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. 19

[Period from 1 to 31 March 2014]

(April 2014)

Verified by: Fredrick Leong

Position: Independent Environmental Checker

Date: 11 April 2014

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. 19

[Period from 1 to 31 March 2014]

(April 2014)

Certified by: Richard Kwan

Position: Environmental Team Leader

Date: 14 April 2014

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. 19

[Period from 1 to 31 March 2014]

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

Version:	A	Date: 10 April 2014

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) was subsequently applied for EP-438/2012 and the latest Environmental Permit (EP No: EP-438/2012/D) was issued by Director of Environmental Protection (DEP) on 13 September 2013.

1.2 Project Programme

1.2.1 Ten civil construction works contracts of the Project have been awarded since July 2012. The construction of the Project commenced in September 2012 and is expected to complete in 2018. **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	Ma On Shan Line Modification Works(1)	December 2012	Sun Fook Kong Joint Venture (SFKJV)	EDMS Consulting Ltd. (EDMS)
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.
1106	Diamond Hill Station	March 2013	Sembawang – Leader Joint Venture	Cinotech Consultants Ltd. (Cinotech)
1107	Diamond Hill to Kai Tak Tunnels	May 2013	Chun Wo - SELI Joint Venture	Cinotech Consultants Ltd. (Cinotech)
1108	Kai Tak Station and Associated Tunnels	June 2013	Kaden -Chun Wo Joint Venture	Environmental Pioneers & Solutions Ltd.
1108A	Kai Tak Barging Point Facilities	September 2012	Concentric – Hong Kong River Joint Venture (CCL-HKR JV)	Cinotech Consultants Ltd. (Cinotech)

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
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

Note:
(1) Only the EM&A works for works areas at Tai Wai Mei Tin Road and the offsite temporary storage areas are included in this Report.

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 nineteenth 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 2014.

2 ENVIRONMENTAL MONITORING AND AUDIT

2.1.1 The construction of SCL has been divided into different civil construction works contracts which are covered by EP No. EP-437/2012 and/or EP-438/2012/D. 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/D
1102	Hin Keng Station and Approach Structures	EP-438/2012/D
1103	Hin Keng to Diamond Hill Tunnels	EP-438/2012/D
1106	Diamond Hill Station	EP-438/2012/D
1107	Diamond Hill to Kai Tak Tunnels	EP-438/2012/D
1108	Kai Tak Station and Associated Tunnels	EP-438/2012/D
1108A	Kai Tak Barging Point Facilities	EP-438/2012/D
1109	Stations and Tunnels of Kowloon City Section	EP-438/2012/D
1111	Hung Hom North Approach Tunnels	EP-437/2012 & EP-438/2012/D
1112	Hung Hom Station and Stabling Sidings	EP-437/2012 & EP-438/2012/D

2.1.2 The EM&A Reports for Works Contracts 1108A, 1109, 1101, 1111, 1103, 1106, 1107, 1112, 1108 and 1102 prepared by the respective Contractor's ETs are provided in **Appendices A** to **J,** respectively. The EM&A Reports provide details of the project information, EM&A requirements, impact monitoring and audit results for the corresponding Contracts.

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

Table 2.1 Summary of Major Construction Activities in the Reporting Period

Works Contract	Site	Construction Activities

Works Contract	Site	Construction Activities
1101[(1)]	Tai Wai Mei Tin Road	• N/A
1102	Hin Keng Station and Approach Structures	• Slope improvement works; • Bored piling; • Pre-bored H-pile; • King Post Piling; • Tree transplanting; and • Modification of hoarding.
1103	Diamond Hill Area	• Excavation; and • ELS for Launching Shaft and Machinery Assembly.
	Hin Keng Area	• Pipe Piling; • Mucking Out and Excavation; and • ELS.
	Fung Tak Area	• Platform Erection; • Diaphragm Wall; and • Shaft Excavation.
	Ma Chai Hang Area	• Diaphragm Wall; and • Shaft Excavation.
1106	Diamond Hill Station Area	• D-wall construction; • Construction of pumping wells; • King post construction works; • Construction of capping beam; • Gas main diversion works; • Construction of Pedestrian Underpass at Luen Yee Road; • Vertical piling work at Diamond Hill Station exit A1; • Construction of temporary storage compound for Former RAF Hangar and Old Pillbox; and • Construction of construction site office.
1107	Tunnel section next to Kai Tak Station	• Site investigation works; • Investigation and removal of old foundation works; • Hoarding erection; • Sheet piling works; • Shaft excavation; • Nullah diversion; • Pipe Pile work; • King Post Installation work; and • Site preparation works.
1108	Kai Tak Station	• Shotcreting on excavated slope; • Excavation ongoing; • Formation of crest U-channel ongoing; • Pumps fitting set up for Stage 2 pumping rest; • Disposal of marine deposit; • Excavation for soil nail platform in progress; • Installation of steel water barrier; • Removal of concrete blocks in side existing Nullah in progress; and • Removal of remaining side wall of Nullah.
1108A	Kai Tak Barging Point Facilities	• Daily operation and maintenance of the Barging Point Facilities; • Loading and disposal of Type 1, Type 1 (dedicated site) and Type 2

Works Contract	Site	Construction Activities
		excavated sediments; • Marine transportation and disposal of received spoil including marine sediments to receptor sites or designated dumping grounds; and • Erection of chain link fencing and traffic signage, and application of road marking for the new L-shaped haul road.
1109	Ma Tau Wai (MTW) Works Area	• TKW/MTW Road Garden – Operation of bentonite plant and Pier 15 underpinning works; and • Along Ma Tau Wai Road – Predrilling for D wall, D wall panel construction and trial pits for location of utilities.
	To Kwa Wan (TKW) Works Area	• Olympic Garden – Pre-bored H pilling and sheet piling; • TKW Station – Archaeological survey cum excavation, construction of grout curtain, water main diversion, box culvert diversion and pre-bored H piling and shaft excavation; TBM and STP setup; and • Nam Kok Road – Installation of pipe pile and construction of grout curtain.
1111	Mong Kok Freight Terminal	• Installation of overhead crane.
	Hung Hom Area	• Excavation work, site formation, slope work, cable duct work; • Construction of man hole, drainage, reinforced concrete, emergency vehicular access, temporary pedestrian walkway; • Trial pit, pre-drilling, pilling works, post-grouting, abutment works; • Erection of hoarding, steel platform and deck, temporary bridge; • Demolition of abandon track; • Trimming of retaining wall; and • Architectural Builders Works and Finishes (ABWF) & Electrical and Mechanical (E&M) works.
1112	Hong Hom (HUH and HHS) Works Area	• Bored piling for HUH and NAT; • Diaphragm wall construction at HUH; • Initial excavation at HUH; and • Barging point operation at Hung Hom Freight Pier.

Note:
(1) Construction works were completed
N/A Not applicable

2.1.4 Impact monitoring for air quality and construction noise were conducted in accordance with the EM&A Manual in the reporting period. No continuous noise monitoring was required according to the Continuous Noise Monitoring Plan (CNMP) in the reporting period. The air quality and construction noise monitoring results 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 **J**.

2.1.5 The monitoring results indicated that no exceedance of the Action/Limit Levels of 24-hr TSP, and construction noise.

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 No environmental complaints, notification of summons and successful prosecutions were received in the reporting period. Cumulative log for environmental complaints, notification of summons and successful prosecutions is 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 Contract 1101[5]					
Works Contract 1102 and 1103					
DMS-1	C.U.H.K.A.A. Thomas Cheung School	27.7 – 71.0	148.7	260	No
Works Contract 1103					
DMS-2	Price Memorial Catholic Primary School	26.0 – 82.8	167.4	260	No
Works Contracts 1103 and 1106					
DMS-3	Hong Kong S.K.H Nursing Home[1]	38.8 – 84.1	159.1	260	No
Works Contract 1106 and 1107					
DMS-4	Block 1, Rhythm Garden	47.1 – 140.1	160.4	260	No
Works Contract 1108[5]					
Works Contract 1108A[5]					
Works Contract 1109					
DMS-6	Katherine Building[2]	74 – 98	156.8	260	No
DMS-7	Parc 22[3]	81 – 93	166.7	260	No
DMS-8	SKH Good Shepherd Primary School	84 – 92	152.2	260	No
DMS-9	No. 26 Kowloon City Road[4]	(9)	160.9	260	No
DMS-10	Chat Ma Mansion	70 – 91	170.4	260	No
Works Contract 1111					
AM1[6]	No. 234 – 238 Chatham Road North[7]	52.0 – 108.8	183.9	260	No
Works Contract 1112					
AM2	Site Boundary of Finger Pier adjacent to Harbourfront Horizon[8]	56.6 – 134.5	182	260	No

Note:
(1) Alternative monitoring location to Shek On House
(2) Alternative monitoring location to Prosperity House
(3) Alternative monitoring location to Skytower Tower 2
(4) Alternative monitoring location to Lucky Building
(5) No TSP monitoring is required under this contract
(6) AM1 named as HUH-1-3 in SCL(TAW-HUH) and SCL(HHS) EIA Reports.
(7) Alternative monitoring location to Wing Fung Building
(8) Alternative monitoring location to Harbourfront Horizon
(9) 24-hour averaged dust monitoring at DMS-9 No. 26 Kowloon City Road has been suspended since March 2014 due to denied access by the occupant of the premise. Study of alternative location is in progress.

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

Monitoring Station ID	Location	Noise Level ($L_{Aeq,30mins}$, dB(A))			Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
		Measured	Baseline	Corrected[7]		
Works Contract 1101[6]						
Works Contract 1102 and 1103						
NMS-CA-1	C.U.H.K.A.A. Thomas Cheung School	58.4 – 59.5	57.0	52.8 – 55.9	70 (65 during examination period)	No
Works Contract 1103						
NMS-CA-2	Price Memorial Catholic Primary School	68.9 – 70.8	66.0	65.8 – 69.1	70 (65 during examination period)	No
Works Contracts 1103 and 1106						
NMS-CA-3	Hong Kong S.K.H Nursing Home[1]	67.3 – 68.6	73.0	< baseline	70	No
Works Contract 1106 and 1107						
NMS-CA-4	Block 1, Rhythm Garden (north-eastern façade)	72.3 – 73.7	71.0	66.4 – 70.4	75	No
NMS-CA-5	Block 1, Rhythm Garden (northern façade)[2]	72.7 – 73.3	74.0	< baseline	70 (65 during examination period)	No
Works Contract 1108[6]						
Works Contract 1108A[6]						
Works Contract 1109						
NMS-CA-6	No. 16-23 Nam Kok Road [3]	63.7 – 64.9	76.1	< baseline	75	No
NMS-CA-7	Skytower Tower 2	67.0 – 67.6	70.0	< baseline	75	No
NMS-CA-8	SKH Good Shepherd Primary School	75.0 – 75.5	75.4	< baseline – 59.1	70 (65 during examination period) (79 during the period of conducting the continuous noise monitoring)[8]	No
NMS-CA-9	Kong Yiu Mansion[4]	71.7 – 73.4	69.2	68.1 – 71.3	75	No
NMS-CA-10	Chat Ma Mansion	76.2 – 76.7	76.6	< baseline – 60.3	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)	67.9 – 69.5	68.0	<baseline – 67.9	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]	72.2 – 74.1	79.0	< baseline	75	No
Works Contract 1112[6]						

Note:
(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 Construction Noise Mitigation Measures Plan (CNMMP) and Continuous Noise Monitoring Plan (CNMP) which were approved by EPD.

Table 2.4 Cumulative Log for Environmental Complaints, Notification of Summons and Successful Prosecutions

Works Contract	Environmental Complaints		Notification of Summons		Successful Prosecutions	
	Reporting Month	Cumulative Number	Reporting Month	Cumulative Number	Reporting Month	Cumulative Number
1101	0	0	0	0	0	0
1102	0	0	0	0	0	0
1103	0	0	0	0	0	0
1106	0	0	0	0	0	0
1107	0	0	0	0	0	0
1108	0	0	0	0	0	0
1108A	0	0	0	0	0	0
1109	0	0	0	0	0	0
1111	0	0	0	0	0	0
1112	0	0	0	0	0	0

3 IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS

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

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

EP Condition (EP-438/2012/D)	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 for Contracts 1109, 1111 and 1103) 8 Feb 2013 (5th submission) 26 Apr 2013 (6th submission) 11 Jun 2013 (7th submission) 12 July 2013 (Approved) 26 July 2013 (8th submission) 22 Aug 2013 (Approved) 23 Aug 2013 (9th submission) 13 Sept 2013 (Approved) 20 Jan 2014 (10th submission) 26 Feb 2014 (Approved)
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 for Contracts 1109, 1111 and 1103) 8 Feb 2013 (5th submission) 26 Apr 2013 (6th submission) 11 Jun 2013 (7th submission) 12 July 2013 (Approved) 26 July 2013 (8th submission) 22 Aug 2013 (Approved) 23 Aug 2013 (9th submission) 13 Sept 2013 (Approved) 20 Jan 2014 (10th submission) 26 Feb 2014 (Approved)
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)

EP Condition (EP-438/2012/D)	Submission	Submission date
		9 May 2013 (5th submission) 24 July 2013 (6th submission) 26 July 2013 (Approved)
Condition 2.13	Visual, Landscape, Tree Planting & Tree Protection Plan	6 Jul 2012 (1st submission) 30 Aug 2012 (2nd submission) 3 Oct 2012 (3rd submission) 13 Nov 2013 (Approved for Contracts 1101, 1106 and 1109) 14 Nov 2012 (4th submission) 8 Feb 2013 (5th submission) 18 Mar 2013 (6th submission) 18 June 2013 (7th submission) 12 July 2013 (Approved)
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 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 Report No. 1 Monthly EM&A Report No. 2 Monthly EM&A Report No. 3 Monthly EM&A Report No. 4 Monthly EM&A Report No. 5 Monthly EM&A Report No. 6 Monthly EM&A Report No. 7 Monthly EM&A Report No. 8 Monthly EM&A Report No. 9 Monthly EM&A Report No. 10 Monthly EM&A Report No. 11 Monthly EM&A Report No. 12 Monthly EM&A Report No. 13 Monthly EM&A Report No. 14 Monthly EM&A Report No. 15 Monthly EM&A Report No. 16 Monthly EM&A Report No. 17 Monthly EM&A Report No. 18	12 Oct 2012 14 Nov 2012 13 Dec 2012 14 Jan 2013 14 Feb 2013 14 Mar 2013 12 Apr 2013 14 May 2013 14 Jun 2013 12 Jul 2013 15 Aug 2013 13 Sept 2013 15 Oct 2013 14 Nov 2013 13 Dec 2013 14 Jan 2014 14 Feb 2014 14 Mar 2014

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

EP Condition (EP-437/2012)	Submission	Submission date
Condition 1.11	Notification of Commencement Date of Construction of the Project	30 Nov 2012
Condition 2.3	Notification of Information of Community Liaison Groups	30 Nov 2012
Condition 2.5	Management Organisation of Main Construction Companies	19 Dec 2012 (1st submission) 30 Apr 2013 (2nd submission)
Condition 2.6	Construction Programme and EP Submission Schedule	19 Dec 2012
Condition 2.7	Construction Noise Mitigation Measures Plan (CNMMP)	30 Nov 2012 (1st submission) 8 Feb 2013 (Approved for Contract 1111) 26 Apr 2013 (2nd submission) 11 Jun 2013 (3rd submission) 27 Aug 2013 (Approved) 20 Jan 2014 (4th submission)
Condition 2.8	Continuous Noise Monitoring Plan (CNMP)	30 Nov 2012 (1st submission) 11 Jan 2013 (2nd submission) 8 Feb 2013 (Approved for Contract 1111) 20 Jan 2014 (3rd submission)
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	14 Nov 2012 (1st submission) 8 Feb 2013 (2nd submission)
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 Report No. 5 Monthly EM&A Report No. 6 Monthly EM&A Report No. 7 Monthly EM&A Report No. 8 Monthly EM&A Report No. 9 Monthly EM&A Report No. 10 Monthly EM&A Report No. 11 Monthly EM&A Report No. 12 Monthly EM&A Report No. 13 Monthly EM&A Report No. 14 Monthly EM&A Report No. 15 Monthly EM&A Report No. 16 Monthly EM&A Report No. 17 Monthly EM&A Report No. 18	14 Feb 2013 14 Mar 2013 12 Apr 2013 14 May 2013 14 Jun 2013 12 Jul 2013 15 Aug 2013 13 Sept 2013 15 Oct 2013 14 Nov 2013 13 Dec 2013 14 Jan 2014 14 Feb 2014 14 Mar 2014

Appendix A

19th EM&A Report for Works Contract 1108A – Kai Tak Barging Point Facilities

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report No.19

[Period from 1 to 31 March 2014]

Works Contract 1108A – Kai Tak Barging Point Facilities

(April 2014)

Certified by: Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 9th April 2014

Concentric – Hong Kong River Joint Venture

Shatin to Central Link – Contract 1108A Kai Tak Barging Point Facilities

Monthly Environmental Monitoring and Audit Report for March 2014

(Version 2.0)

Certified 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 19th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for MTR Contract no. 1108A "Shatin to Central Link - Kai Tak Barging Point Facilities". This report documents the findings of EM&A Works conducted in March 2014.

Summary of Site Activities undertaken during Reporting Month

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

- Daily operation and maintenance of the Barging Point Facilities;
- Loading and disposal of Type 1, Type 1 (dedicated site) and Type 2 excavated sediments;
- Marine transportation and disposal of received spoil including marine sediments to receptor sites or designated dumping grounds; and
- Erection of chain link fencing and traffic signage, and application of road marking for the new L-shaped haul road.

Environmental Monitoring and Audit Progress

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

- Water Quality Monitoring at each monitoring station…….....Nil
- Environmental Site Inspection…….……...…4 times

Water Quality

4. No water quality monitoring was carried out as no dredging activity was conducted during the reporting month.

Waste Management

5. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. No inert C&D materials and non-inert C&D materials were generated during the reporting period. Non-inert C&D materials are made up of general refuse, steel materials and paper/cardboard packaging materials.

Environmental Site Inspection

6. A monthly joint environmental site inspection was carried out by the representatives of the Contractor, the IEC and the ET. Details of the audit findings and implementation status are presented in Section 6.

Ecology/Landscape and Visual

7. Details of the audit findings and implementation status on Ecology/Landscape and Visual are presented in Section 6.

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

8. Summary of the events and action taken and key information in the reporting month is tabulated in **Table I** and **Table II** respectively.

Table I Summary Table for Events Recorded in the Reporting Month

Parameter	No. of Exceedance		Action Taken
	Action Level	Limit Level	
Water Quality Monitoring	N/A	N/A	N/A

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---
Notifications of any summons & prosecutions	0	---	N/A	N/A	---

Future Key Issues

9. Major site activities for the coming reporting month will include:

- Daily operation and maintenance of the Barging Point Facilities;
- Loading and disposal of Type 1, Type 1 (dedicated site) and Type 2 excavated sediments;
- Marine transportation and disposal of received spoil including marine sediments to receptor sites or designated dumping facilities; and
- Completion of chain link fencing and traffic signage for the new L-shaped haul road.

1 INTRODUCTION

1.1 Cinotech Consultants Limited (Cinotech) was appointed by Concentric – Hong Kong River JV 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 Works Contract 1108A – Kai Tak Barging Point Facilities (hereafter referred to the Project).

Purpose of the report

1.2 This is the 19th EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1 March to 31 March 2014.

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. 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 1108A is one of the off-site temporary works sites covers the construction and operation of barging facilities.

General Site Description

2.3 The site layout plan is presented in **Figure 1**.

Construction Programme and Activities

2.4 A summary of the major site activities undertaken in this reporting period is shown as follows. The tentative construction programme is presented in **Appendix H**.

- Daily operation and maintenance of the Barging Point Facilities;
- Loading and disposal of Type 1, Type 1 (dedicated site) and Type 2 excavated sediments;
- Marine transportation and disposal of received spoil including marine sediments to receptor sites or designated dumping grounds; and
- Erection of chain link fencing and traffic signage, and application of road marking for the new L-shaped haul road.

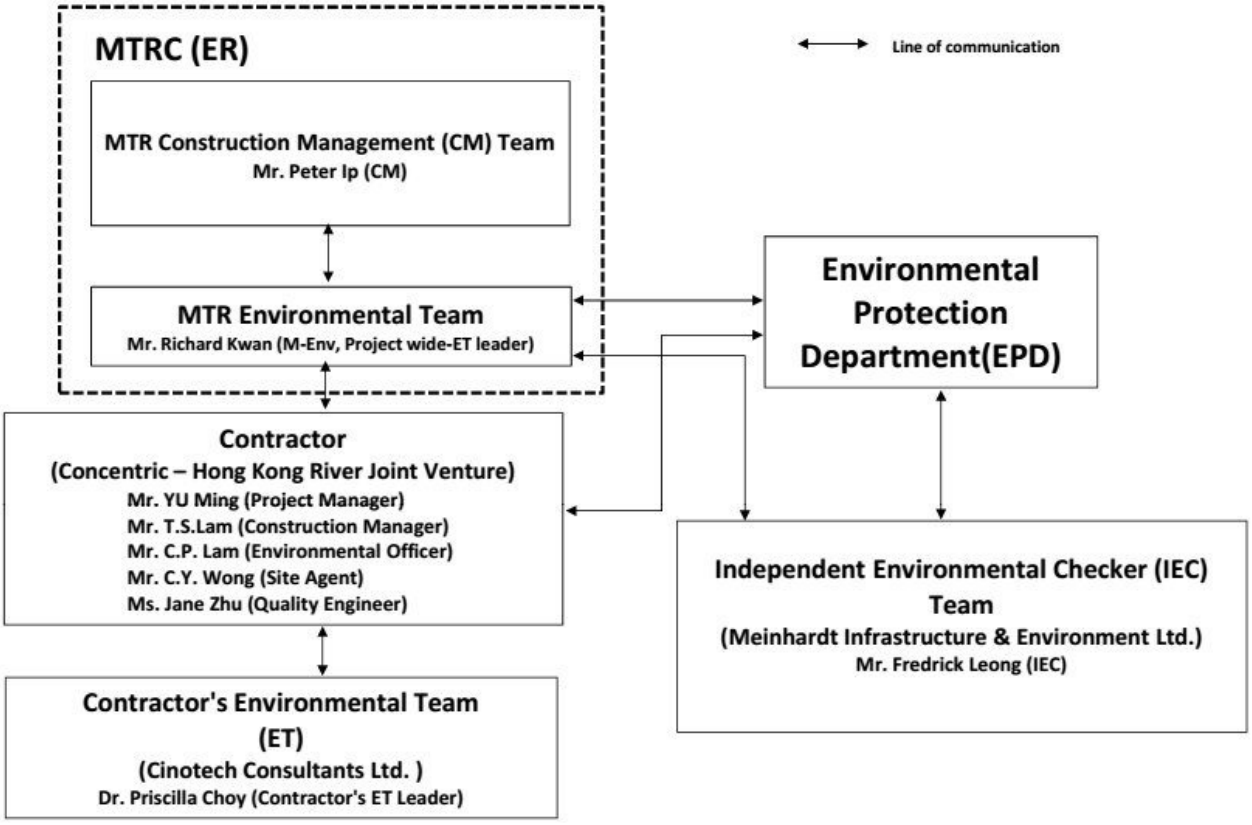
Project Organisation

2.5 Different parties with different levels of involvement in the project organization include:

- Engineer or Engineer's Representative (ER) – MTR Corporation (MTRC)
- Contractor's Environmental Team (ET) – Cinotech Consultants Ltd. (Cinotech)
- Independent Environmental Checker (IEC) – Meinhardt Infrastructure & Environment Ltd. (Meinhardt)
- Contractor – Concentric – Hong Kong River Joint Venture (CCL-HKR JV)

2.6 The responsibilities of respective parties are detailed in Section 3 of the SCL (TAW-HUH) EM&A Manual.

2.7 The project organisation chart is shown as follows:



2.8 The key contacts of the Project are shown in **Table 2.1**.

Table 2.1 Key Contacts of the Project

Party	Role	Name	Position	Phone No.	Fax No.
MTRC	ER	Mr. Peter IP	Construction Manager	3507 6889	2334 0323
	Environmental Team	Mr. Richard KWAN	SCL Project Environmental Team Leader	2688 1283	2993 7577
Cinotech	Contractor's Environmental Team	Dr. Priscilla CHOY	Contractor's ET Leader	2151 2089	3107 1388
		Ms. Ivy TAM	Project Coordinator and Audit Team Leader	2151 2090	
Meinhardt	Independent Environmental Checker	Mr. Fredrick LEONG	Independent Environmental Checker	2858 0738	2540 1580
CCL-HKR JV	Contractor	Mr. T.S. LAM	Construction Manager	9655 5486	2398 8301
		Mr. C.P. LAM	Environmental Officer	9212 9417	
		Ms. Jane ZHU	Quality Engineer	6207 3974	

Status of Environmental Licences, Notification and Permits

2.9 Application for Variation of Environmental Permit (Application No. VEP-382/2012) was submitted by the Permit Holder on 17 October 2012 for amending Conditions 2.21 and 2.22 in Part C of Environmental Permit No. EP-438/2012/A. Environmental Permit No. EP-438/2012/B was issued by EPD on 26 October 2012 based on this application. The EP was superseded by EP-438/2012/C from 30th April 2013.

2.10 An updated Environmental Permit (EP) (EP No. EP-438/2012/D) was granted on 13th September 2013. 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 Licences, Notification and Permits

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-438/2012/B	26/10/2012	29/04/2013	Superseded by EP-438/2012/C
EP-438/2012/C	30/04/2013	12/09/2013	Superseded by EP-438/2012/D
EP-438/2012/D	13/09/2013	N/A	Valid
Construction Noise Permit (CNP)			
GW-RE0754-12	24/09/2012	23/03/2013	Expired
GW-RE0272-13	26/03/2013	23/09/2013	Expired
GW-RE0969-13	24/09/2013	23/03/2014	Expired
GW-RE0321-14	29/03/2014	28/09/2014	Valid
Marine Dumping Permits			
EP/MD/13-075	10/10/2012	09/11/2012	Expired
EP/MD/13-074	26/10/2012	25/11/2012	Expired
EP/MD/14-083	16/12/2013	15/1/2014	Expired
EP/MD/14-077	27/11/2013	26/5/2014	Valid
EP/MD/14-117	24/02/2014	23/3/2014	Expired
EP/MD/14-158	25/03/2014	24/4/2014	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
EPD reference no. 348913	22/08/2012	N/A	Receipt acknowledged by EPD
Billing Account for Construction Waste Disposal			
A/C# 7015860	29/08/2012	N/A	Valid
Registration of Chemical Waste Producer			
WPN5213-286-C3752-01	17/09/2012	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00014328-2012	07/11/2012	30/11/2017	Valid

Summary of EM&A Requirements

2.11 The EM&A programme under 1108A require construction phase water 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.

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

2.13 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely water quality as well as audit works for the Project in the reporting month.

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Water Quality Monitoring

Monitoring Location

3.1 In accordance with the EM&A Manual, marine water quality monitoring should be carried out while dredging activities are conducting. The water quality monitoring stations and control stations of Project are shown in **Figure 2**. The co-ordinates of the proposed monitoring stations (construction phase – dredging activities) are listed in **Table 3.1**. As shown in **Figure 2**, the proposed locations are classified as Impact Station and Control Station according to their functions.

Table 3.1 Water Quality Monitoring Stations

Station	Description	East	North	Parameters to be measured
IS-1(1)	Impact Station for Dredging Activities	838499	819333	DO, Turbidity, SS
CS-1	Control Station for IS-1	838170	818903	DO, Turbidity, SS
CS-2	Control Station for IS-1	838912	818997	DO, Turbidity, SS

Note: (1) As per Baseline Monitoring Report under consultancy agreement No. NEX/2213, there was a slight adjustment for the monitoring station IS-1 due to the site constraint as the original monitoring location (Easting: 838450, Northing: 819399) has been occupied by barges/dredgers of other projects.

Monitoring Parameters, Frequency and Programme

3.2 Water quality monitoring was conducted in accordance with the requirements stipulated in the approved SCL(TAW-HUH) EM&A Manual. **Table 3.2** summarized the monitoring frequency and water quality parameters for the impact monitoring.

Table 3.2 Water Quality Impact Monitoring Programme

	Impact Monitoring
Monitoring Period	During dredging period
Monitoring Frequency	3 Days in a Week, at mid-flood and mid-ebb tides
Monitoring Locations	IS-1, CS-1, CS-2
Monitoring Parameters	DO, temperature, turbidity, pH, salinity and SS
Intervals between 2 Sets of Monitoring	Not less than 36 hours
Tide Range	Individual flood and ebb tides not less than 0.5m

Monitoring Equipment and Methodology

Dissolved Oxygen and Temperature Measuring Equipment

3.3 The instrument should be portable and weatherproof dissolved oxygen (DO) measuring instrument complete with cable and sensor, and use a DC power source. The equipment should be capable of measuring:

- DO level in the range of 0 - 20 mg/ L and 0 - 200% saturation; and
- Temperature of 0 - 45 degree Celsius.

3.4 The equipment should have a membrane electrode with automatic temperature compensation complete with a cable.

3.5 Should salinity compensation not be built-in to the DO equipment, in-situ salinity should be measured to calibrate the DO equipment prior to each DO measurement.

Turbidity Measurement Instrument

3.6 The instrument should be a portable and weatherproof turbidity measuring instrument using a DC power source. It should have a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU (for example, Hach model 2100P or an approved similar instrument).

Water Sampler

3.7 A water sampler is required for SS monitoring. It should comprise a PVC cylinder, with a capacity of not less than 2 litres, which can be effectively sealed with latex cups at both ends. The sampler should have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth (for example, Kahlsico Water Sampler or an approved similar instrument).

Water Depth Detector

3.8 A portable, battery-operated echo sounder should be used for the determination of water depth at each designated monitoring station. This unit can either be hand held or affixed to the bottom of the work boat, if the same vessel is to be used throughout the monitoring programme.

Salinity Measuring Equipment

3.9 A portable salinometer capable of measuring salinity in the range of 0 - 40 parts per thousand (ppt) should be provided for measuring salinity of the water at each monitoring location.

pH Measuring Equipment

3.10 A portable pH meter capable of measuring a range between 0.0 and 14.0 shall be provided to measure pH under the specified conditions (e.g., Orion Model 250A or an approved similar instrument).

Sample Containers and Storage

3.11 Water samples for SS determinations should be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen) and shipment to the testing laboratory. The samples shall be delivered to the laboratory within 24 hours of collection and be analysed as soon as possible after collection.

Position Equipment

3.12 A hand-held or boat-fixed type digital Differential Global Positioning System (DGPS) with way point bearing indication and Radio Technical Commission for maritime (RTCM) Type 16 error message 'screen pop-up' facilities (for real-time auto-display of error messages and DGPS corrections from the Hong Kong Hydrographic Office), or other equipment instrument of similar accuracy, should be provided and used during marine water monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

Calibration of In-Situ Instruments

3.13 The pH meter, DO meter and turbidimeter shall be checked and calibrated before use. DO meter and turbidimeter shall be certified by a laboratory accredited under HOKLAS

or any other international accreditation scheme, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes should be checked with certified standard solutions before each use. Wet bulb calibration for a DO meter shall be carried out before measurement at each monitoring location.

Back-up Equipment and Vessels

3.14 Sufficient stocks of spare parts shall be maintained for replacements when necessary. Backup monitoring equipment shall also be made available so that monitoring can proceed uninterrupted even when some equipment is under maintenance, calibration, malfunction, etc.

3.15 The water quality monitoring will involve three monitoring stations and measurements should be conducted within the prescribed tidal conditions in order to ensure the measurement/samples are representative. A multi-probe monitoring equipment set integrated with water sampler(s) is highly recommended to improve the monitoring efficiency. Depending on the actually operation, more than one field survey vessels might be required simultaneously to ensure the monitoring are conducted within the acceptable monitoring period. The ET shall also consider the use of unattended automatic sampling/monitoring devices at fixed stations where monitoring are required throughout the construction period. The use of such unattended automatic devices, however, shall be subject to the approval of the ER, IEC and EPD.

Laboratory Measurement / Analysis

3.16 At least 3 replicate samples from each independent sampling event are required for the suspended solids measurement which shall be carried in a HOKLAS or international accredited laboratory. Sufficient water samples shall be collected at the monitoring stations for carrying out the laboratory measurement and analysis. The laboratory determination work shall start within 24 hours after collection of the water samples. The analysis for SS is summarized in **Table 3.3**.

Table 3.3 Laboratory analysis for SS

Parameters	Analytical Method	Reporting Limit
Suspended Solid (SS)	APHA 2540-D	0.1 mg/L

Action and Limit Levels

3.17 The action and limit levels for water quality monitoring are presented in **Appendix A**.

Event and Action Plan

3.18 Should non-compliance of the criteria occur, action in accordance with the Event and Action Plan in **Appendix D** shall be carried out.

Cultural Heritage

3.19 According to the location of the Project and EIA report, there are no terrestrial archaeological resources and built heritage resources in vicinity of the Project. Archaeological monitoring works and the implementation of mitigation measures during the construction and operation phases of the Project is, therefore, not required.

3.20 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.

Landscape and Visual

3.21 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 summarised in **Table 6.1** of Section 6.

Ecology

3.22 In accordance with the EM&A Manual, weekly site audits should be conducted by the ET during construction phase of the Project to check the recommended mitigation measures should be properly implemented.

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 during the reporting period is summarized in **Appendix E**. Status of required submissions under the Environmental Permit (EP) during the reporting period is presented in **Table 4.1**.

Table 4.1 Status of Required Submissions under EP

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Status of submissions under EP	1	Monthly EM&A Report (February 2014)	Submitted to EPD on 14th March 2014 (EP Condition 3.4)	N/A	---

5 MONITORING RESULTS

Water Quality

5.1 No water quality monitoring was carried out at the monitoring stations during this reporting period as the dredging activity was completed on 11 November 2012.

5.2 Action and Limit Levels for water quality monitoring were established in the baseline water quality monitoring conducted by MTR between 16 June 2012 and 14 July 2012 under consultancy agreement no. NEX/2213. Action and Limit Levels for water quality is summarised in **Appendix A**.

Waste Management

5.3 Waste potentially generated from this Project includes inert construction and demolition (C&D) materials, non-inert C&D materials and dredging materials. Non-inert C&D materials are made up of general refuse, steel 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 5.1**. No paper/cardboard packaging, plastics and steel material were generated during the reporting period.

5.4 Detail of waste management data is presented in **Appendix F**.

Table 5.1 Quantities of Waste Generated from the Project

Reporting Month	Quantity						
	C&D Materials (inert) [(a)]	C&D Materials (non-inert)[(b)]	Dredging Quantity (in bulk volume)	Chemical Waste	Recycled materials		
					Paper/ cardboard	Plastics	Metals
March 2014	0 m^3	5 m^3	0 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.
(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 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

5.5 No observations and recommendations were made during the audit sessions.

Ecology

5.6 No observations and recommendations were made during the audit sessions.

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 C**.

6.2 Site audits were conducted on 4, 13, 18 and 25 March 2014 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 13 March 2014. The details of observations during site audit can refer to **Table 6.1**.

Implementation Status of Environmental Mitigation Measures

6.3 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the 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	13 February 2014	Reminder: The U-channel at floating jetty no. 4 was observed damaged. The contractor was reminded to repair the U-channel and confine waste water within site area.	The observation was observed to be improved/rectified by the Contractor during the audit session on 13 March 2014.
	18 February 2014	Reminder: Repair the U-channel at the floating jetty no. 4.	The observation was observed to be improved/rectified by the Contractor during the audit session on 13 March 2014.
	25 February 2014	Observation: Water of wheel washing facility near site entrance was observed muddy while the wheel washing. The Contractor was reminded to regularly remove the slit and mud inside the facility to ensure its wheel washing effectiveness.	The observation was observed to be improved/rectified by the Contractor during the audit session on 18 March 2014.
	25 February 2014	Reminder: Mud was cumulated in the catch pit near the haul road going up to Tipping Hall of Conveyor Belt No. 1. The Contractor was reminded to remove such mud as precaution measure.	The observation was observed to be improved/rectified by the Contractor during the audit session on 4 March 2014.
	25 February 2014	Reminder: Excavated material was observed on the loading perform of barge under the two Conveyor Belts. The Contractor was reminded to remove it, in order to prevent it from entering to the sea.	The observation was observed to be improved/rectified by the Contractor during the audit session on 4 March 2014.

Parameters	Date	Observations and Recommendations	Follow-up
	25 February 2014	Reminder: The U Channel of Floating Jetty No. 4 was broken again after the maintenance work. The Contractor was reminded to repair it accordingly.	The observation was observed to be improved/rectified by the Contractor during the audit session on 13 March 2014.
	4 March 2014	Reminder: Wheel washing facility near site entrance was under maintenance. The Contractor was reminded to provide wheel washing for both sides of the vehicles manually.	The observation was observed to be improved/rectified by the Contractor during the audit session on 13 March 2014.
	4 March 2014	Reminder: Mud and sediment was observed to accumulate in the approach ramp of floating jetty no. 3. The Contractor was reminded to clear the mud and sediment to avoid it from entering the sea.	The observation was observed to be improved/rectified by the Contractor during the audit session on 13 March 2014.
	4 March 2014	Reminder: The U-Channel of Floating Jetty No. 4 was observed damaged and not repaired. The Contractor was reminded to repair it accordingly.	The observation was observed to be improved/rectified by the Contractor during the audit session on 13 March 2014.
	4 March 2014	Reminder: The water of wheel washing bay next to the site entrance was observed muddy. The Contractor was reminded to replace it with clean water to enhance the wheel washing efficiency.	The observation was observed to be improved/rectified by the Contractor during the audit session on 18 March 2014.
	13 March 2014	Observation: To properly remove the soil observed underneath along conveyor belts no. 1 and 2 to prevent dust dispersion.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 March 2014.
	13 March 2014	Reminder: Water in the wheel washing bay should be replaced regularly to enhance the efficiency of the wheel washing bay.	The observation was observed to be improved/rectified by the Contractor during the audit session on 18 March 2014.
	18 March 2014	Reminder: To properly remove soil observed underneath conveyor belt no. 2.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 March 2014.
	25 March 2014	Reminder: To replace the water in the wheel washing bay and facility by clear water ensure the efficiency of them.	Follow up action will be reported in next reporting period.
Noise	N/A	N/A	N/A
Ecology/ Landscape and Visual	N/A	N/A	N/A
Air Quality	18 February 2014	Reminder: Properly repair the dust curtain for the	The observation was observed to be improved/rectified by the

Parameters	Date	Observations and Recommendations	Follow-up
		tipping hall of floating jetty no. 3.	Contractor during the audit session on 25 March 2014.
	25 February 2014	Observation: Unloading of excavated material was observed at Floating Jetty No. 3 without dust curtain. The Contractor was reminded to provide dust curtain while the unloading.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 March 2014.
	25 February 2014	Reminder: Dusty materials (Fire Resistant Material) were partially covered near the Conveyor Belt No. 1. The Contractor was reminded to provide sufficient cover to such dusty materials.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 March 2014.
	4 March 2014	Observation: Tipping hall for floating jetty no. 4 was observed to be damaged. The Contractor was reminded to repair the tipping hall to provide enclosure with the top and 3 sides.	Follow up action will be reported in next reporting period.
	4 March 2014	Reminder: Dusty material was not covered completely. The Contractor was reminded to cover the upper part of the material properly by impervious sheet.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 March 2014.
	4 March 2014	Reminder: Mud was observed on ground next to the haul road going to tipping hall no.1. The Contractor was reminded to remove it accordingly.	The observation was observed to be improved/rectified by the Contractor during the audit session on 13 March 2014.
	4 March 2014	Reminder: The dust curtain of the tipping hall at floating jetty no. 3 was not observed due to maintenance of the barge. The item would be reviewed during next site inspection.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 March 2014.
	13 March 2014	Observation: Tipping halls for floating jetty no. 3 and no. 4 were observed damaged. The Contractor is reminded to repair the holes of the tipping hall.	Follow up action will be reported in next reporting period.
	13 March 2014	Observation: Dust curtain of tipping hall at floating jetty no. 3 should be provided during unloading of soil.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 March 2014.
	13 March 2014	Reminder: Properly cover the dusty material near conveyor belt no. 1 by impervious sheet completely.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 March 2014.
	13 March 2014	Reminder: Provide water spray to haul road near site entrance to avoid dust dispersion.	Follow up action will be reported in next reporting period.
	18 March 2014	Observation: Tipping hall for floating jetty no. 3 and 4 were observed damaged. The Contractor was reminded to repair the	Follow up action will be reported in next reporting period.

Parameters	Date	Observations and Recommendations	Follow-up
		holes of the tipping hall.	
	18 March 2014	Reminder: Properly cover the dusty material by impervious sheet completely.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 March 2014.
	18 March 2014	Reminder: Dust curtain should be provided at tipping hall of floating jetty no. 3 to avoid dust generation.	The observation was observed to be improved/rectified by the Contractor during the audit session on 25 March 2014.
	18 March 2014	Reminder: Provide water spray to haul road near site entrance to avoid dust generation.	Follow up action will be reported in next reporting period.
	25 March 2014	Observation: Tipping hall for floating jetty no. 3 and 4 were observed damaged. The Contractor is reminded to repair the holes and cracks of the tipping hall.	Follow up action will be reported in next reporting period.
	25 March 2014	Reminder: To clear the sand and silt on the ground near the tipping hall for floating jetty no. 3.	Follow up action will be reported in next reporting period.
	25 March 2014	Reminder: To provide sufficient water spray to haul road and ramp of floating jetties.	Follow up action will be reported in next reporting period.
Waste / Chemical Management	4 March 2014	Observation: Chemical containers were observed unlabelled inside the waste storage cupboard. The Contractor was reminded to properly label the chemicals inside the container and store incompatible wastes separately.	The observation was observed to be improved/rectified by the Contractor during the audit session on 18 March 2014.
	4 March 2014	Observation: Paint stain was observed on unpaved ground near chemical storage area. The Contractor was reminded to properly clear the paint stain.	The observation was observed to be improved/rectified by the Contractor during the audit session on 13 March 2014.
	13 March 2014	Observation: The Contractor is reminded to provide label to the chemical containers inside the chemical waste storage cupboard.	The observation was observed to be improved/rectified by the Contractor during the audit session on 18 March 2014.
Permits / Licenses	25 March 2014	Reminder: The displayed construction noise permit was expired. The Contractor was reminded to display the valid CNP approved by EPD at the site entrance for public inspection.	Follow up action will be reported in next reporting period.

7 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

7.1 No impact monitoring was conducted in the reporting month. The summary of exceedance is provided in **Appendix B**.

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 related complaint, prosecution or notification of summons was received in the reporting month. The Complaint Log is presented in **Appendix G**.

Summary of Environmental Summon and Successful Prosecution

7.4 There was no environmental complaint, prosecution or notification of summons received since the Project commencement.

8 FUTURE KEY ISSUES

Key Issues in the Coming Month

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

- Potential dust and noise impacts arising from unloading and temporary stockpiling of C&D material during full operation of the Barging Point Facilities.
- Potential water pollution problem due to the discharge of site runoff during rainfall events.
- Potential environmental impacts arising from unloading and handling of C&D material to the barge.
- Potential splashing of spoils into the surrounding seawater arising from handling/unloading of the spoil at the discharge points.

Site Activities for the Next Month

8.2 A tentative construction programme is provided in **Appendix H**. The major site activities in the coming month will include:

- Daily operation and maintenance of the Barging Point Facilities;
- Loading and disposal of Type 1, Type 1 (dedicated site) and Type 2 excavated sediments;
- Marine transportation and disposal of received spoil including marine sediments to receptor sites or designated dumping facilities; and
- Completion of chain link fencing and traffic signage for the new L-shaped haul road.

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 March 2014 to 31 March 2014 in accordance with EM&A Manual and the requirement under EP-438/2012/D.

9.2 No impact monitoring was conducted in the reporting month.

9.3 There was no environmental complaint, prosecution or notification of summons received.

9.4 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

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

Water Quality

- Provide adequate measures to remove the silt and mud in the catch pit and keep the drainage system well maintained.
- Regularly remove silt and mud in the wheel washing facilities including car washing bay to ensure the efficiency of facilities.
- Provide manual vehicle washing for both sides of the vehicle during the maintenance of the wheel washing facility.
- Provide adequate measures to avoid any splashing of spoils into the surrounding seawater when handling/unloading the spoil at the discharge points.
- Properly maintain and bund the U-channel to prevent silty water from entering the sea and public channel.

Air Quality

- Flexible dust curtains should be properly installed at the discharge point for dust suppression when in operation.
- Clear the mud and dusty materials on the barging platform and access roads regularly to reduce dust generation.
- Stockpiles or dusty materials in the site area should be covered properly with imperious sheeting.
- Provide water spray at the main haul roads to avoid dust generation.
- Properly maintain the tipping hall of floating jetties to ensure 3-side enclosure was provided during the unloading of soil and sediment.

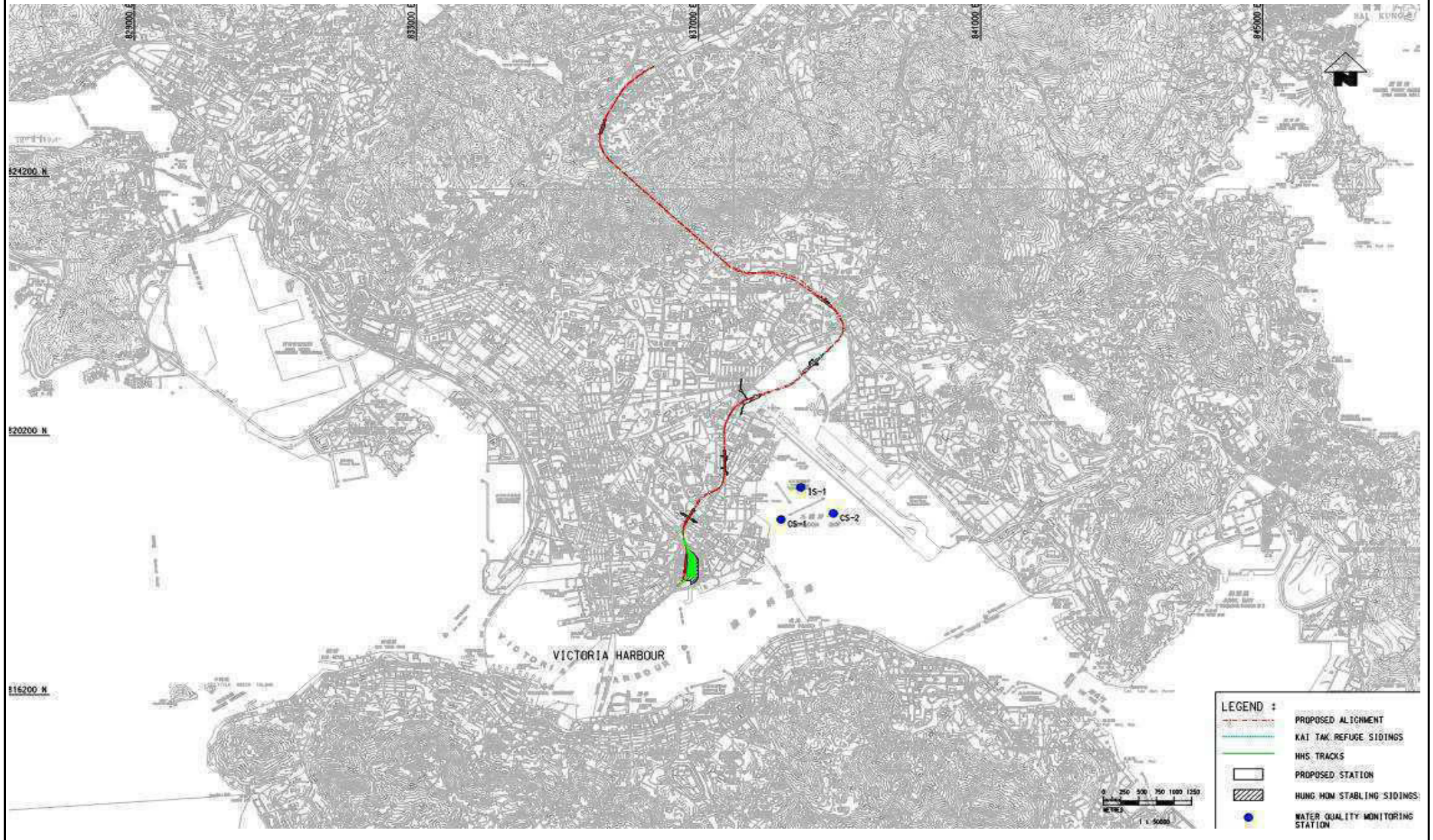
Waste/Chemical Management

- Chemical containers and chemical wastes should be labeled and stored properly in chemical storage area. Incompatible wastes should be stored separately.
- Properly maintain drip trays to prevent leakage of oil paints. In case of any leakage, the paint stain should be cleared and disposed of properly.

FIGURES

Title	SCL Contract 1108A The Shatin to Central Link - Kai Tak Barging Point Facilities Site Layout Plan	Scale: N.T.S Date: Oct-12	Proposa No. MA12028 Figure: 1

CINOTECH



Title	SCL Contract 1108A The Shatin to Central Link - Kai Tak Barging Point Facilities Location of Water Monitoring Station and Control Stations	Scale: N.T.S Date: Oct-12	Proposa No. MA12028 Figure: 2

CINOTECH

APPENDIX A
ACTION AND LIMIT LEVELS

APPENDIX A – Action and Limit Levels

Action and Limit Levels for Water Quality

Parameter	Action	Limit
DO in mg/L	Surface & Middle: 4.6 (5 percentile of baseline data) Bottom: 3.9 (5 percentile of baseline data)	Surface & Middle: 4 Bottom: 2
SS in mg/L	6.1 (95 percentile of baseline data) or 120% of upstream control station's SS at the same tide of the same day	6.3 (99 percentile of baseline data) or 130% of upstream control station's SS at the same tide of the same day
Turbidity in NTU	4.8 (95 percentile of baseline data) or 120% of upstream control station's Turbidity at the same tide of the same day	5.0 (99 percentile of baseline data) or 130% of upstream control station's Turbidity at the same tide of the same day

APPENDIX B
SUMMARY OF EXCEEDANCE

APPENIDX B – SUMMARY OF EXCEEDANCE

Reporting Month: March 2014

a) Exceedance Report for Water Quality Monitoring (NIL)

APPENDIX C
SITE AUDIT SUMMARY

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140304
Date	4 March 2014 (Tuesday)
Time	14:00 - 15:30

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality	
140304-R04	• Wheel washing facility near site entrance was under maintenance. The Contractor was reminded to provide wheel washing for both sides of the vehicles manually.	B 13
140304-R06	• Mud and sediment was observed to accumulate in the approach ramp of floating jetty no. 3. The Contractor was reminded to clear the mud and sediment to avoid it from entering the sea.	B 25
140304-R07	• The U-Channel of Floating Jetty No. 4 was observed damaged and not repaired. The Contractor was reminded to repair it accordingly.	B 7
140304-R09	• The water of wheel washing bay next to the site entrance was observed muddy. The Contractor was reminded to replace it with clean water to enhance the wheel washing efficiency.	B 14iii
	Part C - Ecology/Others	
	• No environmental deficiency was identified during the site inspection.	
	Part D – Air Quality	
140304-O01	• Tipping hall for floating jetty no. 4 was observed to be damaged. The Contractor was reminded to repair the tipping hall to provide enclosure with the top and 3 sides.	D 18
140304-R05	• Dusty material was not covered completely. The Contractor was reminded to cover the upper part of the material properly by impervious sheet.	D 7
140304-R08	• Mud was observed on ground next to the haul road going to tipping hall no.1. The Contractor was reminded to remove it accordingly.	D 3
140304-R10	• The dust curtain of the tipping hall at floating jetty no. 3 was not observed due to maintenance of the barge. The item would be reviewed during next site inspection.	D 12
	Part E – Construction Noise Impact	
	• No environmental deficiency was identified during the site inspection.	
	Part F – Waste/Chemical Management	
140304-O02	• Chemical containers were observed unlabelled inside the waste storage cupboard. The Contractor was reminded to properly label the chemicals inside the container and store incompatible wastes separately.	F2 i
140304-O03	• Paint stain was observed on unpaved ground near chemical storage area. The Contractor was reminded to properly clear the paint stain.	F 8
	Part G - Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	Others	
	• Follow-up on previous audit section (Ref. No.:140225), items 140225-O01, 140225-O02, 140225-R03 and 140225-R06 were remarked and should be reviewed during next site inspection.	

	Name	Signature	Date
Recorded by	Kevin Lam		4 March 2014
Checked by	Dr. Priscilla Choy		4 March 2014

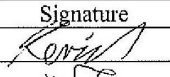
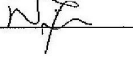
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140313
Date	13 March 2014 (Tuesday)
Time	15:00 - 15:45

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality	
140313-R06	• Water in the wheel washing bay should be replaced regularly to enhance the efficiency of the wheel washing bay.	B 14ii, 14iii
140313-R07	• To properly remove the soil observed underneath along conveyor belts no. 1 and 2 to prevent dust dispersion.	B 22
	Part C - Ecology/Others	
	• No environmental deficiency was identified during the site inspection.	
	Part D – Air Quality	
140313-O01	• Tipping halls for floating jetty no. 3 and no. 4 were observed damaged. The Contractor is reminded to repair the holes of the tipping hall.	D 18
140313-O03	• Dust curtain of tipping hall at floating jetty no. 3 should be provided during unloading of soil.	D 12
140313-O04	• Properly cover the dusty material near conveyor belt no. 1 by impervious sheet completely.	D 6
140313-R05	• Provide water spray to haul road near site entrance to avoid dust dispersion.	D 7
	Part E – Construction Noise Impact	
	• No environmental deficiency was identified during the site inspection.	
	Part F – Waste/Chemical Management	
140313-O02	• The Contractor is reminded to provide label to the chemical containers inside the chemical waste storage cupboard.	F2 i
	Part G - Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	Others	
	• Follow-up on previous audit section (Ref. No.:140304), items 140304-O01, 140304-O02, 140304-R05, 140304-R09 and 140304-R10 were remarked and should be reviewed during next site inspection.	

	Name	Signature	Date
Recorded by	Kevin Lam		13 March 2014
Checked by	Dr. Priscilla Choy		13 March 2014

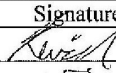
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140318
Date	18 March 2014 (Tuesday)
Time	14:00 - 15:30

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality	
140318-R05	• To properly remove soil observed underneath conveyor belt no. 2.	B 22
	Part C - Ecology/Others	
	• No environmental deficiency was identified during the site inspection.	
	Part D – Air Quality	
140318-O01	• Tipping hall for floating jetty no. 3 and 4 were observed damaged. The Contractor was reminded to repair the holes of the tipping hall.	D 18
140318-R02	• Properly cover the dusty material by impervious sheet completely.	D 7
140318-R03	• Dust curtain should be provided at tipping hall of floating jetty no. 3 to avoid dust generation.	D12
140318-R04	• Provide water spray to haul road near site entrance to avoid dust generation.	D 6
	Part E – Construction Noise Impact	
	• No environmental deficiency was identified during the site inspection.	
	Part F – Waste/Chemical Management	
	• No environmental deficiency was identified during the site inspection.	
	Part G - Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	Others	
	• Follow-up on previous audit section (Ref. No.:140313), items 140313-O01, 140313-O03, 140313-O04, 140313-R05 and 140313-R07 were remarked and should be reviewed during next site inspection.	

	Name	Signature	Date
Recorded by	Kevin Lam		18 March 2014
Checked by	Dr. Priscilla Choy		18 March 2014

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140325
Date	25 March 2014 (Tuesday)
Time	14:00 - 15:15

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality	
140325-R02	• To replace the water in the wheel washing bay and facility by clear water ensure the efficiency of them.	B 14ii, 14iii
	Part C - Ecology/Others	
	• No environmental deficiency was identified during the site inspection.	
	Part D – Air Quality	
140325-O01	• Tipping hall for floating jetty no. 3 and 4 were observed damaged. The Contractor is reminded to repair the holes and cracks of the tipping hall.	D 18
140325-R03	• To clear the sand and silt on the ground near the tipping hall for floating jetty no. 3.	D 6
140325-R05	• To provide sufficient water spray to haul road and ramp of floating jetties.	D 6
	Part E – Construction Noise Impact	
	• No environmental deficiency was identified during the site inspection.	
	Part F – Waste/Chemical Management	
	• No environmental deficiency was identified during the site inspection.	
	Part G - Permit / Licenses	
140325-R04	• The displayed construction noise permit was expired. The Contractor was reminded to display the valid CNP approved by EPD at the site entrance for public inspection.	G 1
	Others	
	• Follow-up on previous audit section (Ref. No.:140318), items 140318-O01 and 140318-R04 were remarked and should be reviewed during next site inspection.	

