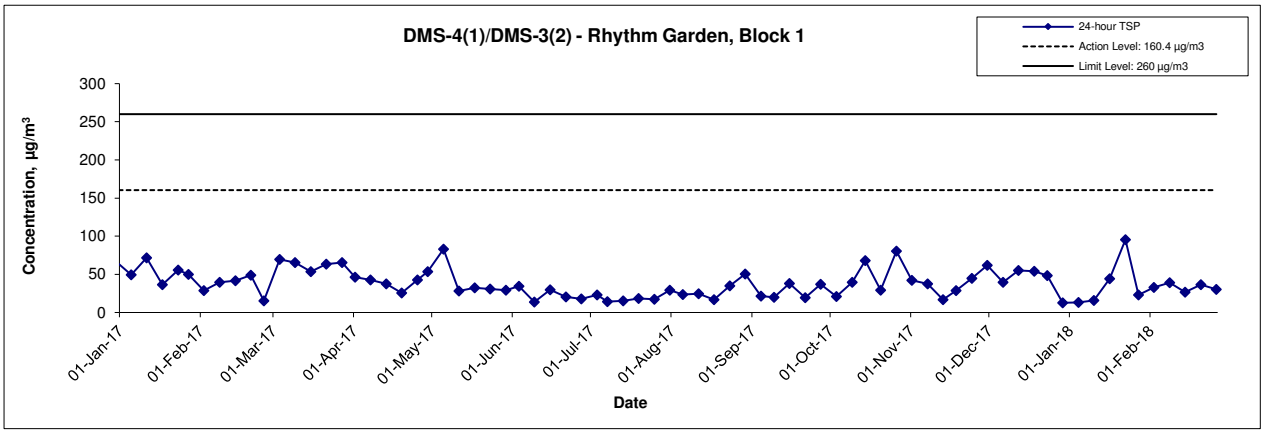
Title	Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels	Scale	N.T.S	Project No. MA13018
	Graphical Presentation of 24-hour TSP Monitoring Results	Date	Mar-18	Appendix C

24-hour TSP Concentration Levels



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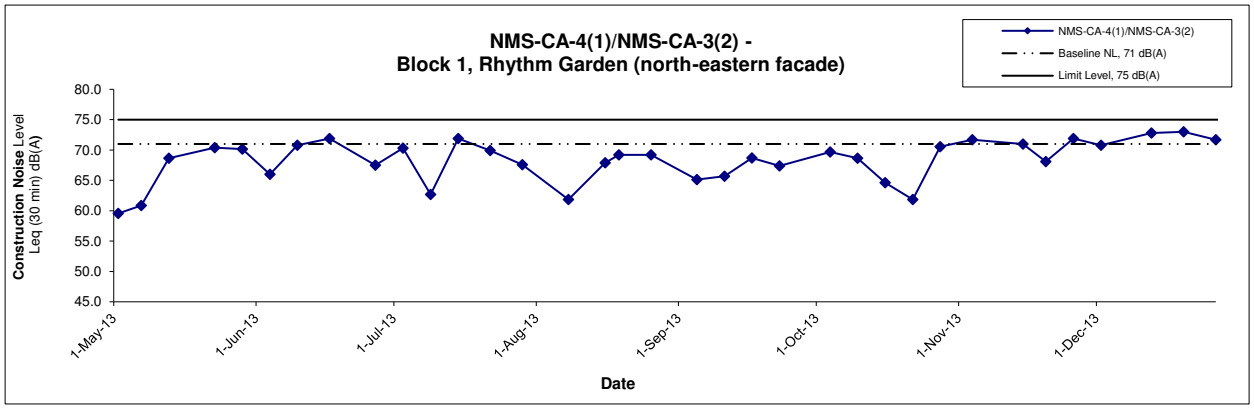
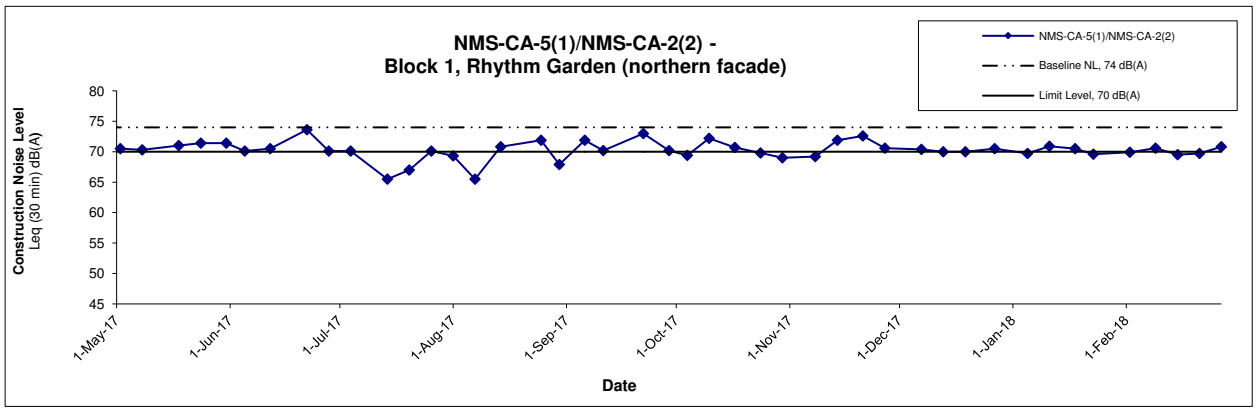
	Graphical Presentation of 24-hour TSP Monitoring Results	Date	Mar-18	Appendix C