	Name	Signature	Date
Recorded by	Kevin Lam		25 March 2014
Checked by	Dr. Priscilla Choy		25 March 2014

APPENDIX D
EVENT AND ACTION PLANS

Event and Action Plan for Water Quality

Event	ET	IEC	ER	Contractor
Action level being exceeded by one sampling day	1. Inform IEC, contractor and ER; 2. Check monitoring data, all plant, equipment and Contractor's working methods; and 3. Discuss remedial measures with IEC and Contractor and ER	1. Discuss with ET, ER and Contractor on the implemented mitigation measures; 2. Review proposals on remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the implemented mitigation measures; and 2. Make agreement on the remedial measures to be implemented. 3. Supervise the implementation of agreed remedial measures	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment; 5. Consider changes of working methods; 6. Discuss with ER, ET and IEC and propose remedial measures to IEC and ER; and 7. Implement the agreed mitigation measures.
Action level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement on next day of exceedance to confirm findings; 2. Inform IEC, contractor and ER; 3. Check monitoring data, all plant, equipment and Contractor's working methods; 4. Discuss remedial measures with IEC, contractor and ER 5. Ensure remedial measures are implemented	1. Discuss with ET Contractor and ER on the implemented mitigation measures; 2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with ET, IEC and Contractor on the proposed mitigation measures; 2. Make agreement on the remedial measures to be implemented; and 3. Discuss with ET IEC and Contractor on the effectiveness of the implemented remedial measures.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Discuss with ET, IEC and ER and submit proposal of remedial measures to ER and IEC within 3 working days of notification; and 6. Implement the agreed mitigation measures.
Limit level being	1. Repeat measurement on next day	1. Discuss with ET , Contractor and	1. Discuss with IEC, ET and	1. Identify source(s) of impact;

Event	ET	IEC	ER	Contractor
exceeded by one sampling day	of exceedance to confirm findings; 2. Inform IEC, contractor and ER; 3. Rectify unacceptable practice; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Consider changes of working methods 6. Discuss mitigation measures with IEC, ER and Contractor; and 7. Ensure the agreed remedial measures are implemented;	ER on possible remedial actions; 2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	Contractor on the implemented remedial measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the remedial measures to be implemented; and 4. Discuss with ET, IEC and Contractor on the effectiveness of the implemented remedial measures.	2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Discuss with ET, IEC and ER and submit proposal of additional mitigation measures to ER within 3 working days of notification; and 6. Implement the agreed remedial measures.
Limit level being exceeded by more than one consecutive sampling days	1. Inform IEC, contractor, ER and EPD 2. Check monitoring data, all plant, equipment and Contractor's working methods; 3. Discuss mitigation measures with IEC, ER and Contractor; and 4. Ensure mitigation measures are implemented; and 5. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.	1. Discuss with ET, ER and Contractor on possible remedial actions; 2. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the implemented mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the remedial measures to be implemented; 4. Discuss with ET and IEC on the effectiveness of the implemented mitigation measures; and 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the dredging activities until no exceedance of Limit level.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Discuss with ET, IEC and ER and submit proposal of additional mitigation measures to ER and IEC within 3 working days of notification; 6. Implement the agreed mitigation measures. 7. As directed by the ER, to slow down or to stop all or part of the dredging activities until no exceedance of Limit level.

Event and Action Plan for Landscape and Visual during Construction Stage

Event	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 proposedremedial 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 remedialmeasures to be implemented 3. Supervise implementation of remedial measures.	1. Identify Source and investigate the non-conformity implement remedial measures 2. Amend working methods agreed with the ER as appropriate 3. Rectify damage and undertake any necessary replacement. 4. 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/Engineer's Representative

APPENDIX E
UPDATED 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 (Pre-Construction Phase)								
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	Contractor	Works sites Kai Tak Barging Point	Prior to site clearance	• AFCD's requirements	^
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;	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
		• 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. • No on-site burning of waste; • Waste and refuse in appropriate receptacles.						^ ^ ^ ^
S5.7	E6	<u>Sediment Removal</u> • Use closed grab in dredging works. • Install silt curtain during the dredging.	• Reduce indirect impacts of suspended solids on sessile benthic and intertidal fauna • Minimize marine water quality impacts	Contractor	Dredging Area	During Dredging	•TM-Water	N/A(2) N/A(2)
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	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	•TM-EIAO	N/A(2)

EIA Ref.	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
		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.						^ ^

EIA Ref.	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 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.						^
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.	Minimize visual & landscape impact	Contractor	Within Project Site	Detailed design and construction stage	• EIAO – TM •ETWB TCW 2/2004 • ETWB TCW 3/2006	^ N/A(1)
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	• APCO • To control the air quality 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
/	A2	Open burning shall be prohibited.	Reduce air pollution emission from work site.	Contractor	All construction sites	Construction stage	• APCO • To control the air quality to meet HKAQO and TM-EIA criteria	^
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 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	*

EIA Ref.	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
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;	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
		• 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						^ ^ ^ N/A(2) N/A(2)

EIA Ref.	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 pulverized 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(2) N/A(2) N/A(2) N/A(2) N/A(2)

EIA Ref.	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
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 Point	Construction stage	• Air Pollution Control (Construction Dust) Regulation	^ ^ ^ ^
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	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria •EP Condition 2.18 (c)	*
S7.6.5	D6	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected representative dust monitoring station	Construction stage	• TM-EIA	N/A(1)

EIA Ref.	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 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 utilized, where practicable, to screen noise from on-site construction activities.	Control construction airborne noise	Contractor	All Construction Sites	Construction stage	• Annex 5, TM-EIA	^ ^ ^ N/A(2) ^ N/A(2)
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	^

EIA Ref.	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
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	Construction stage	• Annex 5, TM-EIA	N/A(1)
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	N/A(1)
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 monitoring station	Construction stage	•TM-EIA	N/A(1)

EIA Ref.	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
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	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		in the permanent drainage channels to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 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						^ ^

EIA Ref.	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
		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 minimize 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						* ^ N/A(1) *

EIA Ref.	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
		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						^ * ^

EIA Ref.	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.						^ ^ N/A(2) ^
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	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	To minimize groundwater quality impact from contaminated area	Contractor	Excavation areas where contamination is found.	Construction stage	• Water Pollution Control Ordinance • TM-water • TM-EIAO	N/A(1) N/A(1)

EIA Ref.	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
		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 licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.						N/A(1)

EIA Ref.	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>Dredging Works</u> The following good practice shall apply for the dredging works: • Install efficient silt curtains at the point of seawall dredging to control the dispersion of SS; • Implement water quality monitoring to ensure effective control of water pollution and recommend additional mitigation measures required; • The decent speed of grabs should be controlled to minimize the seabed impact and to reduce the volume of over-dredging; and • 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.	To minimize sediment suspension during dredging	Contractor	Kai Tak Barging Point during dredging works	Dredging period	• Water Pollution Control Ordinance • TM-EIAO	N/A(2) N/A(2) N/A(2) N/A(2)
S10.7.1	W6	<u>Operation of Barging Facilities</u> 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	To minimize water quality impact from operation of barging facility	Contractor	All barging facilities	Construction stage	• Water Pollution Control Ordinance • 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
		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.						^ ^ *
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	^ ^ ^

EIA Ref.	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	W8	Implement a marine water quality monitoring programme	Monitor marine water quality prior to and during dredging period	Contractor	At identified monitoring location	Prior to and during dredging period	• Water Pollution Control Ordinance • TM-water • EIA-TM	^
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 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	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(2)

EIA Ref.	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
		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; • 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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005	N/A(2) N/A(2) N/A(2) N/A(2) ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• In 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 minimize 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	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No.19/2005	^ N/A(2)

EIA Ref.	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
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	• Waste Disposal Ordinance	^ ^ ^ ^
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	To control pollution due to marine sediment	Contractor	Within Project Site Area	Construction Stage	• ETWB TCW No. 34/2002	N/A(1)

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		in the 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						N/A(1) N/A(1) N/A(1) N/A(1) N/A(1) N/A(1)

EIA Ref.	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
		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 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 fulfilling the requirements for fully confined mud disposal.						N/A(1) N/A(1) N/A(1) N/A(1)

EIA Ref.	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
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 labeled 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.						^

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(1) Not Applicable N/A(2) Not Applicable at this stage

APPENDIX F
WASTE GENERATION IN THE REPORTING MONTH

Concentric – Hong Kong River Joint Venture

MTR SCL Contract 1108A
Kai Tak Barging Point Facilities

Monthly Summary Waste Flow Table for 2014 (year)

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 '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
January	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.010**
Feb	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Mar	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.005**
Apr	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-
June	-	-	-	-	-	-	-	-	-	-	-
Sub-total	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.015**
July	-	-	-	-	-	-	-	-	-	-	-
Aug	-	-	-	-	-	-	-	-	-	-	-
Sept	-	-	-	-	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-	-	-	-	-
Nov	-	-	-	-	-	-	-	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-
G.Total	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.015**

APPENDIX G
COMPLAINT LOG

Appendix G - Complaint Log

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	File Closed
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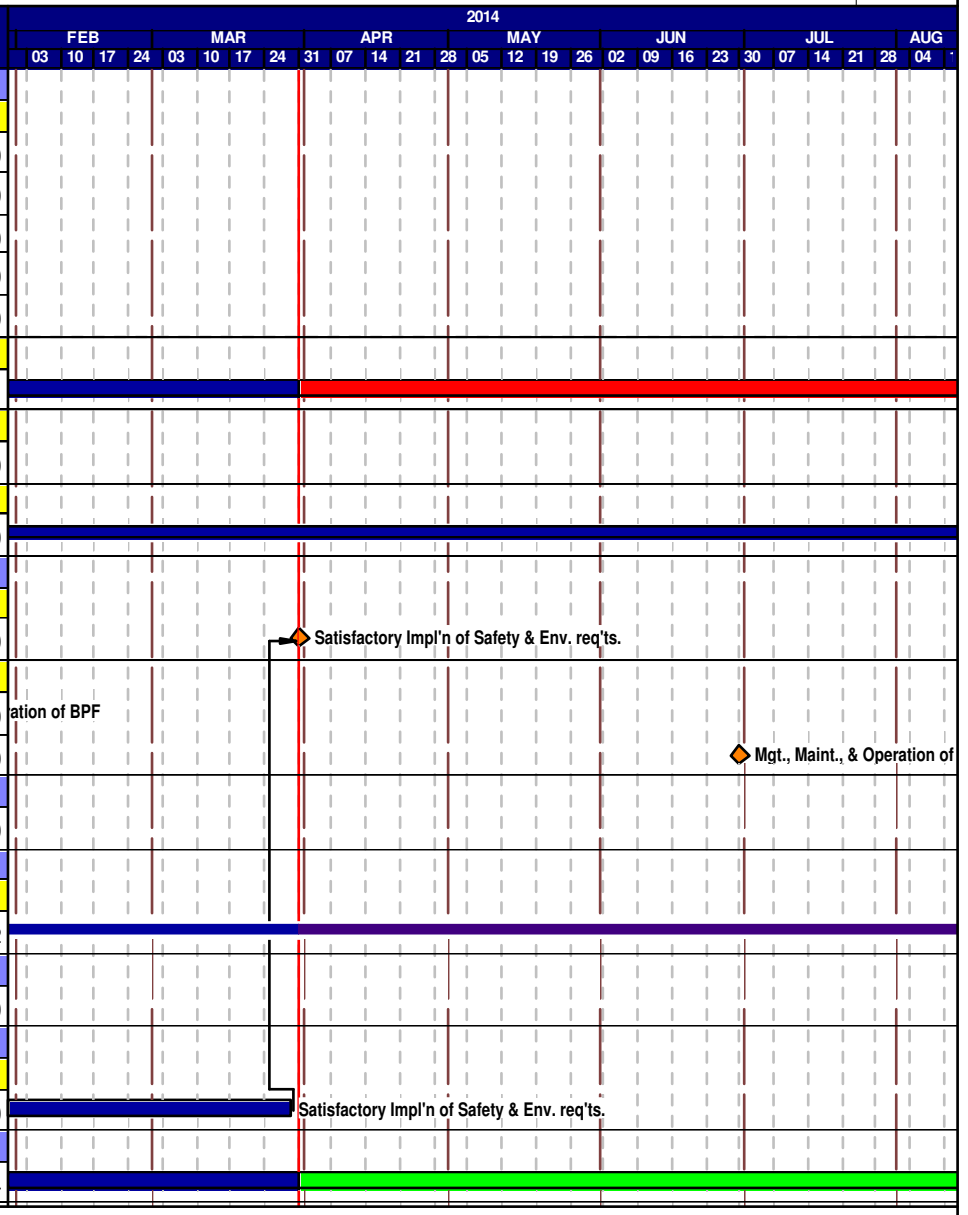
APPENDIX H
TENTATIVE CONSTRUCTION PROGRAMME

MTR SCL 1108A
KAI TAK BARGING POINT FACILITIES

3 Month Rolling Programme
(incl. Addition of Floating Jetty)

Act ID	Description	Orig Dur	Early Start	Early Finish	%
COMMENCEMENT & COMPLETION					
Completion of the Works					
1108ACD01	Letter of Acceptance	0	10AUG12 A		100
1108ACD02	Commencement of Contract	0	13AUG12 A		100
1108ACD03A	Completion of Specified Parts of the Works	0		10FEB13 A	100
1108ACD03C	Completion of Contract	0		28AUG16	0
1108ACD04B	Completion of 1st BPF for Operation	0		10DEC12 A	100
+Time for Completion					
		1477	13AUG12 A	28AUG16	51
+Time for Possession of Works Area					
		52	13AUG12 A	03OCT12 A	100
+Vacation of Works Area					
		544	31MAY13 A	28AUG16	0
MILESTONES SCHEDULE					
Milestones for Cost Centre A					
1108AMSA50	Satisfactory Impl'n of Safety & Env. req'ts.	0		30MAR14 A	100
Milestones for Cost Centre B					
1108AMSB40	Mgt., Maint., & Operation of BPF	0		28DEC13 A	100
1108AMSB50	Mgt., Maint., & Operation of BPF	0		29JUN14	0
+EXECUTION OF OPTIONS					
		59	13AUG12 A	10OCT12 A	100
Engineer's Instruction					
Addition of Floating Landing Barge in WA3					
1108AVE391	Operation of Additional Floating Jetty	724 *	06JAN14 A	31DEC15	12
+Value Engineering Proposals					
		24	13SEP12 A	06OCT12 A	100
Cost Centre A					
Preliminaries					
1108AA5010	Satisfactory Impl'n of Safety & Env. req'ts.	598	13AUG12 A	29MAR14 A	100
+Cost Centre B					
		1015	13AUG12 A	30JUN16	64



Start date	10AUG12
Finish date	28AUG16
Data date	31MAR14
Run date	31MAR14
Page number	1A

MTR SCL 1108A

KAI TAK BARGING POINT FACILITIES

Concentric - Hong Kong River Joint Venture

Early bar
Progress bar
Critical bar
Summary bar
Start milestone poi
Finish milestone pc

Appendix B

19th 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. 19

[Period from 1 to 31 March 2014]

Works Contract 1109 - Stations and Tunnels of Kowloon City Section

(10 April 2014)

Certified by: Winnie Ko

Position: Environmental Team Leader

Date: 10 April 2014

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.19

March 2014

Environmental Resources Management
16/F DCH Commercial Centre
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.19

March 2014

Reference 0171181

For and on behalf of ERM-Hong Kong, Limited	
Approved by:	Frank Wan
Signed:	
Position:	Partner
Date:	10 April 2014

CONTENTS

LIST OF ANNEXES

EXECUTIVE SUMMARY

The construction works of **MTR Shatin to Central Link Works Contract 1109 – Stations and Tunnels of Kowloon City Section** commenced on 1 September 2012. This is the nineteenth monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 March 2014 to 31 March 2014 in accordance with the EM&A Manual.

Summary of the Construction Works undertaken during the Reporting Month

The major construction works undertaken during the reporting month include:

Construction Activities undertaken
Works in Ma Tau Wai (MTW)
• TKW/MTW Road Garden – Operation of bentonite plant and Pier 15 underpinning works; and • Along Ma Tau Wai Road – Predrilling for D wall, D wall panel construction and trial pits for location of utilities.
Works in To Kwa Wan (TKW)
• Olympic Garden – Pre-bored H pilling and sheet piling; • TKW Station – Archaeological survey cum excavation, construction of grout curtain, water main diversion, box culvert diversion and pre-bored H piling and shaft excavation; TBM and STP setup; and • Nam Kok Road – Installation of pipe pile and construction of grout curtain.

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* *0 time*
  - *DMS-10* *5 times*

24-hour averaged dust monitoring has been suspended at DMS-9 No. 26 Kowloon City Road since March 2014 due to denied access by the occupant of the premise.

Continuous Noise Monitoring

No continuous noise monitoring was conducted in this reporting month according to the programme in the latest version of CNMP which has been

approved on 26 February 2014. The next continuous noise monitoring session shall commence again in August 2014.

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 at the Sacred Hill (North) commenced on 1 November 2012 and is being 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.

Vibration monitoring was conducted at Hong Kong Aviation Club during the reporting period, no non-compliance was recorded.

Waste Management

Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. About 18, 734 m^3 of inert C&D materials were generated from the Project, which were sent to 1108A Kai Tai Barging Facilities during the reporting month. 320 kg of plastics was generated and sent to recyclers for recycling during the reporting period. About 107 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. 67 kg of paper/cardboard packaging was generated and sent to recyclers for recycling during the reporting period. 200kg of chemical waste was generated during this reporting month.

Landscape and Visual

Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 3, 17 and 31 March 2014. 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 3, 10, 17, 24 and 31 March 2014. The representative of the IEC joined the site inspection on 10 March 2014. 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 and 24-hour TSP monitoring was recorded during the reporting period.

No environmental complaint, summon or prosecution was received in this reporting period.

Future Key Issues

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

Construction Activities to be undertaken
Work in Ma Tau Wai (MTW)
● TKW/MTW Road Garden – Operation of bentonite plant and pier 15 underpinning works; ● Along Ma Tau Wai Road – Predrilling for D wall, D wall panel construction and trial pits for location of utilities and sheet piling and ● Tam Kung Road – Site establishment and setup.
Work in To Kwa Wan (TKW)
● Olympic Garden – Pre-bored H pilling and sheet piling; ● TKW Station – Archaeological survey cum excavation, construction of grout curtain, water main diversion, TBM and STP site setup, box culvert diversion, pre-bored H piling and shaft excavation; ● Nam Kok Road – Installation of pipe pile and construction of grout curtain.

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 nineteenth EM&A report which summarises the monitoring results and audit findings during the reporting period from 1 March to 31 March 2014.

1.2 STRUCTURE OF THE REPORT

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

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

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

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

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

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

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

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

Section 9 : **Conclusions**

2 PROJECT INFORMATION

2.1 BACKGROUND

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

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

2.2 GENERAL SITE DESCRIPTION

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

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

2.3 CONSTRUCTION PROGRAMME AND ACTIVITIES

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

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

Construction Activities undertaken
Works in Ma Tau Wai (MTW)
● TKW/MTW Road Garden – Operation of bentonite plant and Pier 15 underpinning works; and ● Along Ma Tau Wai Road – Predrilling for D wall, D wall panel construction and trial pits for location of utilities.
Works in To Kwa Wan (TKW)
● Olympic Garden – Pre-bored H pilling and sheet piling; ● TKW Station – Archaeological survey cum excavation, construction of grout curtain, water main diversion, box culvert diversion and pre-bored H piling and shaft excavation; TBM and STP setup; and ● Nam Kok Road – Installation of pipe pile and construction of grout curtain.

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/D	Throughout the Contract	Permit granted on 13 September 2013
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	*WT00014390-2012*	*30-September-2017*	-
Site at MTW	*WT00016348-2013*	*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			
- *Grout Pump and Generator at TKW Garden*	*GW-RE0096-14*	*21 February 2014 – 19 August 2014*	-.
- *Powered Mechanical Equipment in TKW E1 – E3 Areas*	*GW-RE1170-13*	*30 October 2013 – 23 April 2014*	-
- *Power Mechanical Equipment in SUW works area*	*GW-RE1360-13*	*12 December 2013 – 27 May 2014*	-
- *Powered Mechanical Equipment along MTW Road Side*	*GW-RE1370-13*	*16 December 2013 – 15 June 2014*	-
- *Powered Mechanical Equipment at TKW*	*GW-RE1172-13*	*4 November 2013 – 30 April 2014*	*Superseded by GW-RE0281-14 from 24 March 2014.*
- *Powered Mechanical Equipment at SUW Olympic Playground*	*GW-RE0281-14*	*24 March 2014 – 18 September 2014*	-
- *Powered Mechanical Equipment at Pier 15*	*GW-RE0225-14*	*5 March 2014 – 31 August 2014*	-

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
- *Power Mechanical Equipment at MTW*	*GW-RE0081-14*	*26 January 2014 – 18 April 2014.*	-
Licence to Excavate and Search for Antiquities	363	Till 21 October 2014	-
Billing Account for Disposal of Construction Waste	7015758	Throughout the Contract	-

3 ENVIRONMENTAL MONITORING REQUIREMENT

3.1 REGULAR CONSTRUCTION NOISE MONITORING

3.1.1 Monitoring Location

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

Table 3.1 Regular Construction Noise Monitoring Location

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

Notes:

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

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

3.1.2 Monitoring Parameter and Frequency

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

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

3.1.3 Monitoring Equipment and Methodology

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

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

Table 3.2 Noise Monitoring Equipment

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

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

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

3.1.4 Action and Limit Levels

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

Table 3.3 Action and Limit Levels for Noise Monitoring

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

Note:
(a) If works are to be carried out during restricted hours (ie, outside 0700 – 1900 on 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 Location

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(A)	No. 420 Prince Edward Road West
MTW-12-3	Lucky Mansion
MTW-12-4	352-354 Ma Tau Wai Rd (East Façade)
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	Jing Ming Building
MTW-16-1	SKH Good Shepherd Primary School

Note:
(a) The final monitoring locations will be subject to the latest Continuous Noise Monitoring

Continuous Noise Monitoring Location[a]	Description
Plan (CNMP).	

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 3.5***. If works are to be carried out during restricted hours (ie, outside 0700 – 1900 on 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 3.5.***

Table 3.5 Action/Limit Levels for Continuous Noise Monitoring [a]

Proposed Continuous Noise Monitoring Stations	Description	Action / Limit Level [a]	Measurement Period [a]
TKW-3-2(A)	No. 420 Prince Edward Road West	80	September 2014 – December 2014
MTW-12-3	Lucky Mansion	80	August 2014 – January 2015, March 2015 – June 2015
MTW-12-4	352-354 Ma Tau Wai Rd (East Façade)	80	August 2014 – June 2015
MTW-12-4-1(A)	59 Maidstone Road	82	October 2014, December 2014 – June 2015

Proposed Continuous Noise Monitoring Stations	Description	Action / Limit Level [(a)]	Measurement Period [(a)]
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	Jing Ming Building	81	September 2014 – June 2015
MTW-16-1	SKH Good Shepherd Primary School	78	December 2012 – January 2013; April 2013 – 21 August 2013,
		79 [(b)]	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 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 3.6*** and shown in ***Annex D***. The proposed locations have been agreed with the ER, EPD and IEC.

Table 3.6 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. 26 Kowloon City Road
DMS-10	Chat Ma Mansion

Proposed Construction Dust Monitoring Location	Description

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 has been suspended at DMS-9 No. 26 Kowloon City Road since March 2014 due to denied access by the occupant of the premise. The 1109 ET will attempt to search for alternative monitoring locations.

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 3.7***. The TSP monitoring was conducted as per the schedule presented in ***Annex E***.

Table 3.7 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 3.8*** summarises the equipment that was deployed for the 24-hour averaged monitoring.

Table 3.8 Construction Dust Monitoring Equipment

Monitoring Location	Monitoring Equipment (HVS and Calibrator)
DMS-6	TE-5170 (Serial No. 0107), CM-AIR-43 (Orifice ID 2323)
DMS-7	TE-5170 (Serial No. 3574), CM-AIR-43 (Orifice ID 2323)
DMS-8	TE-5170 (Serial No. 3572), CM-AIR-43 (Orifice ID 2323)
DMS-9[(a)]	TE-5170 (Serial No. 0814), CM-AIR-43 (Orifice ID 2323)
DMS-10	TE-5170 (Serial No. 3573), CM-AIR-43 (Orifice ID 2323)

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.

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 3.9***.

Table 3.9 Action and Limit Levels for Dust Monitoring

Parameters	Dust Monitoring Station	Action Level (µg m^{-3}) [(a)]	Limit Level (µg m^{-3}) [(a)]

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 has been suspended since March 2014 due to denied access by the occupant of the premise.

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

3.4 CULTURAL HERITAGE

The 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 had been 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.

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	Eighteenth Monthly EM&A Report	14 March 2014

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. After baseline-level corrected, no exceedance of the limit level was recorded during the whole reporting period at all five monitoring locations.

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

5.2 CONTINUOUS NOISE MONITORING

No continuous noise monitoring was conducted in this reporting month according to the programme in the latest version of CNMP which has been approved on 26 February 2014. The next continuous noise monitoring session shall commence again in August 2014.

5.3 CONSTRUCTION DUST MONITORING

A total of 20 sets of 24-hr TSP monitorings were carried out at the designated monitoring stations during normal weekdays of the reporting period. 24-hour averaged dust monitoring has been suspended at DMS-9 (No. 26 Kowloon City Road) since March 2014 due to denied access by the occupant of the premise. 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	88	74 – 98	156.8	260
DMS-7	86	81 - 93	166.7	260
DMS-8	88	84 – 92	152.2	260
DMS-9(a)	--	--	160.9	260
DMS-10	81	70 – 91	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.

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 at the Sacred Hill (North) commenced on 1 November 2012 and is being 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.

Vibration monitoring was conducted at Hong Kong Aviation Club during the reporting period, no non-compliance was recorded.

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	Non-inert C&D Materials			
			General Refuse/Vegetative Waste	Recycled materials		
				Paper/cardboard	Plastics	Metals
March 2014	18,734 m^3	200 kg	107 m^3	67 kg	320 kg	0 kg

Notes:

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

(b) About 18,734 m^3 of inert C&D materials were generated from the Project, and sent to 1108A Kai Tai Barging Facilities 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 inspection of the implementation of landscape and visual mitigation measures was conducted on 3, 17 and 31 March 2014. Most of the mitigation measures given in ***Annex H*** have been implemented. Required Actions that were found are listed below:

3 March 2014

- No observation was reported during the site inspection.

17 March 2014

- No observation was reported during the site inspection.

31 March 2014

- 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 3, 10, 17, 24 and 31 March 2014. The representative of the IEC joined the site inspection on 10 March 2014. No non-compliance was recorded during the site inspections.

Follow up actions for the observations on 24 February 2014 had been taken. As observed in the site inspection on 3 March 2014, there was no breaker operation during the site inspection and the Contractor would duly ensure that sufficient water-spraying would be in place during operation of the breakers for dust suppression.

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

3 March 2014

- The Contractor was reminded to provide sufficient drip trays for chemical containers found in both MTW and TKW works areas. As observed in subsequent site inspection on 10 March 2014, the Contractor had provided the free-standing chemical containers with sufficient drip trays to prevent leakage in both MTW and TKW works area. Some of the chemical containers had also been removed from the works area.

10 March 2014

- There is no major observation during the site inspection.

17 March 2014

There is no major observation during the site inspection.

24 March 2014

- There is no major observation during the site inspection.

31 March 2014

- Chemical containers were discovered without drip tray on hard paved ground at Pier 15 of MTW works area. Furthermore, a chemical container without labelling and drip tray was found beside the Slurry Treatment Plant (STP) of TKW works area. The Contractor was reminded to provide sufficient trip drays and labelling for them.

- The Contractor was reminded to enhance the noise mitigation measures for the generator – sufficient sound-proof canvas should be provided and the existing sound proof canvas should be straightened out to maximise its effect (Area W1 of MTW woks area).

All 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.

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 SUMMARY OF MONITORING EXCEEDANCE

No exceedance of the Action and Limit Levels of the regular construction noise and 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 reported during the reporting month. The cumulative environmental complaint log is shown in ***Annex M***.

7.4 SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION

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

8 FUTURE KEY ISSUES

8.1 KEY ISSUES FOR THE COMING MONTH

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

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

Construction Activities to be undertaken
Work in Ma Tau Wai (MTW)
● TKW/MTW Road Garden – Operation of bentonite plant and pier 15 underpinning works; ● Along Ma Tau Wai Road – Predrilling for D wall, D wall panel construction; trial pits for location of utilities and sheet piling; and ● Tam Kung Road – Site establishment and setup.
Work in To Kwa Wan (TKW)
● Olympic Garden – Pre-bored H pilling and sheet piling; ● TKW Station – Archaeological survey cum excavation, construction of grout curtain, water main diversion, TBM & STP site setup, box culvert diversion, pre-bored H piling and shaft excavation; and ● Nam Kok Road – Installation of pipe pile and construction of grout curtain.

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 19th monthly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 March 2014 to 31 March 2014 in accordance with the EM&A Manual and the requirement under EP-438/2012/D.

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

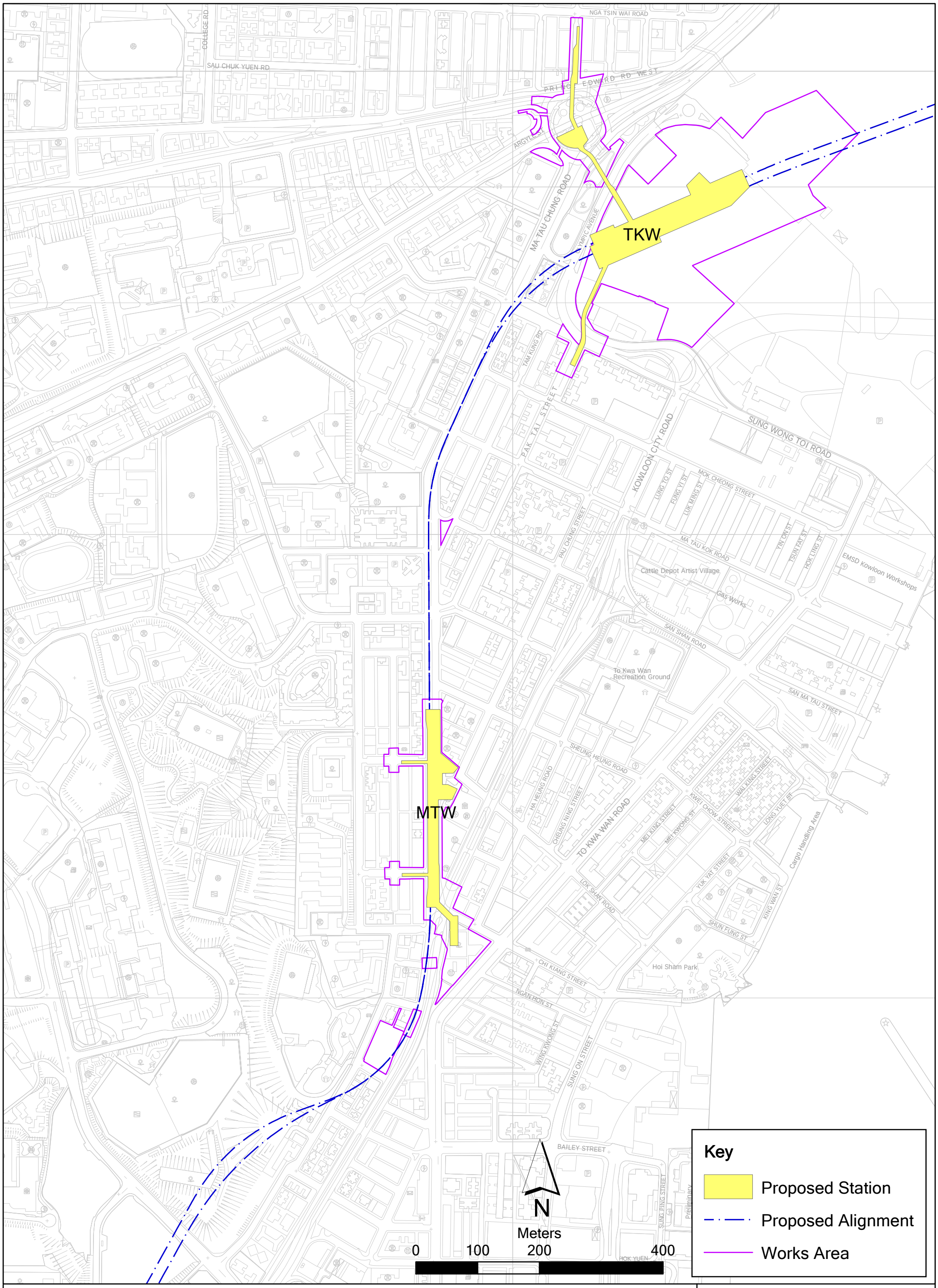
No continuous noise monitoring was conducted during the reporting period, according to the programme in the latest version of CNMP.

No complaint and summon/prosecution was received during the reporting period.

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

Annex A

The Alignment and Works Area for Works Contract



Annex A

Alignment, Stations and Works Area of SCL Works Contract 1109

Name: 0171181_Works_Area_Annex.mxd
Date: 10-Oct-12

Environmental Resources Management

ERM

Annex B

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

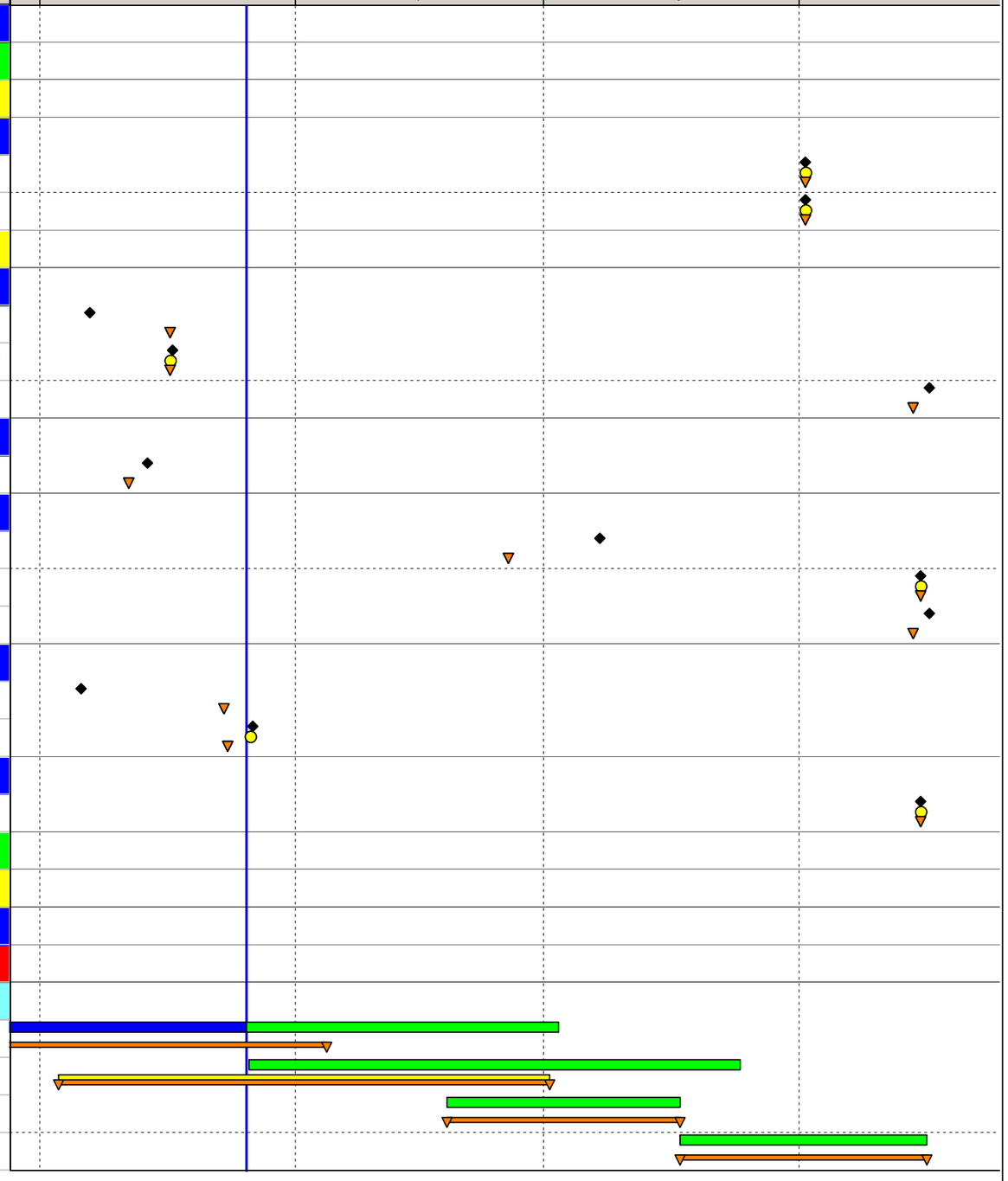
(1) Sung Wong Toi and To Kwa Wan Stations in the programme mean To Kwa Wan and Ma Tau Wai Stations in the Monthly EM&A Report respectively.

Data Date: 25-Mar-14

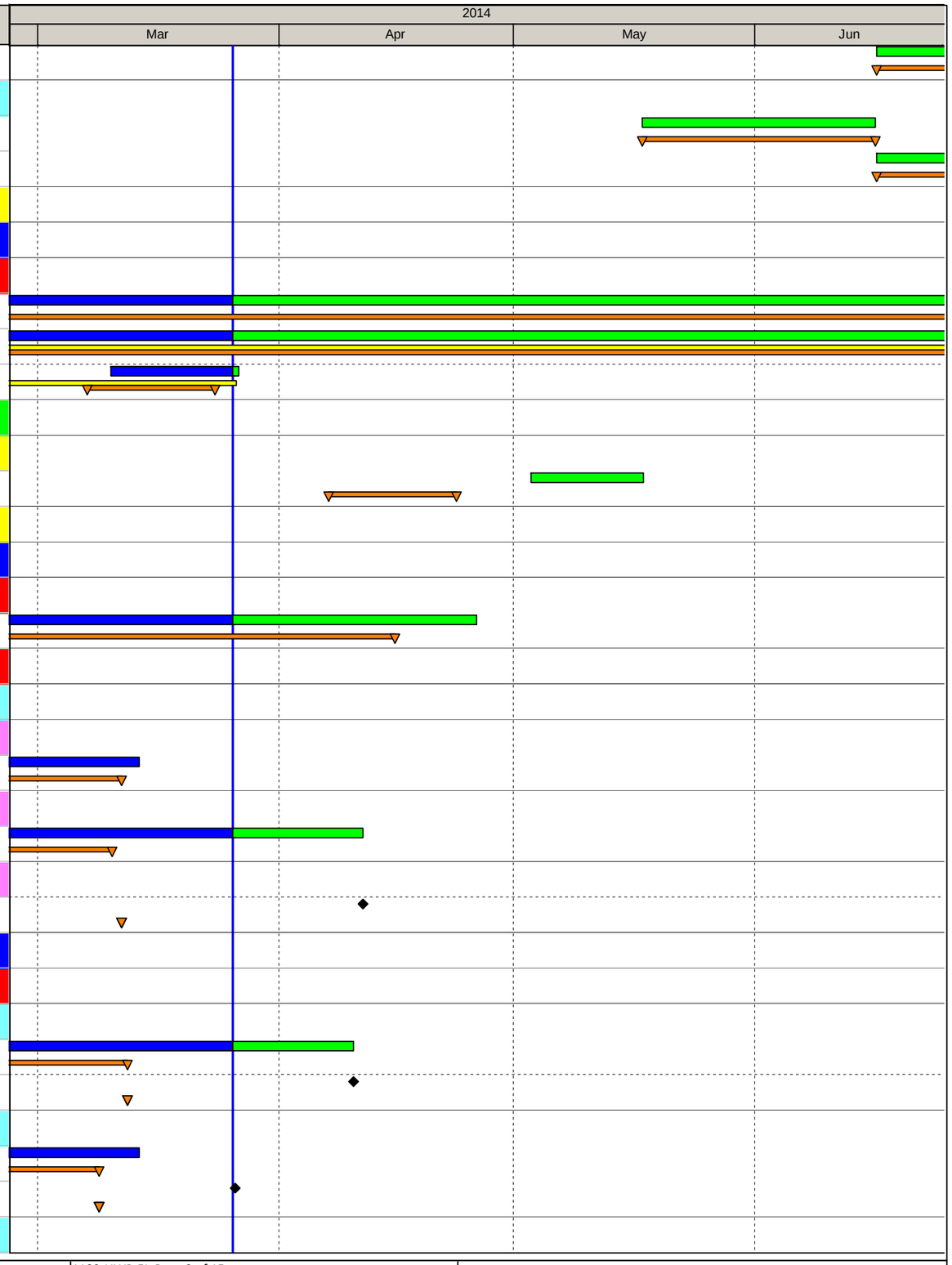
SAMSUNG - HSIN CHONG JOINT VENTURE

THREE MONTH ROLLING PROGRAMME - MARCH 2014

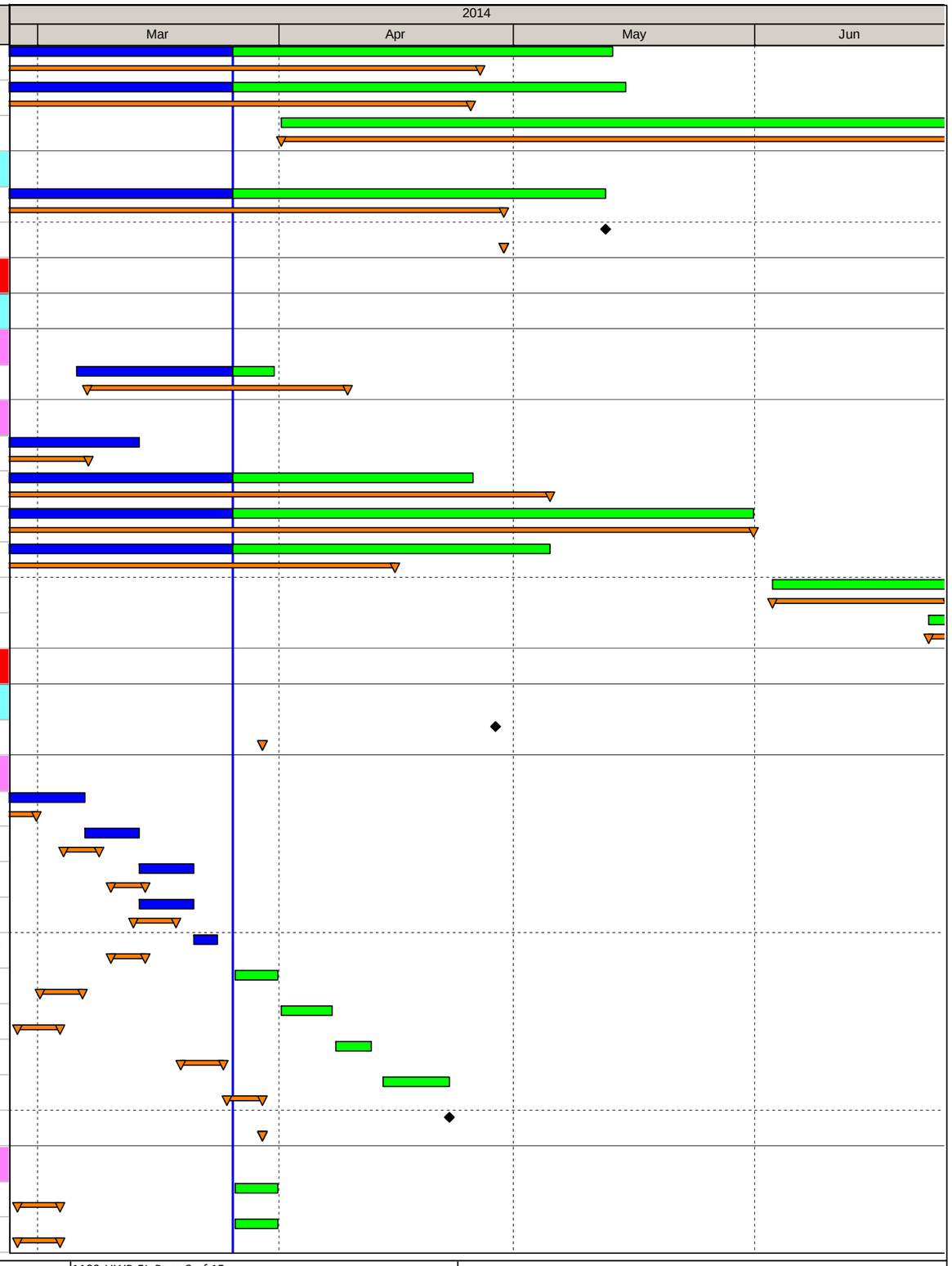
Activity ID	Activity Name	Physical % Complete	Start	Finish
1109 - SUW & TKW Stations and Tunnels MAR14 (UWP R5)				
PROJECT DATES				
Works Areas				
Return Dates				
01109.RDA3a	Vacation date for Works Area 1109.A3a (Wk22/14;1Jun14)	0%		01-Jun-14*
01109.RDA3b	Vacation date for Works Area 1109.A3b (Wk22/14;1Jun14)	0%		01-Jun-14*
Specified Milestone Dates				
CC-A Milestones				
01109.MSA8A	A7(i) - 80% of total number of Pre-bored H Pile at SUW complete	100%		07-Mar-14 A
01109.MSA7ii	A7(ii) - Engr confirm satisfac implementation of Sys Assu.& Risk Mgmt as per approved spec. Plans (1).(Wk11/14;16Mar14)	100%		17-Mar-14 A
01109.MSA26i	A6(i) - Complete 60% by plan length of permanent diaphragm wall for TKW complete.(Wk50/13;15Dec13)	0%		16-Jun-14
CC-B Milestones				
01109.MSB04i	B6(i) - Existing DSD twin cell box culvert temporarily diverted to north of SUW.(20 Apr 14)	100%		14-Mar-14 A
CC-C Milestones				
01109.MSC03i	C3(i)-50% by plan length of permanent diaphragm wall complete.(Wk24/13;16Jun13)	0%		07-May-14
01109.MSC07ii	C7(ii)-Shop dwgs for all suspended ceiling & metal wall panel systems approved.(Wk24/14;15Jun14)	0%		15-Jun-14*
01109.MSC05i	C5(i)-60% by plan length of permanent diaphragm wall complete.(Wk50/13;15Dec13)	0%		16-Jun-14
CC-D Milestones				
01109.MSD04ii	D4(ii)-Fabrication & factory tests of the first TBM complete & delivery to site.(23Mar14)	100%		06-Mar-14 A
01109.MSD04i	D4(i)-Manufacturing of pre-cast tunnel lining segments 5% complete & delivered (23Mar14)	0%		26-Mar-14
CC-F Milestones				
01109.MSF02	F2 - All shop dwgs & mat. submissions approved by the Eng.(Wk24/14;15Jun14)	0%		15-Jun-14*
CC-A - PRELIMINARIES AND GENERAL REQUIREMENTS				
Design and Approvals				
Temporary Traffic Arrangements				
SUW Station, Entrances and Adits				
TTMS Design & Approval				
01109.PDA1340	SUW - Sung Wong Toi & Pak Tai St - TTM Stage 1 - Design & Approval by SLG	35%	04-Dec-13 A	02-May-14
01109.PDA1320	SUW - TTM for Kln City Interchange - Design & Approval by SLG	0%	26-Mar-14*	24-May-14
01109.PDA1350	SUW - Nam Kok Rd - TTM Stage 1 Phase 2 - Design & Approval by SLG	0%	19-Apr-14	17-May-14*
01109.PDA1360	SUW - Nam Kok Rd - TTM Stage 2 Phase 1 - Design & Approval by SLG	0%	17-May-14	16-Jun-14



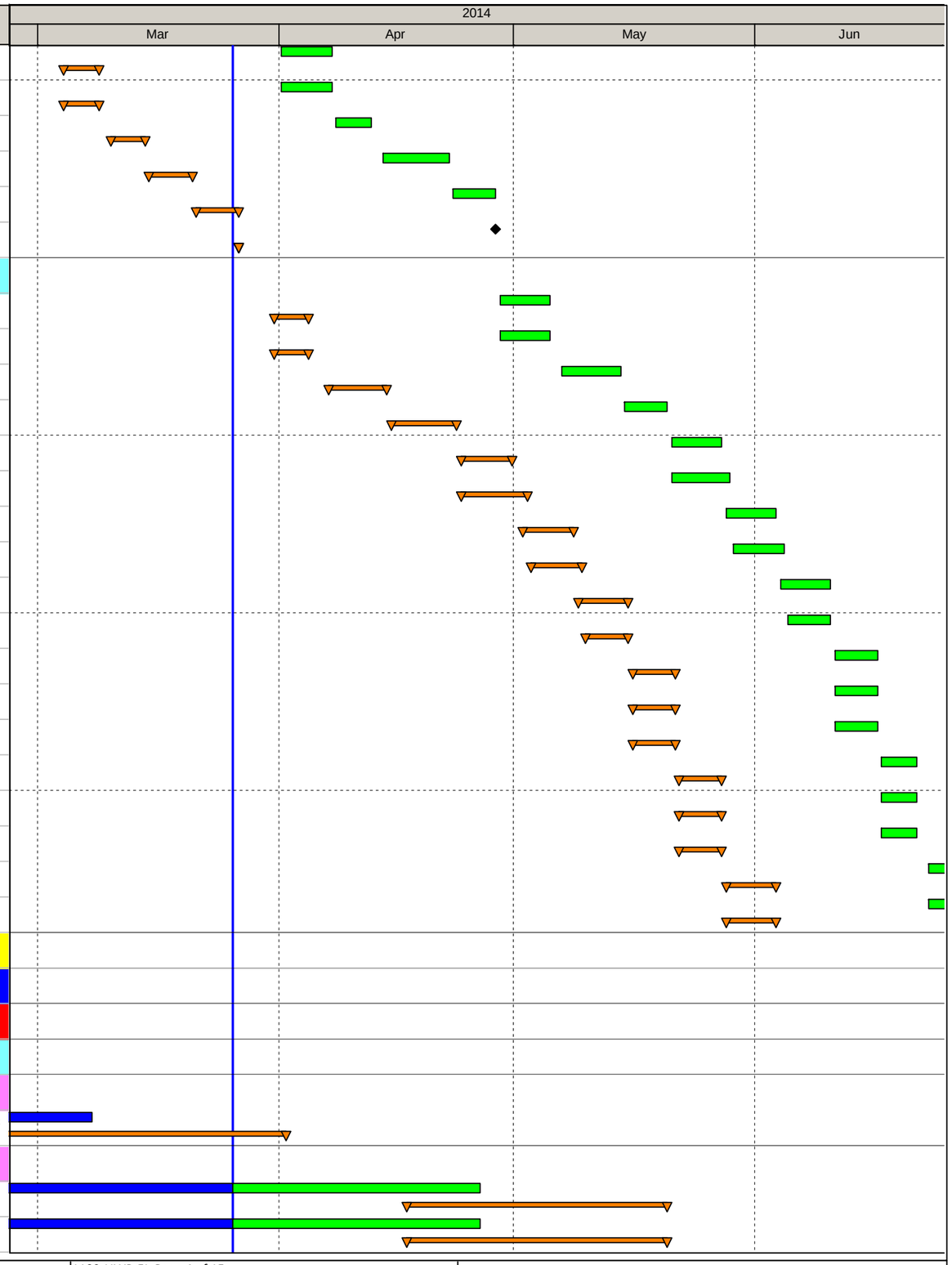
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDA1390	SUW - Nam Kok Rd - TTM Stage 2 Phase 2 - Design & Approval by SLG	0%	16-Jun-14	16-Jul-14
TTMS Gazette Notice				
01109.PDA1440	SUW - Nam Kok Rd - TTM Stage 1 Phase 2 - Gazette Notice	0%	17-May-14	16-Jun-14
01109.PDA1470	SUW - Nam Kok Rd - TTM Stage 2 Phase 1 - Gazette Notice	0%	16-Jun-14	16-Jul-14
Procurement				
Concrete Construction Materials				
Precast supplies				
01109.PDA3970A	Submission and Approval for revised detailed design to tunnel lining (EI 000053)	50%	28-Nov-13 A	28-Jul-14
01109.PDA4020	Precast concrete segment manufacture (2nd and subsequent batches)	7%	25-Jan-14 A	27-Nov-15
01109.PDA4010	Precact concrete segment delivery & arrival on site (1st batch)	94%	10-Mar-14 A	26-Mar-14
CC-B - SUW STATION, ENTRANCES AND ADITS				
Implementation of TTA at SUW				
01109.PDB1601	SUW - Sung Wong Toi & Pak Tai St - Implement TTM Stage 1	0%	03-May-14*	17-May-14
SUW Station Construction Works				
Site Preparation				
Archaeological Survey				
01109.PDB14381A	AWB Within Launching Shaft (Additional Work)	74%	20-Dec-13 A	26-Apr-14
Utilities and Services Diversion				
Utility Diversion Works				
DSD Box Culvert Stormwater drain diversion				
01109.PDB1730A	Casting of Wall and Roof Slab for Box Culvert Diversion	100%	08-Nov-13 A	14-Mar-14 A
Fresh water main diversion				
01109.PDB1730	Fresh water mains diversions (Part 3- GL 12 to 19)	75%	12-Feb-14 A	11-Apr-14
Telecom cable diversions				
01109.PDB1940	All utility diversion in Main Station Area complete	0%		11-Apr-14
Station - Excavation and Foundation				
Pre-bored H- Piling for Permanent Works				
Part 2B (GL 7.5 - 12)				
01109.PDB2350	Rig 7 - H- Piling - 71Nr - (BD approved drawings 07 Mar 13)	95%	19-Apr-13 A	10-Apr-14
01109.PDB2130A	H- Piling; (GL 7.5 - 12) - Complete	0%		10-Apr-14
Other Areas (GL 23 - 24+)				
01109.PDB2250	Rig 5 - H- Piling - 37Nr - 2.5d/pile (BD approved drawings 06 Feb 13)	100%	13-May-13 A	14-Mar-14 A
01109.PDB2101A10	H-Piling (GL23 - 24+) - Complete	0%		26-Mar-14
Part 3 (GL 12 - 18)				



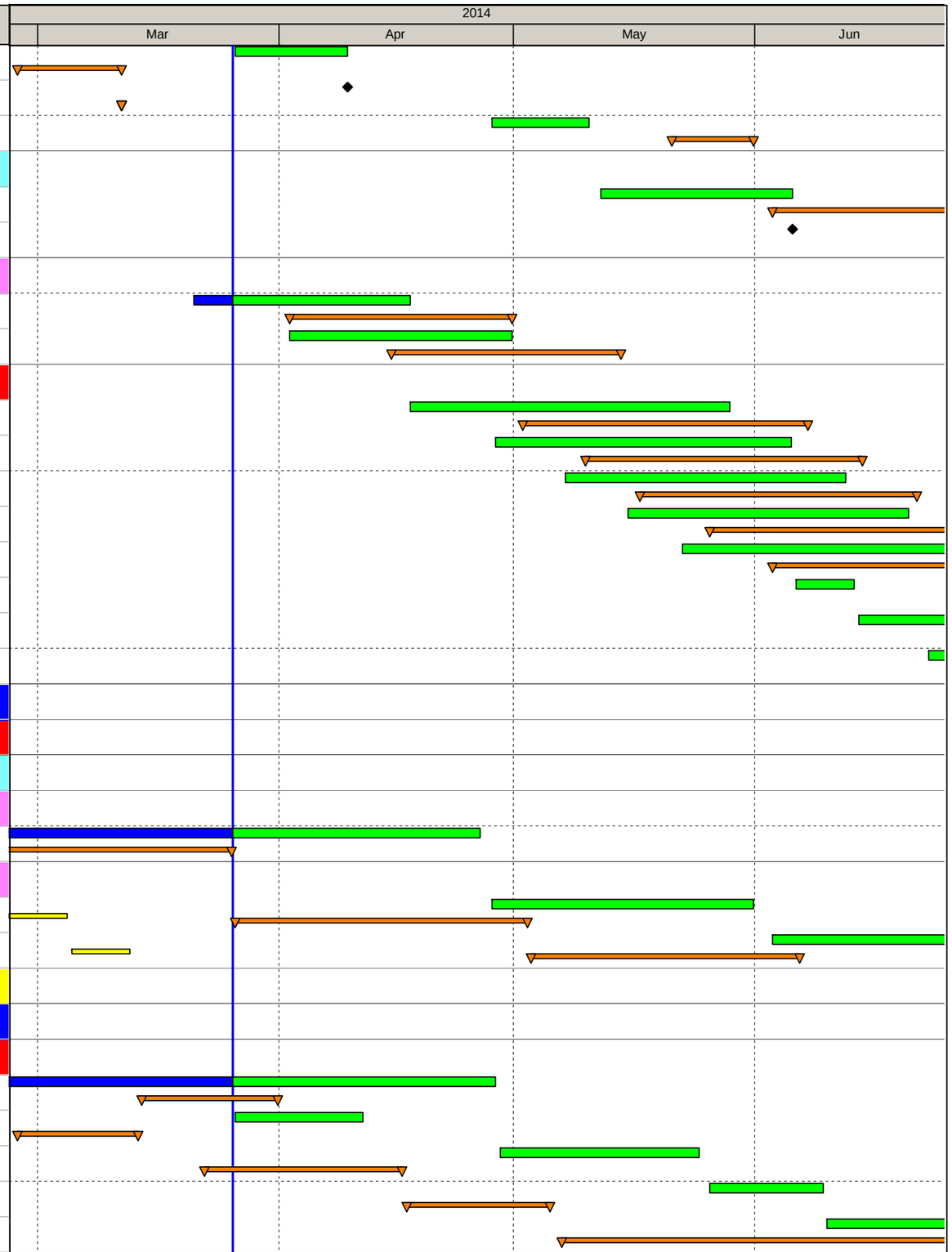
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDB2180	Rig 6 - H- Piling - 110Nr - (BD approved drawings 07 Mar 13)	85%	14-Oct-13 A	13-May-14
01109.PDB2210	Rig 1 - H- Piling - 35Nr - (BD approved drawings 07 Mar 13)	60%	02-Jan-14 A	15-May-14
01109.PDB2271A	Rig A - H-Piling - 43 Nr - Piles with founding level >75m)	0%	01-Apr-14*	15-Jul-14
Part 4 (GL 18 - 23)				
01109.PDB2360	Rig 2 - H- Piling - 30Nr - (BD approved drawings 07 Mar 13)	50%	17-Jan-14 A	12-May-14
01109.PDB2130A20	H- Piling; (GL18 - 23) - Complete	0%		12-May-14
TBM Launch Shaft Works				
Excavation TBM Shaft Area				
Pumping Tests - TBM Shaft				
01109.PDB19351A	TBM Launch shaft - Pumping test Stage 2	85%	06-Mar-14 A	31-Mar-14
Excavation and lateral Support - TBM Shaft				
01109.PDB3080	TBM Launch shaft - Install capping beam	100%	03-Jan-14 A	14-Mar-14 A
01109.PDB3100	TBM Launch shaft - Install Temporary Shoring - EGL to +5.0mPD	77%	03-Jan-14 A	25-Apr-14
01109.PDB19260	TBM Launch shaft - Install Temporary Shoring - +5mPD to 0.0mPD	42%	03-Feb-14 A	31-May-14
01109.PDB3090	TBM Launch shaft - Excavate +5mPD to 0.0mPD	70%	03-Feb-14 A	05-May-14
01109.PDB3110	TBM Launch shaft - Excavate 0mPD to -5mPD	0%	03-Jun-14	25-Jun-14
01109.PDB3120	TBM Launch shaft - Install Temporary Shoring - 0.0mPD to -5mPD	0%	23-Jun-14	08-Jul-14
Earthworks				
Curtain Grout Works				
01109.PDB3480	Grout Curtain complete	0%		28-Apr-14
North of SUW				
01109.PDB3290A	Grout Curtain; Part 2- GL 5 to 6	100%	20-Feb-14 A	07-Mar-14 A
01109.PDB3300A	Grout Curtain; Part 3- GL 11 to 12	100%	07-Mar-14 A	14-Mar-14 A
01109.PDB3380A	Grout Curtain; Part 3- GL 13 to 14	100%	14-Mar-14 A	21-Mar-14 A
01109.PDB3370A	Grout Curtain; Part 2- GL 7 to 8	100%	14-Mar-14 A	21-Mar-14 A
01109.PDB3340A	Grout Curtain; Part 3- GL 12 to 13	100%	21-Mar-14 A	24-Mar-14 A
01109.PDB3330A	Grout Curtain; Part 2- GL 6 to 7	0%	26-Mar-14	31-Mar-14
01109.PDB3240A	Grout Curtain; Part 3- GL 10 to 11	0%	01-Apr-14	07-Apr-14
01109.PDB3400A	Grout Curtain; Part 2- GL 8 to 9	0%	08-Apr-14	12-Apr-14
01109.PDB3430A	Grout Curtain; Part 2- GL 9 to 10	0%	14-Apr-14	22-Apr-14
01109.PDB19360B	Grout Curtain completed on North of Station	0%		22-Apr-14
South of SUW				
01109.PDB19260B	Grout Curtain; Part 2- GL 5 to 6	0%	26-Mar-14	31-Mar-14
01109.PDB19210B	Grout Curtain; Part 3- GL 10 to 11	0%	26-Mar-14	31-Mar-14



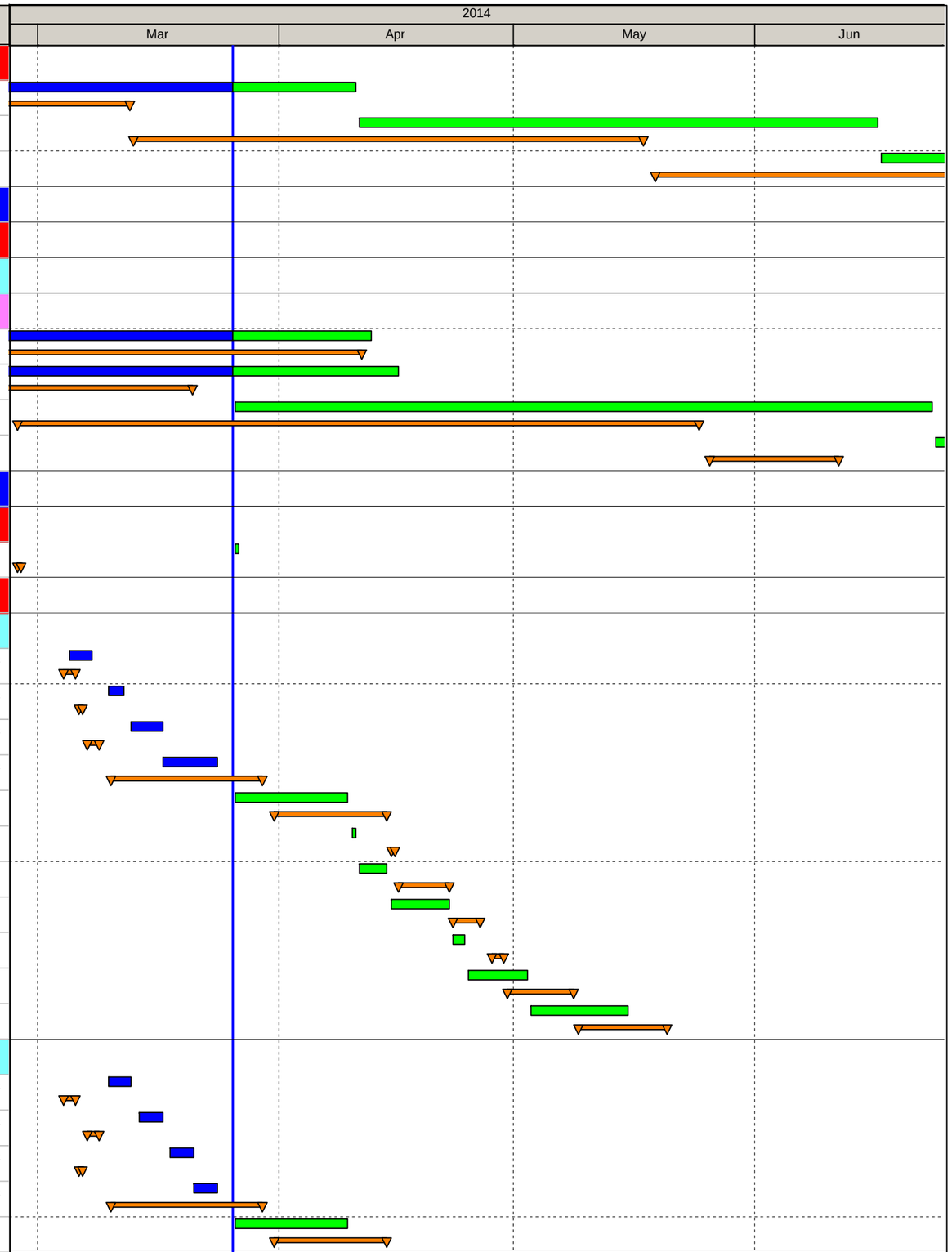
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDB19290B	Grout Curtain; Part 2- GL 6 to 7	0%	01-Apr-14	07-Apr-14
01109.PDB19280B	Grout Curtain; Part 3- GL 11 to 12	0%	01-Apr-14	07-Apr-14
01109.PDB19310B	Grout Curtain; Part 2- GL 7 to 8	0%	08-Apr-14	12-Apr-14
01109.PDB19320B	Grout Curtain; Part 2- GL 8 to 9	0%	14-Apr-14	22-Apr-14
01109.PDB19330B	Grout Curtain; Part 2- GL 9 to 10	0%	23-Apr-14	28-Apr-14
01109.PDB19350B	Grout Curtain completed on South of Station	0%		28-Apr-14
Install Observation Wells				
01109.PDB3520	Observation Wells; Part 1- GL 1 to 2	0%	29-Apr-14	05-May-14
01109.PDB3750	Observation Wells; Part 4- areas beyond GL 24	0%	29-Apr-14	05-May-14
01109.PDB3540	Observation Wells; Part 1- GL 2 to 3	0%	07-May-14	14-May-14
01109.PDB3550	Observation Wells; Part 1- GL 3 to 4	0%	15-May-14	20-May-14
01109.PDB3610	Observation Wells; Part 4- GL 19 to 20	0%	21-May-14	27-May-14
01109.PDB3560	Observation Wells; Part 2- GL 4 to 5	0%	21-May-14	28-May-14
01109.PDB3630	Observation Wells; Part 4- GL 20 to 21	0%	28-May-14	03-Jun-14
01109.PDB3590	Observation Wells; Part 3- GL 10 to 11	0%	29-May-14	04-Jun-14
01109.PDB3660	Observation Wells; Part 4- GL 21 to 22	0%	04-Jun-14	10-Jun-14
01109.PDB3620	Observation Wells; Part 3- GL 11 to 12	0%	05-Jun-14	10-Jun-14
01109.PDB3690	Observation Wells; Part 4- GL 22 to 23	0%	11-Jun-14	16-Jun-14
01109.PDB3640	Observation Wells; Part 2- GL 5 to 6	0%	11-Jun-14	16-Jun-14
01109.PDB3650	Observation Wells; Part 3- GL 12 to 13	0%	11-Jun-14	16-Jun-14
01109.PDB3720	Observation Wells; Part 4- GL 23 to 24	0%	17-Jun-14	21-Jun-14
01109.PDB3670	Observation Wells; Part 2- GL 6 to 7	0%	17-Jun-14	21-Jun-14
01109.PDB3680	Observation Wells; Part 3- GL 13 to 14	0%	17-Jun-14	21-Jun-14
01109.PDB3700	Observation Wells; Part 2- GL 7 to 8	0%	23-Jun-14	27-Jun-14
01109.PDB3710	Observation Wells; Part 3- GL 14 to 15	0%	23-Jun-14	27-Jun-14
Entrance C and Associated Adits				
Entrance C - Part 1- GL 7 to GL 14				
Entrance C- Part 1- ELS Works				
Entrance C - Part 1- Piling & Toe Grouting Works				
GL 7 to GL 12				
01109.PDB19310A	Pump Test (Incl. Set Up)	100%	01-Nov-13 A	08-Mar-14 A
GL12 to GL 14				
01109.PDB19290C	Toe grouting Works; GL C12 to C14; East Side	50%	25-Feb-14 A	26-Apr-14
01109.PDB19300C	Toe grouting Works; GL C14 to C12; West Side	50%	25-Feb-14 A	26-Apr-14



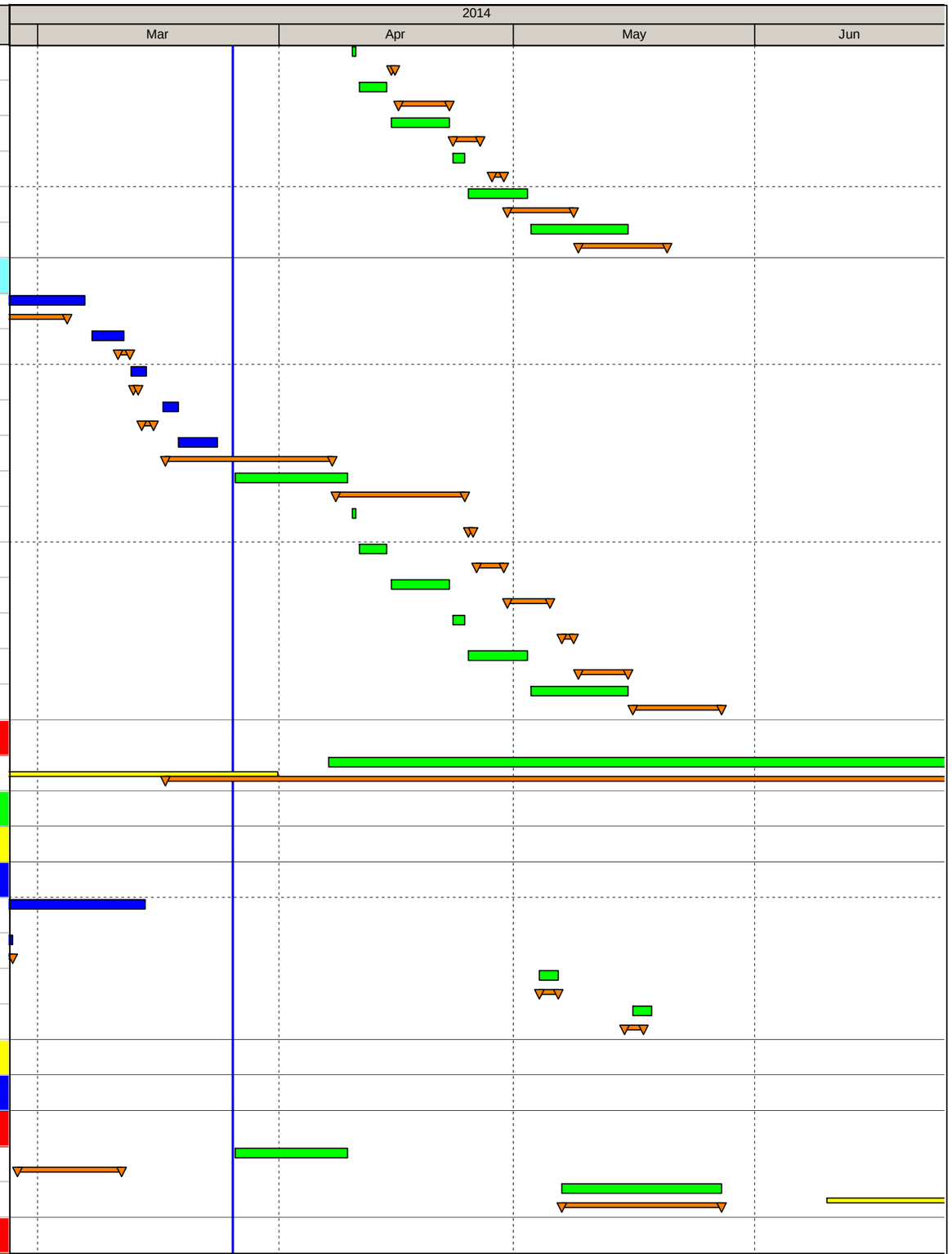
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDB14410A	Pre Bored H pile testing	0%	26-Mar-14	09-Apr-14
01109.PDB10410A	All Piling Works for Ent C & Adits complete	0%		09-Apr-14
01109.PDB14420A	Pump Test	0%	28-Apr-14	10-May-14
Entrance C - Part 1-Excavation Works				
01109.PDB10430	Excavation & Lateral Support Works; GL C14 to C12	0%	12-May-14	05-Jun-14
01109.PDB10460	ELS Works; GL C7 to C14; complete	0%		05-Jun-14
GL 7 to GL 12				
01109.PDB10440	Excavation & Lateral Support Works; GL C7 to C9	10%	21-Mar-14 A	17-Apr-14
01109.PDB10450	Excavation & Lateral Support Works; GL C9 to C12	0%	02-Apr-14	30-Apr-14
Entrance C - Part 1- Concrete Structure Works				
01109.PDB10510	Concrete Structure GL C12 to C11	0%	17-Apr-14	28-May-14
01109.PDB10520	Concrete Structure GL C11 to C10	0%	28-Apr-14	05-Jun-14
01109.PDB10530	Concrete Structure GL C10 to C9	0%	07-May-14	12-Jun-14
01109.PDB10540	Concrete Structure GL C9 to C8	0%	15-May-14	20-Jun-14
01109.PDB10550	Concrete Structure GL C8 to C7	0%	22-May-14	27-Jun-14
01109.PDB10470	Prepare area for concrete Works	0%	06-Jun-14	13-Jun-14
01109.PDB10490	Concrete Structure GL C14 to C13	0%	14-Jun-14	23-Jul-14
01109.PDB10500	Concrete Structure GL C13 to C12	0%	23-Jun-14	31-Jul-14
Entrance C - Part 2- GL 3 to GL 7				
Entrance C - Part 2- GL 3 to GL 7; Segment 1				
Entrance C- Part 2- Seg 1; ELS Works				
Entrance C - Part 2- Seg 1; Traffic & Utility Diversion				
01109.PDB10700	Utility relocation / diversion in Ent C Part 2; Segment 1	80%	16-Nov-13 A	26-Apr-14
Entrance C - Part 2- Seg 1; Sheet Piling & Toe Grouting Works				
01109.PDB10730	Sheet Piling & Toe grouting Works; GL C5 to C7; Segment 1; East Side	0%	28-Apr-14	31-May-14
01109.PDB10740	Sheet Piling & Toe grouting Works; GL C5 to C7; Segment 1; West Side	0%	03-Jun-14	05-Jul-14
Entrance B and Associated Adits				
Entrance B - Olympic Avenue and SUW playground Works				
Stage 1				
01109.PDB11800	Sheet piling & Toe grouting Works;GL B1 to B5 (2x24m sheetpiles)	50%	22-Feb-14 A	28-Apr-14
01109.PDB11790	Load test according to drawing number 1109/T/302/OAP/C19/201	0%	26-Mar-14	11-Apr-14
01109.PDB11810	Sheet piling & Toe grouting Works;GL B5 to B7 (South bound lane areas)(2x18m sheetpiles)	0%	29-Apr-14	24-May-14
01109.PDB11820	Pumping test	0%	26-May-14	09-Jun-14
01109.PDB11830	Excavate and Install struts & waling	0%	10-Jun-14	13-Aug-14



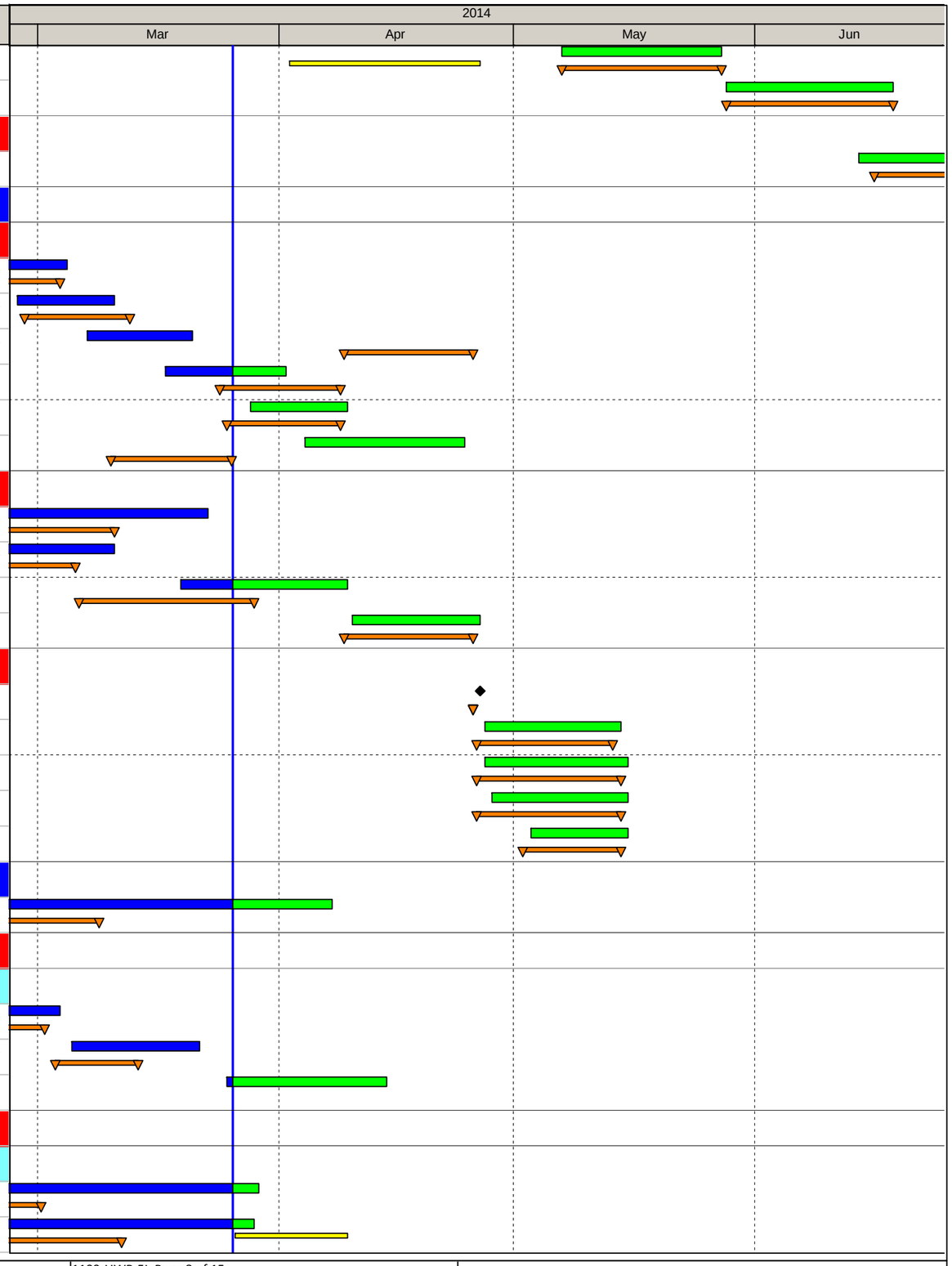
Activity ID	Activity Name	Physical % Complete	Start	Finish
Stage 2				
01109.PDB11970	Pumping test (incl. set up)	87%	07-Dec-13 A	10-Apr-14
01109.PDB11980	Excavate and Install struts & waling	0%	11-Apr-14	16-Jun-14
01109.PDB11990	Construct the Adit structure	0%	17-Jun-14	02-Aug-14
Enrtance B - Nam Kok Road Works - (Detailed Programme)				
Entrance B - Nam Kok Road Works (Portion 3)				
Nam Kok Road - TTMS - Stage 1 and 2				
TTMS - Stage 1 (Phase 1)				
01109.PDB14650A	Install 410mm dia pipe pile wall. 88nr (assume 3 piles/2 days). 1PR	88%	02-Aug-13 A	12-Apr-14
01109.PDB14690A	Install 7 nr King Posts - (Dwg no. 1109//T/SUW/SHJ/C06/805)	43%	17-Feb-14 A	16-Apr-14
01109.PDB19200A	Install grout curtain	0%	26-Mar-14	23-Jun-14
01109.PDB14660A	Excavate approx 1m below ground level (volume 152m3) (assume 60m3/day)	0%	24-Jun-14	11-Jul-14
Entrance B - Kowloon City Interchange				
Entrance B - Preparation Works				
01109.PDB12550	Implement the TTM Scheme at Kowloon City Interchange on drawing number 1109/T/SUW/SHJ/C21/018	0%	26-Mar-14*	26-Mar-14
Entrance B - Underpinning of KNEC Piers				
Pier P75				
01109.PDB13000	Excavation to waling beam level	100%	05-Mar-14 A	08-Mar-14 A
01109.PDB13010	Install waling beam	100%	10-Mar-14 A	12-Mar-14 A
01109.PDB13020	Excavation to final formation level	100%	13-Mar-14 A	17-Mar-14 A
01109.PDB13030	Construct pile cap	100%	17-Mar-14 A	24-Mar-14 A
01109.PDB13040	Install temporary steel support frame and jacks	0%	26-Mar-14	09-Apr-14
01109.PDB13050	Jack up viaduct	0%	10-Apr-14	10-Apr-14
01109.PDB13060	Breakout concrete from existing pile cap	0%	11-Apr-14	14-Apr-14
01109.PDB13070	Set up threaded end rebars to connect underpinning beam to pile cap	0%	15-Apr-14	22-Apr-14
01109.PDB13080	Stitch up and grout underpining beam and existing cap	0%	23-Apr-14	24-Apr-14
01109.PDB13090	Dismantle temporary steel frame	0%	25-Apr-14	02-May-14
01109.PDB13100	Backfill & remove codfferdam wall	0%	03-May-14	15-May-14
Pier P76				
01109.PDB13160	Excavation to waling beam level	100%	10-Mar-14 A	13-Mar-14 A
01109.PDB13180	Excavation to final formation level	100%	14-Mar-14 A	17-Mar-14 A
01109.PDB13170	Install waling beam	100%	18-Mar-14 A	21-Mar-14 A
01109.PDB13190	Construct pile cap	100%	21-Mar-14 A	24-Mar-14 A
01109.PDB13200	Install temporary steel support frame and jacks	0%	26-Mar-14	09-Apr-14



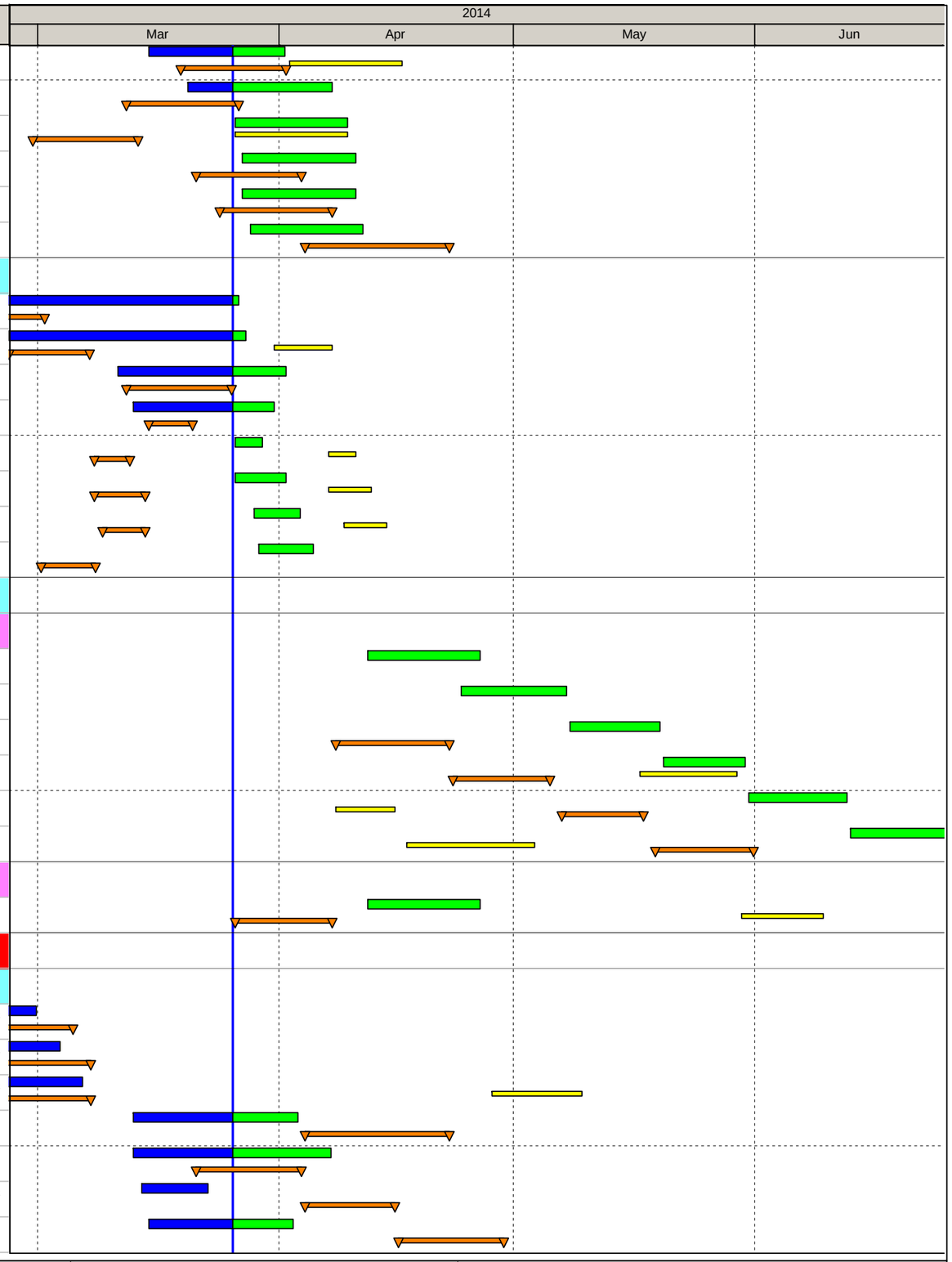
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDB13210	Jack up viaduct	0%	10-Apr-14	10-Apr-14
01109.PDB13220	Breakout concrete from existing pile cap	0%	11-Apr-14	14-Apr-14
01109.PDB13230	Set up threaded end rebars to connect underpinning beam to pile cap	0%	15-Apr-14	22-Apr-14
01109.PDB13240	Stitch up and grout underpining beam and existing cap	0%	23-Apr-14	24-Apr-14
01109.PDB13250	Dismantle temporary steel frame	0%	25-Apr-14	02-May-14
01109.PDB13260	Backfill & remove codfferdam wall	0%	03-May-14	15-May-14
Pier P74				
01109.PDB19450C	P74 - Pre-bored socket H- Piles 609 Dia P2	100%	19-Feb-14 A	07-Mar-14 A
01109.PDB12840	Excavation to waling beam level	100%	08-Mar-14 A	12-Mar-14 A
01109.PDB12850	Install waling beam	100%	13-Mar-14 A	15-Mar-14 A
01109.PDB12860	Excavation to final formation level	100%	17-Mar-14 A	19-Mar-14 A
01109.PDB12870	Construct pile cap	100%	19-Mar-14 A	24-Mar-14 A
01109.PDB12880	Install temporary steel support frame and jacks	0%	26-Mar-14	09-Apr-14
01109.PDB12890	Jack up viaduct	0%	10-Apr-14	10-Apr-14
01109.PDB12900	Breakout concrete from existing pile cap	0%	11-Apr-14	14-Apr-14
01109.PDB12910	Set up threaded end rebars to connect underpinning beam to pile cap	0%	15-Apr-14	22-Apr-14
01109.PDB12920	Stitch up and grout underpining beam and existing cap	0%	23-Apr-14	24-Apr-14
01109.PDB12930	Dismantle temporary steel frame	0%	25-Apr-14	02-May-14
01109.PDB12940	Backfill & remove codfferdam wall	0%	03-May-14	15-May-14
Entrance B - Pipe Piling & Toe Grouting Works				
01109.PDB12580	Pipe piling & Grout Curtain Works; GL B20 to B30 (2x120m pipe piles)	0%	07-Apr-14*	25-Jul-14
CC-C - TKW STATION, ENTRANCES AND ADITS				
Implementation of TTA at TKW				
Revised TTMS Schemes				
01109.PDC1714x30	Implement TTMs at Kiang Su St.	100%	14-Feb-14 A	14-Mar-14 A
01109.PDC1714x10	Stage 2 - Phase 1 - Wks Area in West (Excl W6)	100%	23-Feb-14 A	25-Feb-14 A
01109.PDC1714x	Stage 2 - Phase 2 - TTM for Partial Wks Area in W6 & E6	0%	04-May-14	06-May-14
01109.PDC1714x20	Stage 2 - Phase 3 - Full Wks Area in West (Incl W6)	0%	16-May-14	18-May-14
TKW Station				
Existing Utility Diversion Works				
Drainage and Sewerage				
01109.PDC1620	TKW-SD507/507P/508/509 - P42 - Support & divert pipelines	0%	26-Mar-14	09-Apr-14
01109.PDC1630	TKW-SD203 - at Ent B (P58) - New 375dia SD for exist 675dia SD	0%	07-May-14	27-May-14
Water Supply				



Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDC1750	TKW-SW501 - P60 - Existing 36" Salt Watermain - Temp support & monitor	0%	07-May-14	27-May-14
01109.PDC1780	TKW-FW201/201P - Ent B (P58) - Existing 450dia Fresh Water Main - Permanent Diversion	0%	28-May-14	18-Jun-14
Power Supply				
01109.PDC1920	TKW-CLP602 - P27 - New 132 kV supply - Install	0%	14-Jun-14	25-Jun-14
Diaphragm Wall Stage 2 Phase 1 TTMS (Area E6)				
Area E6 - BC Cutter Nr 1				
01109.PDC24970	E6 - Dwall works P74a	100%	18-Feb-14 A	04-Mar-14 A
01109.PDC24930	E6 - Dwall works P79	100%	26-Feb-14 A	10-Mar-14 A
01109.PDC24940	E6 - Dwall works P76	100%	07-Mar-14 A	20-Mar-14 A
01109.PDC24950	E6 - Dwall works P78	77%	17-Mar-14 A	01-Apr-14
01109.PDC24890	E6 - Dwall works P81	0%	28-Mar-14	09-Apr-14
01109.PDC24920	E6 - Dwall works P75	0%	04-Apr-14	24-Apr-14
Area E6 - BC Cutter Nr 5				
01109.PDC24840	E6 - Dwall works P83 (excav, steel cage, concrete)	100%	15-Feb-14 A	22-Mar-14 A
01109.PDC29215	E6 - P85 concrete hacking and cable diversion works	100%	24-Feb-14 A	10-Mar-14 A
01109.PDC24900	E6 - Dwall works P85	30%	19-Mar-14 A	09-Apr-14
01109.PDC24870	E6 - Dwall works P82	0%	10-Apr-14	26-Apr-14
Area E6 - Post Concrete Works				
01109.PDC10050	E6 - Dwall works to Area E6 Complete	0%		26-Apr-14
01109.PDC10040	E6 - Dwall testing	0%	27-Apr-14	14-May-14
01109.PDC29225	E6 - Road preparation works for TTM Stage 2 Phase 2	0%	27-Apr-14	15-May-14
01109.PDC23130	E6 - Dwall Toe grouting	0%	28-Apr-14	15-May-14
01109.PDC29195	E6 - Shear Pin	0%	03-May-14	15-May-14
Diaphragm Wall Stage 2 Phase 1 TTMS (W1-W3 + Ent D)				
01109.PDC29210A	W1 to W3 Portal Frame Installation	71%	27-Jan-14 A	07-Apr-14
Ent D				
Area E1 (Ent D) - BC Cutter No 2				
01109.PDC23980	E1 (Ent D) - Dwall works P139	100%	18-Feb-14 A	03-Mar-14 A
01109.PDC23910	E1 (Ent D) - Dwall works P140	100%	05-Mar-14 A	21-Mar-14 A
01109.PDC23880	E1 (Ent D) - Dwall works P141	7%	25-Mar-14 A	14-Apr-14
Area W1				
Area W1 - Advance Works				
01109.PDC10180	W1 - Trial Pits (P13-P21) / Trench	73%	27-Jan-14 A	29-Mar-14
01109.PDC10970	W1 - Trial Pits (P22-P26) / Trench	75%	24-Feb-14 A	28-Mar-14



Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDC10980	W1 - Remove decommissioned Water Pipes SW+FW502 (P22-P26)	60%	15-Mar-14 A	01-Apr-14
01109.PDC29215A	W1 - Jet Grouting (P16-P19) 27 holes - Additional Work	24%	20-Mar-14 A	07-Apr-14
01109.PDC10990	W1 - Temporary site provisions including utility works (P22-P26)	0%	26-Mar-14	09-Apr-14
01109.PDC10200	W1 - Remove decommissioned Water Pipes SW+FW502 (P13-P21)	0%	27-Mar-14	10-Apr-14
01109.PDC29216A	W1 - Excavation and construction of Guide walls (P22-P26)	0%	27-Mar-14	10-Apr-14
01109.PDC10190	W1 - Excavation and construction of Guide walls (P13-P21)	0%	28-Mar-14	11-Apr-14
Area W1 - Founding Level Predrill				
01109.PDC10210	W1 - Founding Level Predrill P14,15,16,17,18,19,20,21 (8nr) 3PR	80%	14-Feb-14 A	26-Mar-14
01109.PDC11010	W1 - Founding Level Predrill P22,23,24,25,26 (6nr) 2PR	71%	25-Feb-14 A	27-Mar-14
01109.PDC27570	W1 - Founding Level Predrill P22 & GI Report with W1 Area	50%	11-Mar-14 A	01-Apr-14
01109.PDC10290	W1 - P: 14,21,15,20,17,16,19,18 - GI Report & Confirmation of Founding Levels	13%	13-Mar-14 A	31-Mar-14
01109.PDC11020	W1 - Founding Level Predrill for X/Wall & Mini Piling (3nr) 1PR (P22-P26)	0%	26-Mar-14	29-Mar-14
01109.PDC11030	W1 - Final Founding Level verification (P22-P26)	0%	26-Mar-14	01-Apr-14
01109.PDC11060	W1 - P: 22,23,24,25,26 - GI Report & Confirmation of Founding Levels	0%	28-Mar-14	03-Apr-14
01109.1000A	W1 (MTW Rd) - Trial Pits & Predrill to P13	0%	29-Mar-14	05-Apr-14
Area W1 - DWall Construction				
BC Cutter No.2				
01109.PDC25140	W1 - Dwall works P19	0%	12-Apr-14	26-Apr-14
01109.PDC25080	W1 - Dwall works P14	0%	24-Apr-14	07-May-14
01109.PDC25150	W1 - Dwall works P18	0%	08-May-14	19-May-14
01109.PDC25630	W1 - Dwall works P25	0%	20-May-14	30-May-14
01109.PDC25600	W1 - Dwall works P22	0%	31-May-14	12-Jun-14
01109.PDC25610	W1 - Dwall works P26	0%	13-Jun-14	26-Jun-14
BC Cutter No.6				
01109.PDC25640	W1 - Dwall works P24	0%	12-Apr-14	26-Apr-14
Area W2				
Area W2 - Advance Works				
01109.PDC11630	W2 - Trial Pits (P27-P30)	100%	24-Feb-14 A	28-Feb-14 A
01109.PDC12280	W2 - Trial Pits (P31-P35)	100%	24-Feb-14 A	03-Mar-14 A
01109.PDC12990	W2 - Trial Pits (P36-P40)	100%	24-Feb-14 A	06-Mar-14 A
01109.PDC12290	W2 - Excavation and construction of Guide walls (P31-P35)	40%	13-Mar-14 A	03-Apr-14
01109.PDC12300	W2 - Remove decommissioned Water Pipes SW+FW502 (P31-P35)	20%	13-Mar-14 A	07-Apr-14
01109.PDC11650	W2 - Remove decommissioned Water Pipes SW+FW502 (P27-P30)	100%	14-Mar-14 A	22-Mar-14 A
01109.PDC11640	W2 - Excavation and construction of Guide walls (P27-P30)	25%	15-Mar-14 A	02-Apr-14



Samsung - Hsin Chong Joint Venture

MTR Corporation Limited

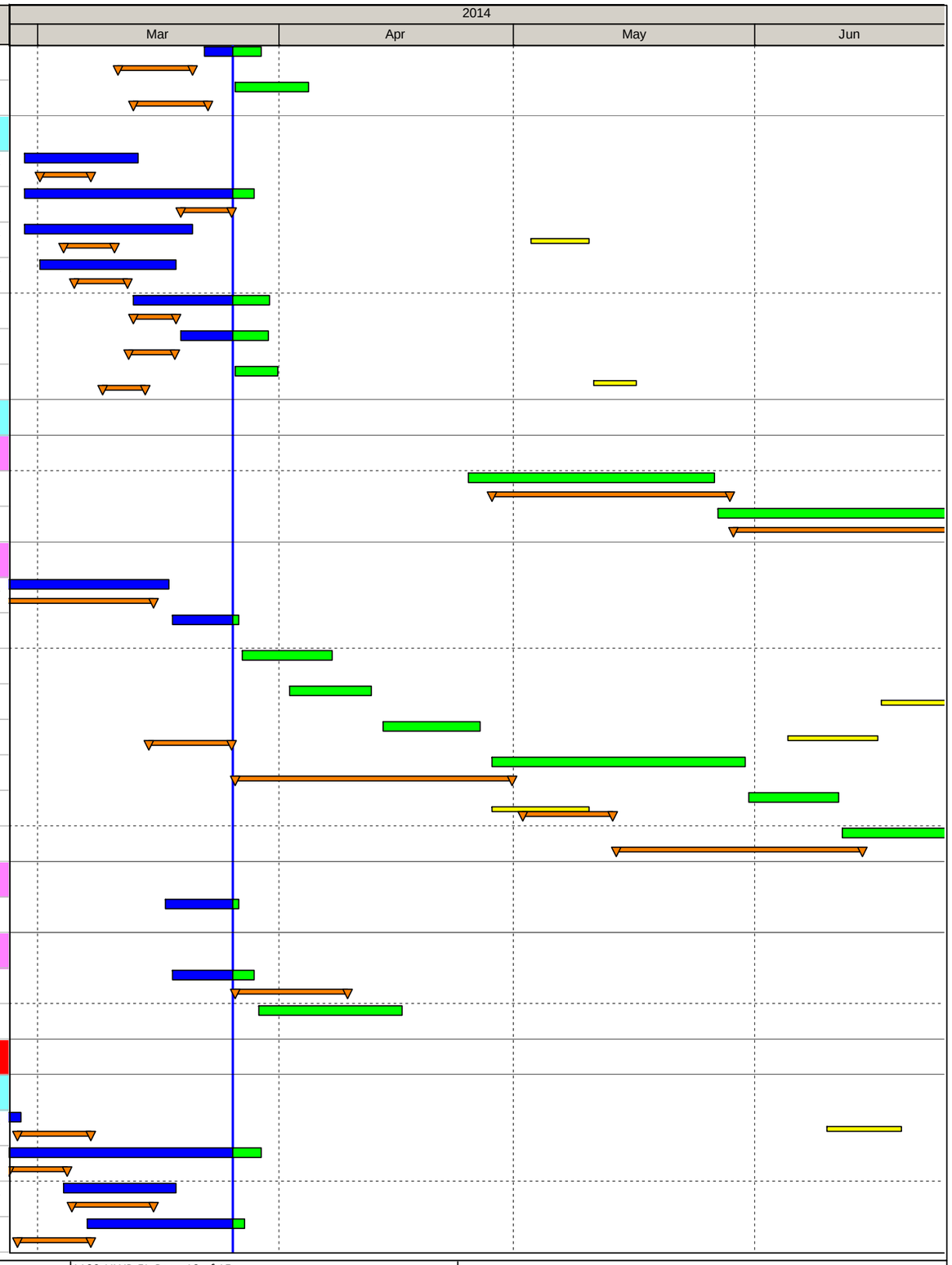
Shatin to Central Link Contract 1109

THREE MONTH ROLLING PROGRAMME - MAR 14 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP.

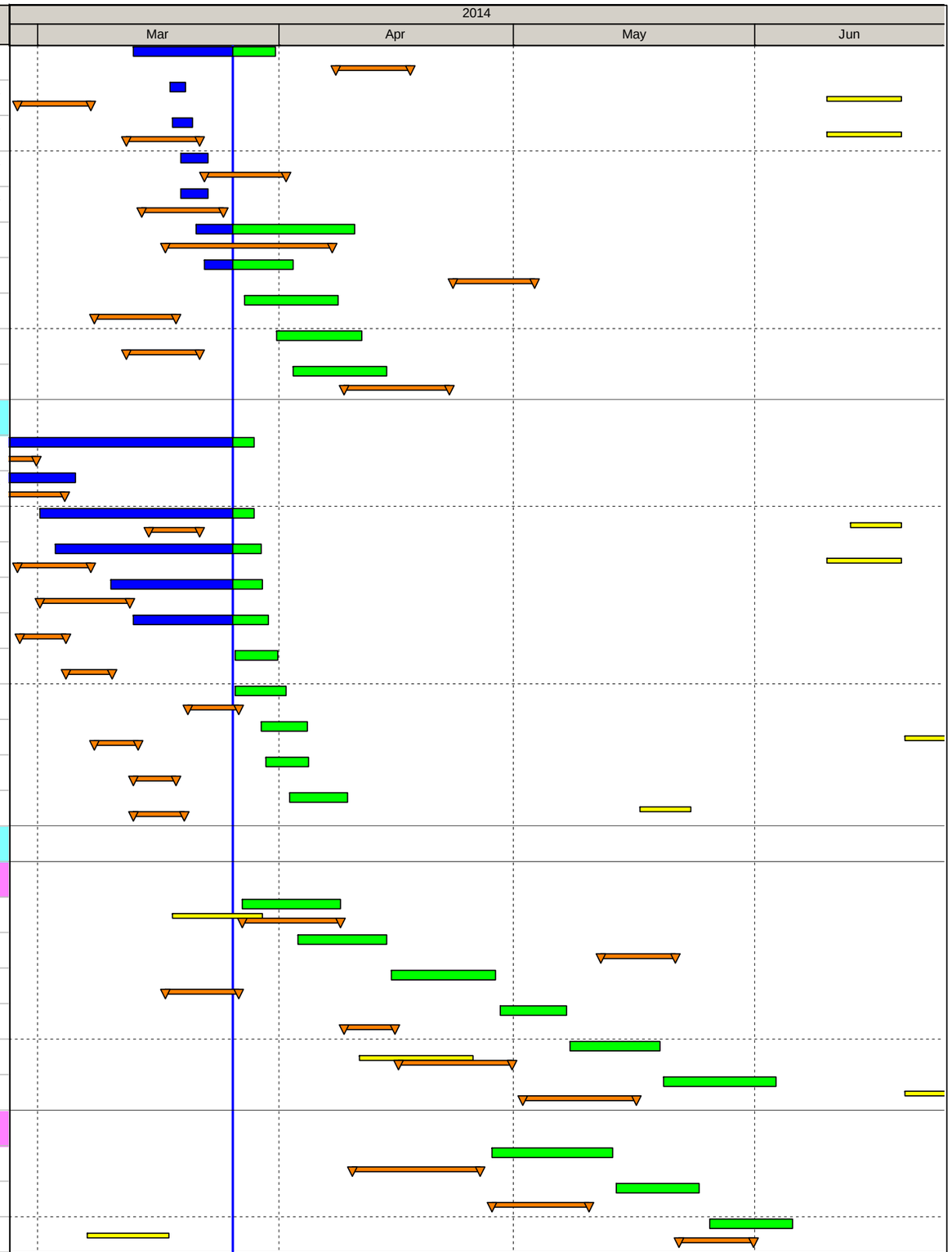
Printed:02-Apr-14

Actual Work
Remaining Work
Master Programme Rev.1
Last Month Update (Feb 2014)
Milestone
MP Rev.1 Milestone
Feb 2014 Milestone

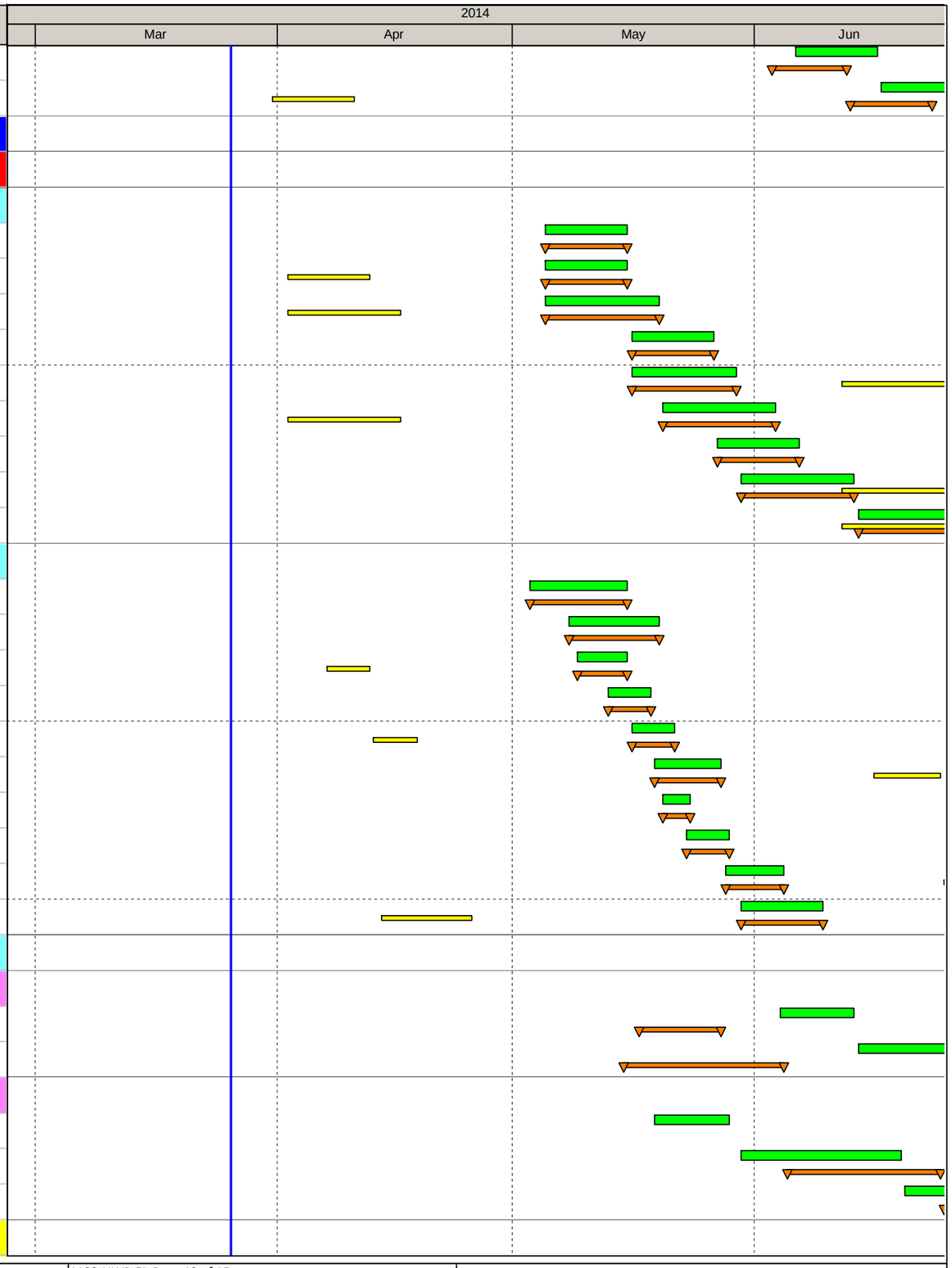
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDC13010	W2 - Remove decommissioned Water Pipes SW+FW502 (P36-P40)	60%	22-Mar-14 A	29-Mar-14
01109.PDC13000	W2 - Excavation and construction of Guide walls (P36-P40)	0%	26-Mar-14	04-Apr-14
Area W2 - Founding Level Predrill				
01109.PDC12310	W2 - Founding Level Predrill P31,32,33,34,35 (6nr) 2PR	100%	27-Feb-14 A	13-Mar-14 A
01109.PDC27580	W2 - Founding Level Predrill P36 - 38 & confirm of found lvl (1PR) (P36-P40)	50%	27-Feb-14 A	28-Mar-14
01109.PDC13020	W2 - Founding Level Predrill P36,37,38,39 (8nr) & Mini piles (3PR)	100%	27-Feb-14 A	20-Mar-14 A
01109.PDC11660	W2 - Founding Level Predrill P27,28,29,30 (6nr) 2PR	100%	01-Mar-14 A	18-Mar-14 A
01109.PDC12360	W2 - P: 31,32,33,34,35 - GI Report & Confirmation of Founding Levels	20%	13-Mar-14 A	30-Mar-14
01109.PDC11700	W2 - P: 27,28,29,30 - GI Report & Confirmation of Founding Levels	25%	19-Mar-14 A	30-Mar-14
01109.PDC13070	W2 - P: 36,37,38,39,40 - GI Report & Confirmation of Founding Levels	0%	26-Mar-14	31-Mar-14
Area W2 - DWall Construction				
BC Cutter No.1				
01109.PDC25280	W2 - Dwall works P31	0%	25-Apr-14	26-May-14
01109.PDC26140	W2 - Dwall works P29 (W3)	0%	27-May-14	25-Jun-14
BC Cutter No.3				
01109.PDC24911A	BC Cutter No.3 maintenance	100%	17-Feb-14 A	17-Mar-14 A
01109.PDC26120	W2 - Dwall works P30 (excav only)	71%	18-Mar-14 A	26-Mar-14
01109.PDC25290A	W2 - Dwall works P34 (excav, steel cage, conc)	0%	27-Mar-14	07-Apr-14
01109.PDC25750	W2 - Dwall works P39	0%	02-Apr-14	12-Apr-14
01109.PDC25760	W2 - Dwall works P37	0%	14-Apr-14	26-Apr-14
01109.PDC25310	W2 - Dwall works P33	0%	28-Apr-14	30-May-14
01109.PDC25740	W2 - Dwall works P36	0%	31-May-14	11-Jun-14
01109.PDC25300	W2 - Dwall works P32	0%	12-Jun-14	14-Jul-14
BC Cutter No.4				
01109.PDC25290	W2 - Dwall works P34 (excav)	90%	17-Mar-14 A	26-Mar-14
BC Cutter No.6				
01109.PDC25320A	Mobilize and Setting up of BC Cutter No.6 and Desander Set up	67%	18-Mar-14 A	28-Mar-14
01109.PDC26120A	W2 - Dwall works P30 (excav, steel cage, conc)	0%	29-Mar-14	16-Apr-14
Area W3				
Area W3 - Advance Works				
01109.PDC15630	W3 - Trial Pits (P54-P57)	100%	28-Jan-14 A	26-Feb-14 A
01109.PDC29223A	W3 - Jet Grouting (P43-P44) 15 holes - Additional Work	53%	25-Feb-14 A	29-Mar-14
01109.PDC29221A	W3 - Jet Grouting (P51-P54) 30 holes - Additional Work	100%	04-Mar-14 A	18-Mar-14 A
01109.PDC13700	W3 - Trial Pits (P42-P45)	83%	07-Mar-14 A	27-Mar-14