APPENDIX D
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Noise Levels





Remarks:

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

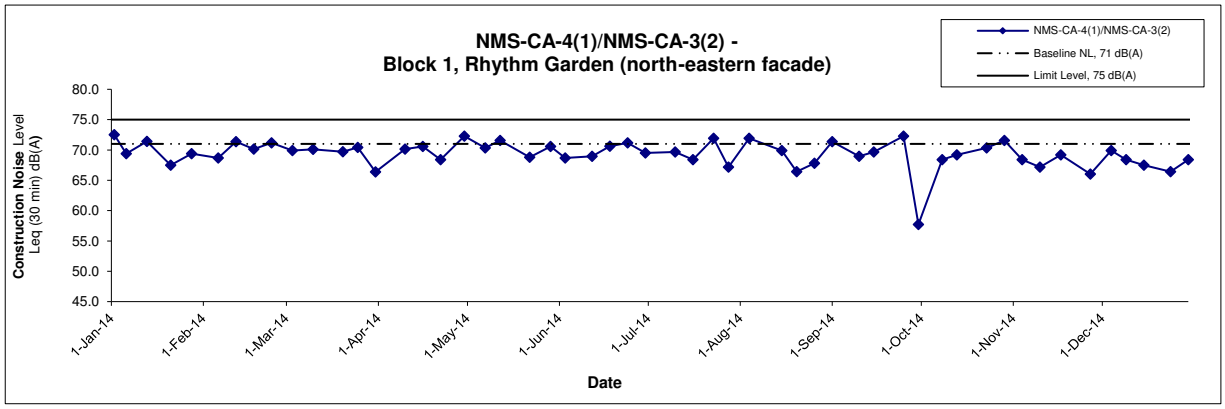
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

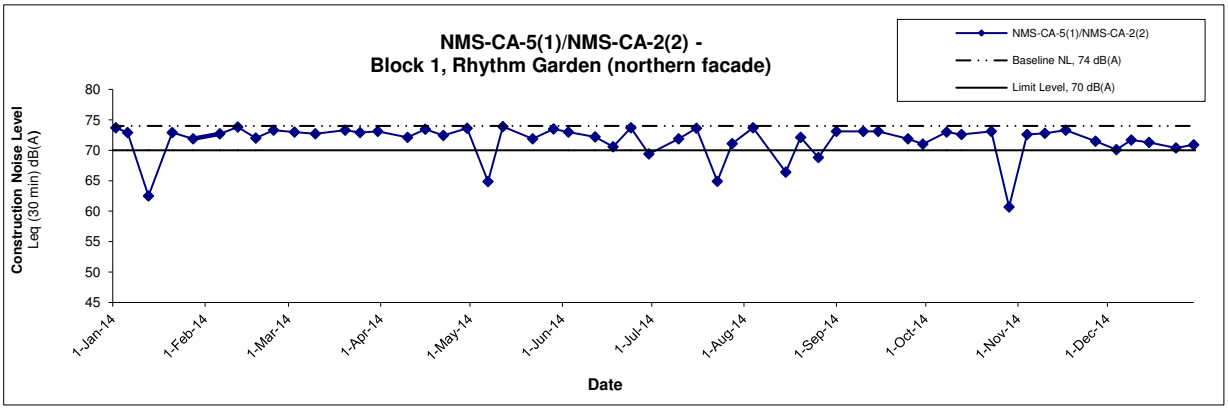
(3) In case of Measured Level ≦ Baseline Level, only Measured Level is presented on the graphical presentation.