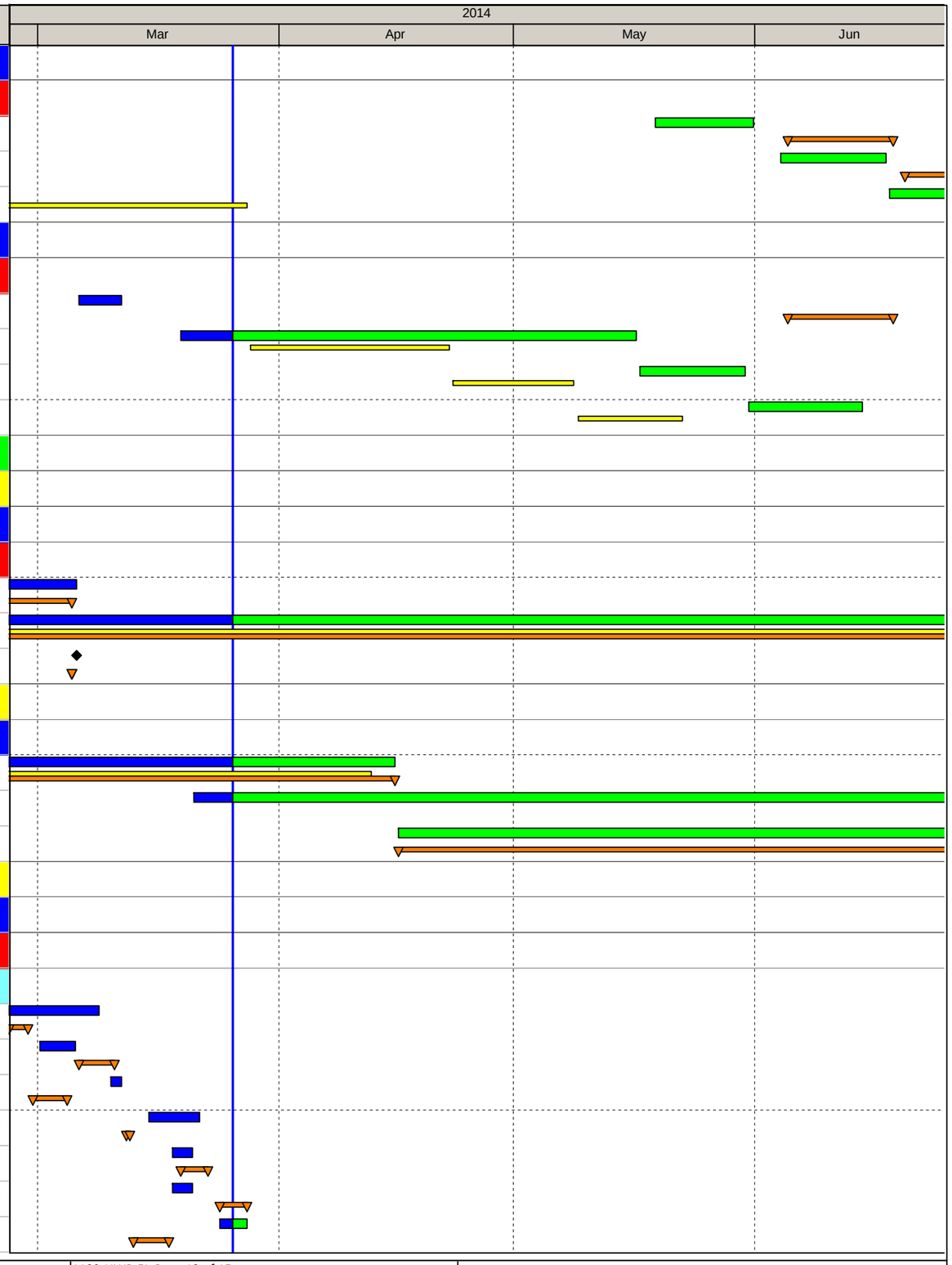
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDC14460	W3 - Remove decommissioned Water Pipes SW+FW502 (P46-P49)	50%	13-Mar-14 A	31-Mar-14
01109.PDC15650	W3 - Temporary site provisions including utility works (P54-P57)	100%	18-Mar-14 A	20-Mar-14 A
01109.PDC15640	W3 - Remove decommissioned Water Pipes SW+FW502 (P54-P57)	100%	18-Mar-14 A	20-Mar-14 A
01109.PDC15050	W3 - Remove decommissioned Water Pipes SW+FW502 (P50-P53)	100%	19-Mar-14 A	22-Mar-14 A
01109.PDC29225A	W3 - Excavation and construction of Guide walls (P54-P56)	100%	19-Mar-14 A	22-Mar-14 A
01109.PDC29220A	W3 - Jet Grouting (P45-P50) 44 holes - Additional Work	30%	21-Mar-14 A	10-Apr-14
01109.PDC15040	W3 - Excavation and construction of Guide walls (P50-P53)	25%	22-Mar-14 A	02-Apr-14
01109.PDC13720	W3 - Remove decommissioned Water Pipes SW+FW502 (P41-P45)	0%	27-Mar-14	08-Apr-14
01109.PDC13710	W3 - Excavation and construction of Guide walls (P41-P45)	0%	31-Mar-14	11-Apr-14
01109.PDC14450	W3 - Excavation and construction of Guide walls (P46-P49)	0%	02-Apr-14	14-Apr-14
Area W3 - Founding Level Predrill				
01109.PDC27590	W3 - Founding Level Predrill P50 & Founding Level confirmation	50%	06-Feb-14 A	28-Mar-14
01109.PDC14470	W3 - Founding Level Predrill P46,47,48,49 (6nr) & Mini Piles (3nr) (2PR)	100%	11-Feb-14 A	05-Mar-14 A
01109.PDC27640	W3 - Founding Level Predrill P54 1PR	50%	01-Mar-14 A	28-Mar-14
01109.PDC15660	W3 - Founding Level Predrill P55,56, 57 (7nr) & Mini Piles (4nr) 2PR	60%	03-Mar-14 A	29-Mar-14
01109.PDC13730	W3 - Founding Level Predrill P,42,43,44, (7nr) 2PR	60%	10-Mar-14 A	29-Mar-14
01109.PDC15100	W3 - P: 50,51,52,53 - GI Report & Confirmation of Founding Levels	25%	13-Mar-14 A	30-Mar-14
01109.PDC14510	W3 - P: 46,47,48,49 - GI Report & Confirmation of Founding Levels	0%	26-Mar-14	31-Mar-14
01109.PDC27620	W3 - Founding Level Predrill & establish founding level P45 1PR	0%	26-Mar-14	01-Apr-14
01109.PDC15710	W3 - P: 55,56,57 - GI Report & Confirmation of Founding Levels	0%	29-Mar-14	04-Apr-14
01109.PDC13780	W3 - P: ,42,43,44, - GI Report & Confirmation of Founding Levels	0%	30-Mar-14	04-Apr-14
01109.PDC27630	W3 - Founding Level Predrill & establish founding level P41 1PR	0%	02-Apr-14	09-Apr-14
Area W3 - DWall Construction				
BC Cutter No.4				
01109.PDC25890	W3 - Dwall works P53	0%	27-Mar-14	08-Apr-14
01109.PDC26210	W3 - Dwall works P45	0%	03-Apr-14	14-Apr-14
01109.PDC26390	W3 - Dwall works P56	0%	15-Apr-14	28-Apr-14
01109.PDC26380	W3 - Dwall works P55	0%	29-Apr-14	07-May-14
01109.PDC25910	W3 - Dwall works P52	0%	08-May-14	19-May-14
01109.PDC26360	W3 - Dwall works P54	0%	20-May-14	03-Jun-14
BC Cutter No.6				
01109.PDC25430	W3 - Dwall works P46	0%	28-Apr-14	13-May-14
01109.PDC25440	W3 - Dwall works P49	0%	14-May-14	24-May-14
01109.PDC25880	W3 - Dwall works P50	0%	26-May-14	05-Jun-14



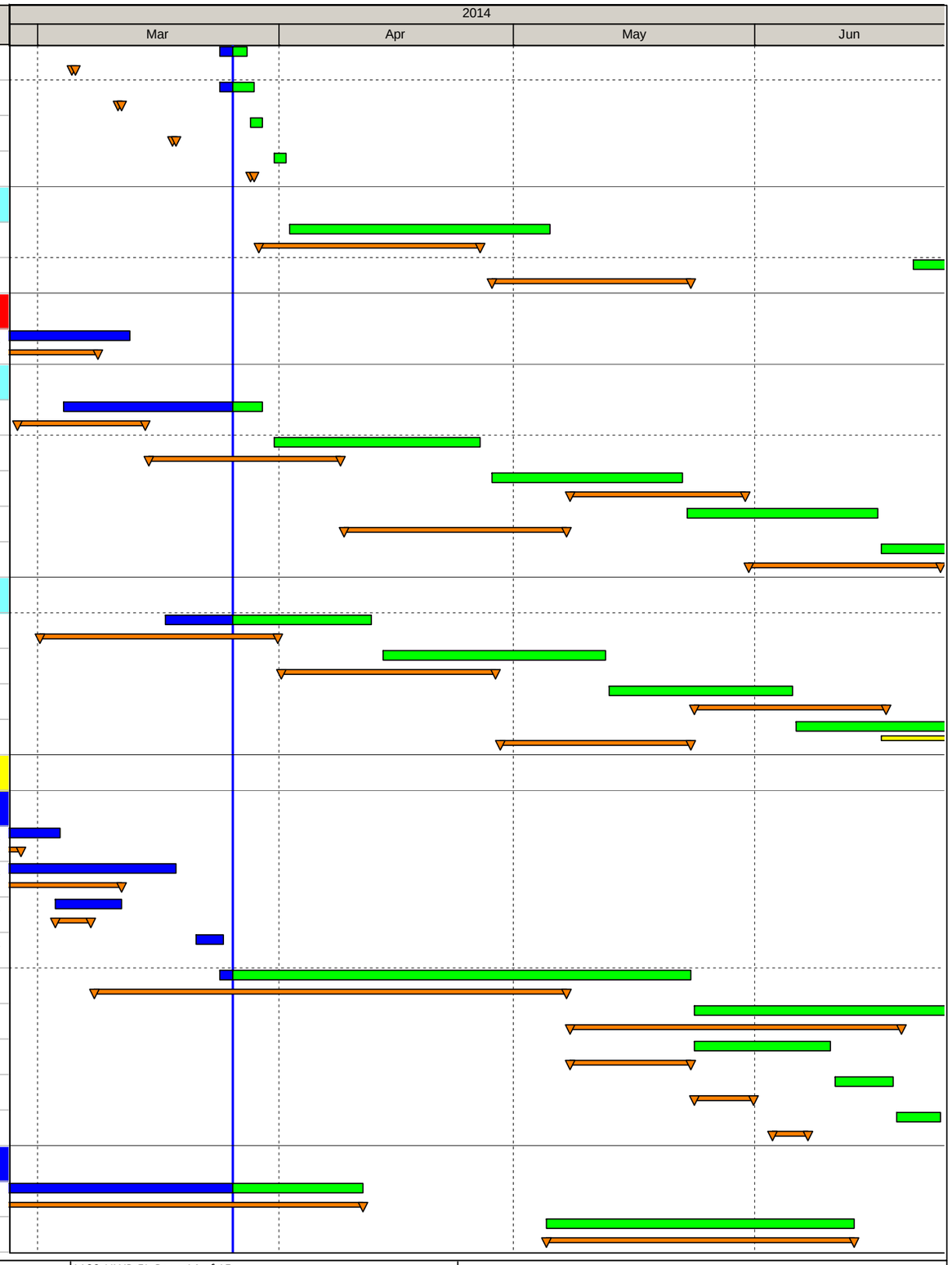
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDC26230	W3 - Dwall works P44	0%	06-Jun-14	16-Jun-14
01109.PDC25900	W3 - Dwall works P51	0%	17-Jun-14	26-Jun-14
Diaphragm Wall STAGE 2 Phase 2 (West Side + Ent D) TTMS				
Area W6				
Area W6 - Advance Works				
01109.PDC17370	W6 - Trial Pits (P68-P74)	0%	05-May-14	15-May-14
01109.PDC16370	W6 - Trial Pits (P57-P62)	0%	05-May-14	15-May-14
01109.PDC16390	W6 - Remove decommissioned Water Pipes SW+FW502 (P59-P62)	0%	05-May-14	19-May-14
01109.PDC17390	W6 - Remove decommissioned Water Pipes SW+FW502 (P68-P74)	0%	16-May-14	26-May-14
01109.PDC16780	W6 - Trial Pits (P63-P67)	0%	16-May-14	29-May-14
01109.PDC16380	W6 - Excavation and construction of Guide Walls (P57-P62)	0%	20-May-14	03-Jun-14
01109.PDC17380	W6 - Excavation and construction of Guide walls (P68-P74)	0%	27-May-14	06-Jun-14
01109.PDC16800	W6 - Remove decommissioned Water Pipes SW+FW502 (P63-P67)	0%	30-May-14	13-Jun-14
01109.PDC16790	W6 - Excavation and construction of Guide walls (P63-P67)	0%	14-Jun-14	27-Jun-14
Area W6 - Founding Level Predrill				
01109.PDC27650	W6 - Founding Level Predrill P68,68A 2PR	0%	03-May-14	15-May-14
01109.PDC17400	W6 - Founding Level Predrill P69,70,71,72,73,74 (10nr) 2PR	0%	08-May-14	19-May-14
01109.PDC16400	W6 - Founding Level Predrill P57,58,59,60,61,62 & Mini PIles (3nr) 2PR	0%	09-May-14	15-May-14
01109.PDC17480	W6 - GI Report & Confirmation of Founding Levels (P68-P74)	0%	13-May-14	18-May-14
01109.PDC16450	W6 - P: 57,58,59,60,61,62 - GI Report & Confirmation of Founding Levels	0%	16-May-14	21-May-14
01109.PDC16810	W6 - Founding Level Predrill P64,65,66,67 (8nr) 2PR	0%	19-May-14	27-May-14
01109.PDC17410	W6 - Founding Level Predrill for X/Wall & Mini Piles (2nr) 2PR (P68-P74)	0%	20-May-14	23-May-14
01109.PDC16860	W6 - P: 63,64,65,66,67 - GI Report & Confirmation of Founding Levels	0%	23-May-14	28-May-14
01109.PDC16820	W6 - Founding Level Predrill for X/Wall & Mini PIles (4nr) 2PR (P63-P67)	0%	28-May-14	04-Jun-14
01109.PDC27600	W6 - Founding Level Predrill P63 1PR	0%	30-May-14	09-Jun-14
Area W6 - DWall Construction				
BC Cutter No. 4				
01109.PDC26400	W6 - Dwall works P58	0%	04-Jun-14	13-Jun-14
01109.PDC26020	W6 - Dwall works P67	0%	14-Jun-14	04-Jul-14
BC Cutter No. 5				
01109.PDC26370	W6 - Dwall works P57	0%	19-May-14	28-May-14
01109.PDC26540	W6 - Dwall works P71	0%	30-May-14	19-Jun-14
01109.PDC26530	W6 - Dwall works P68A	0%	20-Jun-14	28-Jun-14
Entrance A & Vent Shaft A				



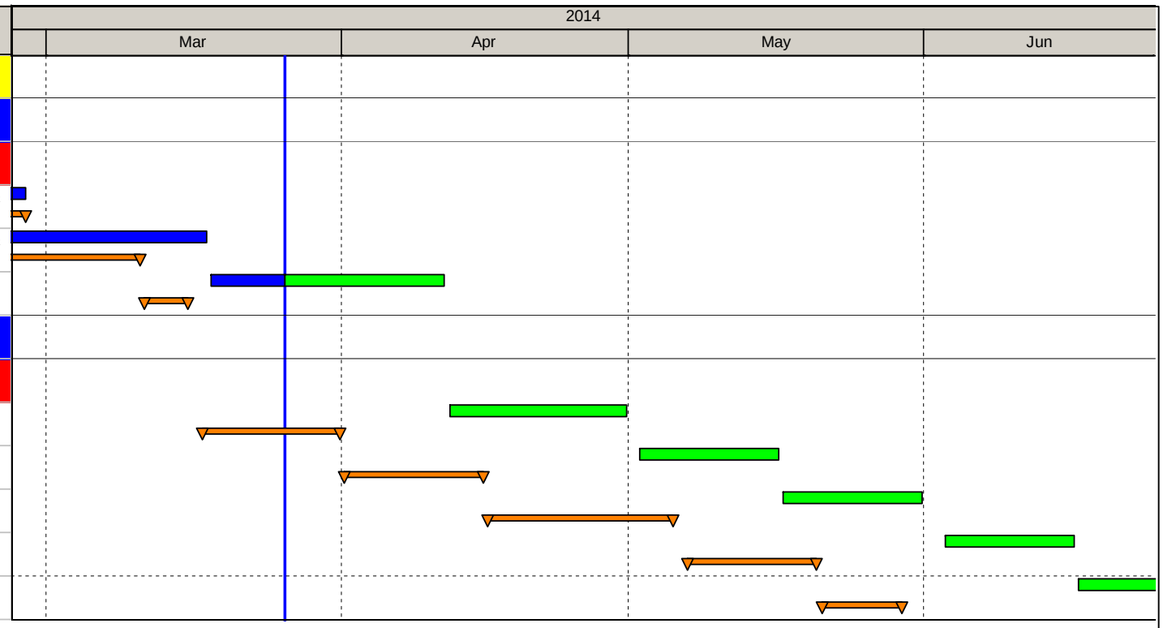
Activity ID	Activity Name	Physical % Complete	Start	Finish
Vent Shaft A				
Foundation				
01109.PDC27310	Vent Shaft A - Trial Pits	0%	19-May-14	31-May-14
01109.PDC27290	Vent Shaft A - Founding Level predrill & verify founding levels	0%	04-Jun-14	17-Jun-14
01109.PDC27320	Vent Shaft A - Install Pipe Piles clockwise from next to P97 to P102 (79nr 2d/pile 1PR)	0%	18-Jun-14	05-Jan-15
Entrance A				
Foundation				
01109.PDC27530	Ent A - Trial Pits	100%	06-Mar-14 A	11-Mar-14 A
01109.PDC27350	Ent A - Sheet piling	12%	19-Mar-14 A	16-May-14
01109.PDC27360	Ent A - Curtain Grouting	0%	17-May-14	30-May-14
01109.PDC22600	Ent A - Pumping test	0%	31-May-14	14-Jun-14
CC-D - BORED TUNNELS FROM SUW STATION TO HOM STATION				
Procurement of Specialised Construction Machinery				
Procurement of Specialised Construction Machinery				
Off-site				
01109.PDD1040	TBM Down track SUW to HOM - TBM Manufacture	100%	09-Jan-13 A	06-Mar-14 A
01109.PDD1050	TBM Up track SUW to HOM - TBM Manufacture	65%	30-Aug-13 A	31-Jul-14
01109.PDD1070	TBM Down track SUW to HOM - TBM Deliver	100%	06-Mar-14 A	
Specialised Construction Machinery Site Assembly and Related Establishment				
Specialised Construction Machinery Site Assembly and Related Establishment				
01109.PDD1100	STP - Assembly On-site	80%	20-Jan-14 A	15-Apr-14
01109.PDD1140	SUW - Grout behind Bored Pile Wall	5%	21-Mar-14 A	28-Jun-14
01109.PDD1100A	STP - Testing On-site	0%	16-Apr-14	04-Jul-14
Underpining of EKW Pier 15 and Foundation Removal				
TTA Stage 1: Phase 3				
Underpinning works				
ELS Construction				
01109.PDD4010	ELS for 2nd Ring Beam	100%	25-Feb-14 A	08-Mar-14 A
01109.PDD4100	Construction 1/2 RB2A	100%	01-Mar-14 A	05-Mar-14 A
01109.PDD4040	Constuction RB2D	100%	10-Mar-14 A	11-Mar-14 A
01109.PDD4060	ELS for 2nd Ring Beam	100%	15-Mar-14 A	21-Mar-14 A
01109.PDD4090	Construction RB2B	100%	18-Mar-14 A	20-Mar-14 A
01109.PDD4340	Construction 1/2 RB2A	100%	18-Mar-14 A	20-Mar-14 A
01109.PDD4020	Constuction RB2C	50%	24-Mar-14 A	27-Mar-14



Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDD4050	75mm Blinding Layer at RB2D	20%	24-Mar-14 A	27-Mar-14
01109.PDD4080	75mm Blinding Layer at 1/2 RB2A	40%	24-Mar-14 A	28-Mar-14
01109.PDD4030	75mm Blinding Layer at RB2C	0%	28-Mar-14	29-Mar-14
01109.PDD4110	75mm Blinding Layer at 1/2 RB2A and RB2B	0%	31-Mar-14	01-Apr-14
Cap Construction				
01109.PDD4120	Construction new Cap 1	0%	02-Apr-14	05-May-14
01109.PDD4180	Construction new Cap 2	0%	21-Jun-14	16-Jul-14
Bored Pile Removal				
01109.PDD2580A	Jet Grouting for Pile Removal (Stage 1)	100%	03-Jan-14 A	12-Mar-14 A
Group 1 (Machine 1)				
01109.PDD2581A	Mobilization and Set up Machine 1	73%	04-Mar-14 A	29-Mar-14
01109.PDD2660	Existing Bored Pile B02 - 1.0m dia - Remove bored pile in way of tunnel	0%	31-Mar-14	26-Apr-14
01109.PDD2680	Existing Bored Pile B03 - 1.0m dia - Remove bored pile in way of tunnel	0%	28-Apr-14	22-May-14
01109.PDD2640	Existing Bored Pile B01 - 1.0m dia - Remove bored pile in way of tunnel	0%	23-May-14	16-Jun-14
01109.PDD2700	Existing Bored Pile B04 - 1.0m dia - Remove bored pile in way of tunnel	0%	17-Jun-14	10-Jul-14
Group 2 (Machine 2)				
01109.PDD2589A	Mobilization and Set up Machine 2	42%	17-Mar-14 A	12-Apr-14
01109.PDD2590	Existing Bored Pile B16 - 1.0m dia - Remove bored pile in way of tunnel	0%	14-Apr-14	12-May-14
01109.PDD2610	Existing Bored Pile B15 - 1.0m dia - Remove bored pile in way of tunnel	0%	13-May-14	05-Jun-14
01109.PDD2580	Existing Bored Pile B17 - 1.0m dia - Remove bored pile in way of tunnel	0%	06-Jun-14	28-Jun-14
Chatham Road North				
Ground Treatment between TKW and Shansi Street				
01109.PDD3966A	Site investigation/ excavation for removal of watermain in Zone A & B	100%	07-Dec-13 A	03-Mar-14 A
01109.PDD3964A	Removal of watermain and backfill	100%	21-Feb-14 A	18-Mar-14 A
01109.PDD2850A	Mobilization and setting up of equipments	100%	03-Mar-14 A	11-Mar-14 A
01109.PDD2855A	Fencing Installation	100%	21-Mar-14 A	24-Mar-14 A
01109.PDD2852A	Ground Treatment Work in Zone A (182 holes)	1%	24-Mar-14 A	23-May-14
01109.PDD2853A	Ground Treatment Work in Zone B (143 holes)	0%	24-May-14	07-Jul-14
01109.PDD3963A	Decking for pedestrian crossing and shift crossing from Zone A to Zone C	0%	24-May-14	10-Jun-14
01109.PDD3962A	Site investigation works in Zone C	0%	11-Jun-14	18-Jun-14
01109.PDD3960B40	Removal of watermain and backfill	0%	19-Jun-14	24-Jun-14
EEP				
01109.PDD2851A	Site Investigation and Preparation works (Zone A+B)	88%	19-Nov-13 A	11-Apr-14
01109.PDD2854A	Site Investigation and Preparation works (Zone C)	0%	05-May-14	13-Jun-14



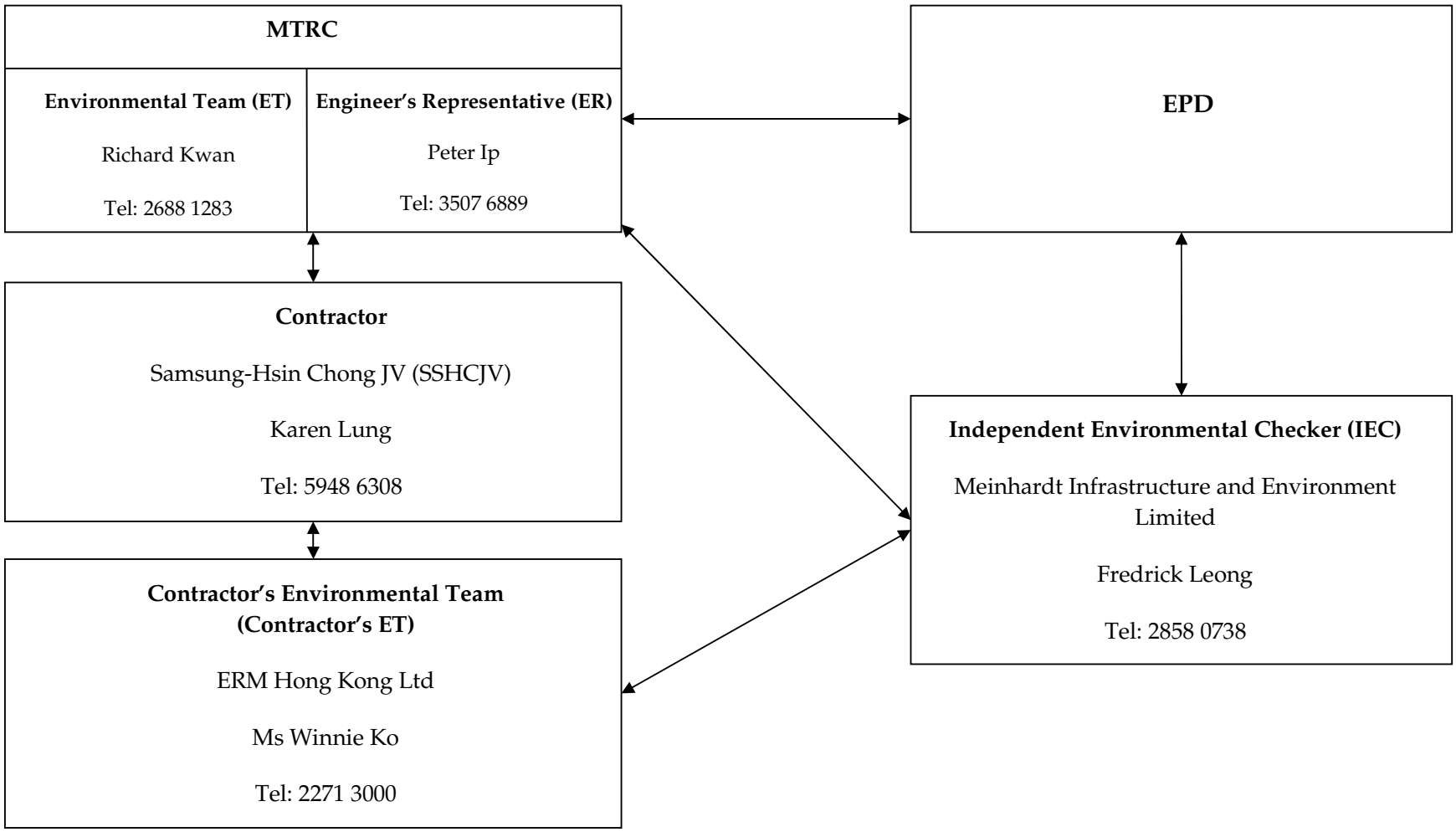
Activity ID	Activity Name	Physical % Complete	Start	Finish
To Kwa Wan Ancillary Building				
Site Preparation				
Demolition & Site Clearance				
01109.PDD2910A	TKA - Testing, existing watermain removal and new watermain connection	100%	28-Nov-13 A	26-Feb-14 A
01109.PDD2882A	TKA - Demolition and site clearance (1109.W9b)	100%	03-Jan-14 A	17-Mar-14 A
01109.PDD2883A	TKA - Site Preparation	33%	18-Mar-14 A	11-Apr-14
Excavation and Foundation				
Stage 1				
01109.PDD2970	Pipe piling #1 to 5 up to 23m deep 4d/pile 1PR	0%	12-Apr-14	30-Apr-14
01109.PDD3030	Pipe piling #6 to 10 up to 23m deep 4d/pile 1PR	0%	02-May-14	16-May-14
01109.PDD3040	Pipe Piling #11 to 15 up to 23m deep 4d/pile 1PR	0%	17-May-14	31-May-14
01109.PDD2980	Pipe Piling #16 to 20 up to 23m deep 4d/pile 1PR	0%	03-Jun-14	16-Jun-14
01109.PDD2990	Pipe Piling #21 to 23 up to 23m deep 4d/pile 1PR	0%	17-Jun-14	25-Jun-14



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
NMS-CA-7
NMS-CA-8
NMS-CA-9
NMS-CA-10
TKW
MTW
NGA TSIN WAI ROAD
SAU CHUK YUEN RD
COLLEGE RD
PRINCE EDWARD RD WEST
ARGYLE ST
MA TAU CHUNG ROAD
OLYMPIC AVENUE
TAM KUNG RD
PAK TAI STREET
KOWLOON CITY ROAD
SUNG WONG TOI ROAD
LUNG TO ST
FUNG YI ST
LUK MING ST
MOK CHEONG STREET
PAU CHUNG STREET
MA TAU KOK ROAD
YIN ON ST
TSUN FAT ST
HOK LING ST
Cattle Depot Artist Village
Gas Works
EMSD Kowloon Workshops
SAN SHAN ROAD
To Kwa Wan Recreation Ground
SAN MA TAU STREET
SHEUNG HEUNG ROAD
HA HEUNG ROAD
CHEUNG NING STREET
TO KWA WAN ROAD
MEI KING STREET
MEI KWONG ST
KWEI CHOW STREET
WAI KING STREET
LONG YUET ST
Cargo Handling Area
YUK YAT STREET
LOK SHAN ROAD
KING WAN ST
SHUN FUNG ST
Hoi Sham Park
CHI KIANG STREET
NGAN HON ST
WING KWONG ST
SUNG ON STREET
BAILEY STREET
HOK YUEN STREET EAST

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

N

Meters
0 100 200 400

Annex D1

Location of Regular Construction Noise Monitoring Stations

File: T:\GIS\CONTRACT\0171181\Mxd\0171181_Airborne_Noise_Monitoring_Stations_Annex.mxd
Date: 07-Nov-2012

Environmental Resources Management

ERM

DMS-6

TKW

DMS-7

DMS-8

MTW

DMS-9

DMS-10

N

Meters

0 100 200 400

Key

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

Note: 24-hour averaged dust monitoring has been suspended at DMS-9 No.26 Kowloon City Road since March 2014 due to denied access by the occupant of the premise

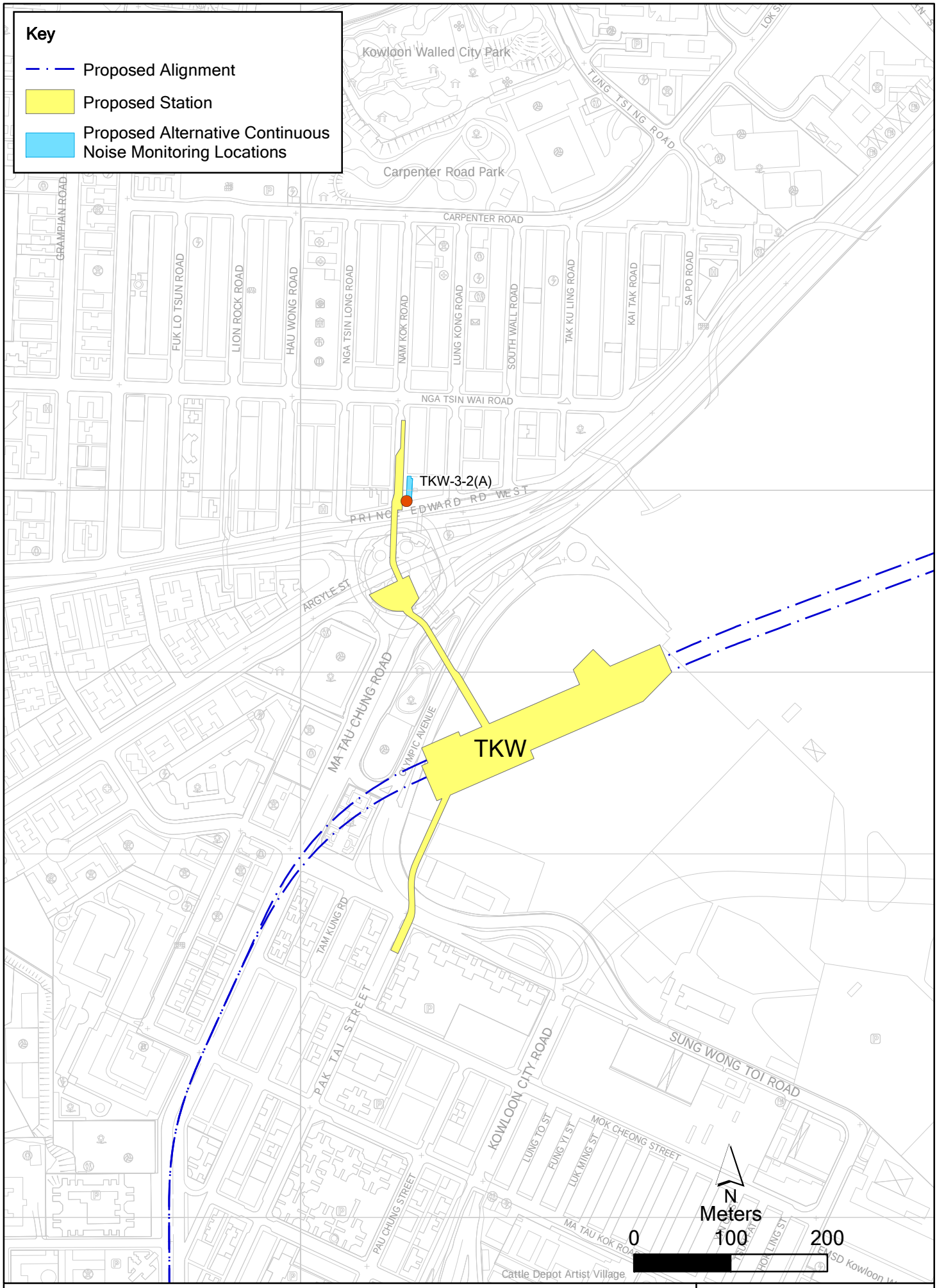
Annex D2

Location of Dust Monitoring Stations

File: T:\GIS\CONTRACT\0171181\Mxd\0171181_Dust_Monitoring_Station_Annex.mxd
Date: 2/4/2014

Environmental Resources Management

ERM



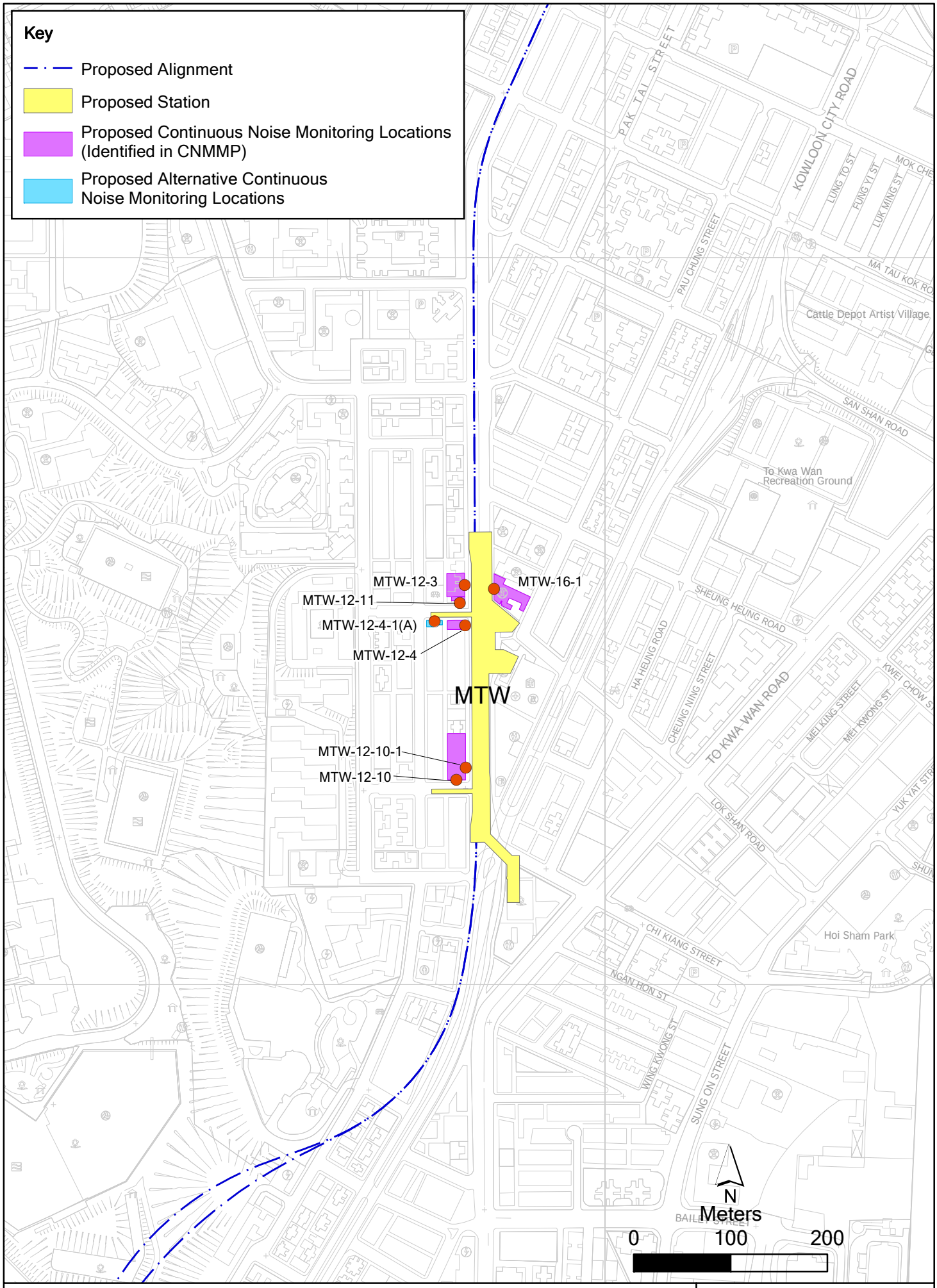
Annex D3

Proposed Continuous Noise Monitoring Locations

Name: 171181_Annex_Continuous_Noise_Monitoring_Locations_TKW.mxd
Date: 10-Oct-12

Environmental Resources Management

ERM



Annex D4

Proposed Continuous Noise Monitoring Locations

File: T:\GIS\CONTRACT\0171181\Mxd\0171181_Continuous_Noise_Monitoring_Locations_MTW_v2.mxd
Date: 31/1/2013

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
Construction Air Quality and Regular Noise Monitoring Schedule

DMS-6 & NMS-CA-6
Monitoring Month : March 2014

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

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

DMS-7 & NMS-CA-7
Monitoring Month : March 2014

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

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

DMS-8 & NMS-CA-8
Monitoring Month : March 2014

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

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

DMS-9 & NMS-CA-9
Monitoring Month : March 2014

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

Note: 24-hour averaged dust monitoring has been suspended at DMS-9 No. 26 Kowloon City Road since March 2014 due to denied access by the occupant of the premise.

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

DMS-10 & NMS-CA-10
Monitoring Month : March 2014

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

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

DMS-6 & NMS-CA-6
Monitoring Month : April 2014

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

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

DMS-7 & NMS-CA-7
Monitoring Month : April 2014

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

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

DMS-8 & NMS-CA-8
Monitoring Month : April 2014

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

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

DMS-9 & NMS-CA-9
Monitoring Month : April 2014

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

Note: 24-hour averaged dust monitoring has been suspended at DMS-9 No. 26 Kowloon City Road since March 2014 due to denied access by the occupant of the premise.

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

DMS-10 & NMS-CA-10
Monitoring Month : April 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Apr	02-Apr	03-Apr	04-Apr	05-Apr
				24-hr TSP Monitoring Noise Monitoring		
06-Apr	07-Apr	08-Apr	09-Apr	10-Apr	11-Apr	12-Apr
		.	24-hr TSP Monitoring Noise Monitoring			
13-Apr	14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr
		24-hr TSP Monitoring Noise Monitoring		24-hr TSP Monitoring		
20-Apr	21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr
		24-hr TSP Monitoring Noise Monitoring				
27-Apr	28-Apr	29-Apr	30-Apr			
	24-hr TSP Monitoring Noise 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. 2323)	6 September 2013	6 March 2014
DMS-6	Katherine Building	TE-5170 (S/N 0107)	CM-AIR-43 (Orifice I.D. 2323)	6 March 2014	6 September 2014
DMS-7	Parc 22	TE-5170 (S/N 3574)	CM-AIR-43 (Orifice I.D. 2323)	6 September 2013	6 March 2014
DMS-7	Parc 22	TE-5170 (S/N 3574)	CM-AIR-43 (Orifice I.D. 2323)	6 March 2014	6 September 2014
DMS-8	SHK Good Shepherd Primary School	TE-5170 (S/N 3572)	CM-AIR-43 (Orifice I.D. 2323)	6 September 2013	6 March 2014
DMS-8	SHK Good Shepherd Primary School	TE-5170 (S/N 3572)	CM-AIR-43 (Orifice I.D. 2323)	6 March 2014	6 September 2014
DMS-9[(a)]	No. 26 Kowloon City Road	TE-5170 (S/N 0814)	CM-AIR-43 (Orifice I.D. 2323)	6 September 2013	6 March 2014
DMS-10	Chat Ma Mansion	TE-5170 (S/N 3573)	CM-AIR-43 (Orifice I.D. 2323)	6 September 2013	6 March 2014
DMS-10	Chat Ma Mansion	TE-5170 (S/N 3573)	CM-AIR-43 (Orifice I.D. 2323)	6 March 2014	6 September 2014

Note

(a) 24-hour averaged dust monitoring has been suspended since March 2014 at DMS-9 No. 26 Kowloon City Road due to denied access by the occupant of the premise. Since no monitoring was carried out during the reporting month, the HVS TE-5170 (S/N 0814) was not used; therefore further calibration for this equipment in March was not conducted.

Noise Monitoring Equipment

Monitoring Station ID	Monitoring Equipment	Model & Serial No.	Last Calibration Date	Next Calibration Date
NMS-CA-6, NMS-CA-7, NMS-CA-8, NMS-CA-9 and NMS-CA-10	Calibrator	Rion NC-73 (S/N 10997142)	12 July 2013	12 July 2014
	Sound Level Meter	Rion NL-18 (S/N 00360030)	12 July 2013	12 July 2014

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-6(Katherine Building)
Calibrated by	:	K.T.Ho
Date	:	06/09/2013

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1013
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	12.6	3.554	1.713	53	53.1
2	13 holes	9.6	3.102	1.497	46	46.1
3	10 holes	7.3	2.705	1.307	39	39.0
4	7 holes	4.5	2.124	1.029	30	30.0
5	5 holes	3.0	1.734	0.843	24	24.0

Sampler Calibration Relationship

Slope(m):33.432 Intercept(b): -4.393 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 09/09/2013

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-6(Katherine Building)
Calibrated by	:	K.T.Ho
Date	:	06/03/2014

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2421
Service Date	:	27 Jan 2014
Slope (m)	:	2.06238
Intercept (b)	:	-0.02415
Correlation Coefficient(r)	:	0.99994

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1017
Ta(K)	:	289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.7	3.627	1.752	54	54.94
2	13 holes	9.7	3.169	1.530	47	47.82
3	10 holes	7.5	2.786	1.344	40	40.70
4	7 holes	4.6	2.182	1.051	30	30.52
5	5 holes	2.9	1.733	0.832	22	22.38

Sampler Calibration Relationship (Linear Regression)

Slope(m):35.532 Intercept(b): -6.991 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 10/03/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-7(Parc 22)
Calibrated by	:	P.F.Yeung
Date	:	06/09/2013

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1013
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	12.0	3.458	1.667	62	61.9
2	13 holes	9.2	3.028	1.462	54	53.9
3	10 holes	6.9	2.622	1.268	48	47.9
4	7 holes	4.2	2.046	0.992	39	38.9
5	5 holes	2.1	1.447	0.705	30	29.9

Sampler Calibration Relationship

Slope(m):32.873 Intercept(b): 6.455 Correlation Coefficient(r): 0.9993

Checked by: Magnum Fan Date: 09/09/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-7(Parc 22)
Calibrated by	:	P.F.Yeung
Date	:	06/03/2014

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2421
Service Date	:	27 Jan 2014
Slope (m)	:	2.06238
Intercept (b)	:	-0.02415
Correlation Coefficient(r)	:	0.99994

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1017
Ta(K)	:	289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.5	3.597	1.738	62	63.08
2	13 holes	9.7	3.169	1.530	55	55.96
3	10 holes	7.7	2.823	1.362	48	48.84
4	7 holes	4.8	2.229	1.074	38	38.66
5	5 holes	3.0	1.762	0.847	28	28.49

Sampler Calibration Relationship (Linear Regression)

Slope(m):38.609 Intercept(b): -3.584 Correlation Coefficient(r): 0.9990

Checked by: Magnum Fan Date: 10/03/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-8(SHK Good Shepherd Primary School)
Calibrated by	:	P.F.Yeung
Date	:	06/09/2013

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1013
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.8	3.429	1.654	60	59.9
2	13 holes	9.4	3.061	1.477	53	52.9
3	10 holes	7.1	2.660	1.2887	46	45.9
4	7 holes	4.5	2.118	1.026	37	36.9
5	5 holes	2.8	1.671	0.812	28	27.9

Sampler Calibration Relationship

Slope(m): 37.412 Intercept(b): -2.079 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 09/09/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-8(SKH Good Shepherd Primary School)
Calibrated by	:	P.F.Yeung
Date	:	06/03/2014

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2421
Service Date	:	27 Jan 2014
Slope (m)	:	2.06238
Intercept (b)	:	-0.02415
Correlation Coefficient(r)	:	0.99994

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1017
Ta(K)	:	289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.4	3.583	1.731	63	64.10
2	13 holes	9.7	3.169	1.530	56	56.98
3	10 holes	7.6	2.805	1.353	49	49.86
4	7 holes	5.0	2.275	1.096	38	38.66
5	5 holes	3.0	1.762	0.847	28	28.49

Sampler Calibration Relationship (Linear Regression)

Slope(m):40.716 Intercept(b): -5.786 Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan Date: 10/03/2014

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-9(No. 26 Kowloon City Road)
Calibrated by	:	P.F.Yeung
Date	:	06/09/2013

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1013
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	12.3	3.501	1.688	66	65.9
2	13 holes	9.5	3.077	1.485	56	55.9
3	10 holes	7.0	2.641	1.277	47	46.9
4	7 holes	4.2	2.046	0.992	36	35.9
5	5 holes	2.7	1.640	0.798	27	26.9

Sampler Calibration Relationship

Slope(m):42.945 Intercept(b): -7.271 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan Date: 09/09/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-10(Chat Ma Mansion)
Calibrated by	:	P.F.Yeung
Date	:	06/09/2013

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2323
Service Date	:	26 Dec 2012
Slope (m)	:	2.09107
Intercept (b)	:	-0.02838
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1013
Ta(K)	:	299

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.2	3.341	1.611	58	57.9
2	13 holes	9.0	2.995	1.446	52	51.9
3	10 holes	7.0	2.641	1.277	46	45.9
4	7 holes	4.5	2.118	1.026	37	36.9
5	5 holes	2.8	1.671	0.812	28	27.9

Sampler Calibration Relationship

Slope(m):37.167 Intercept(b): -1.759 Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan Date: 09/09/2013

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-10(Chat Ma Mansion)
Calibrated by	:	P.F.Yeung
Date	:	06/03/2014

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2421
Service Date	:	27 Jan 2014
Slope (m)	:	2.06238
Intercept (b)	:	-0.02415
Correlation Coefficient(r)	:	0.99994

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1017
Ta(K)	:	289

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.8	3.495	1.689	62	63.08
2	13 holes	9.6	3.152	1.522	54	54.94
3	10 holes	7.5	2.786	1.344	47	47.82
4	7 holes	4.9	2.252	1.085	36	36.63
5	5 holes	2.1	1.474	0.707	20	20.35

Sampler Calibration Relationship (Linear Regression)

Slope(m):43.166 Intercept(b): -10.234 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan Date: 10/03/14

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 - Jan 27, 2014 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 2421 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	1.4360	3.2	2.00
2	NA	NA	1.00	1.0120	6.4	4.00
3	NA	NA	1.00	0.9090	7.9	5.00
4	NA	NA	1.00	0.8650	8.8	5.50
5	NA	NA	1.00	0.7140	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0052	0.7000	1.4209		0.9957	0.6934	0.8814
1.0010	0.9891	2.0095		0.9915	0.9798	1.2464
0.9989	1.0989	2.2467		0.9894	1.0885	1.3936
0.9977	1.1535	2.3564		0.9883	1.1426	1.4616
0.9925	1.3901	2.8419		0.9831	1.3769	1.7627
Qstd slope (m) =		2.06238		Qa slope (m) =		1.29142
intercept (b) =		-0.02415		intercept (b) =		-0.01498
coefficient (r) =		0.99994		coefficient (r) =		0.99994
x 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. : C134307
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC13-1709)

Description / 儀器名稱 : Sound Level Calibrator
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-73
Serial No. / 編號 : 10997142
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
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 : 12 July 2013

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within 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
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee

Certified By 核證 : K M Wu

Date of Issue 簽發日期 : 15 July 2013

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

Certificate of Calibration
校正證書

Certificate No. : C134307
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	C133632
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C120886

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.7	± 0.5	± 0.2

5.2 Frequency Accuracy

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

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

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

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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. : C134309
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC13-1709)

Description / 儀器名稱	:	Precision Integrating Sound Level Meter
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-18
Serial No. / 編號	:	00360030
Supplied By / 委託者	:	Envirotech Services Co. Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, 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 : 12 July 2013

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within 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
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee

Certified By 核證 : K M Wu

Date of Issue 簽發日期 : 15 July 2013

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

Certificate of Calibration
校正證書

Certificate No. : C134309
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 from 6.1.2 to 6.4.

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

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C130019
CL281	Multifunction Acoustic Calibrator	DC130171

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 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	A	Fast	94.00	1	* 93.1	± 0.7

* Out of Mfr's Spec.

6.1.1.2 After Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	A	Fast	94.00	1	94.1	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
60 - 120	LA	A	Fast	94.00	1	94.2 (Ref.)
				104.00		104.2
				114.00		114.2

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

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6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	A	Fast	94.00	1	94.1	Ref.
			Slow			94.1	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

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

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 110	LA	A	Fast	94.00	31.5 Hz	54.4	-39.4 ± 1.5
					63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.7	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.0
					4 kHz	95.1	+1.0 ± 1.0
					8 kHz	93.0	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)

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

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6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 110	LC	C	Fast	94.00	31.5 Hz	91.0	-3.0 ± 1.5
					63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.1	0.0 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.3	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
50 - 110	LAeq	A	10 sec.	4	1	1/10	110	100	100.0	± 0.5
						$1/10^2$		90	90.0	± 0.5
			60 sec.			$1/10^3$		80	79.5	± 1.0
			5 min.			$1/10^4$		70	69.7	± 1.0

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

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

- Uncertainties of Applied Value :

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

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

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

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 Noise for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>Construction Runoffs and Site Drainage</u> • At the start of the site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the Contractor prior to the commencement of construction. • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to	To minimise water quality impact from construction site runoffs and general construction activities	Contractor	All construction sites where practicable	Construction stage	√

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

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

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

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

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

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

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

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

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

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

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

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

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

Annex I - 1

Regular Noise Monitoring Results

Annex I-1 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-14	11:15	11:45	Cloudy	64.9	76.1	-(b)	-	Traffic noise	17	0.5	NL-18 00360030	NC-73 10997142
11-Mar-14	11:28	11:58	Cloudy	63.7	76.1	-(b)	-	Traffic noise	15	0.5	NL-18 00360030	NC-73 10997142
17-Mar-14	11:15	11:45	Cloudy	63.8	76.1	-(b)	-	Traffic noise	21	0.5	NL-18 00360030	NC-73 10997142
28-Mar-14	10:30	11:00	Cloudy	64.1	76.1	-(b)	-	Traffic noise	22	0.5	NL-18 00360030	NC-73 10997142

Station NMS-CA-7 Skytower Tower 2

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L_{Aeq}(30 min)	Baseline (dB(A)), L_{Aeq}(30 min)	Corrected LAeq(dBA) [(a)]	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
05-Mar-14	10:15	10:45	Cloudy	67.4	70.0	-(b)	-	Traffic noise	17	0.5	NL-18 00360030	NC-73 10997142
11-Mar-14	10:35	11:05	Cloudy	67.2	70.0	-(b)	-	Traffic noise	15	0.5	NL-18 00360030	NC-73 10997142
17-Mar-14	10:18	10:48	Cloudy	67.0	70.0	-(b)	-	Traffic noise	21	0.5	NL-18 00360030	NC-73 10997142
28-Mar-14	9:28	9:58	Cloudy	67.6	70.0	-(b)	-	Traffic noise	22	0.5	NL-18 00360030	NC-73 10997142

Station NMS-CA-8 SKH Good Shepherd Primary School

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L_{Aeq}(30 min)	Baseline (dB(A)), L_{Aeq}(30 min)	Corrected LAeq(dBA) [(a)]	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
05-Mar-14	8:40	9:10	Cloudy	75.1	75.4	-(b)	Crane Operation	Traffic noise	17	0.5	NL-18 00360030	NC-73 10997142
11-Mar-14	8:40	9:10	Cloudy	75.5	75.4	59.1	Crane Operation	Traffic noise	15	0.8	NL-18 00360030	NC-73 10997142
17-Mar-14	8:40	9:10	Cloudy	75.0	75.4	-(b)	Crane Operation	Traffic noise	21	0.5	NL-18 00360030	NC-73 10997142
28-Mar-14	7:45	8:15	Cloudy	75.3	75.4	-(b)	Crane Operation	Traffic noise	22	0.5	NL-18 00360030	NC-73 10997142

Station NMS-CA-9 Kong Yiu Mansion

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L_{Aeq}(30 min)	Baseline (dB(A)), L_{Aeq}(30 min)	Corrected LAeq(dBA) [a]	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
05-Mar-14	8:00	8:30	Cloudy	72.4	69.2	69.6	Breaker Operation	Traffic noise	17	0.5	NL-18 00360030	NC-73 10997142
11-Mar-14	8:00	8:30	Cloudy	71.7	69.2	68.1	-	Traffic noise	15	1.5	NL-18 00360030	NC-73 10997142
17-Mar-14	8:00	8:30	Cloudy	72.5	69.2	69.8	Site Investigation	Traffic noise	21	0.5	NL-18 00360030	NC-73 10997142
28-Mar-14	7:00	7:30	Cloudy	73.4	69.2	71.3	Crane Operation	Traffic noise	22	0.5	NL-18 00360030	NC-73 10997142

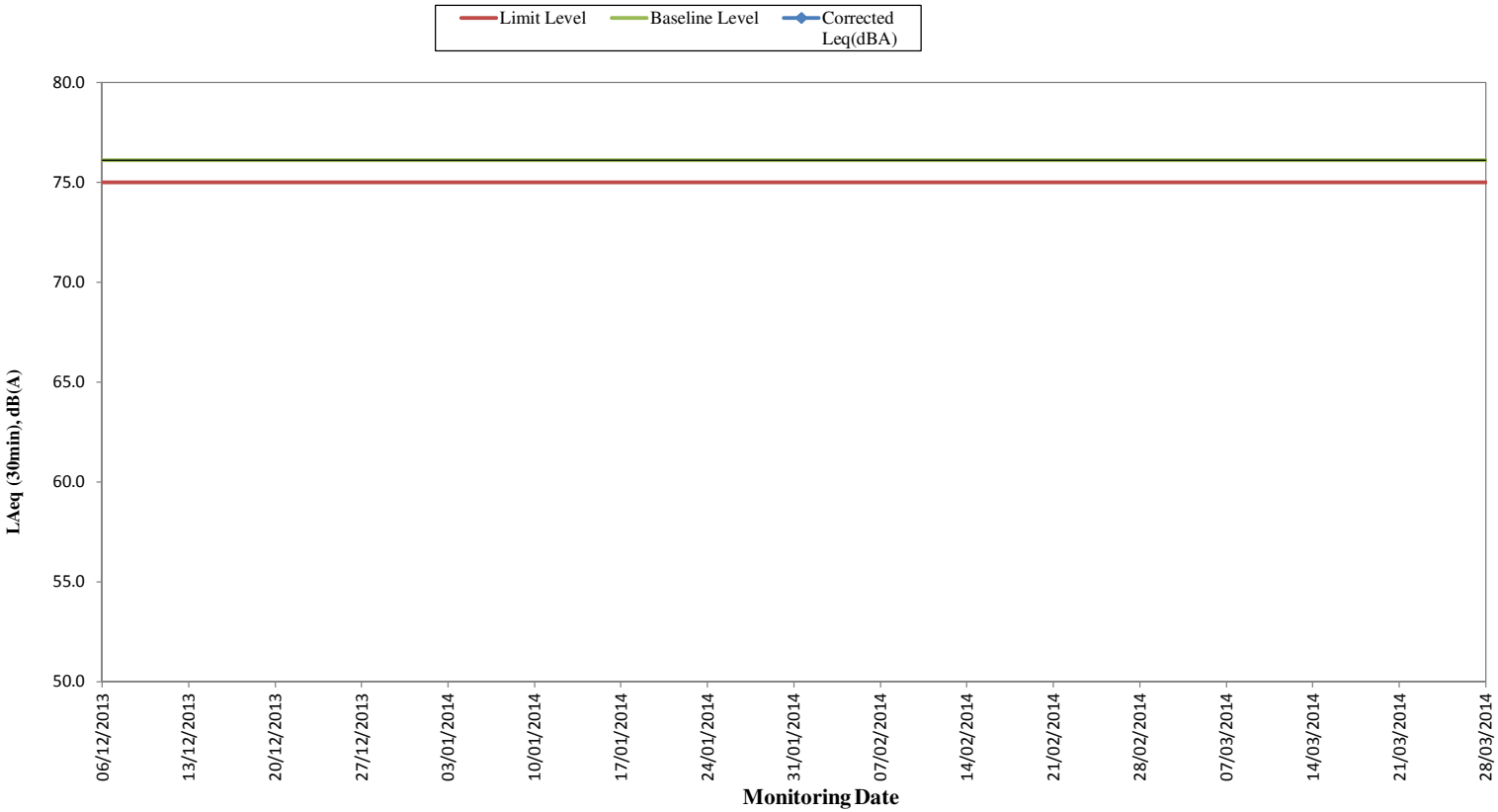
Station NMS-CA-10 Chat Ma Mansion

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L_{Aeq}(30 min)[c]	Baseline (dB(A)), L_{Aeq}(30 min)	Corrected LAeq(dBA) [a]	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
05-Mar-14	9:21	9:51	Cloudy	76.7	76.6	60.3	Breaker Operation and Backhole	Traffic noise	17	0.5	NL-18 00360030	NC-73 10997142
11-Mar-14	9:25	9:55	Cloudy`	76.2	76.6	-(b)	Backhole	Traffic noise	15	0.5	NL-18 00360030	NC-73 10997142
17-Mar-14	9:22	9:52	Cloudy	76.7	76.6	60.3	Backhole	Traffic noise	21	0.5	NL-18 00360030	NC-73 10997142
28-Mar-14	8:28	8:58	Cloudy	76.4	76.6	-(b)	Backhole and crane operation	Traffic noise	22	0.5	NL-18 00360030	NC-73 10997142

Remarks:

(a) The Measured LAeq is corrected against the corresponding Baseline Level.
(b) No correction was made as the measured noise levels were equal to or below the baseline noise levels.
(c) The noise monitoring results of the measurements carried out at NMS-CA-8 and NMS-CA-10 on 5, 11, 17 and 28 March 2014 are higher than the daytime construction noise criterion. However, the results are not considered as exceedances as they are below the limit level after deducting the baseline noise level.

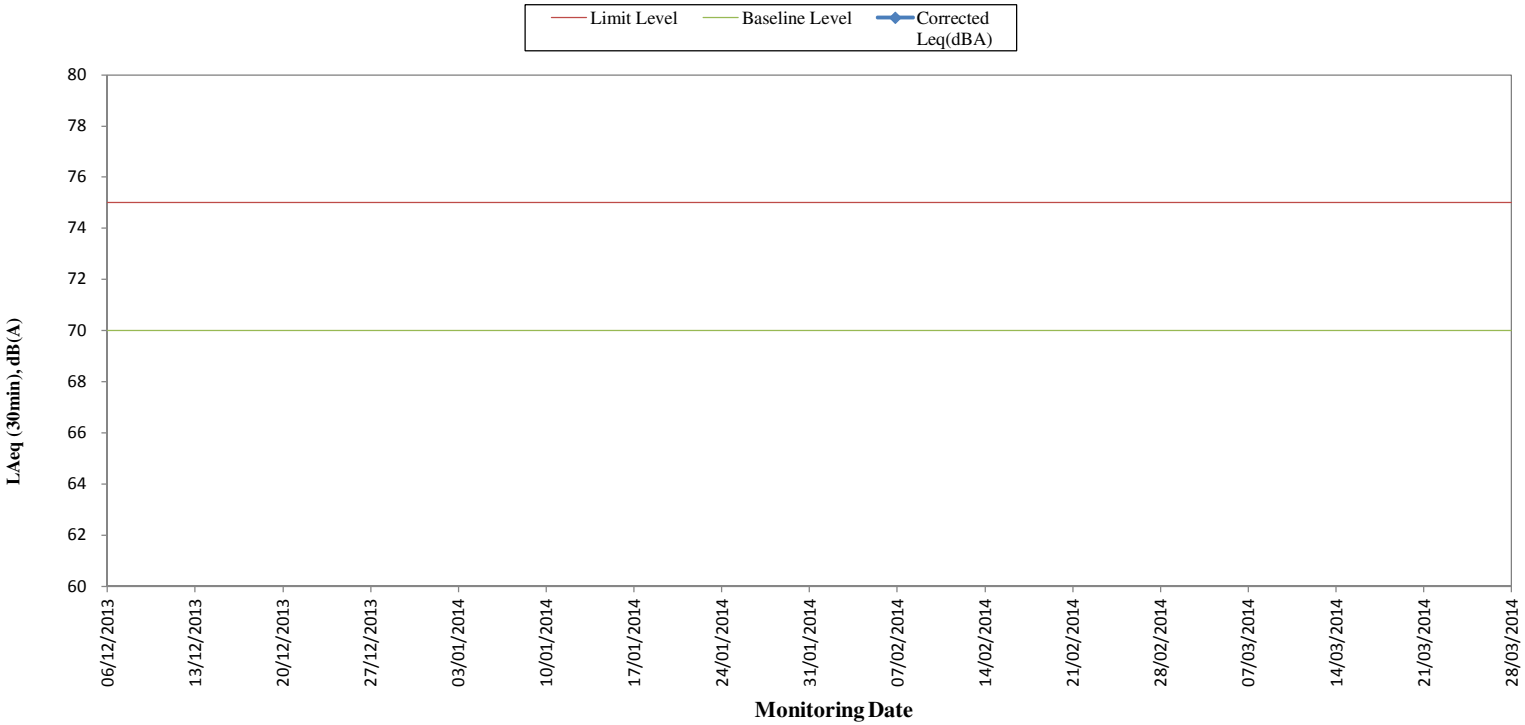
Regular Noise Monitoring Results at NMS-CA-6 (No. 16-23 Nam Kok Road) (LAeq, 30min) for the Past 4 Months



Remarks:

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

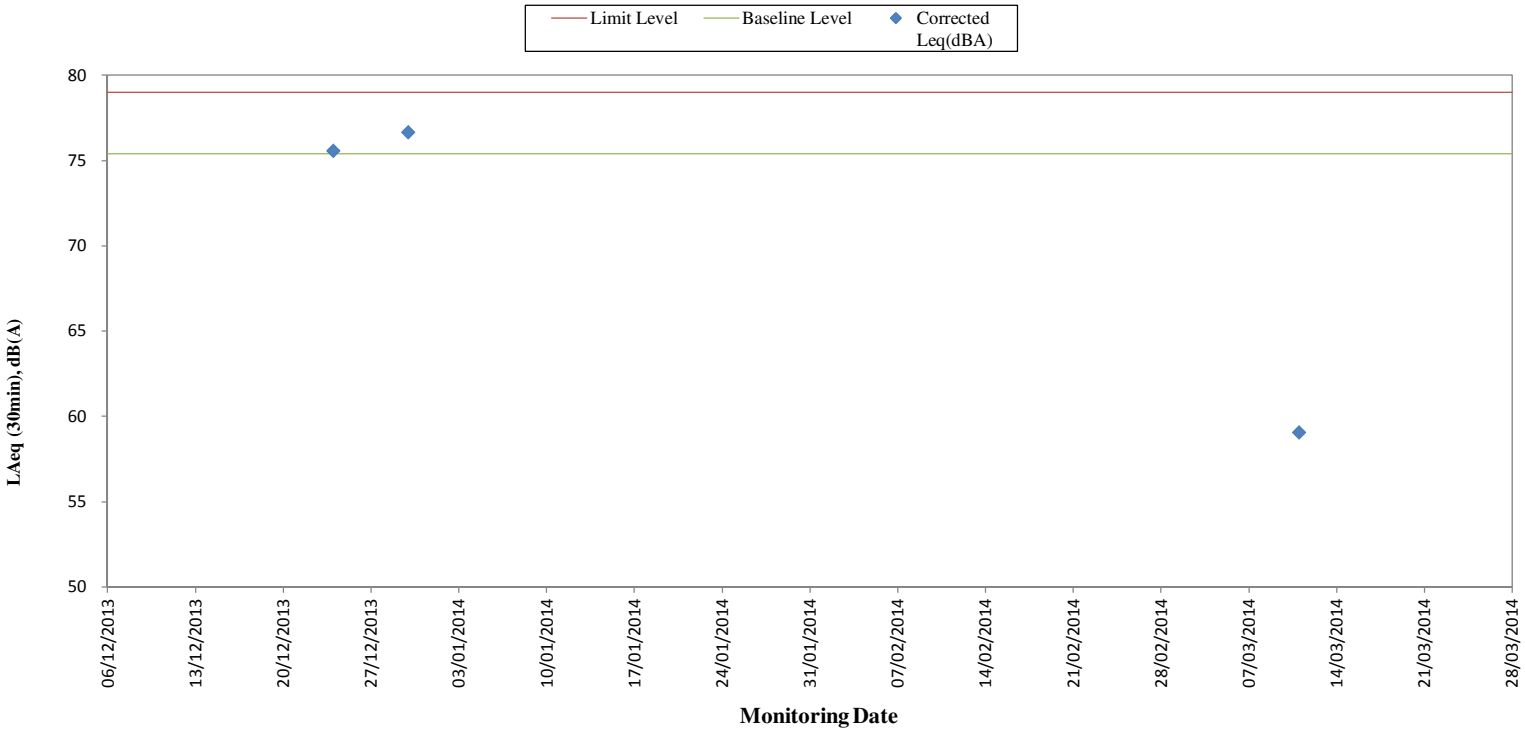
Regular Noise Monitoring Results at NMS-CA-7 (Skytower Tower 2) (LAeq, 30min) for the Past 4 Months



Remarks:

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

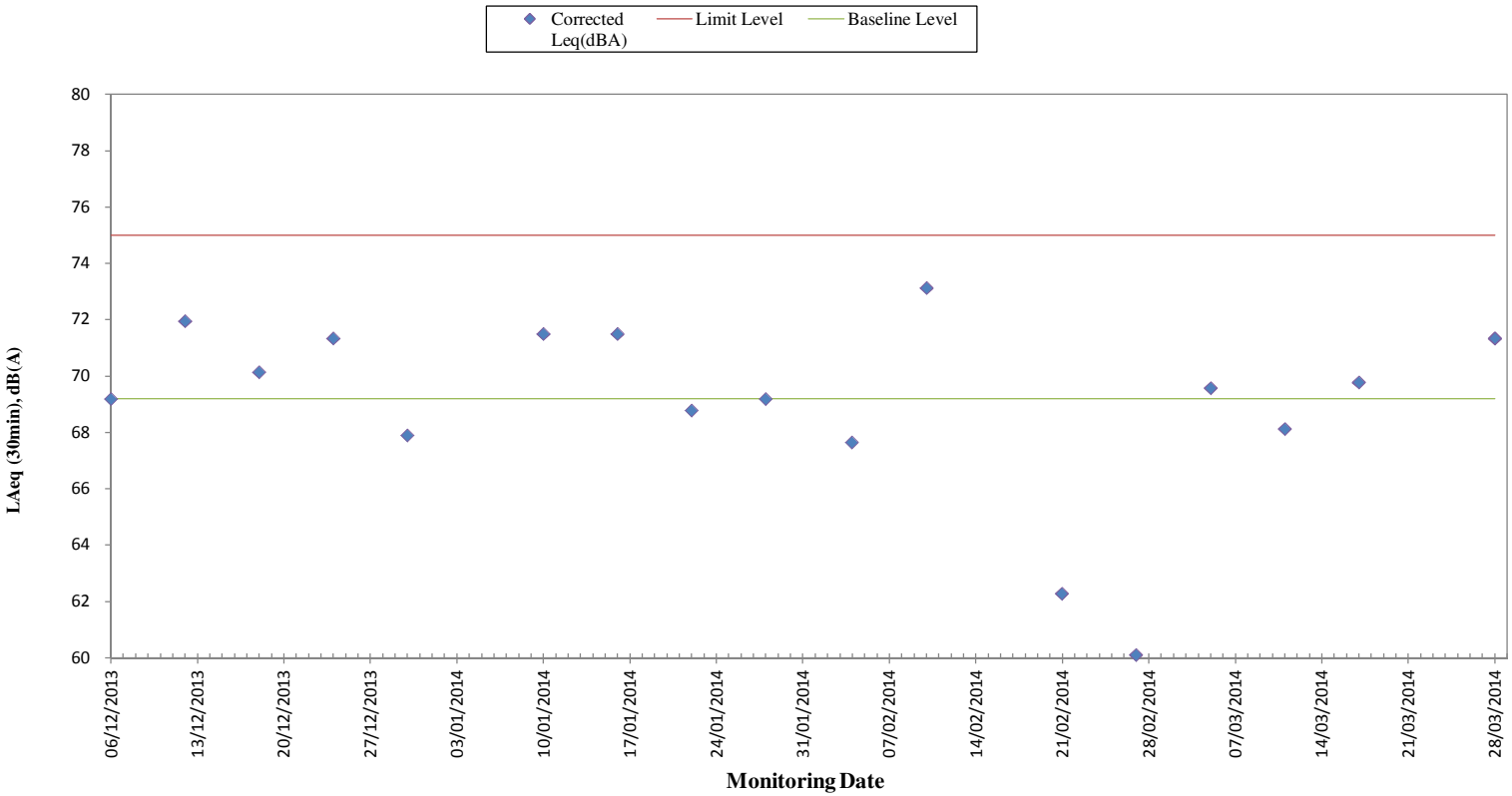
Regular Noise Monitoring Results at NMS-CA- 8 (SKH Good Shepherd Primary School) (LAeq, 30min) for the Past 4 Months



Remarks:

- For those corrected noise levels that are not shown in this graph, the measured noise level s are 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.

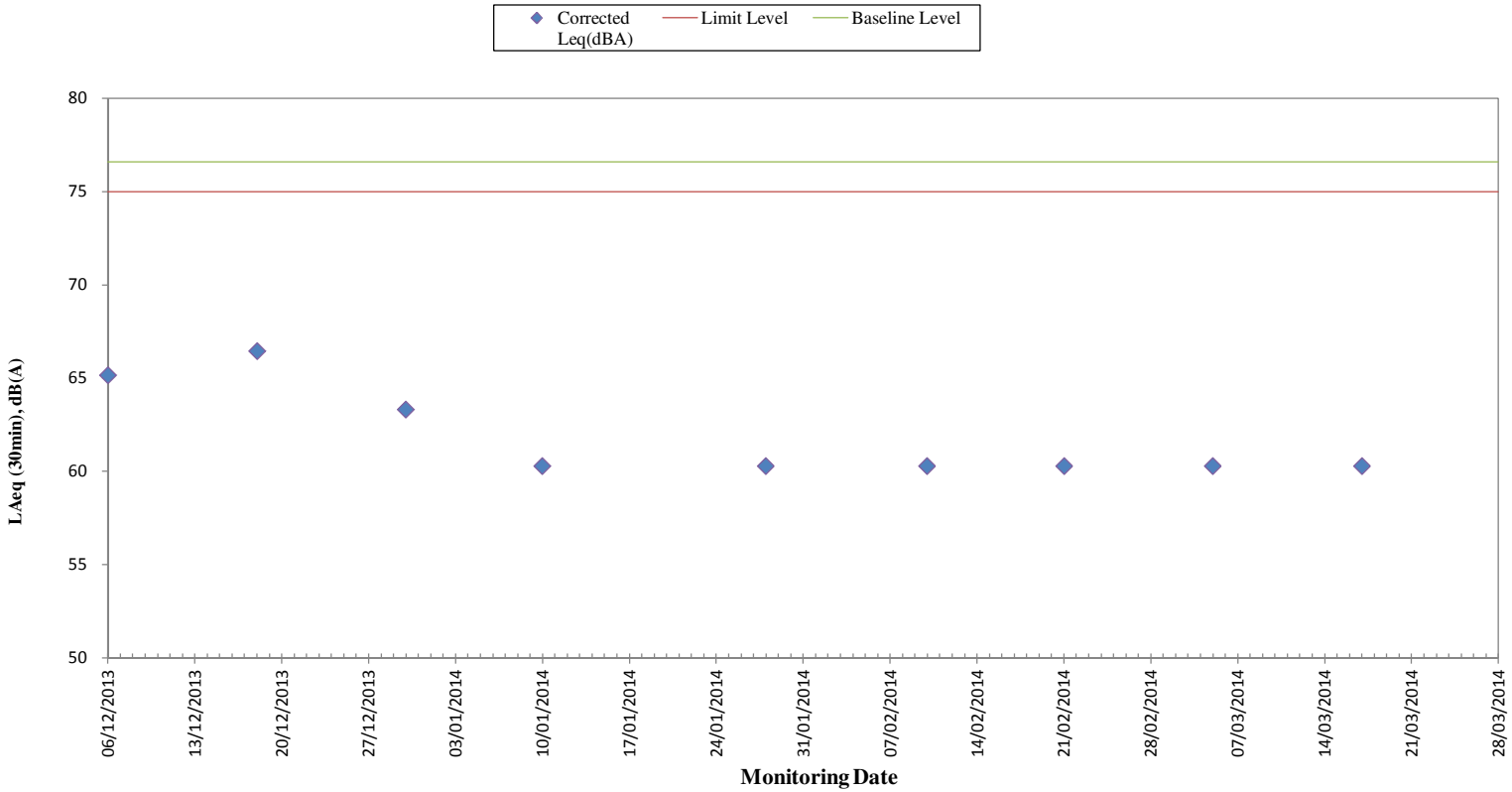
Regular Noise Monitoring Results at NMS-CA-9 (Kong Yiu Mansion) (LAeq, 30min)) for the Past 4 Months



Remarks:

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

Annex J

Construction Dust Monitoring Results and Wind Data Monitoring Results

Annex J **Construction Dust Monitoring Results**

Station DMS-6 Katherine Building

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
5-Mar-14	11:00	6-Mar-14	11:00	Cloudy	2.7809	2.9505	12368.30	12392.30	24.00	1.27	1.27	1.27	93	156.8	260	Construction work in progress	107	9677
11-Mar-14	11:15	12-Mar-14	11:15	Cloudy	2.7521	2.9317	12392.30	12416.30	24.00	1.27	1.27	1.27	98	156.8	260	Construction work in progress	107	9700
17-Mar-14	11:00	18-Mar-14	11:00	Cloudy	2.8329	2.9800	12416.30	12440.30	24.00	1.26	1.26	1.26	81	156.8	260	Construction work in progress	107	3024
22-Mar-14	8:48	23-Mar-14	8:48	Fine	2.8463	2.9798	12440.30	12464.30	24.00	1.26	1.26	1.26	74	156.8	260	Construction work in progress	107	3050
28-Mar-14	10:13	29-Mar-14	10:13	Cloudy	2.8430	3.0159	12464.30	12488.30	24.00	1.26	1.26	1.26	95	156.8	260	Construction work in progress	107	3056
												Minimum	74					
												Average	88					
												Maximum	98					

Station DMS-7 Parc 22

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)		ID	ID
5-Mar-14	10:05	7-Dec-13	10:05	Cloudy	2.7762	2.9177	2545.17	2569.17	24.00	1.21	1.21	1.21	81	166.7	260	Construction work in progress	3574	9676
11-Mar-14	10:25	12-Mar-14	10:25	Cloudy	2.7563	2.9191	2569.17	2593.17	24.00	1.21	1.21	1.21	93	166.7	260	Construction work in progress	3574	9699
17-Mar-14	10:05	18-Mar-14	10:05	Cloudy	2.8367	2.9912	2593.17	2617.17	24.00	1.23	1.23	1.23	87	166.7	260	Construction work in progress	3574	3023
22-Mar-14	8:33	23-Mar-14	8:33	Fine	2.8355	2.9787	2617.17	2641.17	24.00	1.23	1.23	1.23	81	166.7	260	Construction work in progress	3574	3049
28-Mar-14	9:18	29-Mar-14	9:18	Cloudy	2.8440	3.0014	2641.17	2665.17	24.00	1.23	1.23	1.23	89	166.7	260	Construction work in progress	3574	3050
												Minimum	81					
												Average	86					
												Maximum	93					

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
5-Mar-14	8:42	6-Mar-14	8:42	Cloudy	2.7889	2.9337	2515.11	2539.11	24.00	1.20	1.20	1.20	84	152.2	260	Construction work in progress	3572	9675
11-Mar-14	8:45	12-Mar-14	8:45	Cloudy	2.7533	2.9101	2539.11	2563.11	24.00	1.20	1.20	1.20	91	152.2	260	Construction work in progress	3572	9698
17-Mar-14	8:43	18-Mar-14	8:43	Cloudy	2.8302	2.9911	2563.11	2587.11	24.00	1.22	1.22	1.22	92	152.2	260	Construction work in progress	3572	3022
22-Mar-14	8:18	23-Mar-14	8:18	Fine	2.8400	2.9966	2587.11	2611.11	24.00	1.22	1.22	1.22	89	152.2	260	Construction work in progress	3572	3048
28-Mar-14	7:50	29-Mar-14	7:50	Cloudy	2.8414	2.9918	2611.11	2635.11	24.00	1.22	1.22	1.22	86	152.2	260	Construction work in progress	3572	3054
												Minimum	84					
												Average	88					
												Maximum	92					

Station DMS-9 No. 26 Kowloon City Road

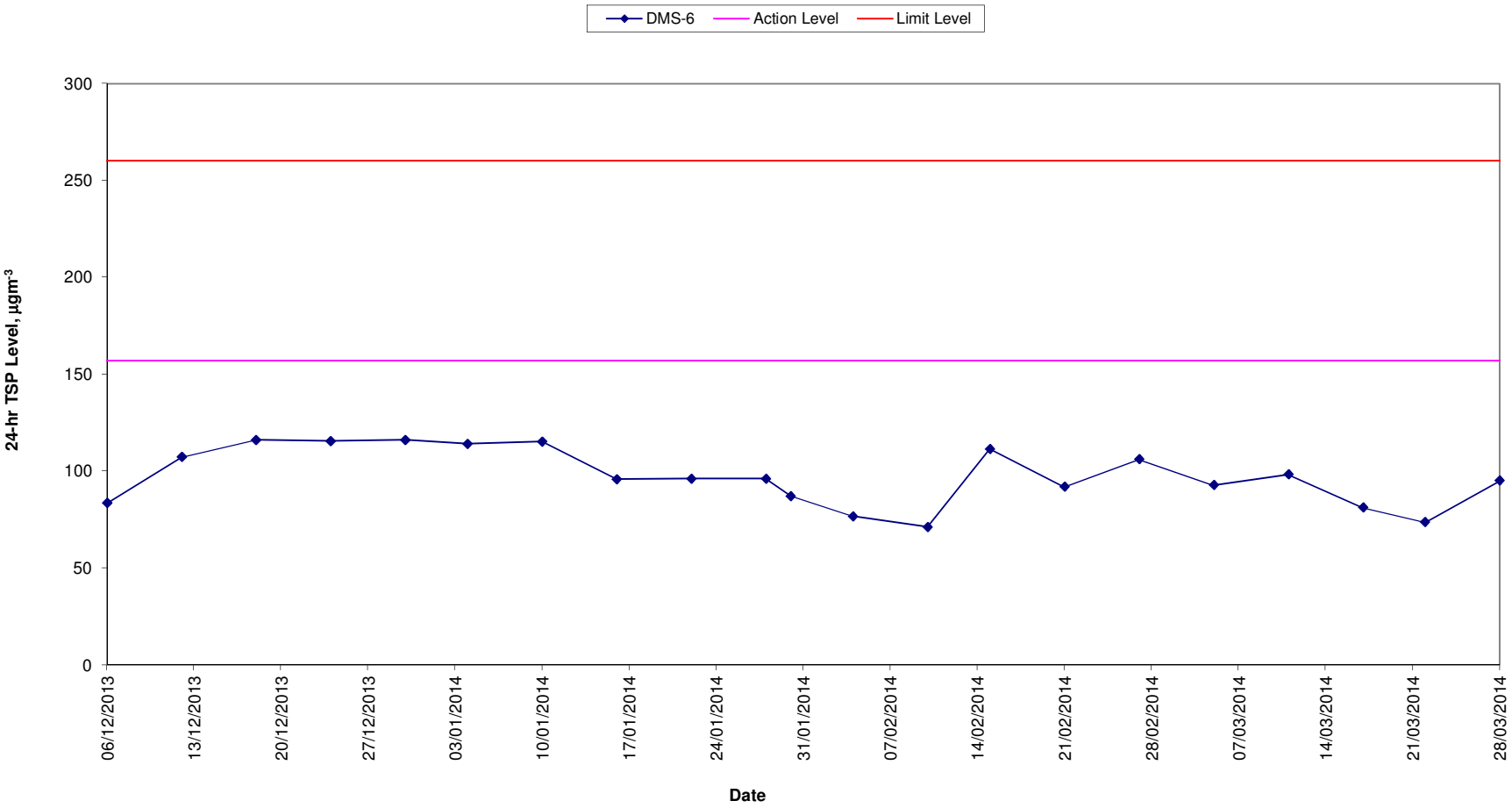
Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(µg/m^3)	(µg/m^3)	(µg/m^3)		ID	ID
5-Mar-14	--	--	--	--	--	--	--	--	--	--	--	--	--	160.9	260	--	--	--
11-Mar-14	--	--	--	--	--	--	--	--	--	--	--	--	--	160.9	260	--	--	--
17-Mar-14	--	--	--	--	--	--	--	--	--	--	--	--	--	160.9	260	--	--	--
22-Mar-14	--	--	--	--	--	--	--	--	--	--	--	--	--	160.9	260	--	--	--
28-Mar-14	--	--	--	--	--	--	--	--	--	--	--	--	--	160.9	260	--	--	--
												Minimum	--					
												Average	--					
												Maximum	--					

Remarks: 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.

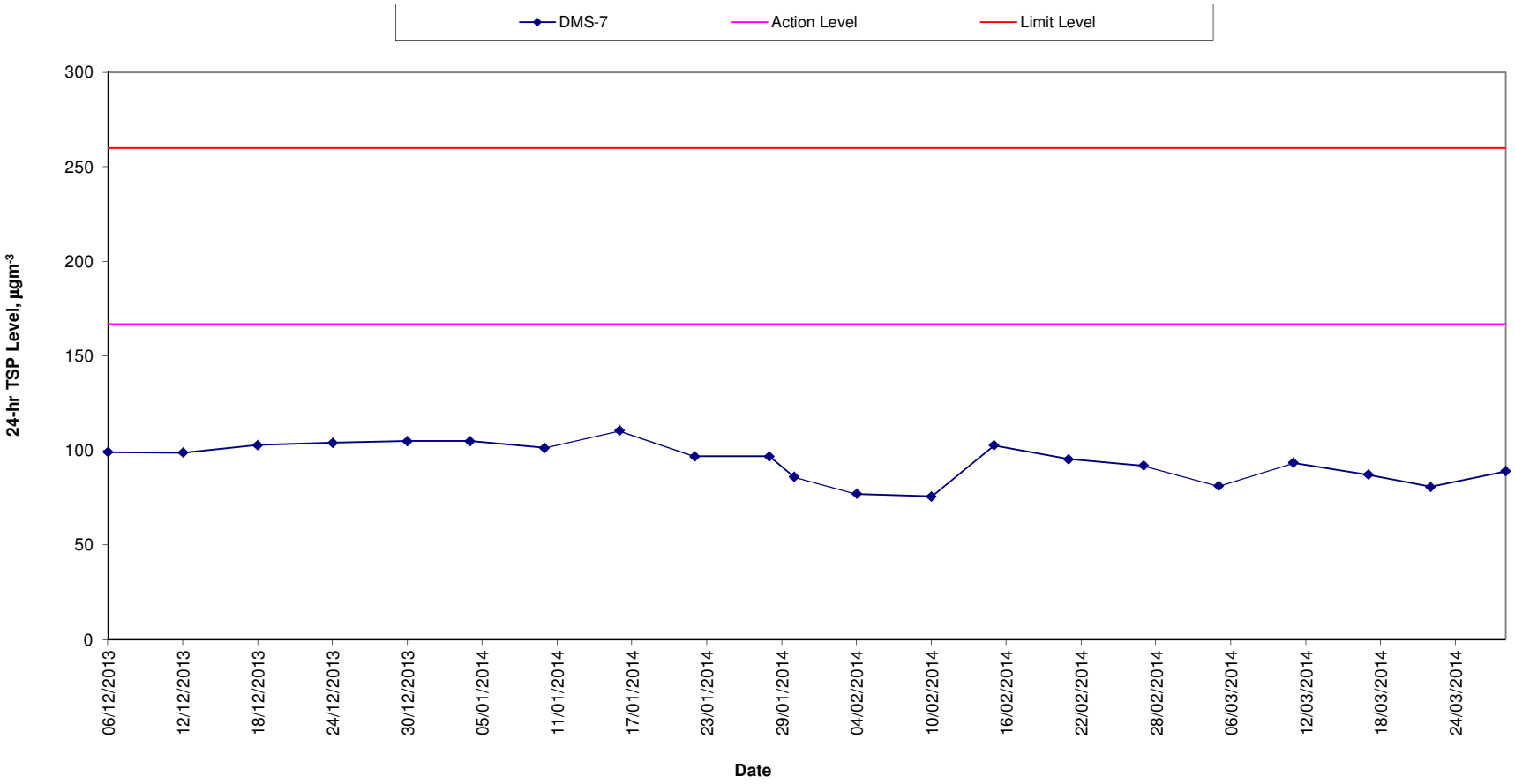
Station DMS-10 Chat Ma Mansion

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
5-Mar-14	9:24	6-Mar-14	9:24	Cloudy	2.7770	2.9110	2533.20	2557.20	24.00	1.23	1.23	1.23	76	170.4	260	Construction work in progress	3573	9673
11-Mar-14	9:30	12-Mar-14	9:30	Cloudy	2.7752	2.9000	2557.20	2581.20	24.00	1.23	1.23	1.23	70	170.4	260	Construction work in progress	3573	9697
17-Mar-14	9:30	18-Mar-14	9:30	Cloudy	2.8290	2.9809	2581.20	2605.20	24.00	1.21	1.21	1.21	87	170.4	260	Construction work in progress	3573	3021
22-Mar-14	8:00	23-Mar-14	8:00	Fine	2.8459	2.9900	2605.20	2629.20	24.00	1.21	1.21	1.21	83	170.4	260	Construction work in progress	3573	3047
28-Mar-14	8:31	29-Mar-14	8:31	Cloudy	2.8312	2.9898	2629.20	2653.2	24.00	1.21	1.21	1.21	91	170.4	260	Construction work in progress	3573	3053
												Minimum	70					
												Average	81					
												Maximum	91					

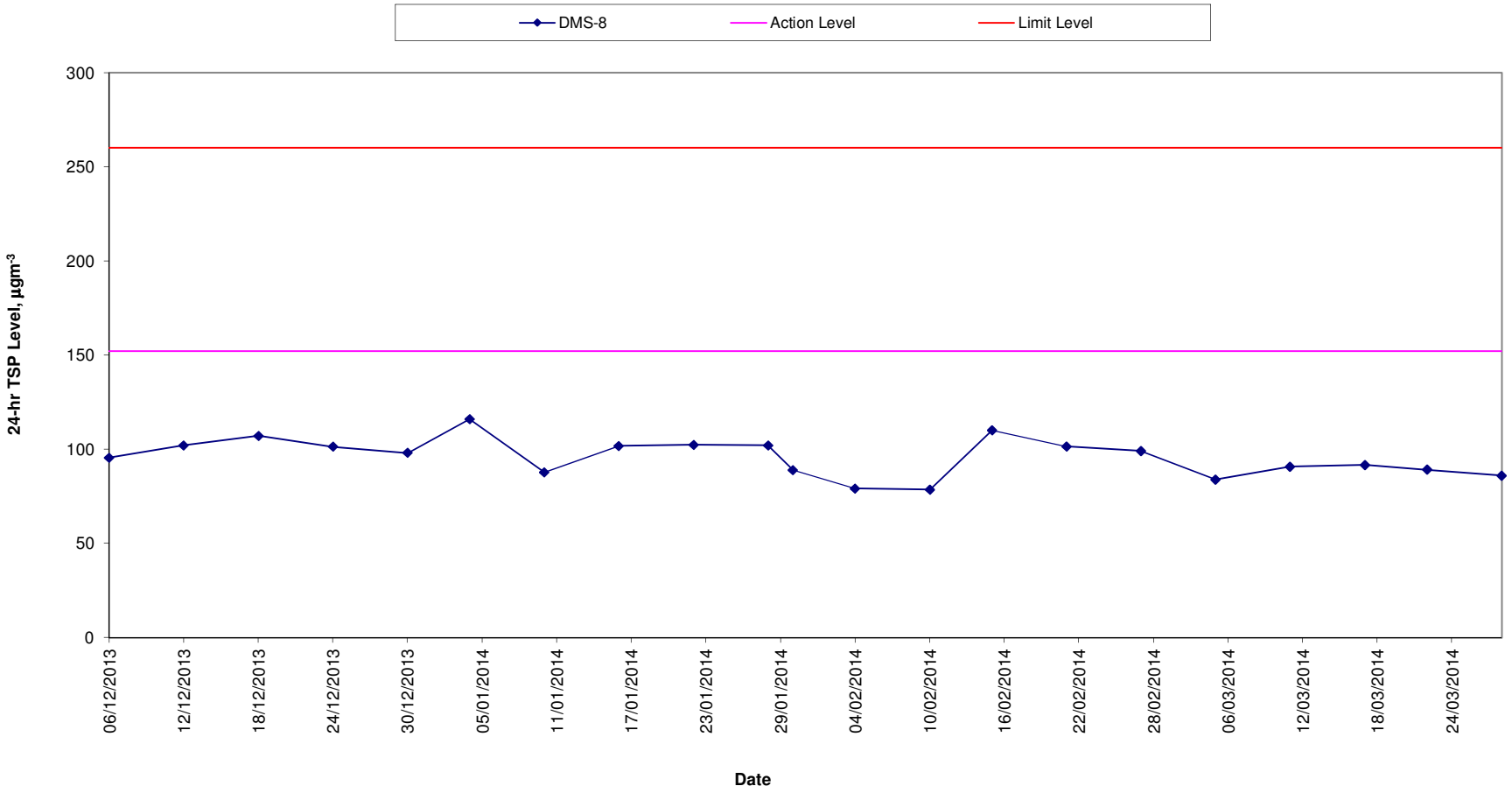
Construction Dust Monitoring Results for the Past 4 Months
DMS-6 (Katherine Building)



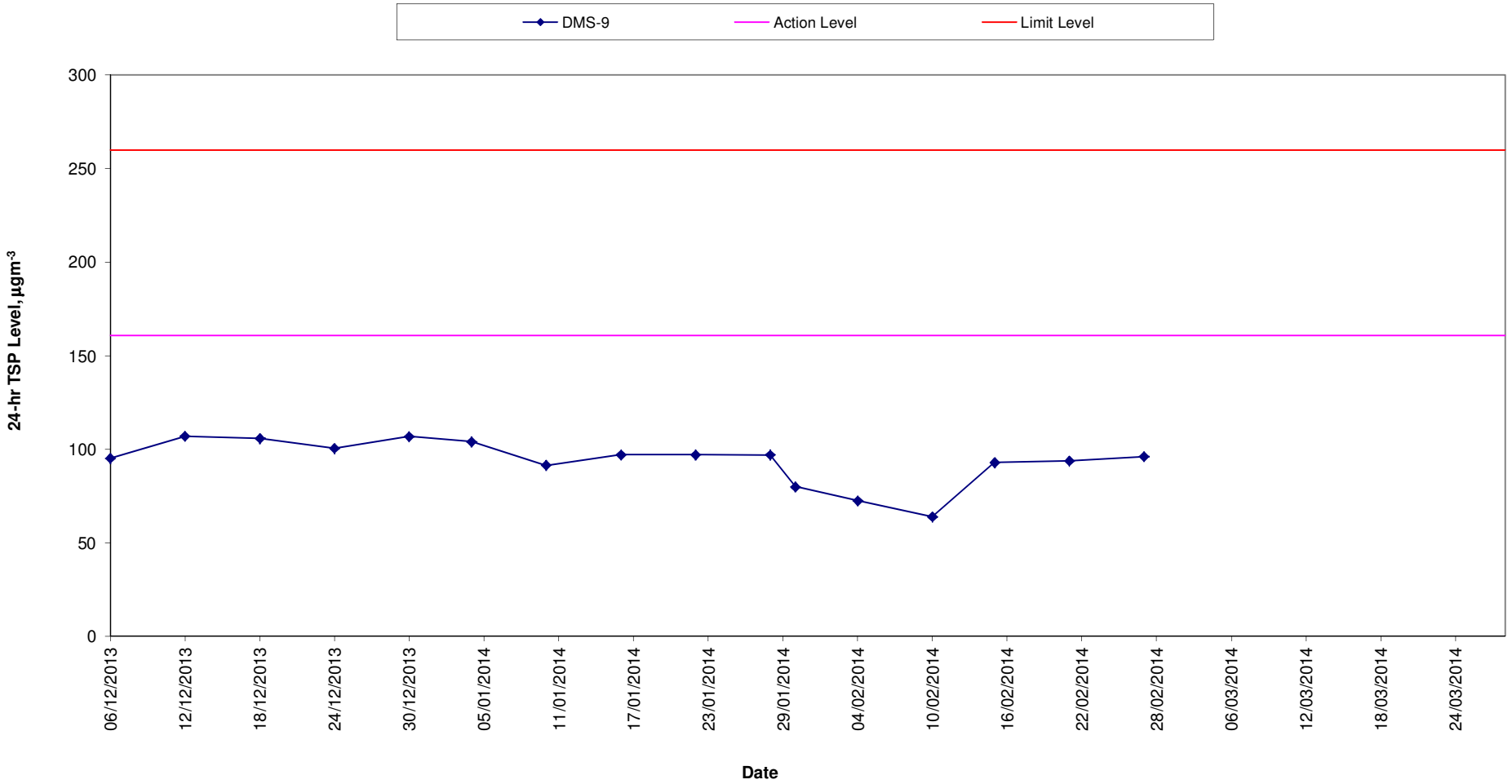
Construction Dust Monitoring Results for the Past 4 Months
DMS- 7 (Parc 22)



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

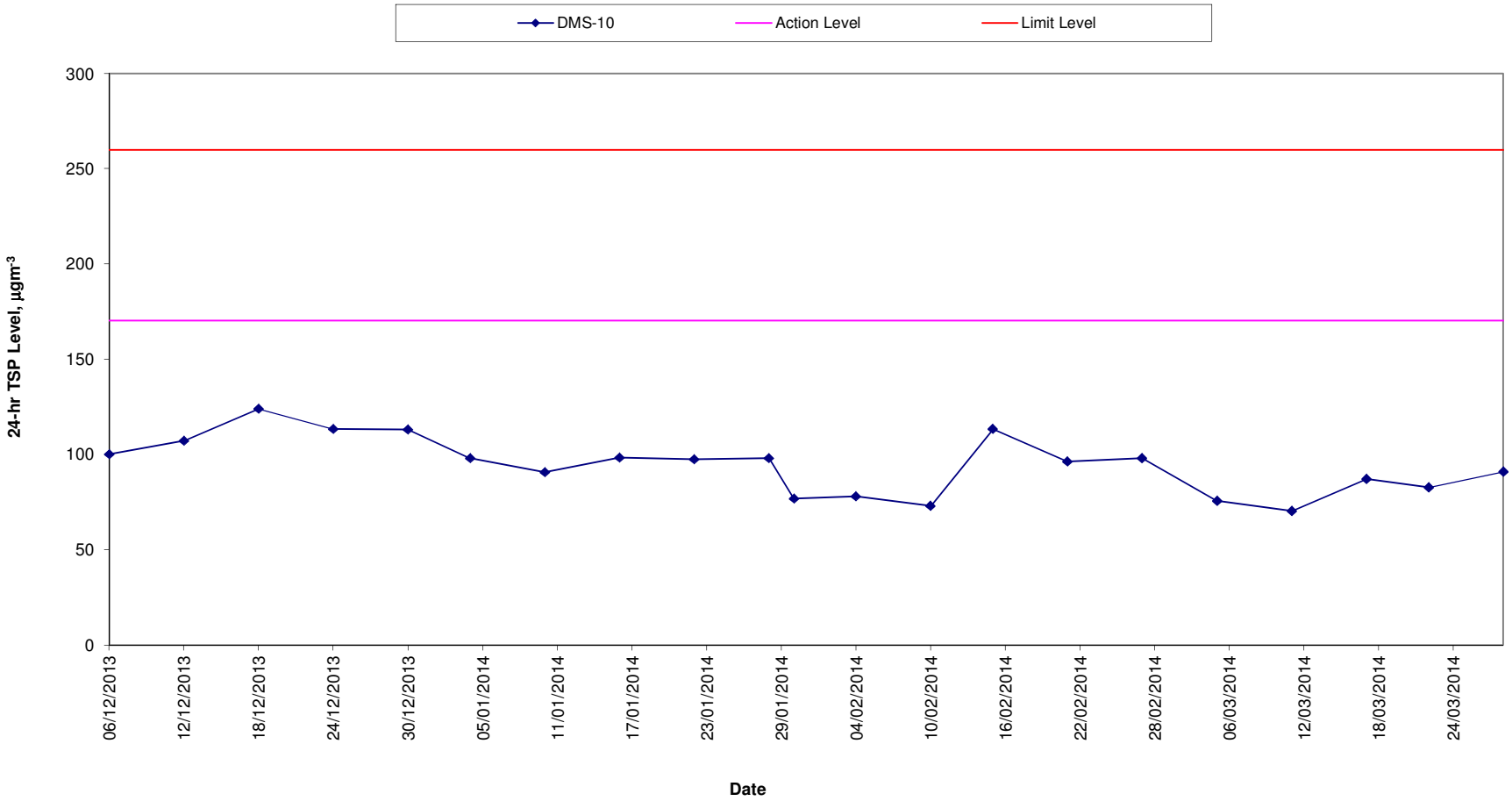


Construction Dust Monitoring Results for the Past 4 Months
DMS-9 (No. 26 Kowloon City Road)



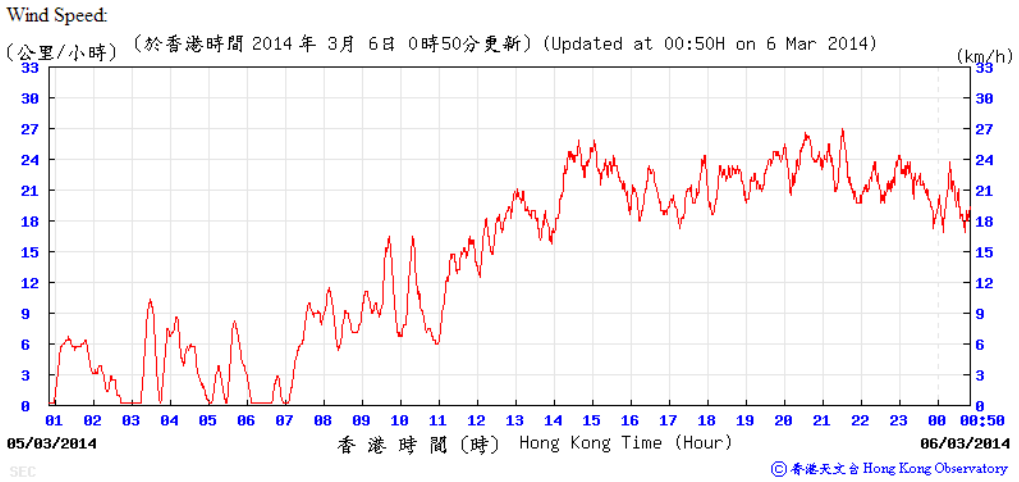
Remarks: 24-hour averaged dust monitoring has been suspended since March 2014 due to denied access by the occupant of No. 26 Kowloon City Road.

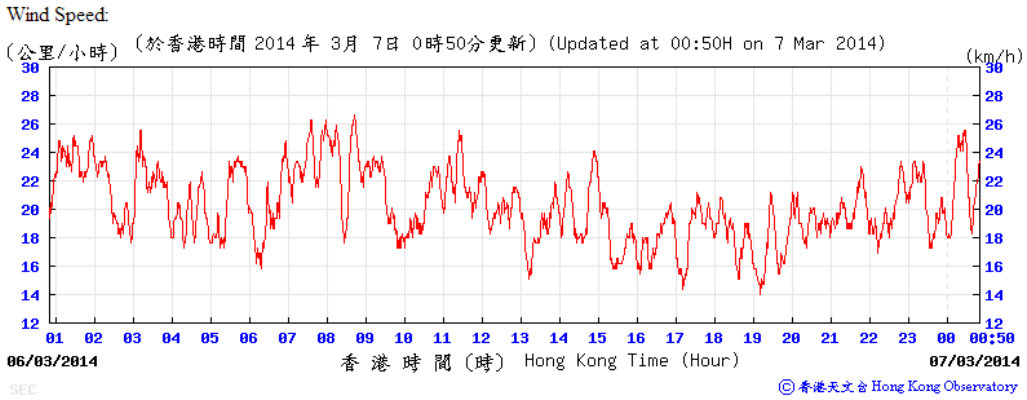
Construction Dust Monitoring Results for the Past 4 Months
DMS-10 (Chat Ma Mansion)



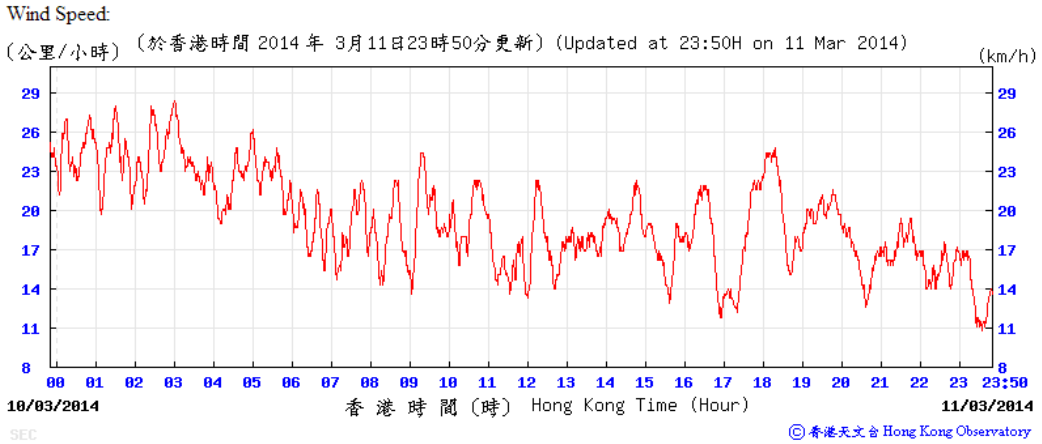
Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

5 - 6 March 2014





11 - 12 March 2014



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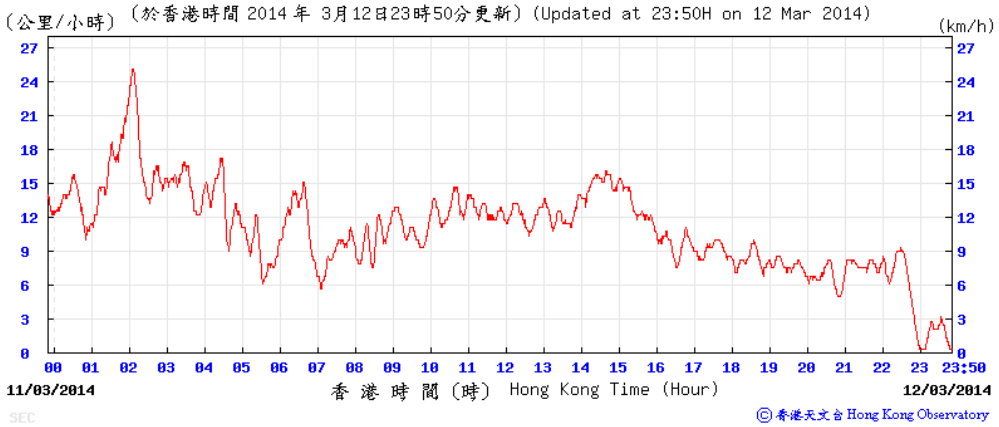

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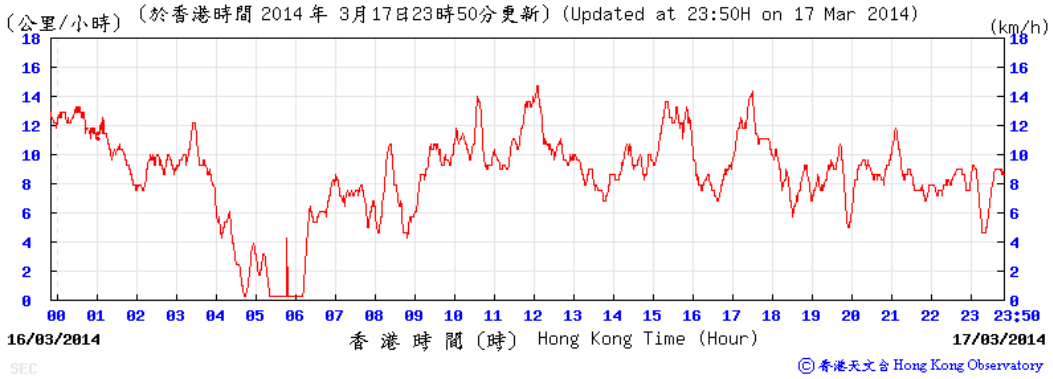

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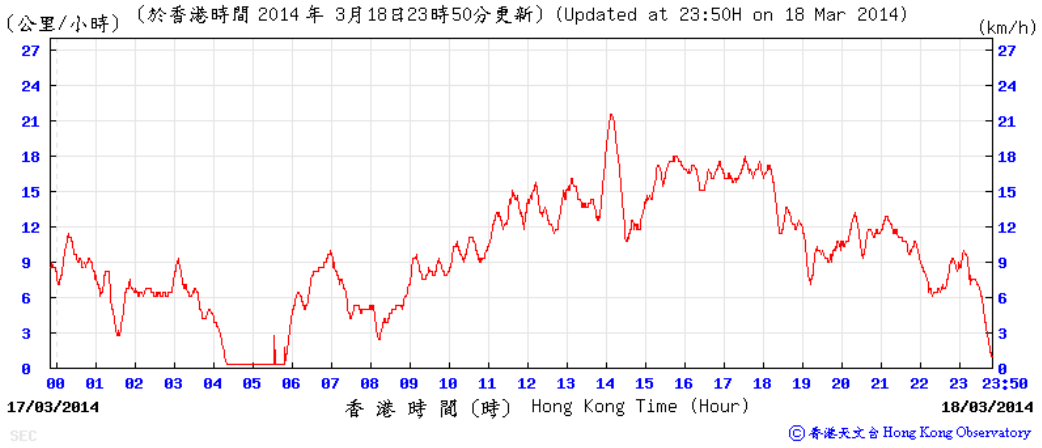

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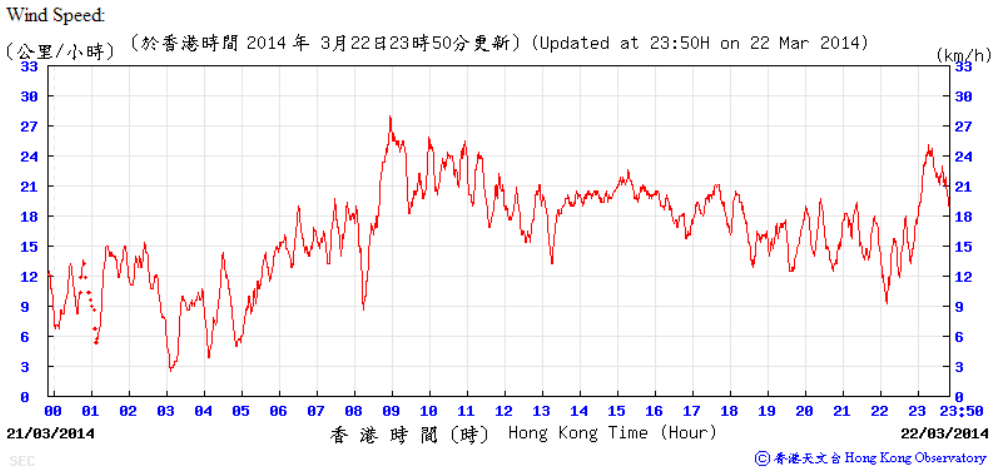
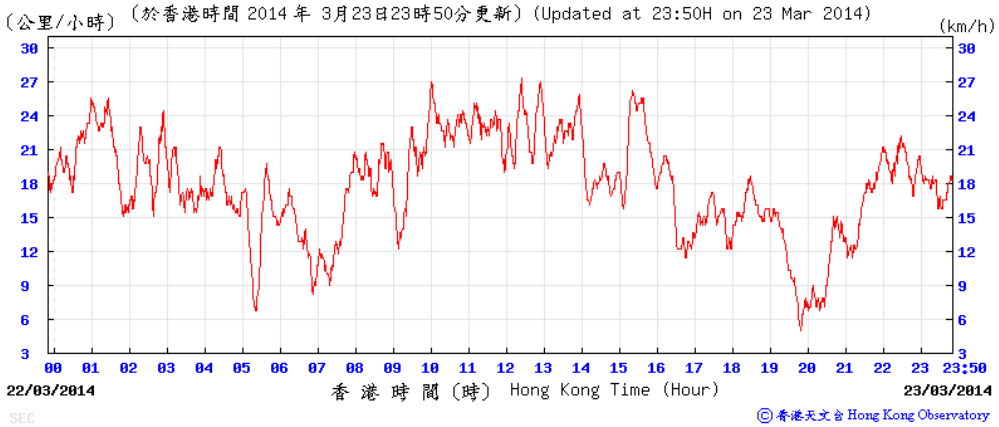
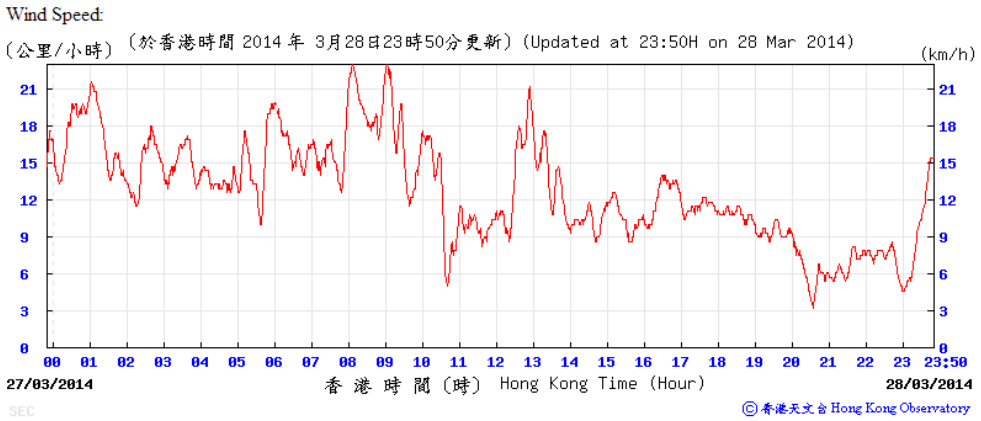




28 – 29 March 2014



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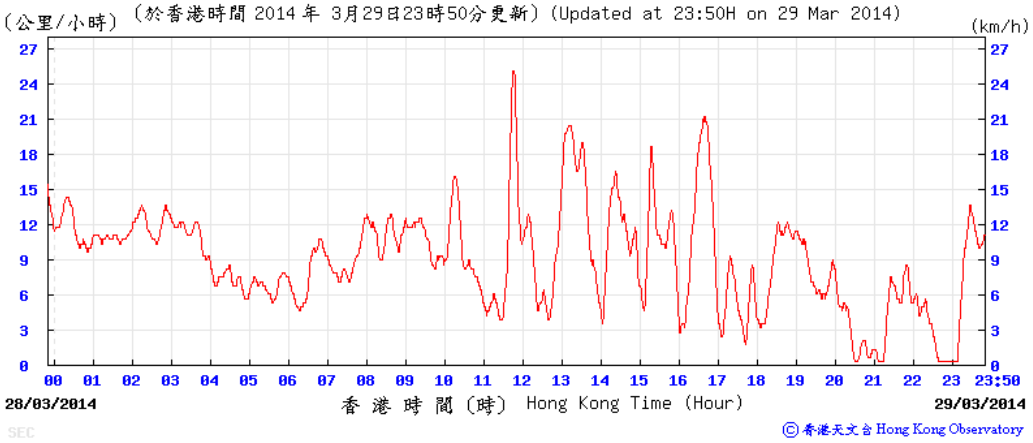
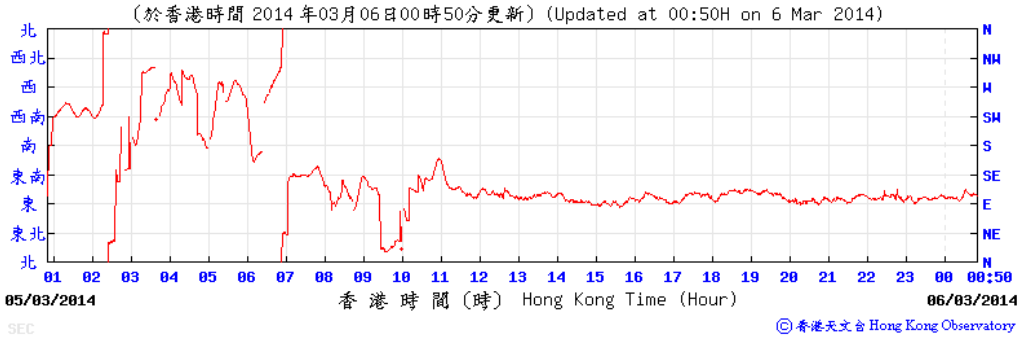


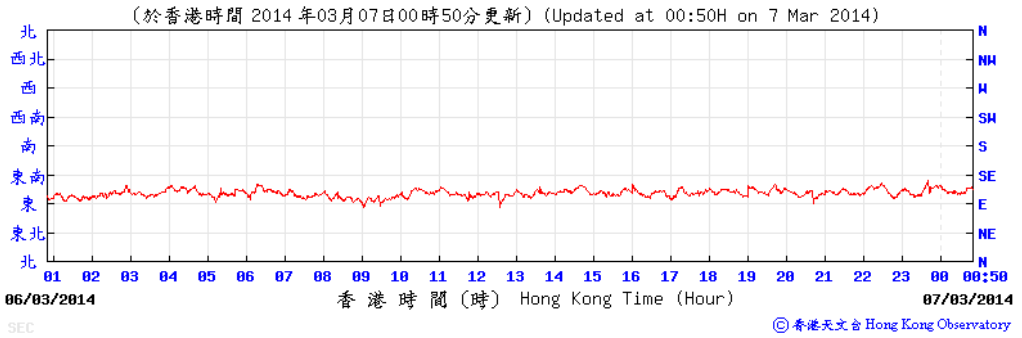
Average wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

5 - 6 March 2014

Wind Direction:

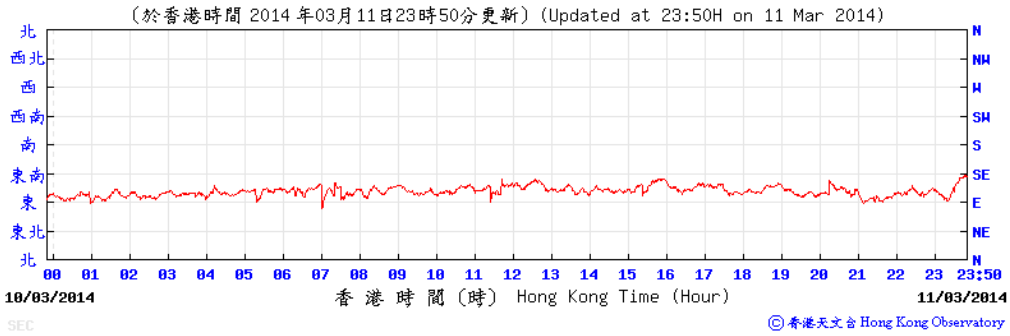


Wind Direction:



11 - 12 March 2014

Wind Direction:



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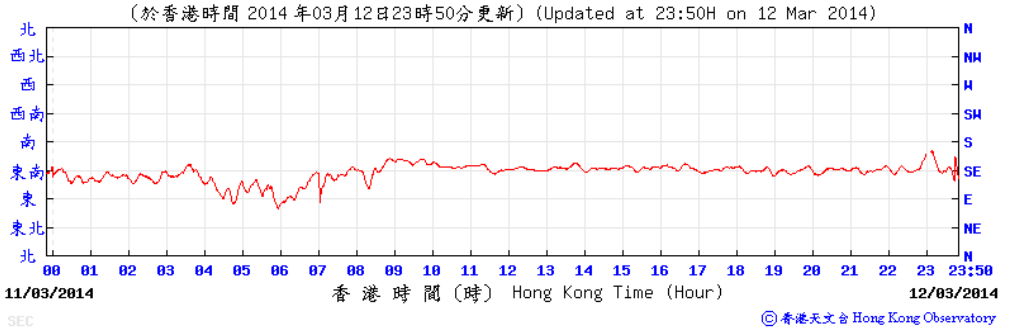

17 – 18 March 2014

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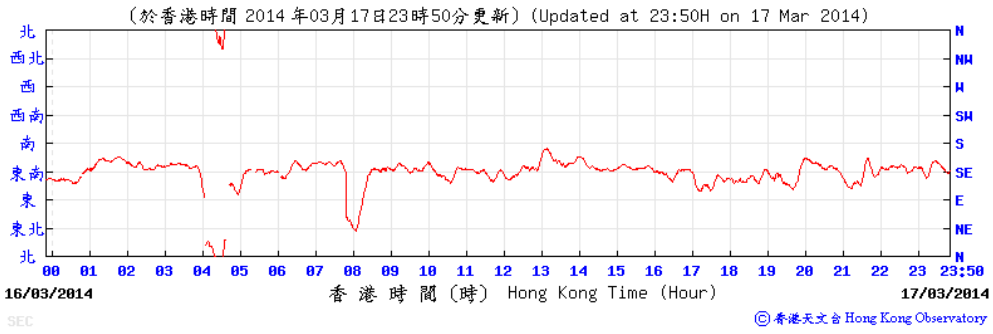

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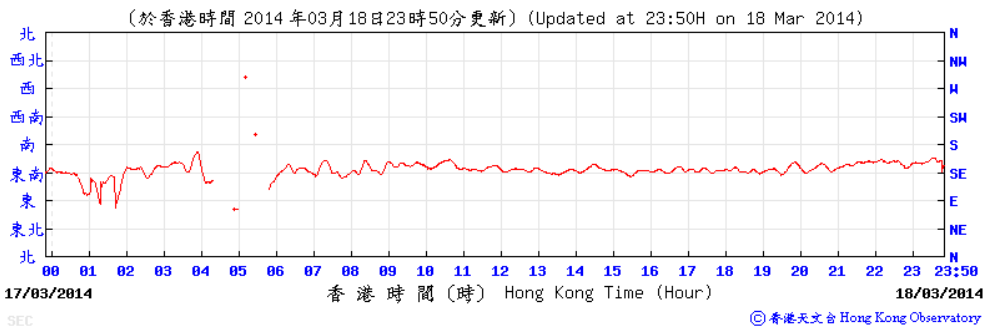

22 – 23 March 2014

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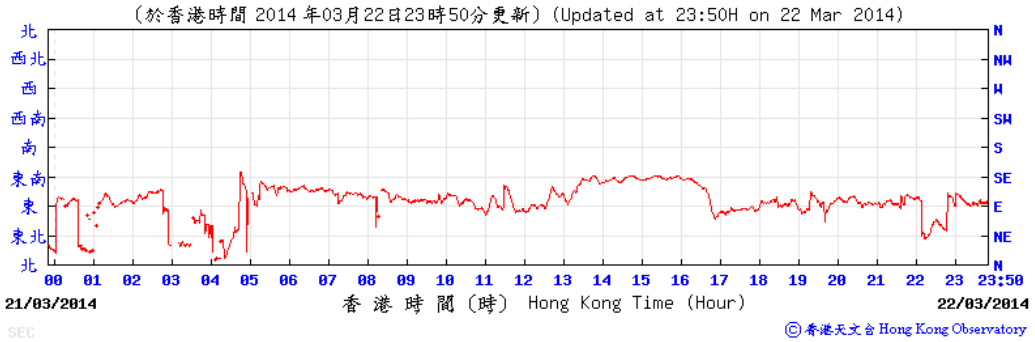

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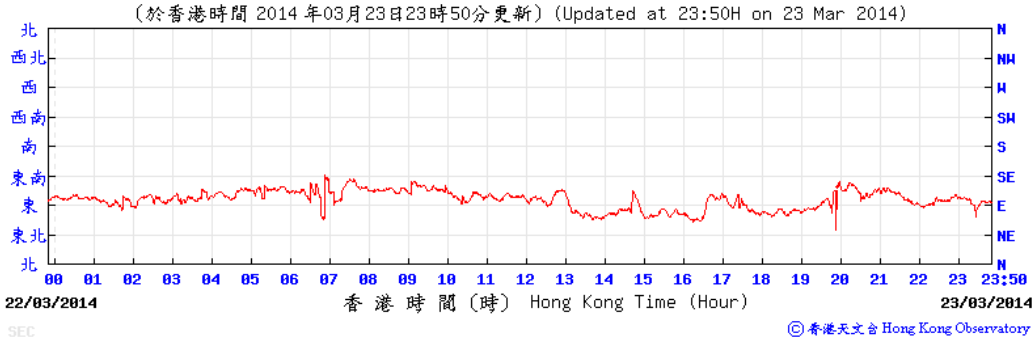

28 – 29 March 2014

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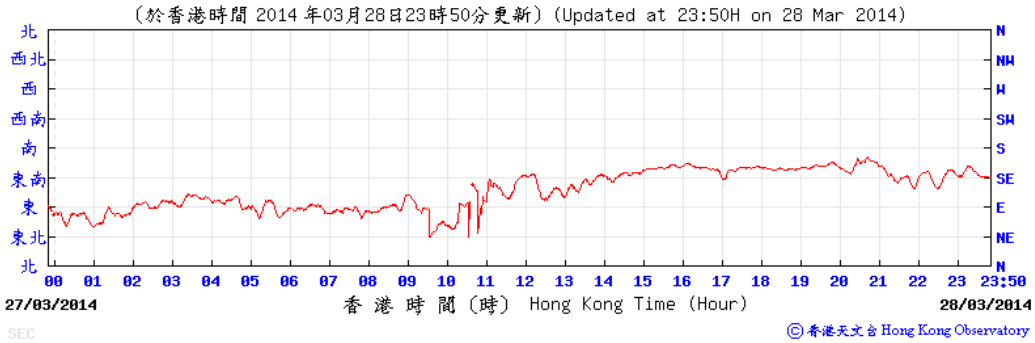
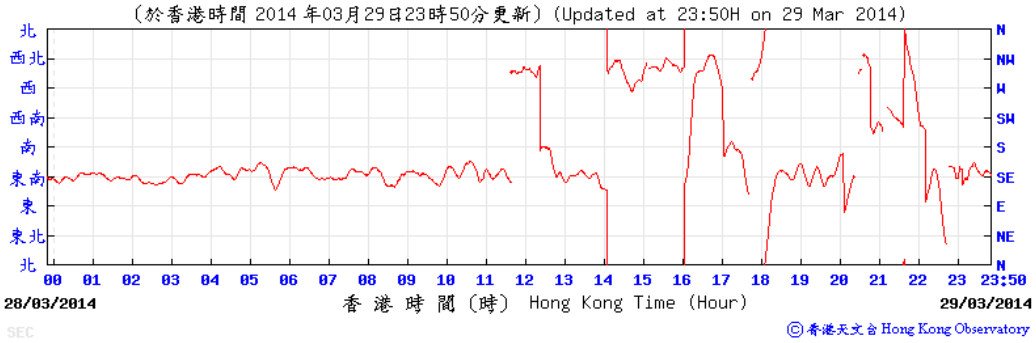


Wind Direction:



Annex K

Waste Flow Table

Annex K – Waste Flow Table

Monthly Summary Waste Flow Table for the year 2012-2014

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly					Imported Fill
	Total Quantity Generated	Hard Rocks and Large Broken Concrete (See Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill (See Note 5)	Inert C&D Materials Delivered to 1108A Kai Tai Barging Facilities (See Note 6)	Metals	Paper/ cardboard packaging	Plastics (See Note 2)	Chemical Waste (See Note 10)	Others, e.g. general refuse (See Note 5)	
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg)	(in '000m^3)	(in '000m³)
Sep 2012	0.004	0.000	0.000	0.000	0.004	-	0.000	0.000	5.300	0.000	0.144	0.000
Oct 2012	0.000	0.000	0.000	0.000	0.000	-	12.800	0.242	0.013	0.000	0.514	0.000
Nov 2012	0.624	0.000	0.605	0.000	0.019	-	0.000	0.154	0.002	0.000	0.172	6.804
Dec 2012	16.844	0.000	0.000	0.000	0.005	16.839	0.000	0.000	0.000	0.000	0.057	0.000
Sub-total	17.472	0.000	0.605	0.000	0.028	16.839	12.800	0.396	5.315	0.000	0.887	6.804
Jan 2013	19.828	0.000	0.000	0.000	0.006	19.822	0.000	0.036 (See Note 7)	0.416	0.000	0.081 (See Note 8)	0.000
Feb 2013	8.372	0.000	0.000	0.000	0.005	8.366	0.000	0.036	0.443	0.000	0.021	0.000
Mar 2013	14.673	0.000	0.000	0.000	0.000	14.673	0.000	0.036	0.463	0.000	0.064 (See Note 9)	0.000
Apr 2013	13.557	0.000	0.000	0.000	0.025	13.533	0.000	0.036	0.148	0.000	0.086	0.000
May 2013	9.969	0.000	0.000	0.000	0.000	9.969	0.000	0.000	0.481	0.000	0.065	0.000
Jun 2013	5.538	0.000	0.000	0.000	0.000	5.538	0.000	0.045	0.784	0.32 (See Note 11)	0.065	0.000
Jul 2013	6.116	0.000	0.000	0.000	0.000	6.116	0.000	0.063	0.868	0.400	0.058	0.000
Aug 2013	11.537	0.000	0.000	0.000	0.000	11.537	0.000	0.068	0.464	0.000	0.071	0.000
Sep 2013	4.641	0.000	0.000	0.000	0.000	4.641	0.000	0.027	0.522	0.000	0.110	0.000
Oct 2013	9.708	0.000	0.000	0.000	0.000	9.708	0.000	0.036	0.348	0.000	0.086	0.000
Nov 2013	7.199	0.000	0.000	0.000	0.000	7.199	0.000	0.068	0.506	0.000	0.678	0.000
Dec 2013	6.973	0.000	0.000	0.000	0.000	6.973	0.000	0.090	0.383	0.000	1.344	0.000
Sub-total	118.111	0.000	0.000	0.000	0.036	118.075	0.000	0.541	5.826	0.720	2.729	0.000
Jan 2014	11.870	0.000	0.000	0.000	0.000	11.870	0.000	0.121	0.270	0.400	0.100	0.000
Feb 2014	15.316	0.000	0.000	0.000	0.000	15.316	0.000	0.067	0.396	0.000	0.095	0.000
Mar 2014	18.734	0.000	0.000	0.000	0.000	18.734	0.000	0.067	0.320	0.200	0.107	0.000
Sub-total	45.920	0.000	0.000	0.000	0.000	45.920	0.000	0.255	0.986	0.600	0.302	0.000
Total	181.504	0.000	0.605	0.000	0.064	180.834	12.800	1.192	12.127	1.320	3.918	6.804

Notes:

-1 The performance targets are given below:
- All excavated materials to be sorted for recovering the inert portion of C&D materials, e.g. hard rocks, soil and broken concrete, for reuse on the Site or disposal to designated outlets;
- All metallic waste to be recovered for collection by recycling contractors;
- All cardboard and paper packaging (for plant, equipment and materials) to be recovered, properly stockpiled in dry and covered condition to prevent cross contamination;
- All chemical wastes to be collected and properly disposed of by specialist contractors; and
- All demolition debris to be stored to recover broken concrete, reinforcement bars, mechanical and electrical fittings, hardware as well as other fitting / materials that have established recycling outlets.

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

-3 Broken concrete for recycling into aggregates.

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

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

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

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

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

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

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

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

Annex L

(Not Used)

Annex M

Environmental Complaint, Environmental Summon and Prosecution

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
Overall Total	0	0

Appendix C

16th EM&A Report for Works Contract 1101 –
Ma On Shan Line Modification Works

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report

[Period from 1 to 31 March 2014]

Works Contract 1101

Ma On Shan Modification Works

(April 2014)

Certified by: James Choi 

Position: Environmental Team Leader

Date: 14 April 2014

EDMS Consulting Limited

edms

SCL Contract No. 1101

Ma On Shan Line Modification Works

Monthly EM&A Report (SCL) (March 2014)

for

Sun Fook Kong Joint Venture

Prepared By		Checked By		Approved for Issue
A Chan		A Lee		J Choi
Version	0		**Date**	3 April 2014

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List of Appendices

EXECUTIVE SUMMARY

Sun Fook Kong Joint Venture (SFKJV) was awarded the Shatin to Central Link (SCL) Contract No. 1101 Ma On Shan Line (MOL) Modification Works (this Project). EDMS Consulting Limited (EDMS) was commissioned by SFKJV as the Environmental Team (ET) for undertaking the Environmental Monitoring and Audit (EM&A) works during the construction period. The works areas under this Project covered by Environmental Permit (EP-438/2012/D) for the SCL Tai Wai to Hung Hom Section (TAW-HUH) included works sites at Tai Wai Mei Tin Road, To Shek Storage Yard and Shek Mun Storage Yard of which EM&A programme according to the EM&A Manual of SCL (TAW-HUH) should be implemented.

Construction Activities

Construction works were completed at Tai Wai Mei Tin Road in September 2013.

Air Quality and Noise Monitoring

According to the EM&A Manual of SCL (TAW-HUH), there is no designated monitoring stations for work sites at Tai Wai Mei Tin Road, To Shek Storage Yard and Shek Mun Storage Yard.

Environmental Auditing

Weekly site inspections were carried out by ET to ensure proper implementation of environmental mitigation measures and compliance with environmental legislation. During the reporting month, a total of 4 site inspections were conducted and the joint site inspection with IEC was conducted on 25 March 2014. All observations, which were recorded in inspection checklist and together with the ET's recommendations, were passed to the Contractor and ER for necessary corrective action.

Waste Disposal

No general refuse and inert C&D materials were disposed of in the reporting month. 120 kg of chemical waste was collected by licenced collector in the reporting month.

Complaint Log

No environmental complaint was received during the reporting month.

Notification of Summon and Successful Prosecution

No Notification of Summons or successful prosecution was received during the reporting month.

Future Key Issues

No construction activity is scheduled in the upcoming months.

Reporting Changes

No reporting change was observed during the reporting month.

1. INTRODUCTION

1.1 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 (MOL) 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 1101 covers the works sites at Tai Wai Mei Tin Road, To Shek Storage Yard and Shek Mun Storage Yard of which EM&A programme according to the EM&A Manual of SCL (TAW-HUH) should be implemented.

EDMS Consulting Limited (EDMS) was commissioned by Sun Fook Kong Joint Venture (SFKJV), the main contractor as the Environmental Team (ET) during the construction phase of SCL(TAW-HUH) for Contract No. 1101.

1.2 Description of the Construction Works

The major works of Contract No. 1101 includes construction of noise cover over the viaduct at Tai Wai Mei Tin Road. The works was completed in September 2013.

The works areas including works sites at Tai Wai Mei Tin Road, To Shek Storage Yard and Shek Mun Storage Yard are shown in ***Appendix A*** and the updated construction programme of the construction works is shown in ***Appendix B***.

1.3 Purpose of this Report

This is the 16th monthly EM&A report summarising audit findings of the EM&A program carried out according to EM&A Manual for SCL (TAW-HUH) by ET during the reporting month in March 2014.

As there is no designated air quality, noise and water quality monitoring stations for works sites at Tai Wai Mei Tin Road, To Shek Storage Yard and Shek Mun Storage Yard, this report mainly summarises the waste management details, site inspections findings, environmental complaint records and investigations, and any notification of summons, prosecutions and corrective actions in the reporting month. This monthly EM&A Report is organised as follows:

- Section 1 Introduction
- Section 2 Project Information
- Section 3 Waste Management
- Section 4 Site Inspection
- Section 5 Environmental Complaint
- Section 6 Summary of Notification of Summons, Successful Prosecutions and Corrective Actions
- Section 7 Future Key Issues

2. PROJECT INFORMATION

2.1 Project Organization and Management Structure

The organization chart, contact detail and lines of communication with respect to the environmental management are shown in ***Appendix C***.

2.2 Construction Activities

Construction works were completed at Tai Wai Mei Tin Road in September 2013.

Offsite works areas at To Shek Storage Yard and Shek Mun Storage Yard were only used for storage of construction materials and no construction activities were carried out.

2.3 Status of License, Permit and Submissions under Environmental Protection Requirements

A summary of relevant permits and licences related to environmental protection for the Construction Works and submission under and EP-438/2012/D for contract no. 1101 is given in *Table 1* and *Table 2* in ***Appendix D***.

3. WASTE MANAGEMENT

The status of waste management in the reporting month is summarized in the following table. Details of the quantities of waste materials generated during the reporting month are shown in the waste flow table given in ***Appendix E***.

Table 3.1 Waste Generated in the Reporting Month

Waste Type	Quantity this month	Cumulative-to-Date
Inert C&D materials disposed	0	32.50 m^3
Inert C&D materials recycled	0	0
Non-inert C&D materials disposed	0	0
Non-inert C&D materials recycled	0	3.00 m^3
General waste disposed of to NENT Landfill	0	224.50 m^3
Chemical waste disposed of to CWTC or collected by licenced collector	120.00 kg	120.00 kg

4. SITE INSPECTION

Weekly site inspections were carried out at the sites on 3, 10, 17 and 25 March 2014. The joint site inspection with IEC was carried out on 25 March 2014. All observations together with the appropriate recommended mitigation measures where necessary were recorded in the site inspection checklists that were passed to the Contractor. Major environmental deficiencies observed during the site inspection and recommendations made by the ET are given in ***Table 4.1***.

Table 4.1 Summary of Major Environmental Deficiencies in the Reporting Month

Date	Item	ET's Observations and Recommendations	Follow-up Action
3 Mar 2014	2	At To Shek Storage Yard – Construction waste and metal fencing within tree protection zone were observed. The contractor was advised to remove them ASAP. Also, it was advised to provide proper fencing around tree protection zone. (Remark was raised on 3.3.2014)	At To Shek Storage Yard – Tree protection zone were provided with proper mitigation measure on 10.3.2014. Last observation raised on 3.3.2014 closed
10 Mar 2014	--	No site observation	NA
17 Mar 2014	--	No site observation	NA
25 Mar 2014	--	No site observation	NA

Remark:
No construction activity had been carried out at To Shek Storage Yard and Shek Mun Storage Yard.

During site inspections in the reporting month, no non-conformance of implementation of environmental mitigation measures was identified. All relevant environmental mitigation measures for construction stages as stated in the EM&A Manual of SCL (TAW-HUH) was carried out properly in the reporting month. The mitigation measures implementation schedule is shown in ***Appendix F***.

5. ENVIRONMENTAL COMPLAINT

No complaint was received during the reporting month.

A log of environmental complaints is shown in ***Appendix G***. Cumulative statistic of environmental complaints is shown in ***Table 5.1***.

Table 5.1 Cumulative Statistic of Environmental Complaint

Compliant Received in the Reporting Month	Cumulative Number of Compliant
0	0

6. SUMMARY OF NOTIFICATION OF SUMMONS, SUCCESSFUL PROSECUTIONS AND CORRECTIVE ACTIONS

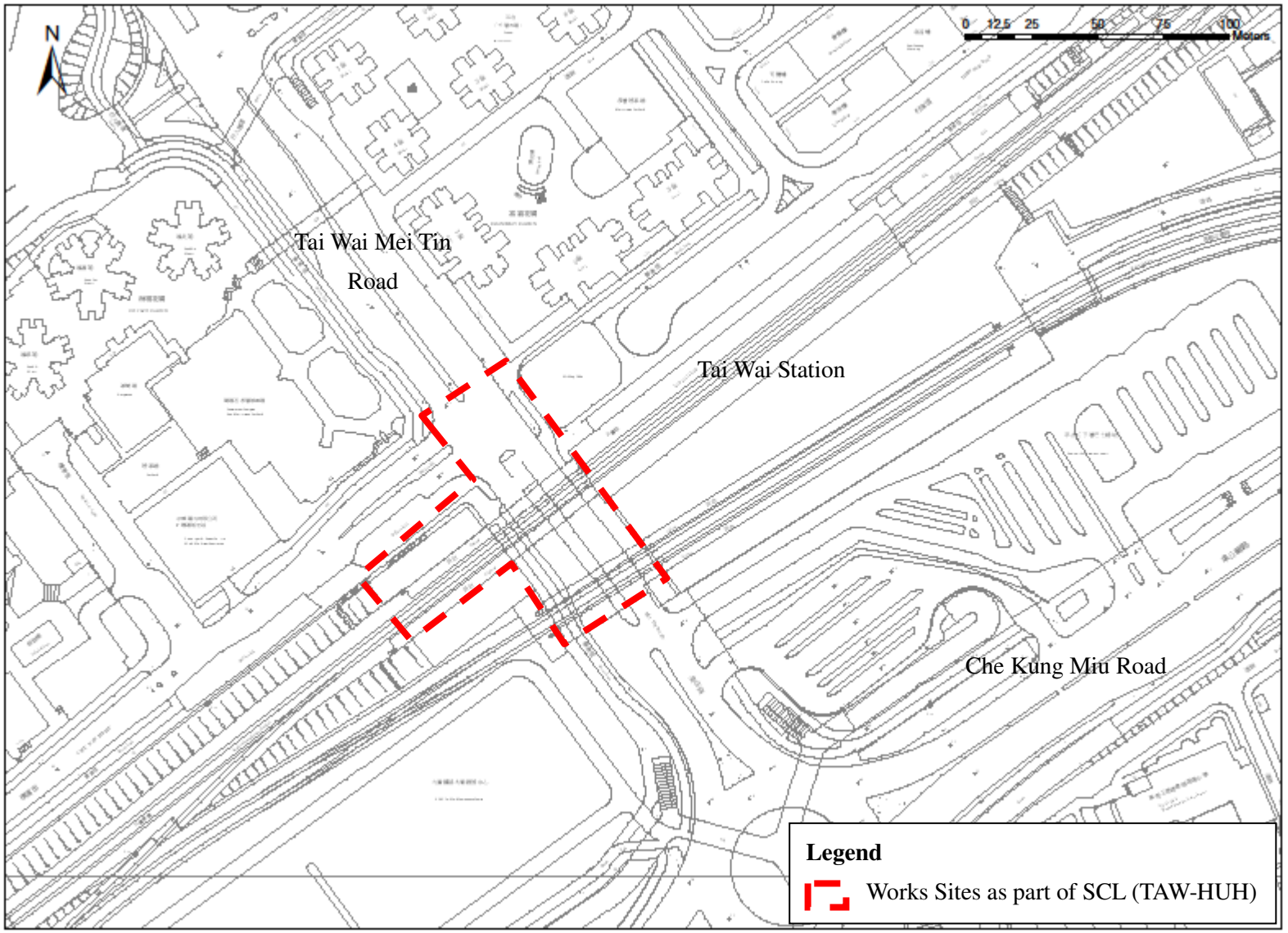
Neither Notification of Summon nor successful prosecution was received by the Contractor during the reporting month.

7. FUTURE KEY ISSUES

Construction works were completed at Tai Wai Mei Tin Road in September 2013.

APPENDIX A

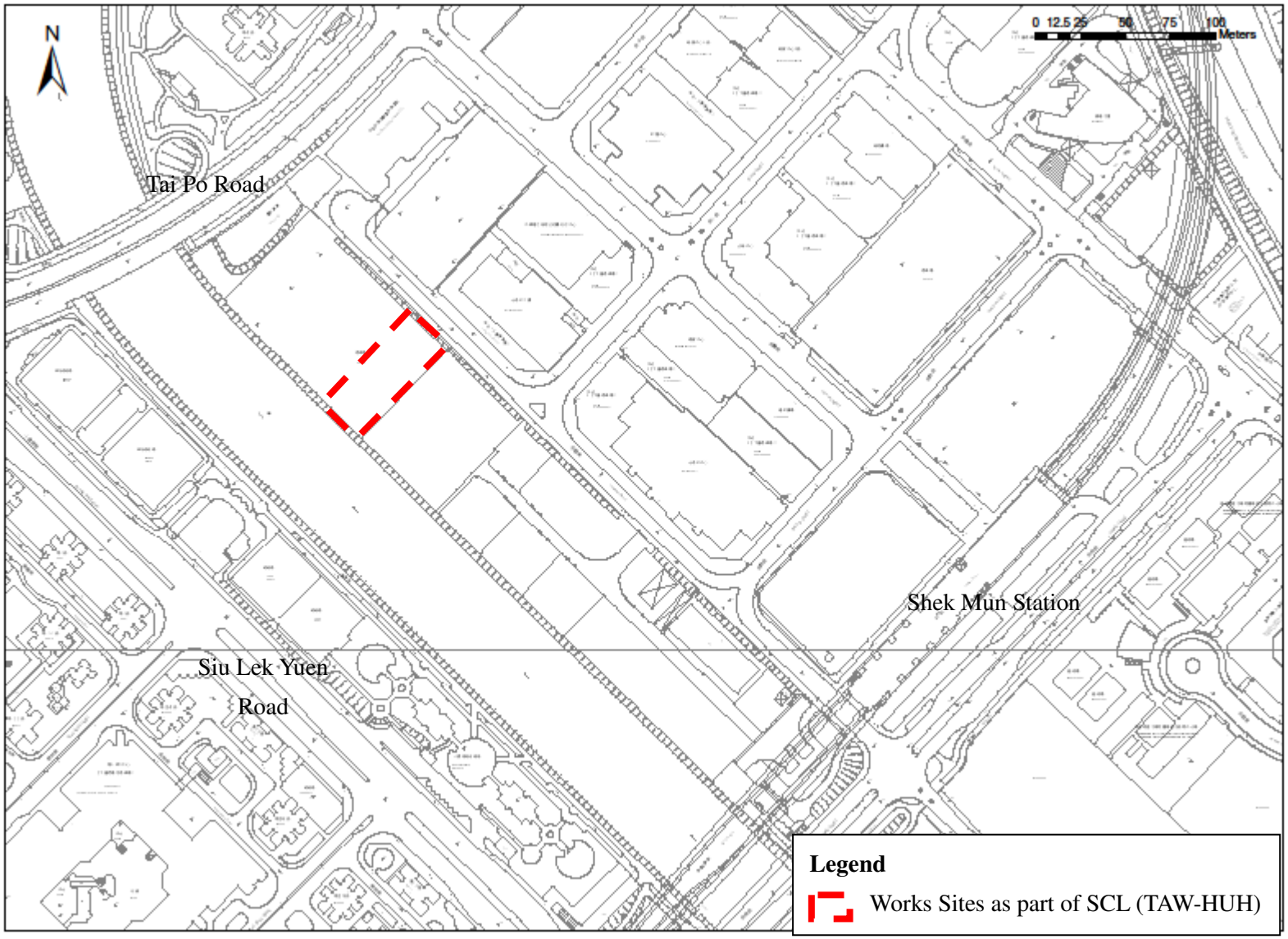
LOCATION PLAN OF WORKS AREA AND STORAGE YARD



edms

Location Plan of Works Area and Storage Yard
Tai Wai Mei Tin Road

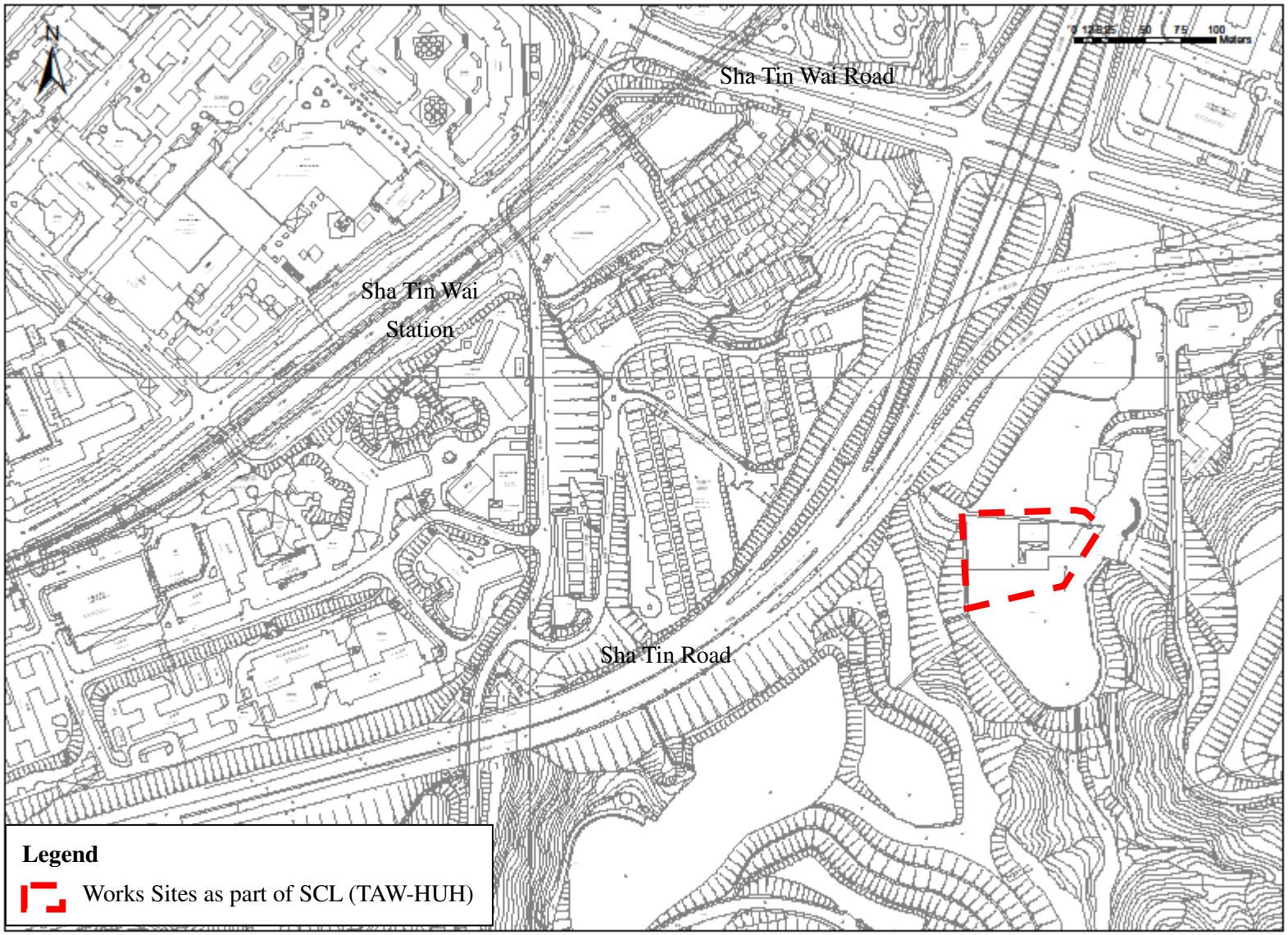
SCALE	N.T.S.	DATE	4 June 2013
CHECK	LYMA	DRAWN	YSWE
Ref. SCL Contract No.1101		FIGURE NO. App A (Sheet 1 of 3)	REV 1



edms

Location Plan of Works Area and Storage Yard
Shek Mun Storage Yard

SCALE	N.T.S.	DATE	4 June 2013
CHECK	LYMA	DRAWN	YSWE
Ref. SCL Contract No.1101		FIGURE NO. App A (Sheet 2 of 3)	REV 1



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Location Plan of Works Area and Storage Yard
To Shek Storage Yard

SCALE	N.T.S.	DATE	4 June 2013
CHECK	LYMA	DRAWN	YSWE
Ref. SCL Contract No.1101		FIGURE NO. App A (Sheet 3 of 3)	REV 1

APPENDIX B

UPDATED CONSTRUCTION PROGRAMME

Construction Programme (SCL)

Work site	Activities	2012				2013											2014												2015												2016						
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Tai Wai Mei Tin Road	Noise Barrier Installation Work			I	I	I	I	I	I	I	I	I	I	I																																		

Note:
1. Abbreviation:
I Engineering Possession (2:00 to 4:00)

2 No construction activity had been carried out at To Shek Storage Yard and Shek Mun Storage Yard.

APPENDIX C

ORGANISATION CHART OF ENVIRONMENTAL MANAGEMENT

Appendix C Organisation Chart of Environmental Management

Project Organization Chart

APPENDIX D

STATUS OF LICENSE, PERMIT AND SUBMISSIONS UNDER ENVIRONMENTAL PROTECTION REQUIREMENTS

Appendix D Status of License, Permits and Submission under Environmental Protection Requirements

Table 1 Environmental Management Related Licenses and Permits

Subject	Reference No.	Application Date	Issued Date	Effective Date	Expired Date
Environmental Permit					
Shatin to Central Link (SCL) - Tai Wai to Hung Hom Section	EP-438/2012/D	30 August 2013	13 September 2013	13 September 2013	N/A
Construction Noise Permit					
Tai Wai Station (At Tai Wai Mei Tin Road)	GW-RN0804-13	16 December 2013	13 January 2014	18 February 2014	17 August 2014
Chemical Waste Producer					
Tai Wai Station (At Tai Wai Mei Tin Road)	5213-757-S3683-02	6 September 2012	8 October 2012	8 October 2012	N/A
To Shek Storage Yard	5213-759-S3683-08	10 January 2013	14 February 2013	14 February 2013	N/A
Wastewater Discharge Licence					
Tai Wai Station (At Tai Wai Mei Tin Road)	WT00014550-2012	5 November 2012	19 November 2012	19 November 2012	30 November 2017
To Shek Storage Yard	WT00014628-2012	12 November 2012	12 December 2012	12 December 2012	31 December 2017

Note: Only include those valid or under application; “N/A” for non-applicable item(s).

Table 2 Summary of Submission Status under EP-438/2012/D

EP Condition	Submission	Date of Submission
Condition 3.4	Monthly EM&A Report (February 2014)	14 March 2014

APPENDIX E

WASTE FLOW TABLE

Waste Flow Table for 2012 (year) (in cu. meter) for SCL

Month		Actual Quantities of Inert C&D Materials Generated Monthly				Actual Quantities of Other C&D Wastes Generated Monthly		
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Recyclable Metals	Non-inert Waste / General Refuse	Chemical Waste (in kg)
January								
February								
March								
April								
May								
June								
Sub-total								
July								
August								
September	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
October	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
November	**13.00**	0.00	0.00	0.00	13.00	0.00	26.00	0.00
December	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cumulative Total	**13.00**	**0.00**	**0.00**	**0.00**	**13.00**	**0.00**	**26.00**	**0.00**

Remark: - Waste Generated from site at Tai Wai Mei Tin Road, Shek Mun Storage Yard, To Shek Storage Yard and Tai Shui Hang Storage Yard.

- 1 full loaded dumping truck is assumed equivalent to 6.5 m^3 by volume from Archsd D/OL03/09.002

- Inert waste is disposed of at Tseung Kwan O Area 137 Public Fill Bank while non-inert waste is disposed of at North East New Territories Landfill.

Waste Flow Table for 2013 (year) (in cu. meter) for SCL

Month		Actual Quantities of Inert C&D Materials Generated Monthly				Actual Quantities of Other C&D Wastes Generated Monthly		
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Recyclable Metals	Non-inert Waste / General Refuse	Chemical Waste (in kg)
January	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
February	**0.00**	0.00	0.00	0.00	0.00	0.00	3.50	0.00
March	**0.00**	0.00	0.00	0.00	0.00	0.00	3.25	0.00
April	**0.00**	0.00	0.00	0.00	0.00	3.00	16.25	0.00
May	**0.00**	0.00	0.00	0.00	0.00	0.00	35.75	0.00
June	**0.00**	0.00	0.00	0.00	0.00	0.00	22.75	0.00
Sub-total	**13.00**	**0.00**	**0.00**	**0.00**	**13.00**	**3.00**	**107.50**	**0.00**
July	**0.00**	0.00	0.00	0.00	0.00	0.00	6.50	0.00
August	**0.00**	0.00	0.00	0.00	0.00	0.00	3.25	0.00
September	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
October	**0.00**	0.00	0.00	0.00	0.00	0.00	58.50	0.00
November	**19.50**	0.00	0.00	0.00	19.50	0.00	48.75	0.00
December	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cumulative Total	**32.50**	**0.00**	**0.00**	**0.00**	**32.50**	**3.00**	**224.50**	**0.00**

Remark: - **Waste generated from site at Tai Wai Mei Tin Road, Shek Mun Storage Yard, To Shek Storage Yard and Tai Shui Hang Storage Yard from January 2013 – April 2013.**

- **Waste generated from site at Tai Wai Mei Tin Road, Shek Mun Storage Yard and To Shek Storage Yard only from May 2013 onwards**
- **Tai Shui Hang Storage Yard has been handed back to land owner on 15 April 2013**
- **1 full loaded dumping truck is assumed equivalent to 6.5 m^3 by volume from Archsd D/OL03/09.002**
- **Inert waste is disposed of at Tseung Kwan O Area 137 Public Fill Bank while non-inert waste is disposed of at North East New Territories Landfill.**

Waste Flow Table for _2014_ (year) (in cu. meter) for SCL

Month		Actual Quantities of Inert C&D Materials Generated Monthly				Actual Quantities of Other C&D Wastes Generated Monthly		
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Recyclable Metals	Non-inert Waste / General Refuse	Chemical Waste (in kg)
January	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
February	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
March	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	120.00
April								
May								
June								
Sub-total	**32.50**	**0.00**	**0.00**	**0.00**	**32.50**	**3.00**	**224.50**	**120.00**
July								
August								
September								
October								
November								
December								
Cumulative Total	**32.50**	**0.00**	**0.00**	**0.00**	**32.50**	**3.00**	**224.50**	**120.00**

Remark: - **Waste generated from site at Tai Wai Mei Tin Road, Shek Mun Storage Yard, To Shek Storage Yard and Tai Shui Hang Storage Yard from January 2013 – April 2013.**

- **Waste generated from site at Tai Wai Mei Tin Road, Shek Mun Storage Yard and To Shek Storage Yard only from May 2013 onwards**
- **Tai Shui Hang Storage Yard has been handed back to land owner on 15 April 2013**
- **1 full loaded dumping truck is assumed equivalent to 6.5 m^3 by volume from Archsd D/OL03/09.002**
- **Inert waste is disposed of at Tseung Kwan O Area 137 Public Fill Bank while non-inert waste is disposed of at North East New Territories Landfill.**

APPENDIX F

MITIGATION MEASURES IMPLEMENTATION SCHEDULE FOR 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 measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Status
Ecology (Construction Phase)								
S5.7	E5	Good Site Practices 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 stabilization works;	Minimise ecological impacts	Contractor	All construction sites	During construction	• ProPECC PN 1/94	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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 on-site burning of waste; • Waste and refuse in appropriate receptacles.						
Landscape & Visual (Construction Phase)								
S6.9.3	LV1	The following good site practices and measures for minimization 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>	Minimize visual & landscape impact	Contractor	Within Project Site	Contraction stage	TM-EIAO	*

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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 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.						
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>	Minimize visual & landscape impact	Contractor	Within Project Site	Detailed design and construction stage	EIAO-TM ETWB TCW 2/2004 ETWB TCW 3/2006	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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
		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.						
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 1.5 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 maintain an equivalent intensity of no less than 1.8 L/m2 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	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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
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 practices, 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;	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	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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
		• 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; • Surface 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;						

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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 by pulverized 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 stabilizer within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						
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;	Control construction airborne noise	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIA	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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
		• 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 down 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 utilized, 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 hoarding shall be properly maintained throughout the construction period.	Reduce the construction noise level 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	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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
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	^
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	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	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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 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 facilities the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediments/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 $0.1m^3/s$ a sedimentation basin of $30m^3$ would be required and for a flow rate of $0.5m^3/s$ the basin would be $150m^3$. The detailed design of the sand/silt traps shall be undertaken by the constructor 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 surface should be covered by tarpaulin or other means.						

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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 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 minimize 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						

Remarks:
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N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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
		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 in imminent or forecasted, and actions to be taken during or after rainstorms are summarized in Appendix A2 or ProPECC PN 1/94. Particular attention should be paid to the control of silt 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						

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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 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. • 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	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • TM-water	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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 employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.						
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 location should be locked as far as possible from the sensitive watercourse and stormwater drains. • The Contractor should register as a chemical waste produce 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 waste 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 identity 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 roke should be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them	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	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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
		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 Apilte 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	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	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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
		purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documents 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 ant 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	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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 labeled 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	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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	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	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	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

EIA Ref.	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
		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	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	^
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	• EIAO Guidance Note No. 4/2010 • TM-EIAO	^

Remarks:
^ Implement mitigation measure in the reporting month
N/A Not Applicable in the reporting month
x Non-compliance of mitigation measure
* Not satisfactory but rectified by the contractor

APPENDIX G

ENVIRONMENTAL COMPLAINT LOG

Appendix G Environmental Complaint Log

Complaint Log No.	Name of Complainant	Date Complaint Received	Complaint Date	Complaint Location	Details of Complaint	Date Complaint Received by ET	ET's Investigation Date	Investigation/ Mitigation Measures	Validity To Project
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Appendix D

15th EM&A Report for Works Contract 1111 –
Hung Hom North Approach Tunnel

AECOM

Gammon- Kaden SCL 1111 Joint Venture

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

Works Contract 1111 -
Hung Hom North Approach Tunnels

Monthly EM&A Report for
March 2014

April 2014

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

Version: 0 Date: 9 April 2014

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 2014. As informed by the Contractor, major activities in the reporting period were:-

Hung Hom Area
- Excavation work, site formation, slope work, cable duct work,
- Construction of man hole, drainage, reinforced concrete structure, emergency vehicular access, temporary pedestrian walkway,
- Trial pit, pre-drilling, pre-drilling, pilling works, post-grouting, abutment works,
- Erection of hoarding, steel platform and deck, temporary bridge,
- Demolition of abandon track,
- Trimming of retaining wall,
- Architectural Builders Works and Finishes (ABWF) & Electrical and Mechanical (E&M) works.

Mong Kok Freight Terminal
- Installation of overhead crane

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 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 not commenced during this reporting month, no continuous noise monitoring was carried out.

Complaint, Notification of Summons and Successful Prosecution

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

Future Key Issues

Key issues to be considered in the coming month included:-

Hung Hom Area
- Excavation work, site formation, slope work, slope cutting, cable duct work, cable detection,
- Construction of drainage, reinforced concrete structure, emergency vehicular access, haul road, temporary pedestrian walkway,
- Geological investigation,
- Trial pit, pre-drilling, abutment works, post grouting, pilling works,
- Erection of hoarding, steel platform and deck, temporary bridge, scaffolding platform,
- Demolition of overhead line equipment shelter, buffer stop,
- Trimming of retaining wall,
- Tie back installation,
- Architectural Builders Works and Finishes (ABWF) & Electrical and Mechanical (E&M) works.

Mong Kok Freight Terminal
- Architectural Builders Works and Finishes (ABWF) works.

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 fifteenth 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 2014.

1.2 Report Structure

1.2.1 This monthly EM&A Report is orgainised as follows:

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

2 PROJECT INFORMATION

2.1 Background

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

2.1.2 The Environmental Impact Assessment (EIA) Reports for SCL – Tai Wai to Hung Hom Section [SCL (TAW-HUH)] (Register No.: AEIAR-167/2012), SCL – Mong Kok East to Hung Hom Section [SCL (MKK-HUH)] (Register No.: AEIAR-165/2012) and SCL - Stabling Sidings at Hung Hom Freight Yard [SCL (HHS)] (Register No.: AEIAR-164/2012) were approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Reports, two Environmental Permits (EPs) were granted on 22 March 2012, one covers SCL (TAW-HUH) and SCL (HHS)(EP No: EP-438/2012) and the other covers SCL (MKK-HUH) and SCL (HHS) (EP No.: EP-437/2012), for their construction and operation. Variations of environmental permit (VEP) was subsequently applied for EP-438/2012 and the latest Environmental Permit (EP No: EP-438/2012/D) was issued by Director of Environmental Protection (DEP) on 13 September 2013.

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:-

Hung Hom Area

- Excavation work, site formation, slope work, cable duct work,
- Construction of man hole, drainage, reinforced concrete structure, emergency vehicular access, temporary pedestrian walkway,
- Trial pit, pre-drilling, pre-drilling, pilling works, post-grouting, abutment works,
- Erection of hoarding, steel platform and deck, temporary bridge,
- Demolition of abandon track,
- Trimming of retaining wall,
- Architectural Builders Works and Finishes (ABWF) & Electrical and Mechanical (E&M) works.

Mong Kok Freight Terminal

- Installation of overhead crane

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	Mr. Richard Kwan	2688 1283	2993 7577
Meinhardt	Independent Environmental Checker	Independent Environmental Checker	Mr. Fredrick Leong	2859 1739	2540 1580
GKSCKJV	Contractor	Project Manager	Mr. Alan Yan	9855 0361	3904 9630
		Environmental Manager	Mr. Brian Kam	9456 9541	
AECOM	Contractor's Environmental Team (ET)	ET Leader	Mr. Y T Tang	3922 9393	2317 7609

2.5 Status of Environmental Licences, Notification and Permits

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

Table 2.1 Status of Environmental Licenses, Notifications and Permits

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Environmental Permit				
EP-437/2012	22 Mar 2012	-	Valid	-
EP-438/2012/D	13 Sep 2013	-	Valid	-
Construction Noise Permit				
GW-RE1229-13	14 Nov 2013	10 May 2014	Valid	For Cross Track Duct Installation at Oi Sen Path near Workfronts No.5 & 6
GW-RE1243-13	17 Nov 2013	16 May 2014	Valid	For E&M Works at PolyU Phase 8
GW-RE1425-13	31 Dec 2013	30 Jun 2014	Valid	For OLE Shelter Demolition Work near Homantin Siding
GW-RE0090-14	30 Jan 2014	29 Jul 2014	Valid	For General and Reprovisioning Works at Hung Hom Station
GW-RE0116-14	01 Feb 2014	31 Jul 2014	Valid	For E&M Works at Mong Kok East Station Concourse
GW-RE0146-14	15 Feb 2014	12 Apr 2014	Valid	For Hoarding Erection at Trackside near Winslow Street
GW-RE0173-14	01Mar 2014	01 Apr 2014	Valid until cancellation on 20 Mar 2014	For Demolition of Existing OHL Footing and Mast at Chatham Road North
GW-RE0183-14	01 Mar 2014	30 Apr 2014	Valid	For Mobilization Woks at Oi Sen Path near Workfronts No. 5 & 6
GW-RE0186-14	01-Mar-14	30-Apr-14	Valid	For Scaffolding and Hoarding Erection during Night Time adjacent to Workfront No. 7
GW-RE0192-14	01-Mar-14	30-Apr-14	Valid	For Hoarding Works at Oi Sen Path Rest Area
GW-RE0226-14	10-Mar-14	09-Sep-14	Valid	For Grouting Station Works at EWL8
GW-RE0263-14	17-Mar-14	30-Apr-14	Valid	For Unloading of Steel Materials at Hung Hom Finger Pier Barging Point (near Hung Hom MTR Station)
GW-RE0268-14	20-Mar-14	15-May-14	Valid	For Retaining Wall Modification Work and Hoarding Erection at Chatham Road North
GW-RE0284-14	25-Mar-14	30-Mar-14	Valid	For Road Marking at Cheong Tung Road
GW-RE0298-14	20-Mar-14	16-May-14	Valid	For ADMS and Hoarding Installation at NSL 3-5
GW-RE0316-14	25-Mar-14	08-May-14	Valid	For Steel Decking Erection Works for TB2 at Slip Roads adjoining Hong Chong Road and Chatham Road North
GW-RE0325-14	25-Mar-14	31-May-14	Valid	For Plate Load Test at Ho Man Tin Maintenance Siding near Portal 1A

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Wastewater Discharge License				
WT00015148-2013	20 Feb 2013	28 Feb 2018	Valid	For Winslow Street Works
WT00015644-2013	16 Apr 2013	30 Apr 2018	Valid	For Homantin Sidings Works
WT00015606-2013	25 Apr 2013	30 Apr 2018	Valid	For Mong Kok Freight Terminal Works
WT00016090-2013	14 Jun 2013	30 Jun 2018	Valid	For Hung Hom Station Works
WT00016108-2013	14 Jun 2013	30 Jun 2018	Valid	For Slip Road Works from Chatham Road North and underneath Princess Margaret Road Link (Discharge Point near Hong Chong Road)
WT00015859-2013	14 May 2013	31 May 2018	Valid	For Works in EWL8 and Oi Sen Path Garden
WT00016447-2013	24 Jul 2013	31 Jul 2018	Valid	For Winslow Street Slope Works Between Chatham Road North and Wai Fung Street
WT00016435-2013	23 Jul 2013	31 Jul 2018	Valid	For Slip Road Works from Chatham Road North and underneath Princess Margaret Road Link (Discharge Point near Oi Sen Path)
Chemical Waste Producer Registration				
5213-213-G2618-01	22 Mar 2013	-	Valid	For Winslow Street Works
5213-213-G2618-03	08 Apr 2013	-	Valid	For Hung Hom Station Reprovisioning Works
5213-222-G2618-05	25 Apr 2013	-	Valid	For Mong Kok Freight Terminal Works
5213-213-G2618-06	16 Apr 2013	-	Valid	For Homantin Sidings Works
5213-236-G2618-10	14 Jun 2013	-	Valid	For Slip Road Works from Chatham Road North and underneath Princess Margaret Road Link
5213-236-G2618-11	27 May 2013	-	Valid	For Works near Chatham Road North
Billing Account for Construction Waste Disposal				
7016658	24 Jan 2013	-	Account Active	-
Notification Under Air Pollution Control (Construction Dust) Regulation				
353991	02 Jan 2013	18 Apr 2018	Notified	-

3 ENVIRONMENTAL MONITORING REQUIREMENTS

3.1 Construction Dust Monitoring

Monitoring Requirements

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

Monitoring Equipment

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

Table 3.1 Air Quality Monitoring Equipment

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

Monitoring Locations

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

Table 3.2 Locations of Construction Dust Monitoring Stations

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

Note:
(1) Permission of access could not be obtained from Wing Fung Building (originally proposed in the approved EM&A Manuals) and hence the monitoring location was relocated to No. 234-248 Chatham Road North. The alternative monitoring location has been approved by IEC and EPD.

Monitoring Methodology

3.1.4 24-hour TSP Monitoring

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

(i) A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
(ii) The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
(iii) A minimum of 2 meters separation from walls, parapets and penthouse for rooftop sampler.
(iv) A minimum of 2 meters separation from any supporting structure, measured horizontally is required.
(v) No furnace or incinerator flues nearby.
(vi) Airflow around the sampler was unrestricted.
(vii) Permission was obtained to set up the samplers and access to the monitoring stations.
(viii) A secured supply of electricity was obtained to operate the samplers.
(ix) The sampler was located more than 20 meters from any dripline.
(x) Any wire fence and gate, required to protect the sampler, did not obstruct the monitoring process.
(xi) Flow control accuracy was kept within ±2.5% deviation over 24-hour sampling period.

(b) Preparation of Filter Papers

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

(c) Field Monitoring

(i) The power supply was checked to ensure the HVS works properly.
(ii) The filter holder and the area surrounding the filter were cleaned.
(iii) The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
(iv) The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
(v) The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied was sufficient to avoid air leakage at the edges.
(vi) Then the shelter lid was closed and was secured with the aluminium strip.
(vii) The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
(viii) A new flow rate record sheet was set into the flow recorder.
(ix) On site temperature and atmospheric pressure readings were taken and the flow rate of the HVS was checked and adjusted at around 1.3 m^3/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m^3/min).
(x) The programmable digital timer was set for a sampling period of 24 hrs, and the starting time, weather condition and the filter number were recorded.
(xi) The initial elapsed time was recorded.
(xii) At the end of sampling, on site temperature and atmospheric pressure readings were taken and the final flow rate of the HVS was checked and recorded.
(xiii) The final elapsed time was recorded.
(xiv) The sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
(xv) It was then placed in a clean 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.

(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 24Hrs TSP monitoring scheduled at 00:00 of 24 Mar 2014 - 00:00 of 25 Mar 2014 was interrupted by a stop of electricity supply. The monitoring restarted from 12:00 of 25 Mar 2014 - 12:00 of 26 Mar 2014 after flow of the HVS and electricity supply were checked and returned normal.

3.1.6 The schedule for environmental monitoring in March 2014 is provided in **Appendix F**.

3.2 Regular Construction Noise Monitoring

Monitoring Requirements

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

Table 3.4 Noise Monitoring Parameters, Frequency and Duration

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

Monitoring Equipment

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

Table 3.5 Noise Monitoring Equipment for Regular Noise Monitoring

Equipment	Brand and Model
Integrated Sound Level Meter	B&K (Model No. 2238 (S/N: 2800927))and Rion (Model No. NL-31 (S/N: 00320528))
Acoustic Calibrator	Rion (Model No. NC-73 (S/N: 10307223) and (S/N: 10186482))

Monitoring Locations

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

Table 3.6 Locations of Regular Construction Noise Monitoring Stations

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

Note:
(1) Permission of access could not be obtained from Wing Fung Building (originally proposed in the approved EM&A Manuals) and hence the monitoring location was relocated to No. 234-248 Chatham Road North. The alternative monitoring location has been approved by IEC and EPD.

Monitoring Methodology

3.2.4 Monitoring Procedure

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

(b) Façade measurements were made at NM1.

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

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

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

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

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

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

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

3.2.5 Maintenance and Calibration

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

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

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

Monitoring Schedule for the Reporting Month

3.2.6 The schedule for environmental monitoring in March 2014 is provided in **Appendix F**.

Continuous noise monitoring

Monitoring Requirements

3.2.7 According to EP conditions under EP-437/2012 (Condition 2.8) and EP-438/2012/D (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

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

Table 3.7 Summary of Proposed Continuous Noise Monitoring Location

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

Note:
(1) Permission of access could not be obtained from Wing Fung Building (originally proposed in the approved EM&A Manuals) and hence the monitoring location was relocated to No. 234-248 Chatham Road North. The alternative monitoring location is considered as an appropriate alternative noise monitoring station in the CNMP.

Monitoring Equipment

3.2.9 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	Rion (Model No. NL-31)
Acoustic Calibrator	Rion (Model No. NC-73)

Monitoring Parameters, Frequency and Duration

3.2.10 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

3.2.11 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

3.2.12 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 Plan

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)(4)
NM2	No. 234-238 Chatham Road North(2)	77	Sep to Dec of 2014 Jan / Mar to May 2015

Note:
(1) Action/Limit level will only be applicable during the examination period.
(2) Permission of access could not be obtained from Wing Fung Building (originally proposed in the approved EM&A Manuals) and hence the monitoring location was relocated to No. 234-248 Chatham Road North. The alternative monitoring location is considered as an appropriate alternative noise monitoring station in the CNMP.
(3) Based on 2013-2014 Calendar of Carmel Secondary School, the examination periods are assumed to be January, February and June.
(4) The continuous noise monitoring periods will be reviewed and updated based on the latest calendar of Carmel Secondary School.

3.3 Landscape and Visual

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

4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

Table 4.1 Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
Condition 3.4 (EP-437/2012) & Condition 3.4 (EP-438/2012/D)	Monthly EM&A Report for February 2014	14 March 2014

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	66.4	52.0 – 108.8	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 – 64.2	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; 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, 1,248m^3 of inert C&D material was generated. 75 m^3 was reused in the Contract, 62m^3 was reused in other projects and 1,111m^3 was disposed as public fills at TM38 while 164,200kg of general refuse was disposed at NENT landfill in the reporting month. 287kg of paper/cardboard packaging material and 2kg of plastics and 7240kg of metals were collected by recycling contractor in the reporting month. No inert C&D materials were reused on site. 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 Practise 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 6 & 20 March 2014. 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, 4 site inspections were carried out on 6, 13, 20 and 27 March 2014. The one held on 20 March 2014 was a joint inspection with the IEC, ER, the Contractor and the ET. No site inspection was conducted by EPD during the reporting month. 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	06 Mar 2014	• Inadequate effluent intercepting mechanism was observed at Winslow Street, EWL8, Homantin Siding and Tai Pau Mei. The Contractor should provide effective intercepting mechanism at the works area and prevent any muddy water from entering the public drainage and haul road.	The item was observed to be rectified on 13 March 2014.
	13 Mar 2014	• Measures to prevent excavated material from entering the public drainage was not provided at NSL8. The Contractor should provide sand bags or bunds to prevent any grit or silt being deposited in the public drainage.	The item was observed to be rectified on 20 March 2014.
		• Sludge removing tubes from the effluent treating facilities at Hong Chong Road was observed to be misconnected to the public drainage. The Contractor should prevent any sludge that arose from the effluent treating facilities be discharged to the public drainage.	The item was rectified by the Contractor on 19 Mar 2014.
		• Deposited silt and grit was observed in the drainage in Oi Sen Path and EWL8. The Contractor should clear the deposited material regularly.	The item was rectified by the Contractor on 19 Mar 2014.
	27 Mar 2014	• Accumulation of stagnant water was observed in the internal drainage at Oi Sen Path which might lead to potential over-flow of effluent to the pedestrian walkway. The Contractor should clear the stagnant water and/or provide pumping facility to prevent over-flow.	The item was rectified by the Contractor on 1 Apr 2014.
		• The public drainage gullies at Tai Pau Mei were exposed to potential effluent arising from the works area. The Contractor should intercept the gullies to prevent effluent from entering the public drainage.	The item was follow-up on 2 Apr 2014.