(4) Location NMS-CA-3

Title	Shatin to Central Link - Contract 1107 - Diamond Hill to Kai Tak Tunnels	Scale	N.T.S	Project No. MA13018
	Graphical Presentation of Construction Noise Monitoring Results	Date	18-Mar	Appendix D

Noise Levels





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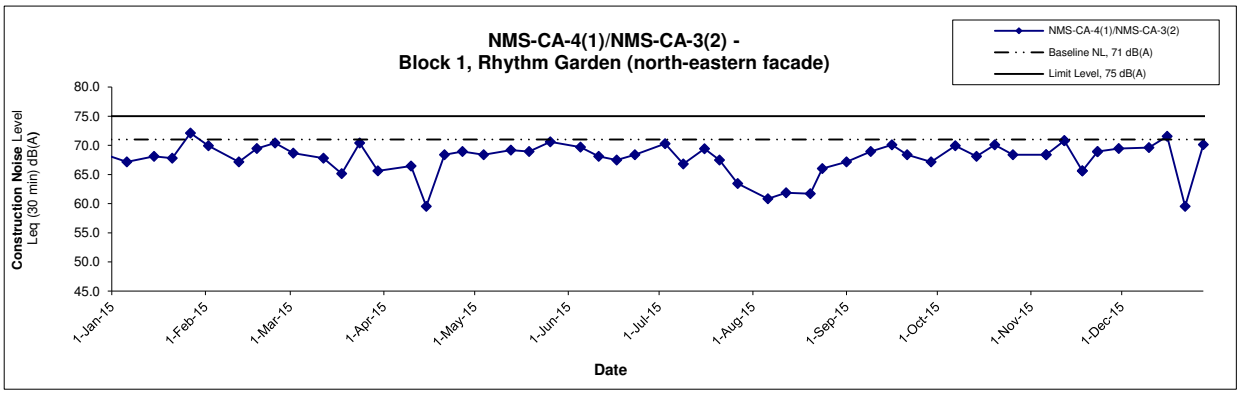
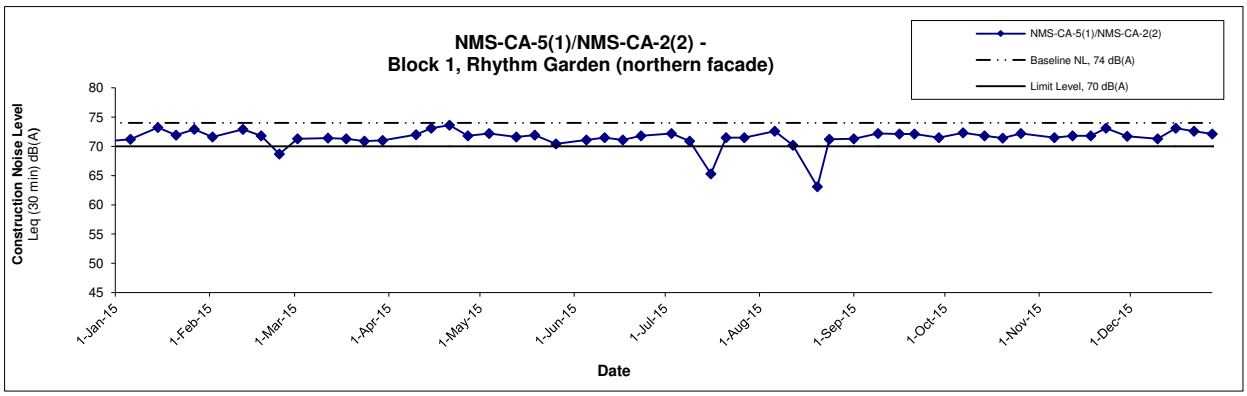
(4) Location NMS-CA-3

Title	Shatin to Central Link - Contract 1107 - Diamond Hill to Kai Tak Tunnels	Scale	N.T.S	Project No. MA13018
	Graphical Presentation of Construction Noise Monitoring Results	Date	18-Mar	Appendix D