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	27 Mar 2014	• Deposited mud was observed in drainages along the pedestrian walkway to NSL9 and the shoes washing facility at NSL8. The Contractor should clear the deposited mud regularly	The item was rectified by the Contractor on 1 Apr 2014.
Air Quality	06 Mar 2014	• Stockpile of construction material was found at Tai Pau Mei without proper dust suppression measure applied. The Contractor should cover the stockpile with tarpaulin sheet as dust suppression measure.	The item was observed to be rectified on 13 March 2014.
	13 Mar 2014	• Stockpile was observed not covered properly at Tai Pau Mei. The Contractor should cover the stockpile entirely to prevent any dusty material from entering the pedestrian pathway.	The item was observed to be rectified on 20 March 2014.
Noise	N/A	N/A	N/A
Waste/ Chemical Management	06 Mar 2014	• Chemical containers without the provision of drip tray and oil leakage were observed at NSL8, Homantin Siding and Tai Pau Mei. The Contractor should provide drip tray or equivalent measures to retain leakage and clear oil stain and disposed of as chemical waste.	The item was observed to be rectified on 13 March 2014.
	20 Mar 2014	• Oil stains were observed on bare ground at Tai Pau Mei and Winslow Street works area respectively. The Contractor should clear the oil stain and dispose of as chemical waste.	The item was observed to be rectified on 2 Apr 2014.
		• The containers stored in chemical waste storage area at Tai Pau Mei were not properly labelled. The Contractor should label the containers properly and clearly.	The item was rectified by the Contractor on 26 March 2014.
	27 Mar 2014	• Oil stain was observed on bare ground at Tai Pau Mei and Winslow Street. The Contractor should clear the oil stain and disposed of as chemical waste.	The item was follow-up on 2 Apr 2014.
Landscape & Visual	N/A	N/A	N/A
Permits/ Licenses	N/A	N/A	N/A

6.1.3 All the follow-up actions requested by Contractor's ET and IEC during the site inspection were undertaken as reported by the Contractor and confirmed into the following weekly site inspection conducted during the reporting period.

6.1.4 The items of which their inspection for follow-up actions were outstanding as recorded in the last reporting month have already been rectified by the Contractor as confirmed by the ET during the reporting period.

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 Summary of Monitoring Exceedances

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

7.1.2 No noise complaint 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.

7.2 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 Next Month

8.1.1 The major construction works in April and May 2014 will be:

Hung Hom Area

- Excavation work, site formation, slope work, slope cutting, cable duct work, cable detection,
- Construction of drainage, reinforced concrete structure, emergency vehicular access, haul road, temporary pedestrian walkway,
- Geological investigation,
- Trial pit, pre-drilling, abutment works, post grouting, pilling works,
- Erection of hoarding, steel platform and deck, temporary bridge, scaffolding platform,
- Demolition of overhead line equipment shelter, buffer stop,
- Trimming of retaining wall,
- Tie back installation,
- Architectural Builders Works and Finishes (ABWF) & Electrical and Mechanical (E&M) works.

Mong Kok Freight Terminal

- Architectural Builders Works and Finishes (ABWF) works.

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 and waste management.

8.3 Monitoring Schedule for the Next Month

8.3.1 The tentative schedule for environmental monitoring in April 2014 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 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 4 nos. of environmental site inspections were carried out in March 2014. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.

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

9.2 Recommendations

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

Air Quality Impact

- Implement effective measures to avoid dust impact.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- Implement effective measures to avoid surface runoff into the drainage system.

Chemical and Waste Management

- Provide proper chemical waste management.

FIGURES

817500 N
818000 N
818500 N
819000 N
836500 E
837000 E
835700 E
835800 E
820400 N
820500 N

CHATHAM ROAD SOUTH
PRINCESS MARGARET ROAD
HUNG HOM STATION
SCL (HUH - ADM)
SCL (MKK - HUH)
UNDER CONTRACT 1112
UNDER CONTRACT 1111
SCL (TAW - HUH)
GILLIES AVENUE SOUTH
MONG KOK FREIGHT TERMINAL

0 25 50 METRES
1 : 2500

MONG KOK FREIGHT TERMINAL WORKS AREA

0 25 50 75 100 125 METRES
1 : 5000

LEGEND:

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

ABBREVIATIONS:

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

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DATE	08/FEB/2013

MTR

SHATIN TO CENTRAL LINK

CONTRACTOR: Gammon Kaden Gammon – Kaden SCL 1111 Joint Venture

ORIGINATOR: AECOM

CADD REF. 701.dgn

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

SCALE	FIGURE NO.	REV.
A3 AS SHOWN	FIGURE 1.1	–

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

818600 N

818800 N

819000 N

836600 E

836800 E

PRINCESS MARGARET ROAD

CHATHAM ROAD NORTH

HONG CHONG ROAD

CHEONG HANG ROAD

YUK CHOI ROAD

HAU MAN STREET

UNDER CONTRACT 1112

UNDER CONTRACT 1111

AM1

SCL (TAW - HUH)

0 10 20 30 40 50
METRES
1 : 2000

LEGEND:

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

ABBREVIATIONS:

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

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APPROVED	IMW
DATE	08/JAN/2013

MTR

SHATIN TO CENTRAL LINK

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

ORIGINATOR: AECOM

CADD REF. Figure 2.1.dgn

TITLE

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

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

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

818600 N

818800 N

819000 N

836600 E

836800 E

PRINCESS MARGARET ROAD

CHATHAM ROAD SOUTH

CHATHAM ROAD NORTH

HONG CHONG ROAD

CHEONG HANG ROAD

YUK CHOI ROAD

HAU MAN STREET

NM1

NM2

UNDER CONTRACT 1112

UNDER CONTRACT 1111

SCL (TAW - HUH)

0 10 20 30 40 50
METRES
1 : 2000

LEGEND:

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

ABBREVIATIONS:

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

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APPROVED	IMW
DATE	08/JAN/2013

MTR

SHATIN TO CENTRAL LINK

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

ORIGINATOR: AECOM

CADD REF. Figure 3.1.dgn

TITLE

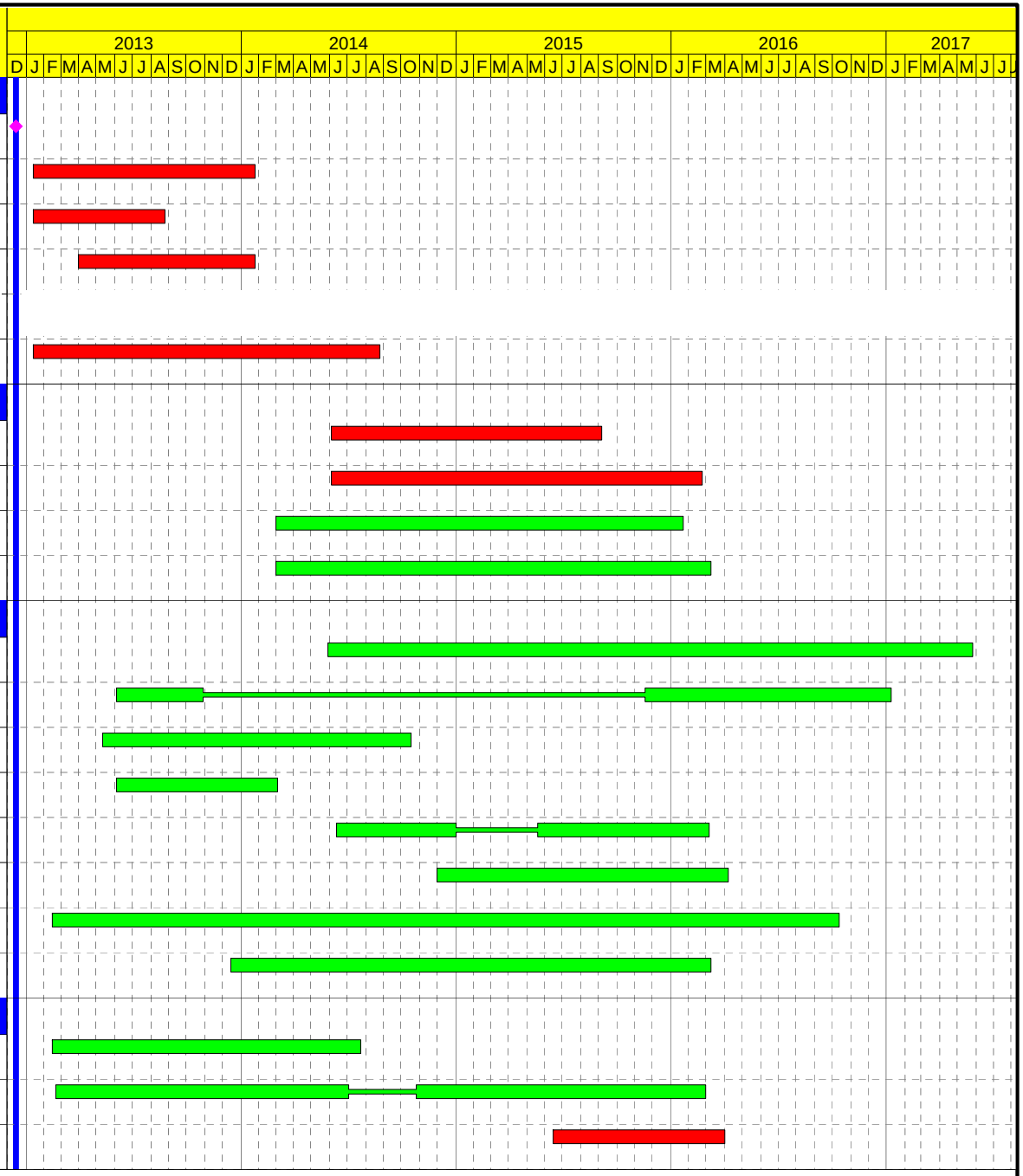
CONTRACT 1111
HUNG HOM NORTH APPROACH TUNNELS
LOCATION OF NOISE MONITORING STATION (CONSTRUCTION PHASE)

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

APPENDIX A

Construction Programme

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



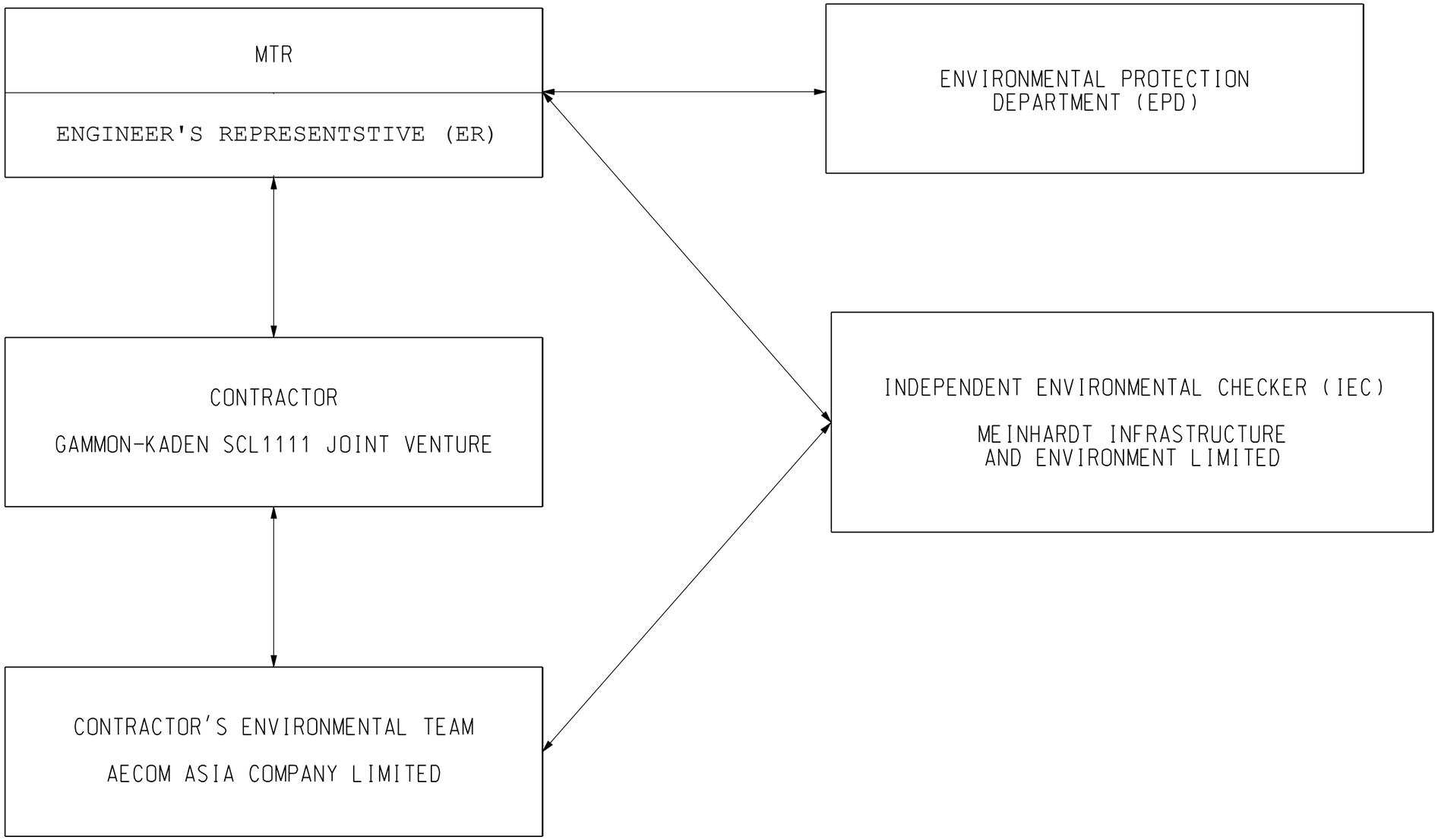
Early Bar
Progress Bar
Critical Activity

SCL 1111
SUMMARY PROGRAMME

Date	Revision	Checked	Approved
19/09/12			

APPENDIX B

Project Organization Structure



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APPROVED	IMW
DATE	08/JAN/2013

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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))	Works areas where required	N/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)) • 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
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	V
		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	N/A
		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
		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

		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	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.	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	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 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

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	@
		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	@
		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	@
		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	@
		Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly.	All construction sites	@
		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	All construction sites	N/A

		out immediately after the final surfaces are formed to prevent erosion caused by rainstorms.		
		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
		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	@
		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	All construction sites	V

		either be dewatered or mixed with inert fill material for disposal to a public filling area.		
		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	@
		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	@
		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	@
		Waste should be removed in timely manner	All construction sites	V
		Waste collectors should only collect wastes prescribed by their permits.	All construction sites	V

		Waste should be disposed of at licensed waste disposal facilities.	All construction sites	V
		Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified.	All construction sites	V
		Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed.	All construction sites	V
		The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides.	All construction sites	V
		The Contractor should register as a chemical waste producer if chemical wastes would be generated.	All construction sites	V
		Disposal of chemical waste should be via a licensed waste collector.	All construction sites	V
		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.	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 70 dB(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

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:	11-Jan-14	Next Due Date:	11-Mar-14
Equipment No.:	---	Serial No.	8259

Ambient Condition			
Temperature, Ta (K)	294	Pressure, Pa (mmHg)	770.3

Orifice Transfer Standard Information					
Serial No:	988	Slope, mc	1.94727	Intercept, bc	0.02332
Last Calibration Date:	20-May-13	**mc x Qstd + bc = [DH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	20-May-14	**Qstd = {[DH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Resistance Plate No.	Orfice			HVS Flow Recorder	
	DH (orifice), in. of water	[DH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (m^3/min) **X - axis**	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) **Y-axis**
18	9.0	3.04	1.55	48.0	48.65
13	7.0	2.68	1.37	40.0	40.54
10	5.6	2.40	1.22	34.0	34.46
7	4.3	2.10	1.07	28.0	28.38
5	3.0	1.76	0.89	20.0	20.27

By Linear Regression of Y on X

Slope , mw = 42.6343 **Intercept, bw =** -17.4795

Correlation Coefficient* = 0.9996

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

Therefore, Set Point; IC = (mw x Qstd + bw) x [(760 / Pa) x (Ta / 298)]$^{1/2}$= **37.44**

Remarks: _____

QC Reviewer: _____ Signature: _____ Date: 13-Jan-14

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:	11-Mar-14	Next Due Date:	10-May-14
Equipment No.:	---	Serial No.	8259

Ambient Condition			
Temperature, Ta (K)	288.3	Pressure, Pa (mmHg)	767.0

Orifice Transfer Standard Information					
Serial No:	988	Slope, mc	1.99238	Intercept, bc	0.02332
Last Calibration Date:	20-May-13	$mc \times Qstd + bc = [DH \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	20-May-14	$Qstd = \{[DH \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	9.0	3.06	1.53	48.0	49.03
13	7.2	2.74	1.36	42.0	42.90
10	5.5	2.40	1.19	34.0	34.73
7	4.4	2.14	1.06	28.0	28.60
5	3.0	1.77	0.88	20.0	20.43

By Linear Regression of Y on X

Slope , mw = **44.6453** **Intercept, bw =** **-18.6213**

Correlation Coefficient* = **0.9985**

*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 x Qstd + bw) x [(760 / Pa) x (Ta / 298)]$^{1/2}$= **38.59**

Remarks:

QC Reviewer: YT Leung Signature: Date: 16-3-14

TISCH ENVIROMENTAL, INC.
145 SOUTH MIAMI AVE.
VILLAGE OF CLEVES, OH 45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 20, 2013 Rootsmeter S/N 0438320 Ta (K) - 297
Operator Tisch Orifice I.D. - 0988 Pa (mm) - 751.84

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	1.3900	3.2	2.00
2	NA	NA	1.00	0.9720	6.4	4.00
3	NA	NA	1.00	0.8670	7.9	5.00
4	NA	NA	1.00	0.8270	8.7	5.50
5	NA	NA	1.00	0.6800	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9884	0.7110	1.4090		0.9957	0.7163	0.8889
0.9842	1.0125	1.9926		0.9915	1.0201	1.2570
0.9821	1.1327	2.2278		0.9894	1.1412	1.4054
0.9811	1.1863	2.3365		0.9884	1.1952	1.4740
0.9759	1.4352	2.8179		0.9832	1.4459	1.7777
Qstd slope (m) =		1.94727		Qa slope (m) =		1.21935
intercept (b) =		0.02332		intercept (b) =		0.01471
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}

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

CERTIFICATE OF CALIBRATION

Certificate No.: 13CA0617 01-01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2800927 / N.009.06	,	2791211
Adaptors used:	-	,	-

Item submitted by

Customer Name:	AECOM ASIA CO. LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	17-Jun-2013

Date of test: 18-Jun-2013

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	22-Jun-2013	CIGISMEC
Signal generator	DS 360	33873	15-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1000 ± 10 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:** 18-Jun-2013 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

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

CERTIFICATE OF CALIBRATION

Certificate No.: 13CA1107 01-01

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	Rion Co., Ltd.	,	Rion Co., Ltd.
Type/Model No.:	NL-31	,	UC-53A
Serial/Equipment No.:	00320528 / N.007.03A	,	90565
Adaptors used:	-	,	-

Item submitted by

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	07-Nov-2013

Date of test: 08-Nov-2013

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	22-Jun-2014	CIGISMEC
Signal generator	DS 360	33873	15-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1000 ± 10 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:** 11-Nov-2013 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

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

CERTIFICATE OF CALIBRATION

Certificate No.: 13CA1107 01-02 **Page:** 1 **of** 2

Item tested

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

Item submitted by

Curstomer:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	07-Nov-2013

Date of test: 08-Nov-2013

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	17-Apr-2014	SCL
Preamplifier	B&K 2673	2239857	16-Apr-2014	CEPREI
Measuring amplifier	B&K 2610	2346941	24-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI
Digital multi-meter	34401A	US36087050	10-Dec-2013	CEPREI
Audio analyzer	8903B	GB41300350	15-Apr-2014	CEPREI
Universal counter	53132A	MY40003662	15-Apr-2014	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1000 ± 10 hPa

Test specifications

1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.

2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.

3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

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

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

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 11-Nov-2013 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

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

CERTIFICATE OF CALIBRATION

Certificate No.: 13CA0325 01-03 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Rion Co., Ltd.
Type/Model No.:	NC-73
Serial/Equipment No.:	10186482 / N.004.09
Adaptors used:	-

Item submitted by

Curstomer:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	25-Mar-2013

Date of test: 26-Mar-2013

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	29-May-2013	SCL
Preamplifier	B&K 2673	2239857	17-Dec-2013	CEPREI
Measuring amplifier	B&K 2610	2346941	17-Dec-2013	CEPREI
Signal generator	DS 360	61227	29-May-2013	CEPREI
Digital multi-meter	34401A	US36087050	10-Dec-2013	CEPREI
Audio analyzer	8903B	GB41300350	29-May-2013	CEPREI
Universal counter	53132A	MY40003662	29-May-2013	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1000 ± 10 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:** 26-Mar-2013 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

APPENDIX F

EM&A Monitoring Schedules

Shatin to Central Link Contract 1111 - Hung Hom North Approach Tunnels
Impact Monitoring Schedule for March 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						01-Mar
02-Mar	03-Mar	04-Mar	05-Mar	06-Mar	07-Mar	08-Mar
				24-hour TSP (AM1)	Noise (NM1, NM2)	
09-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar
			24-hour TSP (AM1)	Noise (NM1, NM2)		
16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar
		24-hour TSP (AM1)	Noise (NM1, NM2)			
23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar
	24-hour TSP* (AM1)	Noise (NM1, NM2)				24-hour TSP (AM1)
30-Mar	31-Mar					

*The 24Hrs TSP monitoring scheduled at 00:00 of 24 Mar 2014 - 00:00 of 25 Mar 2014 was interrupted by a stop of electricity supply. The monitoring restarted from 12:00 of 25 Mar 2014 - 12:00 of 26 Mar 2014 after flow of the HVS and electricity supply were checked and returned normal.

Shatin to Central Link Contract 1111 - Hung Hom North Approach Tunnels
Tentative Impact Monitoring Schedule for April 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Apr	02-Apr	03-Apr	04-Apr	05-Apr
		Noise (NM1, NM2)			24-hour TSP (AM1)	
06-Apr	07-Apr	08-Apr	09-Apr	10-Apr	11-Apr	12-Apr
		Noise (NM1, NM2)		24-hour TSP (AM1)		
13-Apr	14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr
			24-hour TSP (AM1)	Noise (NM1, NM2)		
20-Apr	21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr
		24-hour TSP (AM1)	Noise (NM1, NM2)			
27-Apr	28-Apr	29-Apr	30-Apr			
	24-hour TSP (AM1)	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

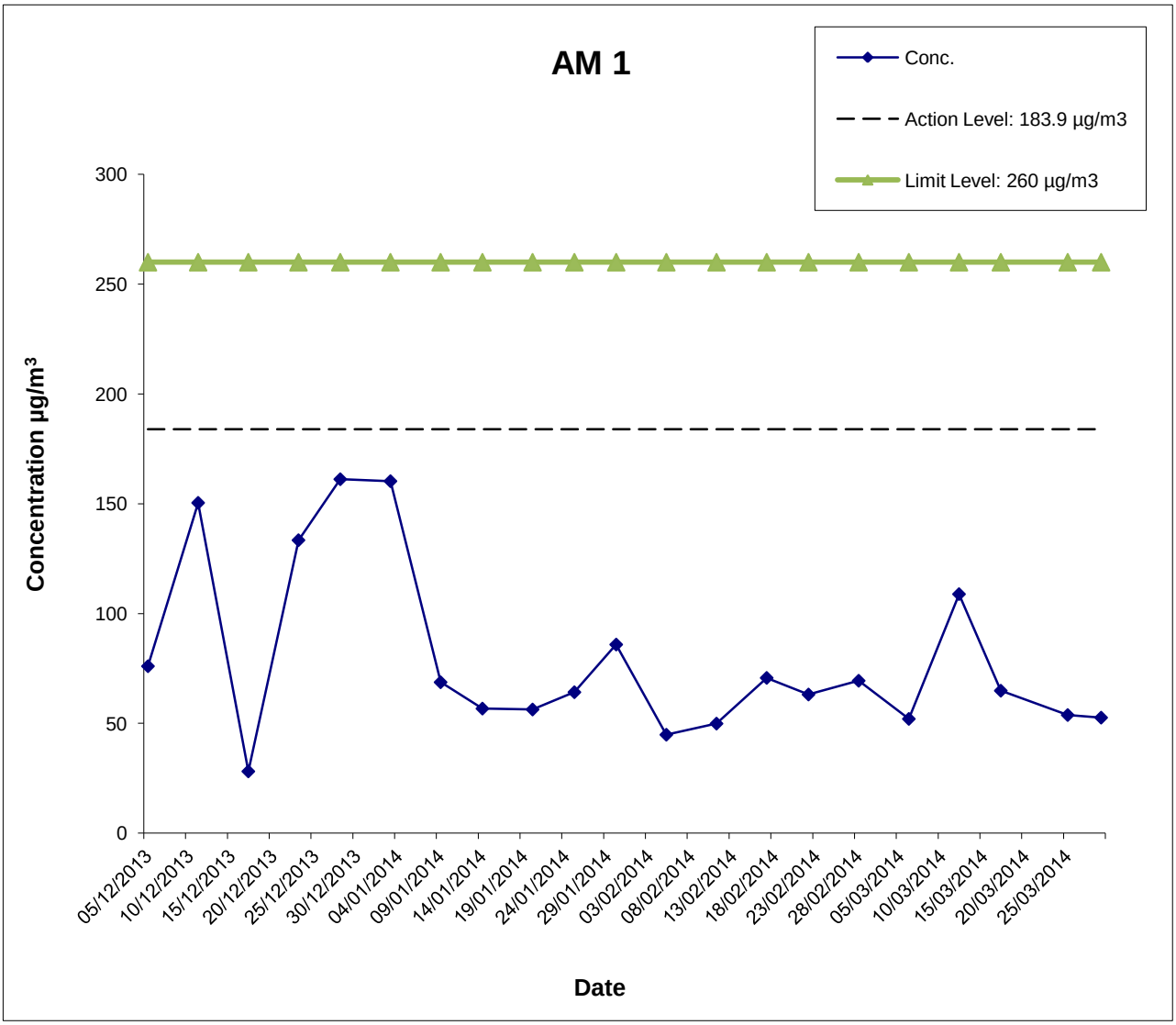
Appendix G
Air Quality Monitoring Results

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.)	($\mu g/m^3$)
06-Mar-14	0:00	07-Mar-14	0:00	Fine	15.3	1018.2	1.33	1.33	1.33	1916.6	2.7045	2.8042	0.0997	13825.87	13849.87	24.00	52.0
12-Mar-14	0:00	13-Mar-14	0:00	Cloudy	17.7	1014.7	1.33	1.33	1.33	1916.6	2.7256	2.9342	0.2086	13849.87	13873.87	24.00	108.8
17-Mar-14	0:00	18-Mar-14	0:00	Fine	18.1	1021.0	1.33	1.33	1.33	1916.6	2.9401	3.0644	0.1243	13873.87	13897.87	24.00	64.9
25-Mar-14*	0:00	26-Mar-14	0:00	Sunny	21.9	1015.5	1.33	1.33	1.33	1916.6	2.7771	2.8802	0.1031	13897.87	13921.87	24.00	53.8
29-Mar-14	0:00	30-Mar-14	0:00	Rainy	21.8	1011.4	1.33	1.33	1.33	1916.6	2.7332	2.8340	0.1008	13921.87	13945.87	24.00	52.6
																Average	**66.4**
																Minimum	**52.0**
																Maximum	**108.8**

*The 24Hrs TSP monitoring scheduled at 00:00 of 24 Mar 2014 - 00:00 of 25 Mar 2014 was interrupted by a stop of electricity supply. The monitoring restarted from 12:00 of 25 Mar 2014 - 12:00 of 26 Mar 2014 after flow of the HVS and electricity supply were checked and returned normal.

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-14
		CHECK	TYUT	DRAWN	IYYS
	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 2014

Date	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
01-Mar	2	50	13.8
02-Mar	2	80	21.8
03-Mar	1.4	70	42.3
04-Mar	1	50	22.4
05-Mar	2.3	70	30
06-Mar	0.4	70	43.2
07-Mar	1.4	80	46.3
08-Mar	1.4	60	29.2
09-Mar	1.8	40	24.2
10-Mar	1.6	70	45.5
11-Mar	0.4	60	39.4
12-Mar	0.3	40	14.7
13-Mar	3.2	30	19.8
14-Mar	1.5	60	31.3
15-Mar	3.9	60	29.2
16-Mar	2	50	24.9
17-Mar	-	50	18.2
18-Mar	2.7	50	12.8
19-Mar	-	40	6.8
20-Mar	5.1	40	14.3
21-Mar	2.7	30	26.7
22-Mar	5.9	70	32.9
23-Mar	3.1	70	33.1
24-Mar	4	60	25
25-Mar	3.8	40	14.4
26-Mar	4.1	40	7.4
27-Mar	4.3	160	11.5
28-Mar	1.7	50	18.5
29-Mar	2.4	40	9.5
30-Mar	-	100	20.7
31-Mar	2	110	18.9
Mean	**2.4**	**60**	**24.1**
Total	**68.4**	**1890**	**748.7**
Maximum	**5.9**	**160**	**46.3**
Minimum	**0.3**	**30**	**6.8**

*Meterological data of the nearest Automatic Weather Station is presented.

missing (less than 24 hourly observations a day)

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

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				
07-Mar-14	Fine	10:16	66.5	72.3	69.5	64.2	68.0	70	N
13-Mar-14	Fine	10:12	66.6	69.1	67.9	<Baseline	68.0	70	N
19-Mar-14	Sunny	10:00	65.1	70.0	68.2	<Baseline	68.0	70	N
25-Mar-14	Sunny	10:25	66.5	71.0	68.8	<Baseline	68.0	70	N

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

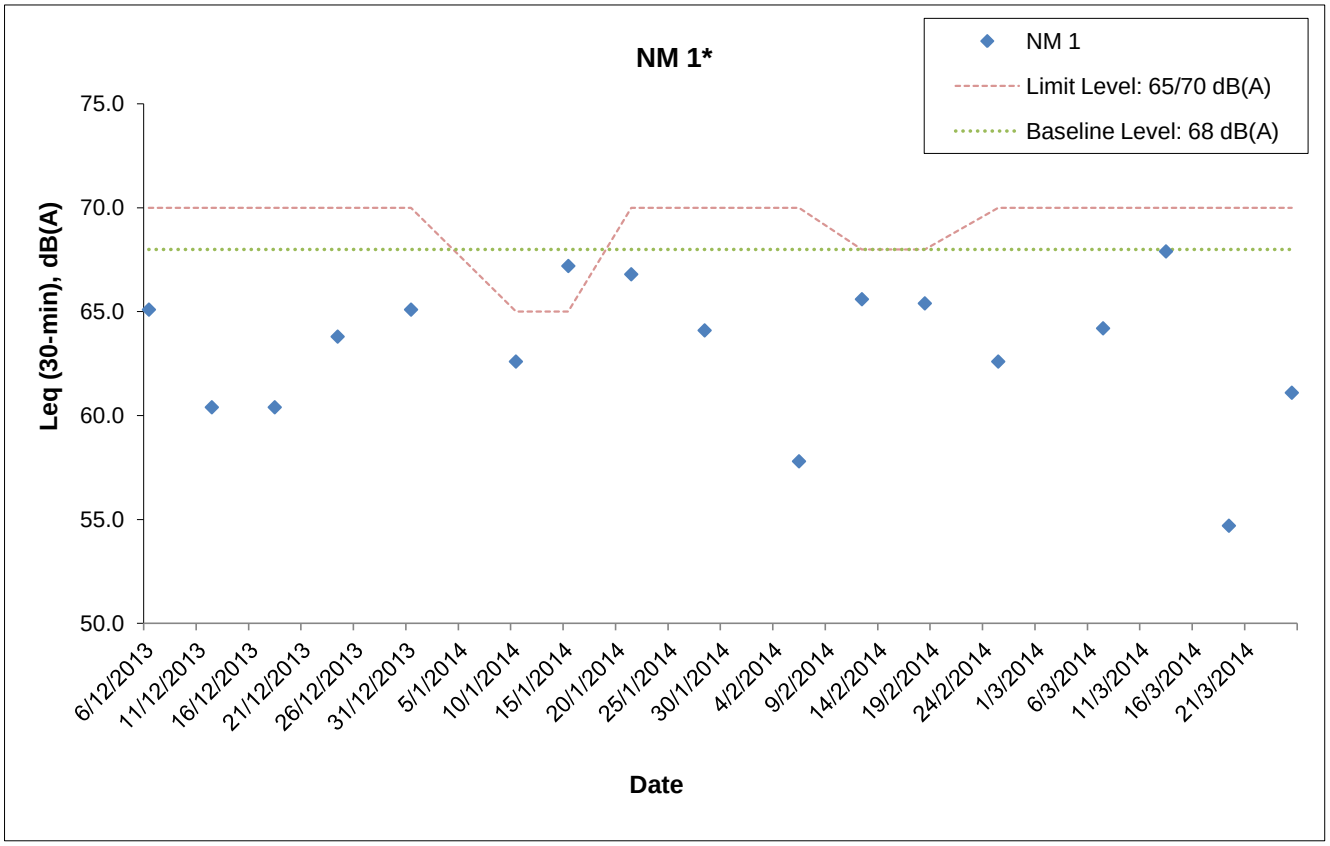
Date	Weather Condition	Noise Level for 30-min, dB(A)++				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level***, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
07-Mar-14	Fine	10:05	69.6	74.3	72.4	<Baseline	79.0	75	N
13-Mar-14	Fine	11:06	72.5	75.0	73.9	<Baseline	79.0	75	N
19-Mar-14	Sunny	10:49	71.2	75.5	74.1	<Baseline	79.0	75	N
25-Mar-14	Sunny	11:30	69.3	74.1	72.2	<Baseline	79.0	75	N

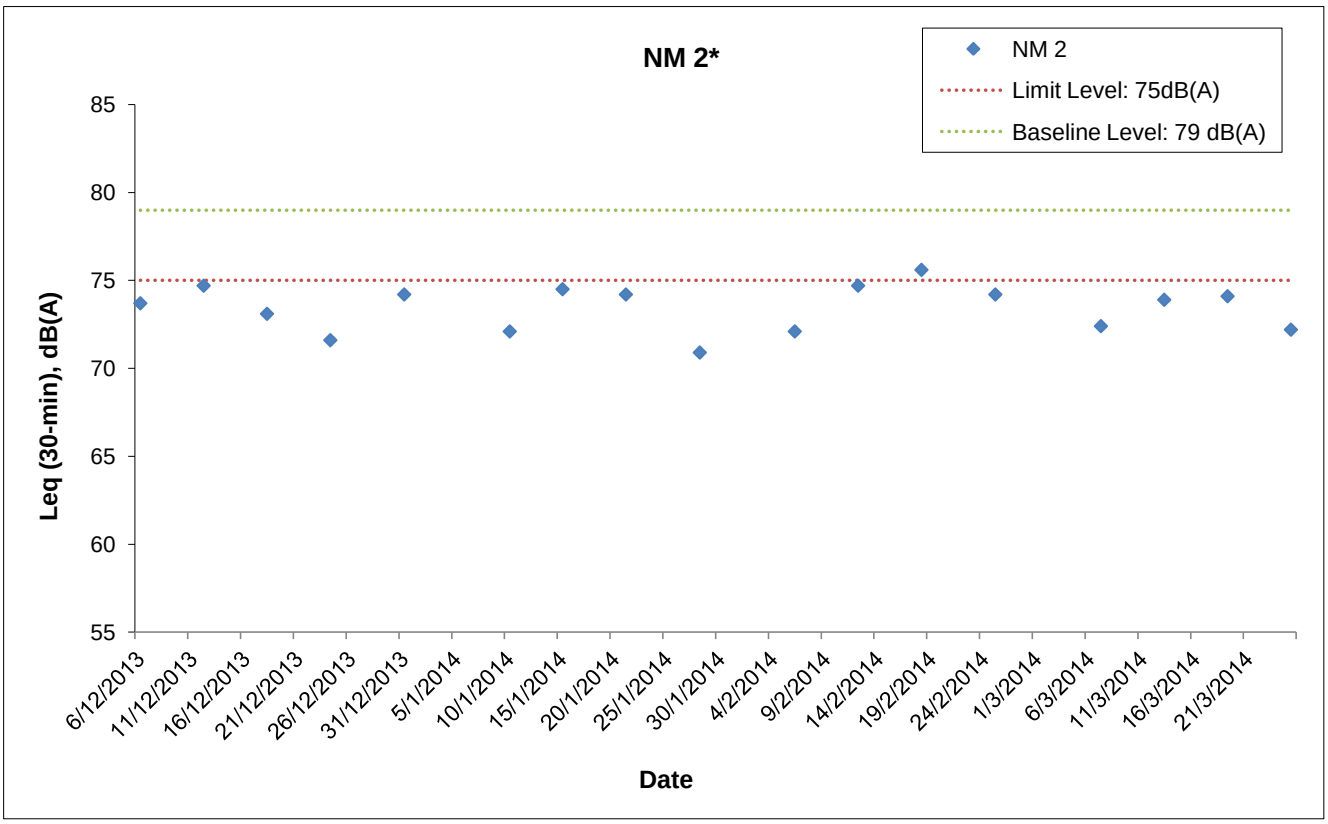
+ - Façade measurement

++ - Free field measurement

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

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-14
		CHECK	TYUT	DRAWN	IYYS
	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	0
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				
	Generated				Disposed (Note 4)								Recycled			Disposed	
	Fill Material	Artificial Material		Total Quatity Generated	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	Disposed as Public Fills at CWPFBP	Total Quatity Disposal	Metals	Paper/ cardboard packaging (Note 3)	Plastics	Chemical Waste	General Refuse (Note 2)
	Soil and Rock	Broken Concrete	Asphalt			Tolo	WIL 705										
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)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	1.210	0.016	0.004	1.230	0.021	0.000	0.168	0.000	0.000	1.037	0.004	1.230	10.210	1.305	0.000	0.000	139.090
Feb	1.645	0.011	0.000	1.656	0.035	0.017	0.108	0.000	0.000	1.496	0.000	1.656	15.640	0.245	0.002	0.000	96.430
Mar	1.217	0.031	0.000	1.248	0.075	0.046	0.016	0.000	0.000	1.111	0.000	1.248	7.240	0.287	0.002	0.000	164.200
Apr																	
May																	
Jun																	
SUB-TOTAL	4.072	0.058	0.004	4.133	0.131	0.062	0.292	0.000	0.000	3.645	0.004	4.133	33.090	1.837	0.004	0.000	399.720
Jul																	
Aug																	
Sep																	
Oct																	
Nov																	
Dec																	
TOTAL	4.072	0.058	0.004	4.133	0.131	0.062	0.292	0.000	0.000	3.645	0.004	4.133	33.090	1.837	0.004	0.000	399.720

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 Hung Hom Finger Pier Barging Point (HHFPBP), Tseung Kwan O Area 137 Fill Bank (TKO137), Tuen Mun Area 38 Fill Bank (TM38) and Chai Wan Public Fill Barging Point (CWPFBP).

Appendix E

14th EM&A Report for Works Contract 1103 – Hin Keng to Diamond Hill

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report No. 14

[Period from 1 to 31 March 2014]

Works Contract 1103 – Hin Keng to Diamond Hill Tunnels

(April 2014)

Certified by:  Coleman Ng

Position: Environmental Team Leader

Date: 10/04/2014

MTR Corporation Limited

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

Monthly Environmental Monitoring and Audit Report – March 2014

228105-27

March 2014

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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Executive Summary

This is the fourteenth monthly 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 2014 (1 to 31 March 2014).

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

- Excavation and ELS for Launching Shaft and Machinery Assembly at Diamond Hill;
- Pipe Piling, Mucking Out and Excavation and ELS at Hin Keng;
- Platform Erection, Diaphragm Wall and Shaft Excavation at Fung Tak; and
- Diaphragm Wall and Shaft Excavation at Ma Chai Hang.

Air Quality and noise monitoring were performed and the results were checked and reviewed. Site audits were conducted on 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 3 air quality and 3 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 Action Level exceedance was recorded since no noise related complaint was received in the reporting month.

No exceedance of 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 13,909m^3 were generated and disposed of at public fill in TKO137FB and Kai Tak Barging Point Facility (Contract 1108A). 117m^3 of general refuse was generated and disposed of at NENT landfill.

Environmental Auditing

A total of 4 environmental site audits were conducted on a weekly basis in the reporting month. The first site inspection was on 5 March 2014 and the final, an IEC joint site audit, was undertaken on 26 March 2014. No non-conformance to the environmental requirements was identified during the reporting period.

Complaint Log

No complaint in relation to the environmental issues was made against the Project in 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

The 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.

Construction dust is a 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	Major Works Undertaken
Diamond Hill	Excavation and ELS for Launching Shaft and Machinery Assembly.
Hin Keng	Pipe Piling, Mucking Out and Excavation and ELS.
Fung Tak	Platform Erection, Diaphragm Wall and Shaft Excavation.
Ma Chai Hang	Diaphragm Wall and Shaft Excavation.

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	Thomas Barrett	2163 6181
SCL Project-wide Environmental Team Leader	Richard Kwan	2688 1283
Independent Environmental Checker: Meinhardt Infrastructure & Environment Ltd.		
Independent Environmental Checker	Fredrick Leong	2859 1739
Contractor: VINCI Constructions Grand Projects		
Project Director	Francois Dudouit	3765 5610
IMS Manager	L K Mak	3765 5635
Contractor's Environmental Team: Ove Arup & Partners Hong Kong Ltd.		
Designated Environmental Team Leader for Works Contract 1103	Coleman Ng	2268 3097

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

Note:

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	All	22 Mar 2012	Superseded
	EP-438/2012A	All	12 July 2012	Superseded
	EP-438/2012/B	All	26 Oct 2012	Superseded
	EP-438/2012/C	All	30 Apr 2013	Superseded
	EP-438/2012/D	All	13 Sept 2013	Throughout the contract
Discharge License under WPCO	WT00014697-2012	Diamond Hill	30 Nov 2012	30 Nov 2017
	WT00014650-2012	Hin Keng	10 Dec 2012	31 Dec 2017
	WT00014648-2012	Hin Keng	10 Dec 2012	31 Dec 2017
	WT00015145-2013	Shui Chuen O	21 Feb 2013	28 Feb 2018
	WT00015513-2013	Ma Chai Hang	2 Apr 2013	30 Apr 2018
	WT00015430-2013	Fung Tak	18 Mar 2013	31 Mar 2018
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation	351345	All	22 Oct 2012	15 Apr 2018
Construction Noise Permit (CNP)	GW-RE1449-13	Ma Chai Hang	8 Jan 2014	30 Jun 2014
	GW-RE0195-14	Fung Tak	28-Feb-14	27-Aug-2014
	GW-RN0635-13	Hin Keng	11 Nov 2013	10 May 2014
	GW-RE1063-13	Diamond Hill	2 Oct 2013	1 Apr 2014
	GW-RE1132-13	Diamond Hill	30 Oct 2013	29 Apr 2014
	GW-RN0154-14	Hin Keng	29 Mar 2014	29 Jul 2014
	GW-RN0157-14	Hin Keng	27 Mar 2014	26 Sept 2014
Chemical Waste Producer Registration	5213-759-V2179-01	Hin Keng	13 Dec 2012	Throughout the Contract
	5213-281-V2180-01	Diamond Hill	12 Dec 2012	Throughout the Contract
	5213-281-V2179-03	Fung Tak	5 Mar 2013	Throughout the Contract

Types of Permits / Licenses	Reference No.	Site	Valid from	Valid to
	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 fourteenth 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 2014.

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 2014)	14th March 2014

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:

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).

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, 3762, 3763
Fibreglass Filter	G810		-
HVS Calibration Kit	GMW-2535		2421
Potable Dust Monitor	MIE personal DataRAM pDR-1000		4705

Note:
Note 1: Due to renovation works starting 23 December at DMS-2 Price Memorial Catholic Primary School a Portable Dust Monitor was used. The roof works were completed in mid-March and the use of the HVS resumed on the 17 March 2014.

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 GMW-2535 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**.

Portable Dust Monitor

The portable dust monitors were frequently checked and maintained in accordance with the manufacturer's instruction manual. The power supply and zeroing of the instrument were checked each time before sampling to ensure proper operation.

The portable dust monitor were calibrated at 2-year intervals by certified laboratory or manufacturer and properly documented. The calibration certificates of the portable dust monitor 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.

Portable Dust Monitor

The TSP measurement followed the manufacturer's instruction manual. Before initiating a measurement, zeroing the portable dust monitor was carried out to ensure maximum accuracy of concentration measurements.

The TSP was sampled by drawing air into the portable dust monitor where particular concentrations are measured instantaneously with an in-built silicon detector sensing light scattered by the particulates in the sampled air. Continuous TSP levels are indicated and logged by a built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

3.3 Monitoring Results and Observations

3.3.1 Weather Condition

No adverse weather conditions were recorded during the monitoring dates.

3.3.2 Air Quality Monitoring Results

Monitoring of 24-hour TSP was conducted on 5, 11, 17, 22 and 28 March 2014. 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		
DMS-1	49.2	43.3	148.7	260
DMS-2	57.2	56.8	167.4	260
DMS-3 / DMS-4	58.8	45.3	159.1	260

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, ground investigation, diaphragm wall construction, hoarding erection, pipe piling, and utilities detection and diversion. No abnormal condition was recorded during the monitoring period.

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)

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).

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.

4.2 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	Brüel & Kjær 2238	2562763	IEC 651 Type 1 IEC 804 Type 1
Sound level calibrator	Brüel & Kjær 4231	2713427	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

The weather condition was mainly fine during the noise monitoring period in the reporting month.

4.3.2 Noise Monitoring Results

Impact Monitoring

Monitoring of the construction noise level was conducted on 6, 12, 18 and 24 March 2014. All monitoring data and graphical presentation of the monitoring results are provided in **Appendix H** and are summarised in **Tables 4.5 - 4.7**. 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 14	10:20-10:50	59.5	57.0	55.9	70/65
12 Mar 14	10:10-10:40	59.1		54.9	
18 Mar 14	14:00-14:30	58.6		53.5	
24 Mar 14	09:00-09:30	58.4		52.8	

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 14	15:10- 15:40	70.5	66.0	68.6	70/65
12 Mar 14	14:30-15:00	68.9		65.8	
18 Mar 14	08:00-08:30	69.4		66.7	
24 Mar 14	11:00-11:30	70.8		69.1	

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 4.7 Summary of Impact Noise Monitoring at Location NMS-CA-3/NMS-CA-4

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 14	13:00- 13:30	67.3	73.0	< Baseline Level	70/65
12 Mar 14	13:00-13:30	68.6		< Baseline Level	
18 Mar 14	9:10-09:40	67.5		< Baseline Level	
24 Mar 14	10:05- 10:35	68.6		< Baseline Level	

Notes:

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

4.3.3 Exceedance of Limit and Action Levels for Construction Noise

No Action Level exceedance was recorded since no noise related complaint was received in the reporting month.

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

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

4.3.4 General Observations

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

5 Landscape and Visual Monitoring

5.1 Introduction

In accordance with the EM&A Manual, the landscape and visual mitigation measures shall be implemented and a site inspection shall be conducted once every two weeks throughout the construction period. The event and action plan is provided in **Appendix I**.

5.2 Mitigation Measures

Bi-weekly inspection of the implementation of landscape and visual mitigation measures were conducted during the reporting month on 12, and 26 March 2014. 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	13,909m^3	TKO137FB and Kai Tak Barging Point Facility (1108A)
Chemical Waste	0	Disposed of by a licensed collector
Paper / cardboard packaging	0	-
Plastic	0	
Metal	0	
General Refuse	117m^3	NENT Landfill

7 Environmental Performance

7.1 Environmental Site Inspection

Environmental site inspections were carried out on a weekly basis, with the IEC joint site inspection being carried out on 26 March 2014, 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 7.1**.

Table 7.1 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
Water				
5 March 2014	Fung Tak	The contractor shall ensure pH is in the 6-9 range when there is discharge of water.	Agreed with ET's Advice.	The contractor rectified the issue ensured the pH was in the correct range. Closed 12 March 2014.
Noise				
26 March 2014	Ma Chai Hang	The contractor is reminded to erect appropriate noise barriers for power packs.	Agreed with ET's Advice.	The contractor will follow up. The status will be reported by the ET in the next reporting month.
Air				
5 & 19 March 2014	Diamond Hill	The contractor is reminded to minimise the smoke accumulation from welding by providing sufficient air ventilation.	Agreed with ET's Advice.	The contractor rectified the issue provided sufficient ventilation. Closed 26 March 2014.
26 March 2014	Ma Chai Hang	The contractor is reminded to frequently monitor the generators and ensure that exhaust filters are regularly checked.	Agreed with ET's Advice.	The contractor will follow up. The status will be reported by the ET in the next reporting month.

Inspection Date	Works Area	Key Observations and Recommendations	Contractor's Response / Environmental Outcome	Closed Date / Follow up Status
Waste				
26 February 2014	Hin Keng	The contractor shall ensure that drip trays for oil drums and air compressors are suitably maintained.	Agreed with ET's Advice.	The contractor rectified the issue and provided suitable drip trays. Closed 5 March 2014.
12 March 2014	Diamond Hill	The contractor is reminded to place tarpaulin sheets under breaker heads when they are not in use.	Agreed with ET's Advice.	The contractor rectified the issue and provided tarpaulin sheets. Closed 19 March 2014.
19 March 2014	Hin Keng	The contractor is reminded to provide drip tray with proper size for chemical drums.	Agreed with ET's Advice.	The contractor rectified the issue and provided sutiable drip trays. Closed 26 March 2014.
26 March 2014	Ma Chai Hang	Oil and water mixture from exhaust of the D-Wall plant was observed on ground. The contractor should clear and treat the mixture properly as chemical waste.	Agreed with ET's Advice.	The contractor will follow up. The status will be reported by the ET in the next reporting month.

7.2 Summary of Environmental Complaint

No environmental complaints regarding environmental issue were recorded in the reporting month. The updated statistical summary of complaint is presented in **Table 7.2**. The updated complaint logs, if any, of the Project in the reporting month is shown in **Appendix L**.

Table 7.2 Summary of Complaints

Reporting Period	Complaint Statistics		Area of Concern	Validity to the Project	Status
	Number	Cumulative			
01/03/14–31/03/14	0	0	N/A	N/A	N/A

7.3 Summary of Environmental Non-Compliance

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

7.4 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.

8 Future Key Issues

8.1 Key Issues for the Coming Month

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

Table 8.1 Tentative Programme of Construction Works for the Coming Month

Locations	Major Works Undertaken
Diamond Hill	Excavation and ELS for Launching Shaft and Machinery Assembly
Hin Keng	Pipe Piling, Mucking Out and Excavation and ELS
Fung Tak	Platform Erection, Diaphragm Wall and Shaft Excavation
Ma Chai Hang	Diaphragm Wall and Shaft Excavation

8.2 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**.

8.3 Construction Program for the Coming Month

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

9 Conclusions and Recommendations

9.1 Conclusions

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

No exceedance of the Action and Limit Levels of regular construction noise was recorded at the designated monitoring stations 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 non-compliance event was recorded during the reporting period.

No complaint and 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.

9.2 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.

Construction dust is a 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.

10 Reference

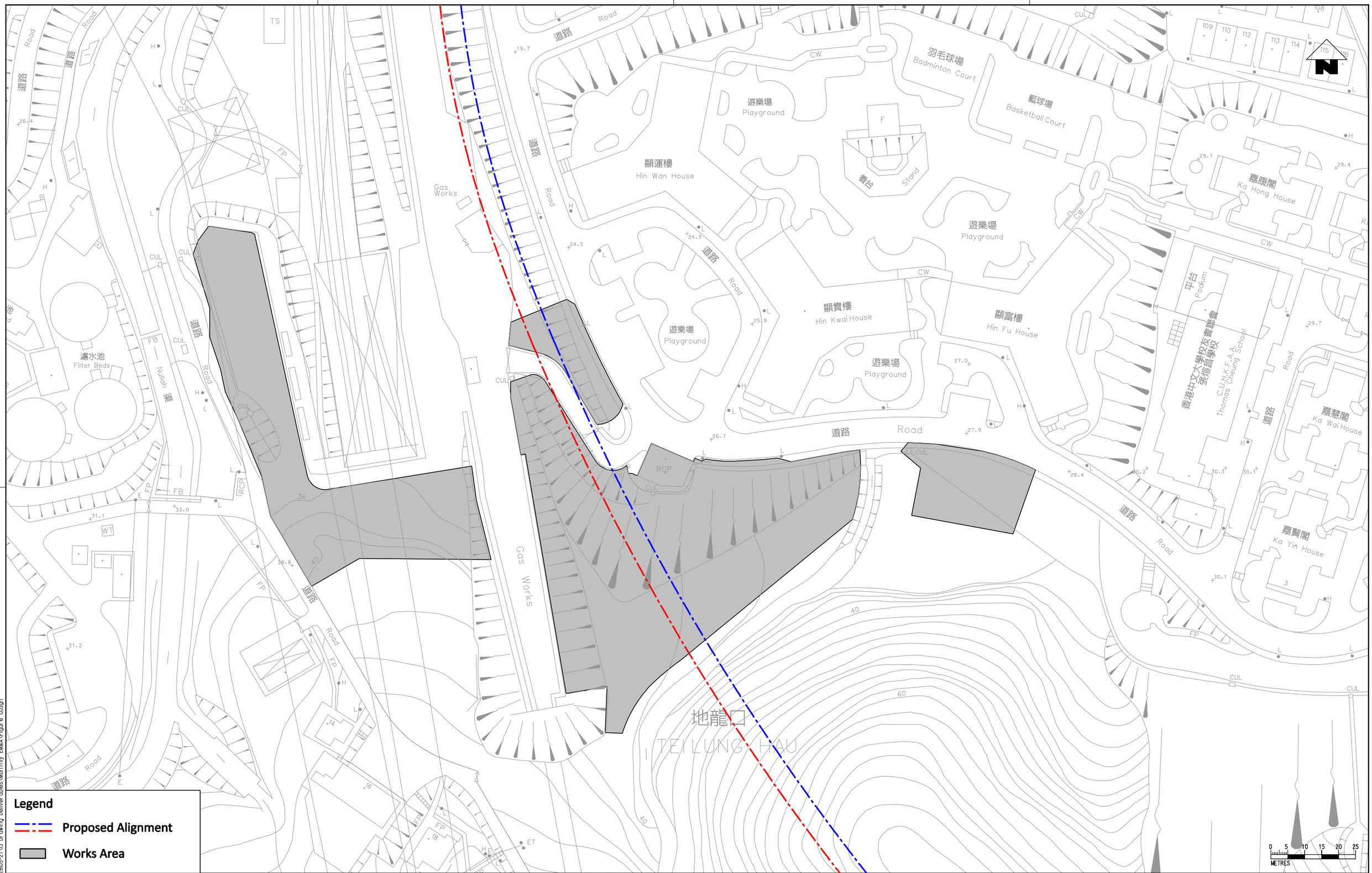
(1) MTR Corporation Limited. SCL – NEX/2206 EIA Study for Tai Wai to Hung Hom Section. Final Environmental Impact Assessment Report. October 2011.