CINOTECH

Noise Levels





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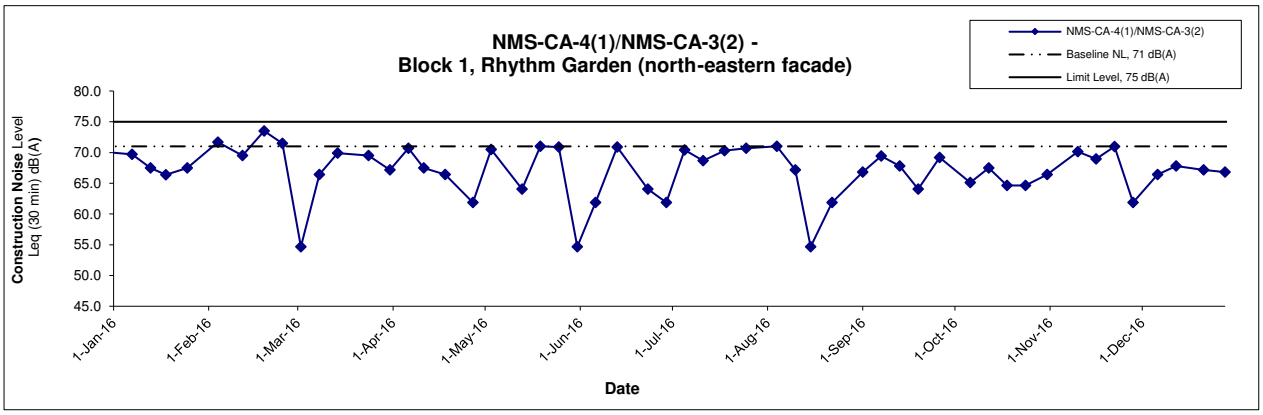
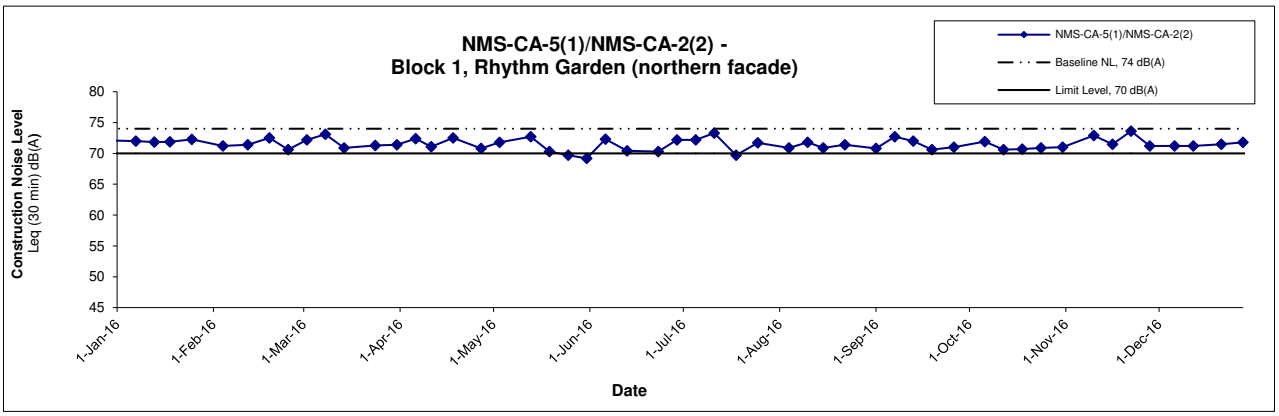
(4) Location NMS-CA-3

Title	Shatin to Central Link - Contract 1107 - Diamond Hill to Kai Tak Tunnels	Scale	N.T.S	Project No. MA13018
	Graphical Presentation of Construction Noise Monitoring Results	Date	18-Mar	Appendix D

CINOTECH

Noise Levels





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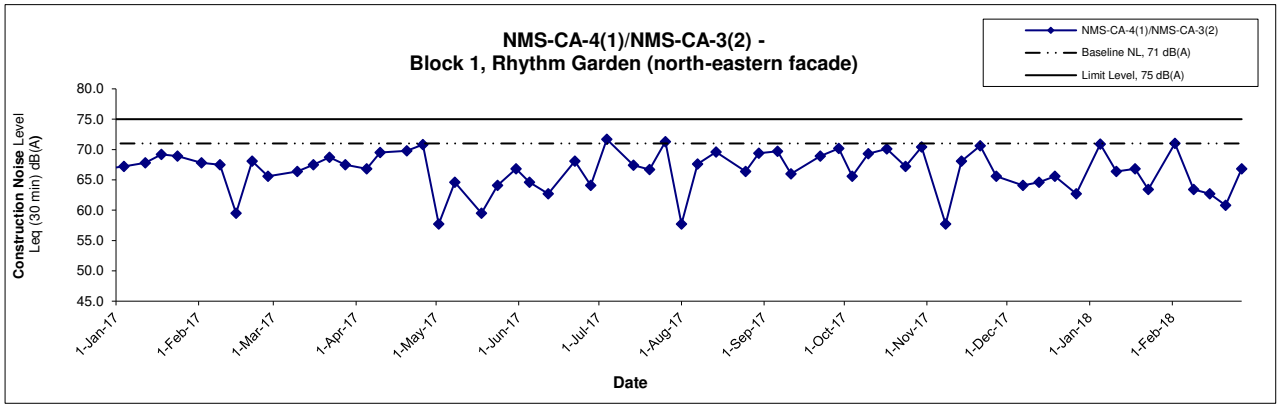
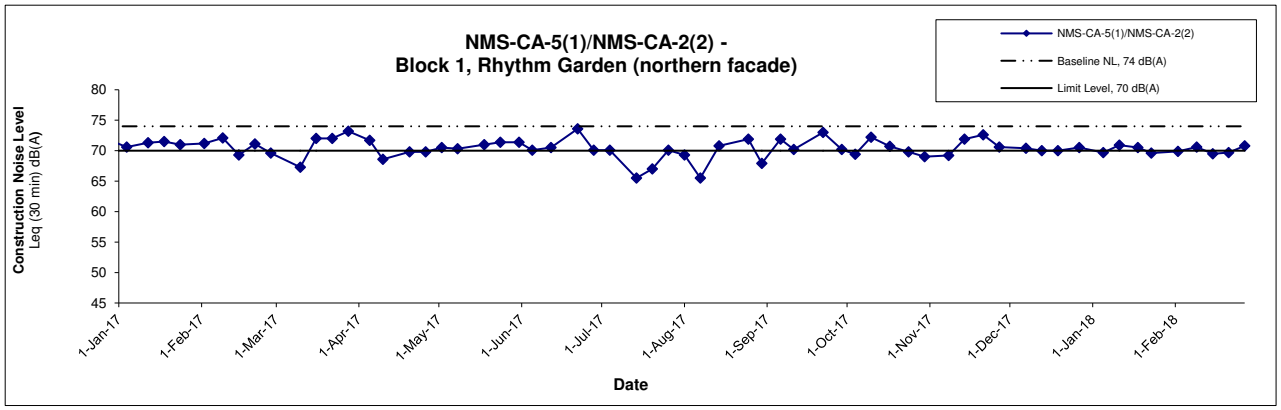
(4) Location NMS-CA-3

Title: Shatin to Central Link - Contract 1107 - Diamond Hill to Kai Tak Tunnels	Scale: N.T.S	Project No.: MA13018	CINOTECH
Graphical Presentation of Construction Noise Monitoring Results	Date: 18-Mar	Appendix: D	

Noise Levels





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(4) Location NMS-CA-3

Title	Shatin to Central Link - Contract 1107 - Diamond Hill to Kai Tak Tunnels	Scale: N.T.S	Project No.: MA13018
	Graphical Presentation of Construction Noise Monitoring Results	Date: 18-Mar	Appendix: D

CINOTECH

APPENDIX E
UPDATED ENVIRONMENTAL MITIGATION IPLEMENTATIONS 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;						N/A
		• Any skip hoist for material transport should be totally enclosed by impervious sheeting;						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
	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 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	 ^ ^ ^ 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 F
WASTE GENERATION IN THE CONSTRUCTION PERIOD

CW - SELI Joint Venture

Name of Department: MTRC

Contract No.:1107

Appendix F

Yearly Summary Waste Flow Table for 2013 - 2018

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 Aggregate		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.
2013	19.300	12.865	0.000	0.000	0.000	0.000	0.000	7.550	19.300	5.315	2.000	29.600	0.700	0.465	0.200	0.000	0.100	0.000	0.740	0.300
2014	92.600	73.765	0.000	0.000	0.000	0.000	40.500	50.715	52.500	23.050	6.000	23.510	1.200	1.273	3.100	3.960	0.400	0.548	1.200	0.495
2015	86.800	35.825	0.000	0.000	0.000	0.000	58.000	22.185	28.800	13.640	2.000	23.560	1.200	1.860	1.200	1.600	0.200	7.915	1.200	0.675
2016	0.600	0.650	0.000	0.000	0.050	0.000	0.000	0.000	0.550	0.650	2.000	0.000	1.200	1.094	0.200	0.000	0.200	11.200	1.200	0.670
2017	0.600	0.085	0.000	0.000	0.030	0.000	0.000	0.000	0.570	0.085	1.000	0.000	1.200	0.412	0.200	0.000	0.200	0.000	1.200	0.235
Jan-18	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.100	0.300
Feb-18	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.100	0.034
Grand Total	**199.960**	**123.190**	**0.000**	**0.000**	**0.080**	**0.000**	**98.500**	**80.450**	**101.780**	**42.740**	**13.000**	**76.670**	**5.700**	**5.104**	**4.900**	**5.560**	**1.100**	**19.663**	**5.740**	**2.709**

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 G
CUMULATIVE LOG FOR COMPLAINT LOGS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

Appendix G - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Complaint Log

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
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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
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