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

SCALE	DRAWING NO.	REV.
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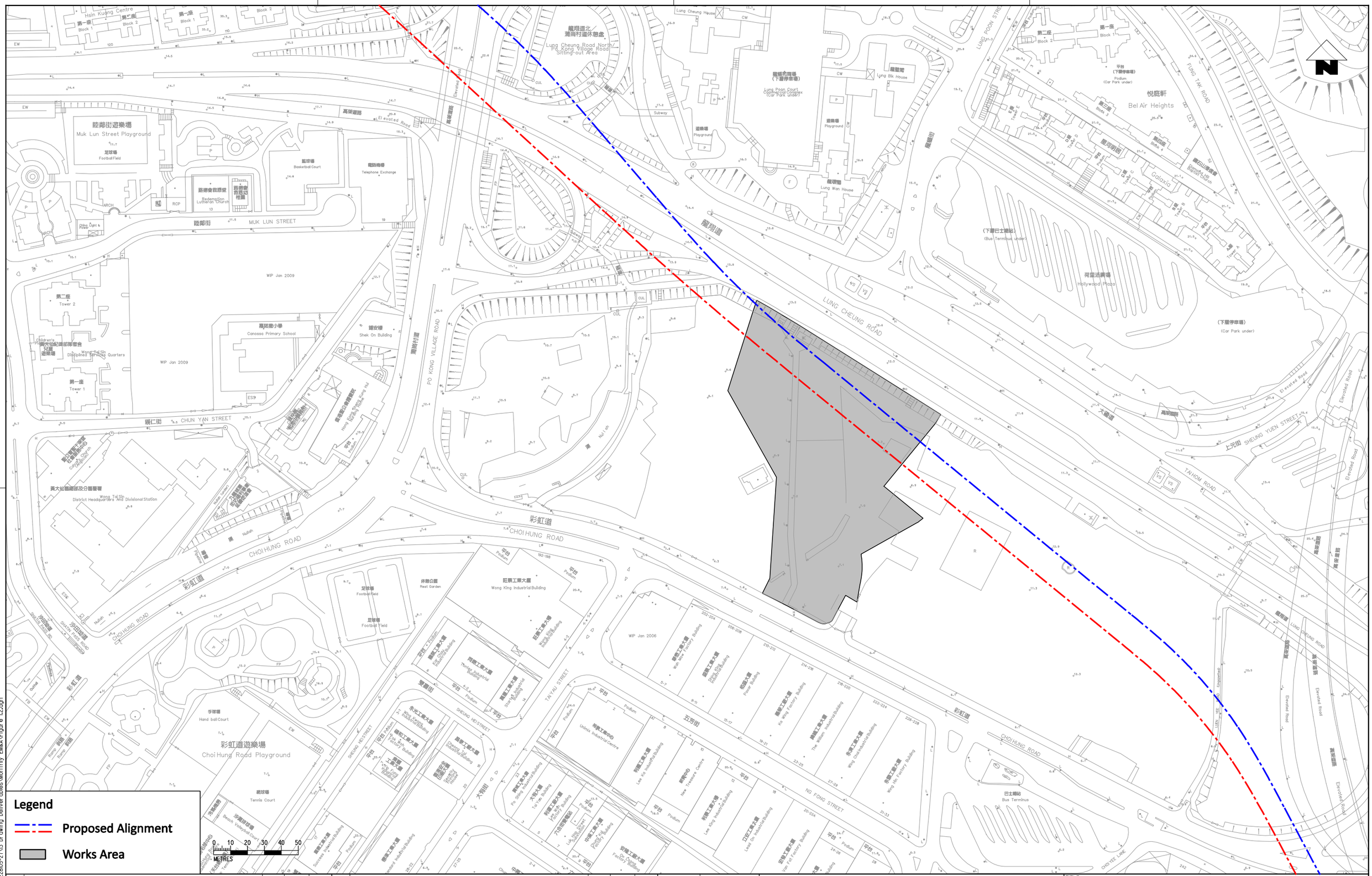

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HIN KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Areas
- General Site Layout of Diamond Hill Works Area
(Sheet 2 of 6)

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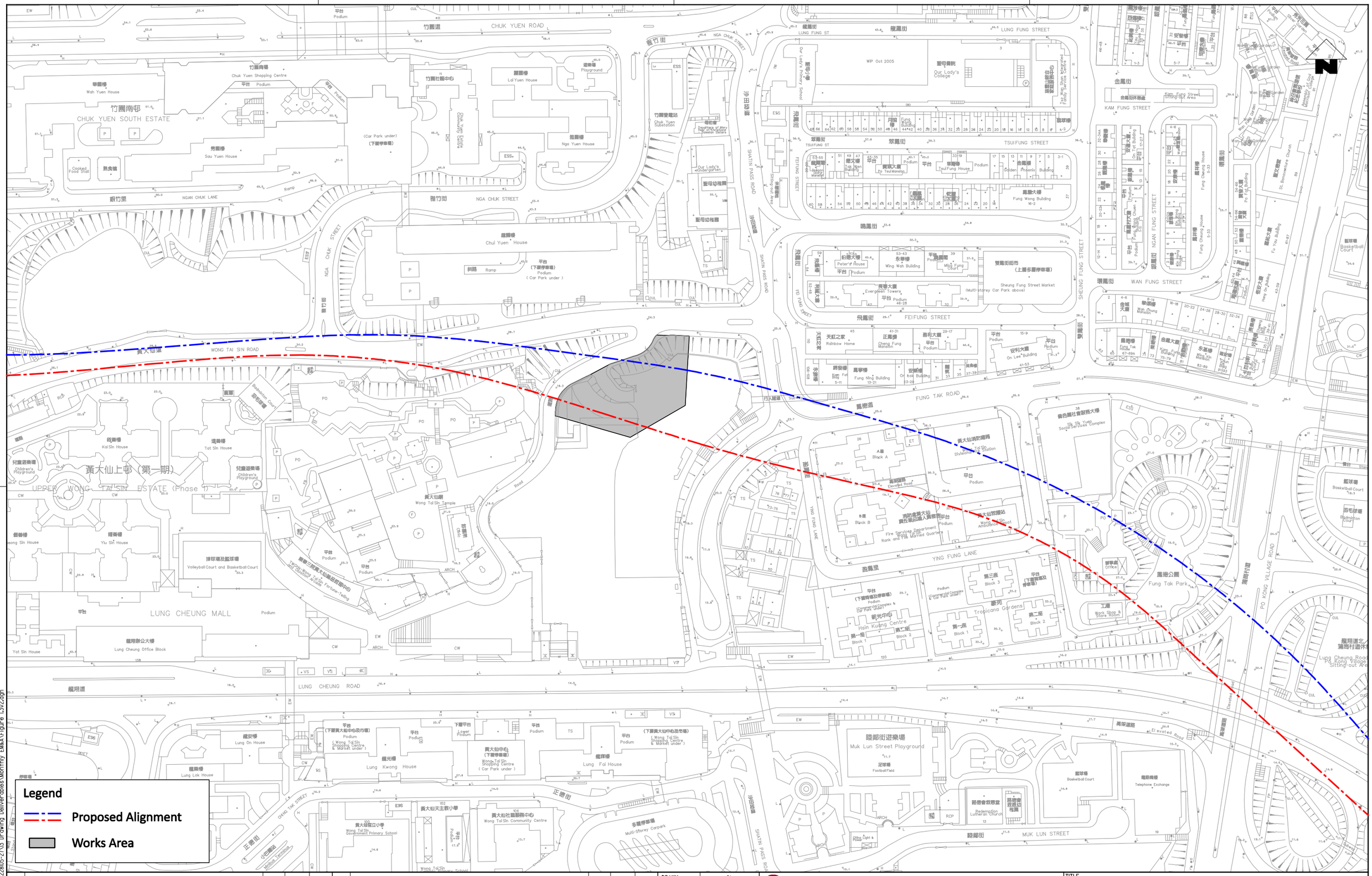

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HIN KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Areas - Site Layout Plan of Fung Tak EAP/EEP Building (Sheet 3 of 6)

SCALE	DRAWING NO.	REV.
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REV	DESCRIPTION	BY	DATE	APPROVED
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HIN KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Areas
- Site Layout Plan of Ma Chai Hang Shaft
(Sheet 4 of 6)

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

SCALE	DRAWING NO.	REV.
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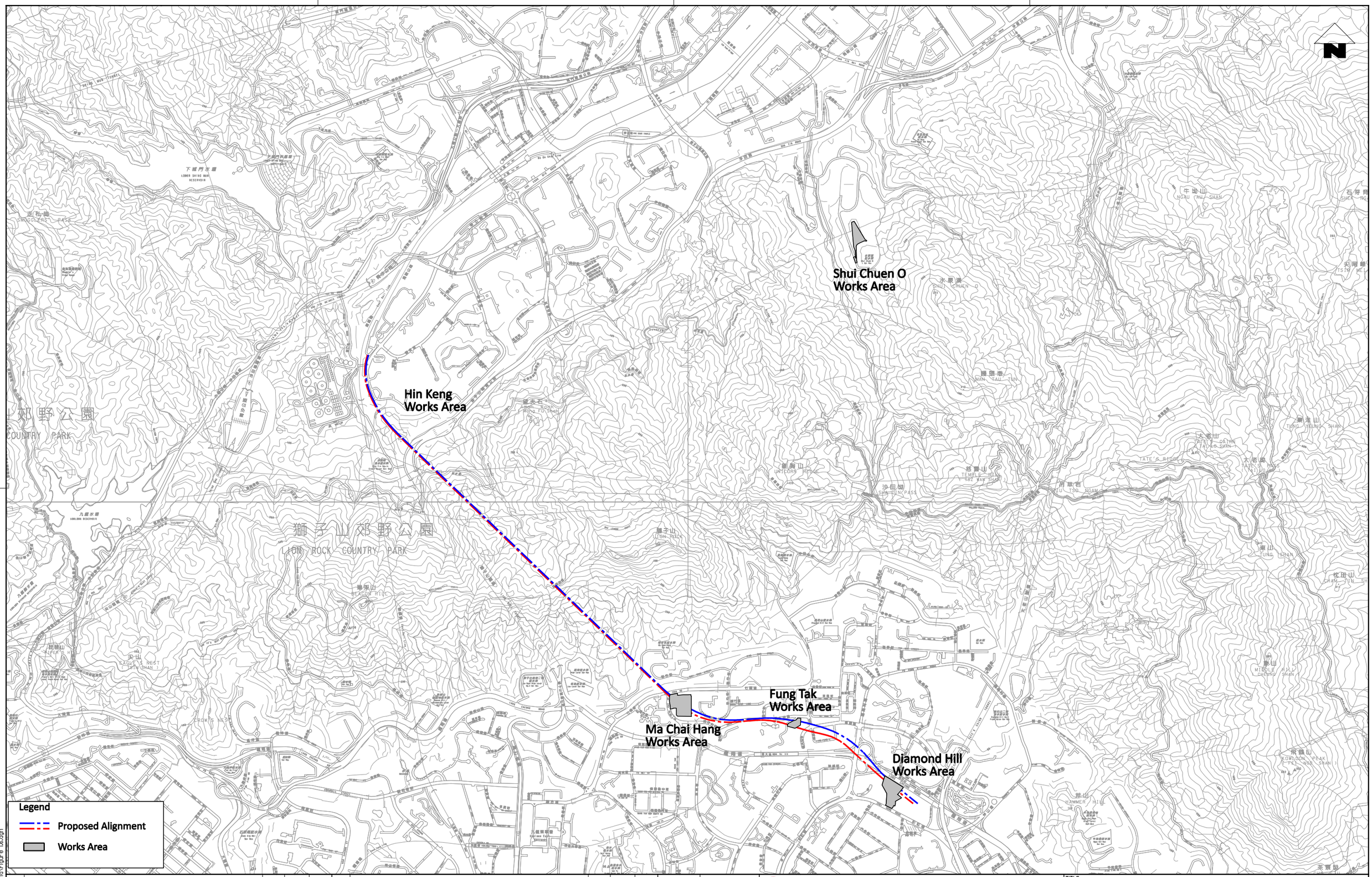

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CONTRACT 1103

HIN KENG TO DIAMOND HILL TUNNELS

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

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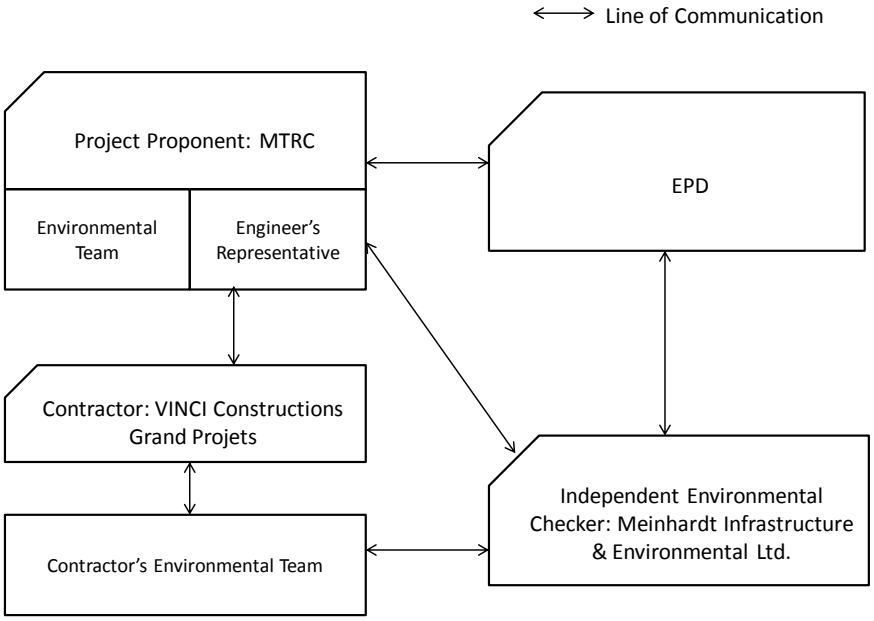
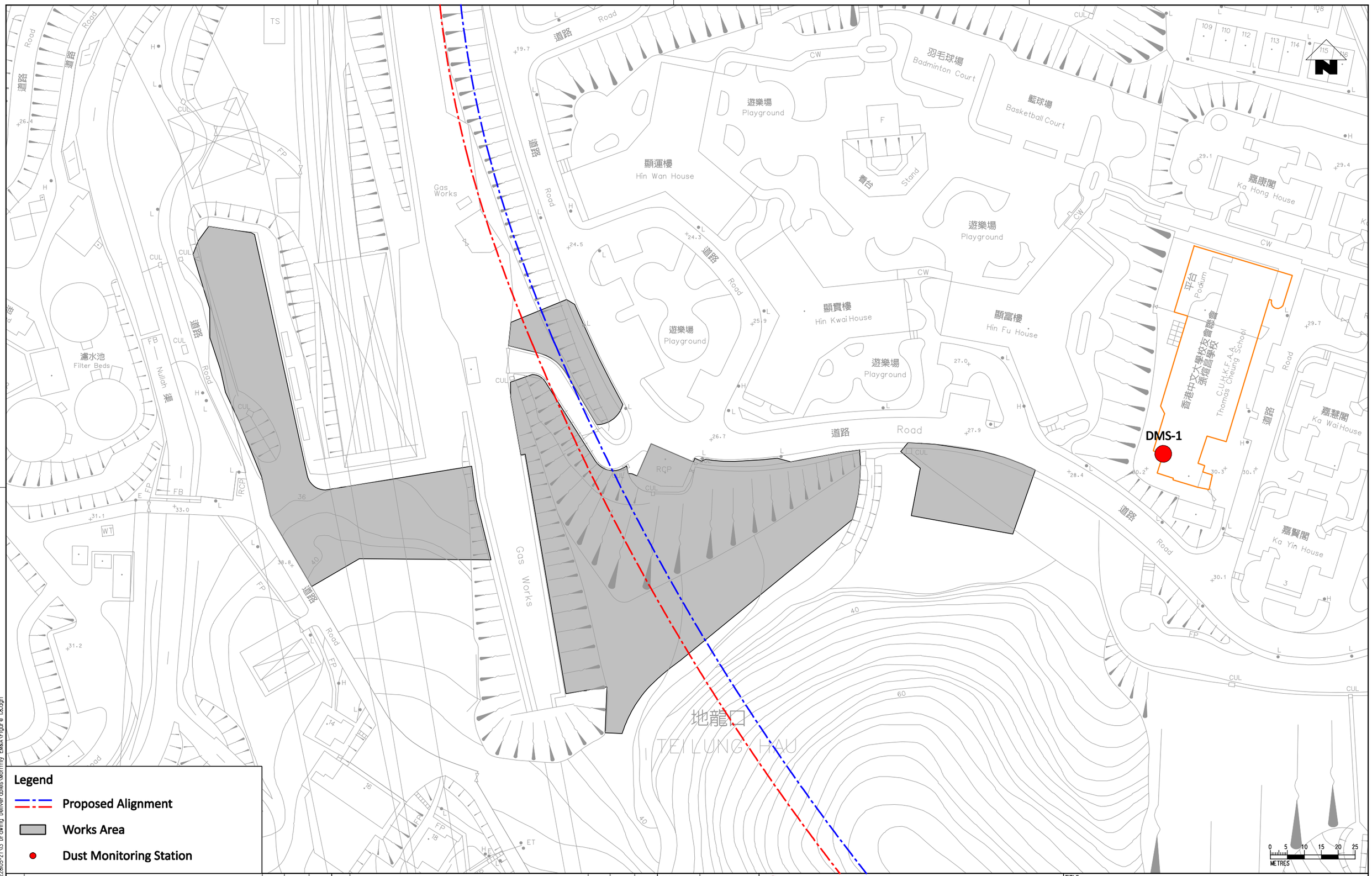
Figure 1.7 - Project Organisation for Environmental Works





Legend

- Proposed Alignment
- Works Area
- Dust Monitoring Station

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

SCALE	DRAWING NO.	REV.
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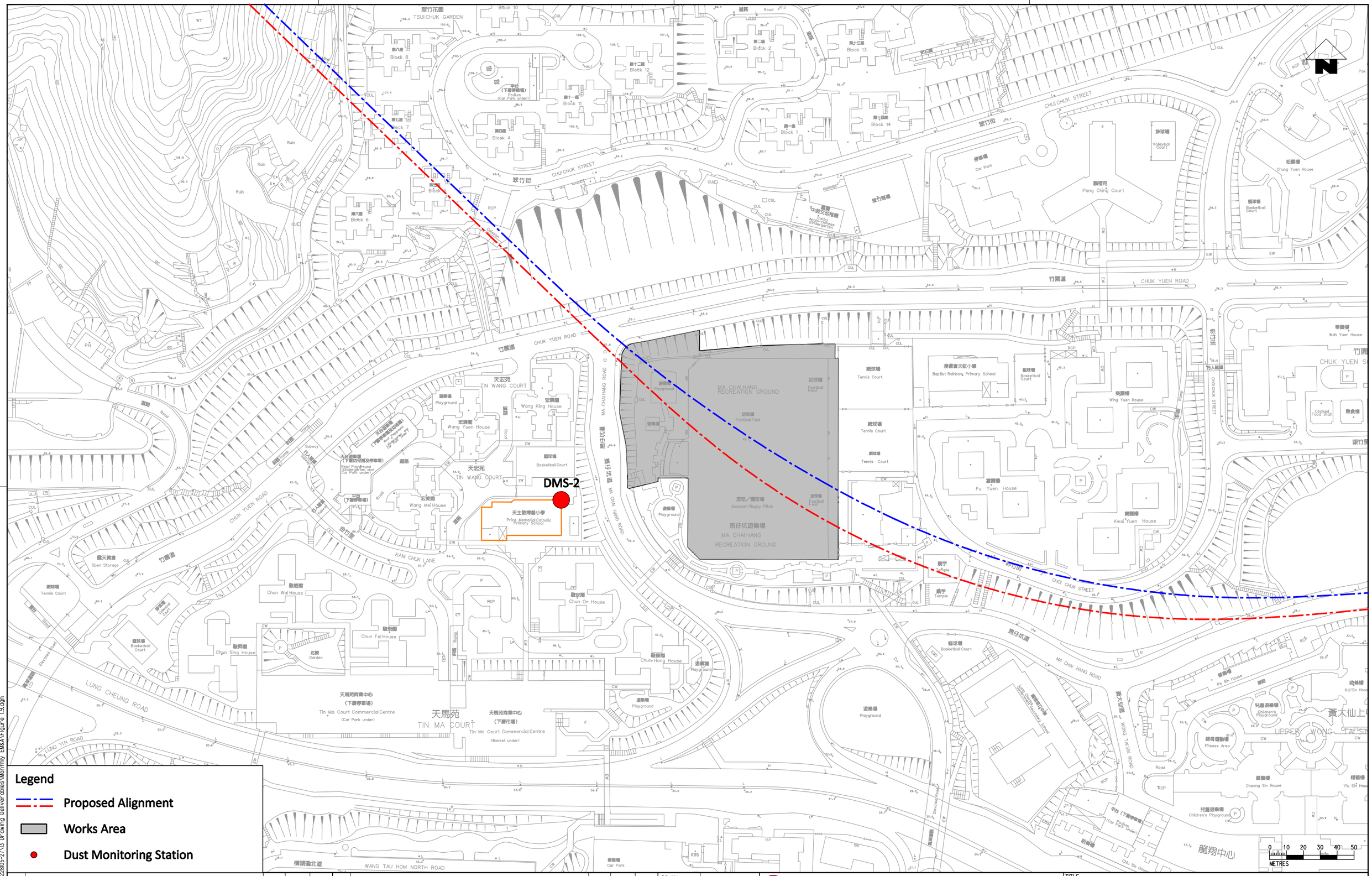

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CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Proposed Dust Monitoring Stations
(Sheet 2 of 3)

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

DMS-3/DMS-4

Legend

- Proposed Alignment
- Works Area
- Dust Monitoring Station

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

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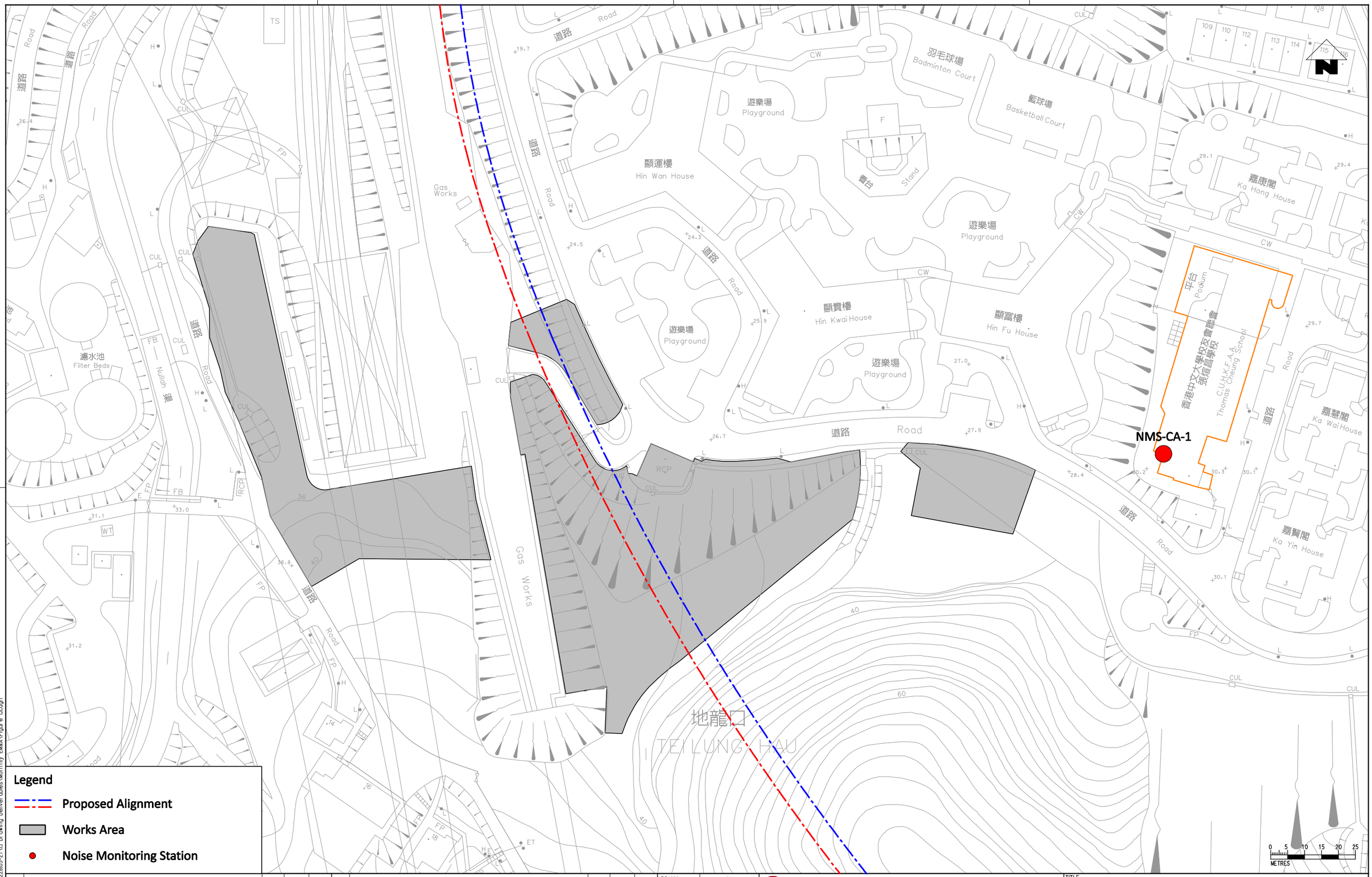

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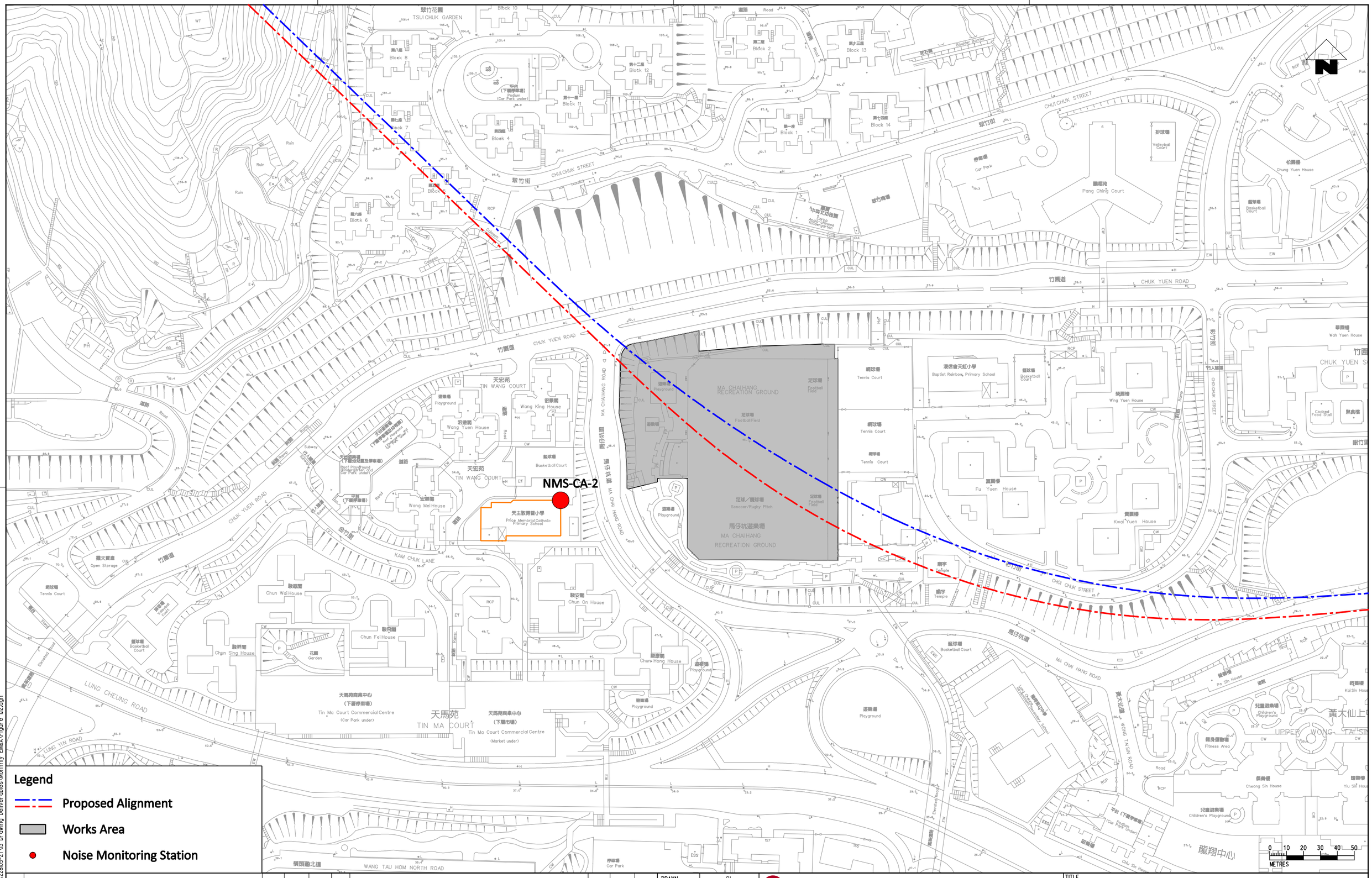
CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Noise Monitoring Stations
(Construction Airborne Noise)
(Sheet 1 of 3)

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



Legend

- Proposed Alignment
- Works Area
- Noise Monitoring Station

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

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

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR

ARUP Ove Arup & Partners Hong Kong Limited

CADD REF.

TITLE

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

0 10 20 30 40 50 METRES

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

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

DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR
ARUP Ove Arup & Partners Hong Kong Limited

CADD REF.

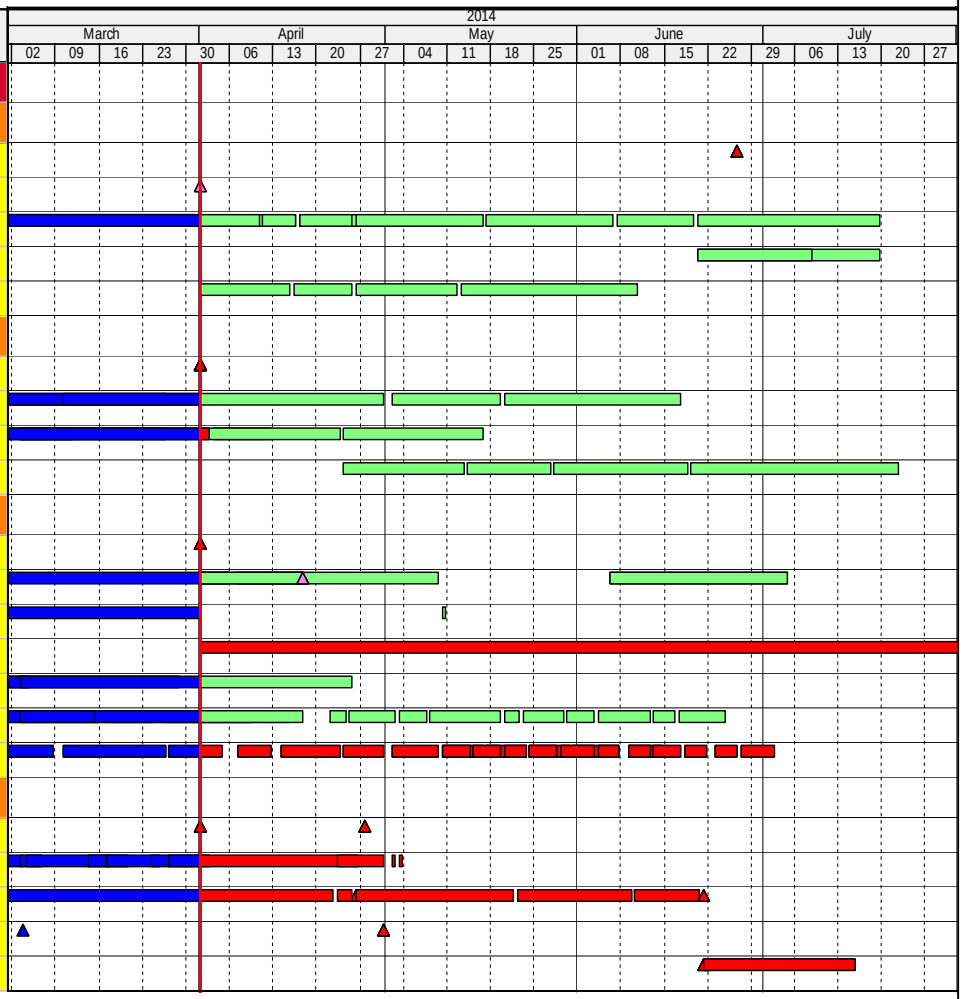
TITLE
CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Noise Monitoring Stations
(Construction Airborne Noise)
(Sheet 3 of 3)

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						
COST CENTER F - MA CHAI HANG VENTILATION BUILDING (MCV)						
	COST CENTER F - Milestone Schedule - MCV					
	MCV - Site Preparation					
	MCV - Diaphragm Wall					
	MCV - Shaft Excavation and ELS					
	Maintenance Shed - Demolition and Site Clearance					
COST CENTER G - FUNG TAK EAP/EEP BUILDING (FTA)						
	COST CENTER G - Milestone Schedule - FTA					
	FTA - Utilities					
	FTA - Diaphragm Wall					
	FTA - Shaft Excavation and ELS					
COST CENTER H - HIN KENG WORKING SHAFT						
	COST CENTER H - Milestone Schedule - HIK Shaft					
	HIK - Site Preparation					
	HIK - Site Formation					
	HIK - Gas Access Road and Gas Bridge					
	HIK - Pipe Pile and Grouting					
	HIK - Excavation and ELS					
	Undrained Tunnels without Ventilation Duct (Ch D93+176 to D93+300)					
COST CENTER S - OPTION 12: DIH TBM Launch Shaft						
	COST CENTER S - Milestone Schedule					
	Option 12 - Excavation and ELS for Launching Shaft (40m)					
	Specialized Construction Machinery Site Assembly and Related Establishment					
	TBM Tunnel Segment Manufacturing					
	TBM Tunnel Up Track - DIH U97+064 to U95+376					



VINCI CONSTRUCTION GRANDS PROJETS

Three Month Rolling Programme
As of 1-Apr-2014

Date	Revision	Checked	Approved
05-04-14	Submission for MTR Information	QT	RD

Appendix B

Environmental Monitoring Programme in Reporting Month

SCL Works Contract 1103 - Hin Keng to Diamond Hill Tunnels
Impact Monitoring Schedule - March 2014

Date		Air Quality	Noise	Site Inspection
		24-hours TSP	L_{Aeq}, 30 min	
01-Mar-14	Sat			
02-Mar-14	Sun			
03-Mar-14	Mon			
04-Mar-14	Tue			
05-Mar-14	Wed			
06-Mar-14	Thu			
07-Mar-14	Fri			
08-Mar-14	Sat			
09-Mar-14	Sun			
10-Mar-14	Mon			
11-Mar-14	Tue			
12-Mar-14	Wed			
13-Mar-14	Thu			
14-Mar-14	Fri			
15-Mar-14	Sat			
16-Mar-14	Sun			
17-Mar-14	Mon			
18-Mar-14	Tue			
19-Mar-14	Wed			
20-Mar-14	Thu			
21-Mar-14	Fri			
22-Mar-14	Sat			
23-Mar-14	Sun			
24-Mar-14	Mon			
25-Mar-14	Tue			
26-Mar-14	Wed			
27-Mar-14	Thu			
28-Mar-14	Fri			
29-Mar-14	Sat			
30-Mar-14	Sun			
31-Mar-14	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 and DMS-3 / DMS-4 - Hong Kong Sheng Kung Hui Nursing Home	24-hour TSP
Noise	NMS-CA-1 - C.U.H.K.A.A Thomas Cheung School, NMS-CA-2 - Price Memorial Catholic Primary School and NMS-CA-3 /NMS-CA-4 - Hong Kong Sheng Kung Hui Nursing Home	$L_{Aeq(30\ min)}$, L_{10}, L_{90}

Appendix C

Environmental Mitigation Implementation Schedule (EMIS)

Environmental Mitigation Implementation Schedule – Works Contract 1103

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

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Ecology (Pre-Construction Phase)							
S5.4	E1	Engineering works should not encroach into country park boundary, Tei Lung Hau Stream and secondary woodland near the portal at Hin Keng	Minimize ecological impacts	Lion Rock Country Park, Tei Lung Hau Stream	Detailed design and construction stage	•AFCD's requirements •EIAO •Country Parks Ordinance	✓
	E2	<u>Habitat Loss</u> A detailed vegetation survey should be conducted in the Hin Keng Portal area to locate and enumerate individuals of *Aquilaria sinensis* which will potentially be affected by construction and operation of the Portal. A suitable site for transplanting all affected individuals within the footprint area should be identified and assessed for its suitability. A transplantation plan should then be drawn up and details of the transplantation methodologies and programme along with post-transplantation monitoring should be included.	Minimize ecological impacts on important species	Hin Keng Portal areas	Prior to site clearance	•AFCD's requirements	✓
S5.7	E3	<u>Tree felling and vegetation removal</u> Precautionary checks of the vegetation for the presence of nesting bird species of conservation interest should be carried out before vegetation clearance by an ecologist.	Minimize ecological impacts to breeding bird species of conservation interest	Works sites for DIH	Prior to site clearance	•AFCD's requirements	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Ecology (Construction Phase)							
S5.7	E5	<u>Good Site Practices</u> Impact to any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, the containment of contaminated soils for removal from the site, appropriate storage of chemicals and chemical waste away from sites of ecological value and the provision of sanitary facilities for on-site workers. Adoption of such measures should permit waste to be suitably contained within the site for subsequent removal and appropriate disposal. The following good site practices should also be implemented: • Erection of temporary geotextile silt or sediment fences/oil traps around any earth-moving works to trap any sediments and prevent them from entering watercourses in particular the Tei Lung Hau stream; • Avoidance of soil storage against trees or close to waterbodies in particular the Tei Lung Hau stream; • Delineation of works site by erecting hoardings to prevent encroachment onto adjacent habitats and fence off areas which have some ecological value e.g. Tei Lung Hau Stream and the adjoining secondary woodland, tunnel on hill at top of slope stabilisation works; • No on-site burning of waste; • Waste and refuse in appropriate receptacles.	Minimize ecological impacts	All construction sites	Construction stage		✓ ✓ ✓ ✓ ✓

Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S5.7	E7	<u>Water Quality and Hydrology</u> • Implement water control measures (ETWB TCW No. 5/2005, Protection of natural streams/ rivers from adverse impacts arising from construction works to avoid direct or indirect impacts on the Tei Lung Hau Stream) and good site practices. • Canopy tubes should be installed from the shaft structure and extend the full width of the stream. These canopy tubes with sieves along its length should be grouted and form a stable and low permeable 'umbrella' for further mining works to be carried out in stages. The canopy tubes beneath the stream area are within Completely Decomposed Granite (CDG) stratum.	• Avoid indirect water impact to any wetland habitats or wetland fauna • Minimize the drawdown of water table	Works area in Hin Keng	Construction stage	• TCW No. 5/2005	✓ ✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Landscape and Visual (Construction Phase)							
S6.9.3	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u> • For soil conservation, existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing ground may be set up on-site as necessary. <u>No-intrusion Zone</u> • To maximize protection to existing trees, ground vegetation and the associated under storey habitats, construction contracts may designate "No-intrusion Zone" to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone. The contractor should closely monitor and restrict the site working staff from entering the "no-intrusion zone", even for indirect construction activities and storage of equipment. <u>Protection of Retained Trees</u> • All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period. Detailed tree protection specification shall be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and the tree monitoring system. • The Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees	Minimize visual & landscape impact	Within Project Site	Construction stage	TM-EIAO	✓ ✓ ✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		prior to undertaking any works adjacent to all retained trees, including trees in contractor's works sites.					✓
S6.12	LV2	• <u>Decorative Hoarding</u> Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas. Hoarding should be designed to be compatible with the existing urban context. • <u>Management of facilities on work sites</u> To provide proper management of the facilities on the sites, give control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs. • <u>Tree Transplanting</u> Trees of high to medium survival rate would be affected by the works shall be transplanted where possible and practicable. Tree transplanting proposal including final location for transplanted trees shall be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006.	Minimize visual & landscape impact	Within Project Site	Detailed design and construction stage	EIAO – TM ETWB TCW 2/2004 ETWB TCW 3/2006	✓ ✓ ✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Air Quality (Construction Phase)							
-	A1	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and • plant should be serviced regularly to avoid emission of • black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	All construction sites	Construction stage	• APCO	Rdr
		Open burning shall be prohibited	Reduce air pollution emission from work site	All construction sites	Construction stage	• APCO	✓
Construction Dust Impact							
S7.6.5	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	✓
S7.6.5	D2	• Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road in the Kowloon area and once per 1.5 hour at those in the Tai Wai area should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to	Minimize dust impact at the nearby sensitive receivers	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		maintain an equivalent intensity of no less than 1.8 L/m2 to achieve the dust removal efficiency					
S7.6.5	D3	• Proper watering of exposed spoil should be undertaken throughout the construction phase: • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided and properly maintained as far as practicable along the site boundary with provision for public crossing; Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction	Minimize dust impact at the nearby sensitive receivers	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	✓ ✓ ✓ ✓ ✓ ✓ ✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;				✓ ✓ N/A ✓ ✓ ✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		• Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.					✓ ✓ N/A
S7.6.5	D6	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Selected representative dust monitoring station	Construction stage	• TM-EIA	✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Construction Noise (Airborne)							
S8.3.6	N1	Implement the following good site practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	Control construction airborne noise	All construction sites	Construction stage	• Annex 5, TM-EIA	✓ ✓ ✓ ✓ ✓ ✓
S8.3.6	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	All construction sites	Construction stage	• Annex 5, TM-EIA	✓
S8.3.6	N3	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressor, generators and	Screen the noisy plant items to be used at all construction sites	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	Rdr

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

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Water Quality (Construction Phase)							
S10.7.1	W1	In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>*Construction Runoff and Site Drainage*</u> • At the start of site establishment (including the barging facilities), perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction. • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates. • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m^3/s a sedimentation basin of $30m^3$ would be required and for a flow rate of 0.5 m^3/s the basin would be 150 m^3. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the	To minimize water quality impact from construction site runoff and general construction activities	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	✓ ✓ ✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		commencement of construction. • All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces should be covered by tarpaulin or other means. • The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all traffic areas and access roads protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows. • All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas. • Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than $50m^3$ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • Manholes (including newly constructed ones) should always be					✓ ✓ Rdr ✓ ✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.					✓
		• Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.					✓
		• All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.					✓
		• Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain.					✓
		• Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.					✓
		• All fuel tanks and storage areas should be provided with locks					

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby. • All the earth works involving should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable. • Adopt best management practices					✓ ✓ ✓
S10.7.1	W2	<u>*Tunnelling Works*</u> • Cut-&-cover/ open cut tunnelling work should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable. • Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge • The wastewater with a high concentration of SS should be treated (e.g. by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater. • Direct discharge of the bentonite slurry (as a result of D-wall and 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	N/A N/A N/A N/A
S10.7.1	W3	<u>*Sewage Effluent*</u>	To minimize water quality	All construction sites	Construction	• Water Pollution	

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
		• 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

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		will not be affected by the recharge operation as indicated in the Section 2.3 of TM-Water. The baseline groundwater quality shall be determined prior to the selection of the recharge wells, and submit a working plan (including the laboratory analytical results showing the quality of groundwater at the proposed recharge location(s) as well as the pollutant levels of groundwater to be recharged) to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Prior to recharge, any prohibited substances such as TPH products should be removed as necessary by installing the petrol interceptor. The Contractor should apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.					
S10.7.1	W7	In order to prevent accidental spillage of chemicals, the following is recommended: • All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains. • The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings. • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	Rdr ✓ ✓

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
Waste Management (Construction Phase)							
S11.4.1.1	WM1	*On-site sorting of C&D material* • Geological assessment should be carried out by competent persons on site during excavation to identify materials which are not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc). Volcanic rock and Aplite dyke rock should be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use. Details regarding control measures at source site and crushing facilities should be submitted by the Contractors for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc should also be explored.	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	All construction sites	Construction stage	• DEVB TC(W) No. 6/2010	✓
S11.5.1	WM2	*Construction and Demolition Material* • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance	✓ ✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation				• ETWB TCW No. 19/2005	✓ ✓ ✓ ✓ ✓
S11.5.1	WM3	<u>*C&D Waste*</u> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005	✓ 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
		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 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	✓ ✓ ✓ ✓
S11.5.1	WM5	<u>Excavated Contaminated Soils</u> Details of the mitigation measures on handling of the contaminated soil shall be referred to Section on Land Contamination below.	To remediate contaminated soil	Site L4 (Former Tai Hom Village)	Site remediation	• Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boat yards and Car Repair/Dismantling Workshop.	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S11.5.1	WM7	<u>*Chemical Waste*</u> • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. • Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.	Control the chemical waste and ensure proper storage, handling and disposal.	All construction sites	Construction stage	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	Obs ✓ ✓ 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	✓ ✓ ✓

Appendix D

Calibration Certificates for Air Monitoring Equipment

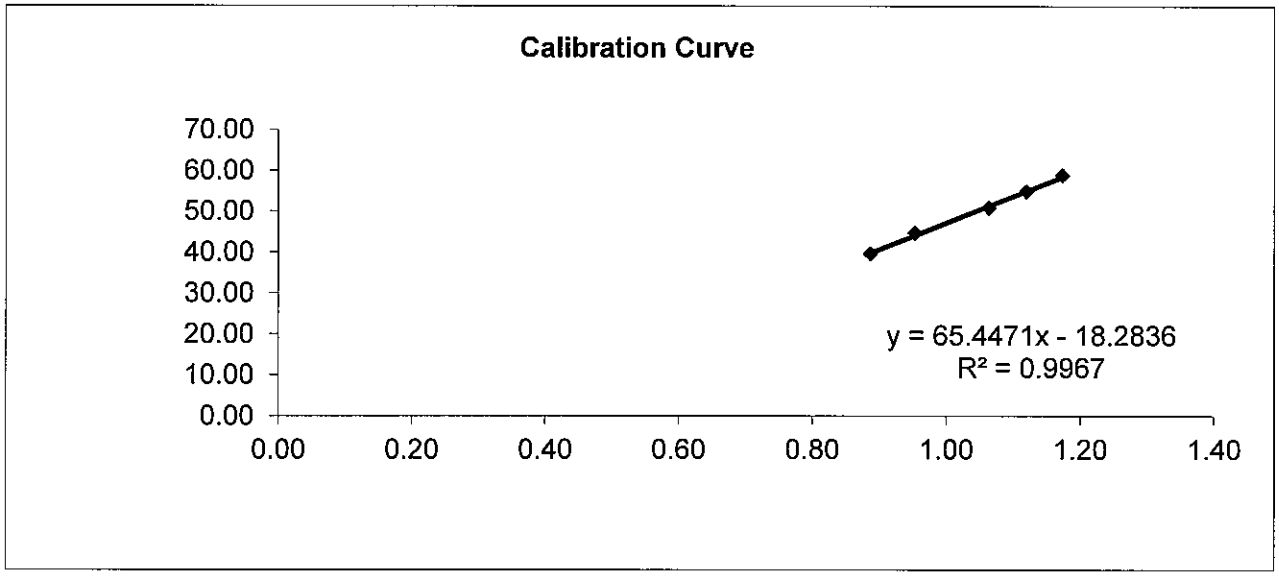
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	13-Jan-14	**Barometric pressure**	760 mm Hg
Next Calibration date	14-Mar-14	**Tempature (°C)**	16 °C
Sampler location	DMS1 - Thomas Cheung School	**Tempature (K)**	289 K
Sampler model	TE-5170	**P_{std}**	760 mm Hg
Sampler serial number	3763	**T_{std}**	298 K

Calibrator model	GMW-2535
Calibrator serial number	2421
Slope of the standard curve, m_s	2.0458
Intercept of the standard curve, b_s	0.0019

Resistance Plate No.	Manometer Reading (inch H_2O)	Flow Recorder Reading (CFM)	Calculated Q_{std} (m^3/min)	Continuous Flow Recorder Reading IC (CFM)
5	3.20	39.00	0.89	39.60
7	3.70	44.00	0.95	44.68
10	4.60	50.00	1.06	50.77
13	5.10	54.00	1.12	54.83
18	5.60	58.00	1.17	58.90



Linear Regression

Sampler slope (m) : **65.4471**
Sampler intercept (b) : **-18.2836**
Correlation coefficient (R^2) : **0.9967**

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

Performed by: _____ Date: 13.1.14

Checked by: _____ Date: 13-1-14

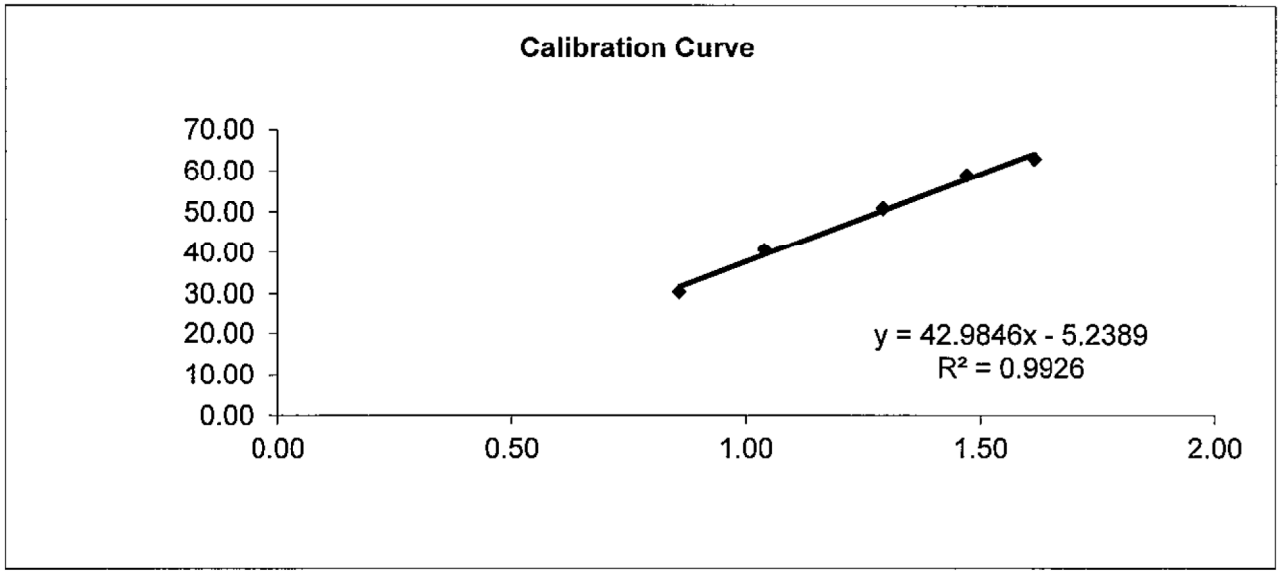
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	13-Jan-14	**Barometric pressure**	760 mm Hg
Next Calibration date	14-Mar-14	**Tempature (°C)**	16 °C
Sampler location	DMS3 - Sheng Kung Hui Nursing H	**Tempature (K)**	289 K
Sampler model	TE-5170	**P_{std}**	760 mm Hg
Sampler serial number	3762	**T_{std}**	298 K

Calibrator model	GMW-2535
Calibrator serial number	2421
Slope of the standard curve, m_s	2.0458
Intercept of the standard curve, b_s	0.0019

Resistance Plate No.	Manometer Reading (inch H_2O)	Flow Recorder Reading (CFM)	Calculated Q_{std} (m^3/min)	Continuous Flow Recorder Reading IC (CFM)
5	3.00	30.00	0.86	30.46
7	4.40	40.00	1.04	40.62
10	6.80	50.00	1.29	50.77
13	8.80	58.00	1.47	58.90
18	10.60	62.00	1.62	62.96



Linear Regression

Sampler slope (m) :	**42.9846**
Sampler intercept (b) :	**-5.2389**
Correlation coefficient (R^2) :	**0.9926**

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

Performed by: _____ Date: 13/1/14

Checked by: _____ Date: 13-1-14

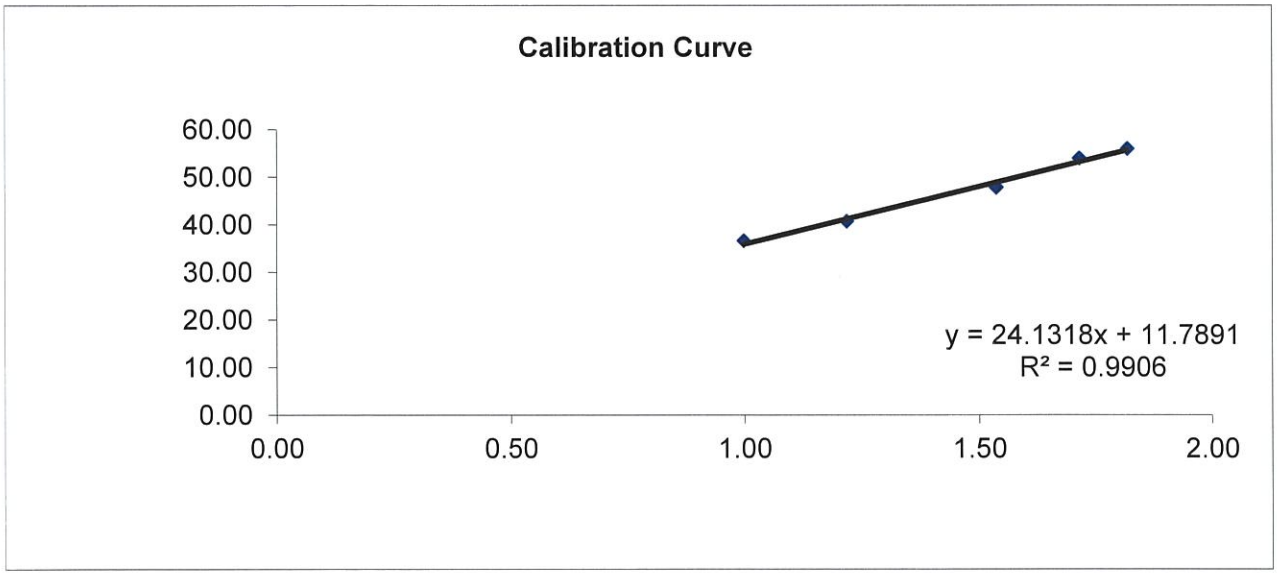
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	12-Mar-14	**Barometric pressure**	761 mm Hg
Next Calibration date	11-May-14	**Tempature (°C)**	16 °C
Sampler location	DMS1 - Thomas Cheung School	**Tempature (K)**	289 K
Sampler model	TE-5170	**P_{std}**	760 mm Hg
Sampler serial number	3763	**T_{std}**	298 K

Calibrator model	GMW-2535
Calibrator serial number	2421
Slope of the standard curve, m_s	2.06238
Intercept of the standard curve, b_s	-0.2415

Resistance Plate No.	Manometer Reading (inch H_2O)	Flow Recorder Reading (CFM)	Calculated Q_{std} (m^3/min)	Continuous Flow Recorder Reading IC (CFM)
5	3.20	36.00	1.00	36.58
7	5.00	40.00	1.22	40.64
10	8.30	47.00	1.54	47.76
13	10.50	53.00	1.71	53.85
18	11.90	55.00	1.82	55.89



Linear Regression

Sampler slope (m) :	**24.1318**
Sampler intercept (b) :	**11.7891**
Correlation coefficient (R^2) :	**0.9906**

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

Performed by: _____ Date: 12.3.14

Checked by: _____ Date: 24-3-14

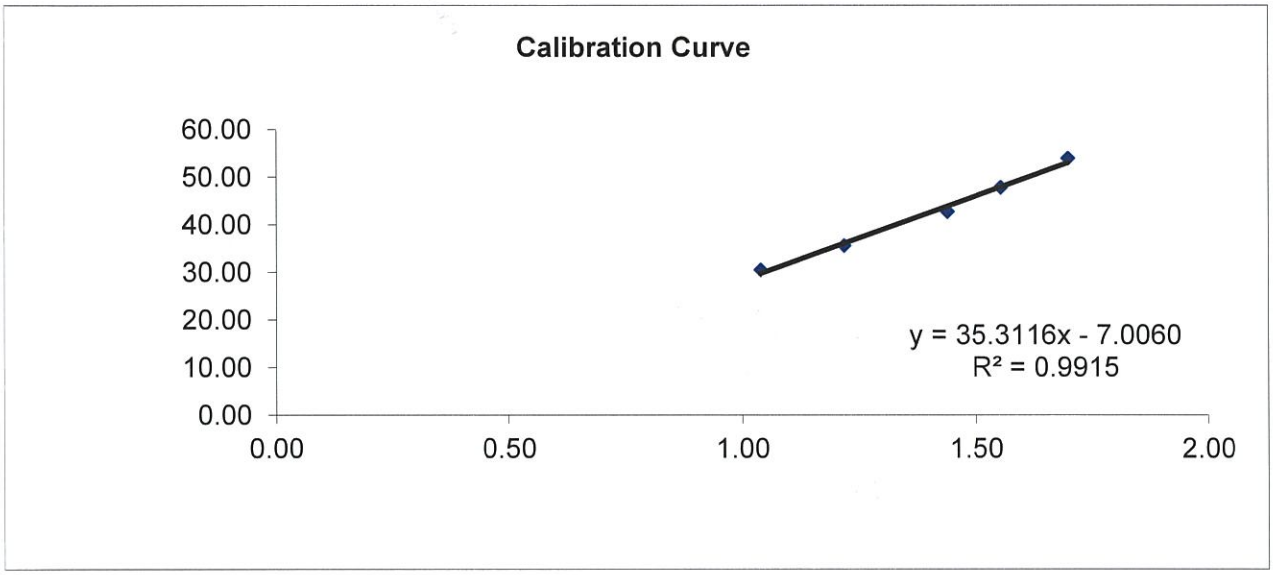
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	12-Mar-14	**Barometric pressure**	761 mm Hg
Next Calibration date	11-May-14	**Tempature (°C)**	16 °C
Sampler location	DMS3 - Sheng Kung Hui Nursing H	**Tempature (K)**	289 K
Sampler model	TE-5170	**P_{std}**	760 mm Hg
Sampler serial number	3762	**T_{std}**	298 K

Calibrator model	GMW-2535
Calibrator serial number	2421
Slope of the standard curve, m_s	2.06238
Intercept of the standard curve, b_s	-0.2415

Resistance Plate No.	Manometer Reading (inch H_2O)	Flow Recorder Reading (CFM)	Calculated Q_{std} (m^3/min)	Continuous Flow Recorder Reading IC (CFM)
5	3.50	30.00	1.04	30.48
7	5.00	35.00	1.22	35.56
10	7.20	42.00	1.44	42.68
13	8.50	47.00	1.55	47.76
18	10.30	53.00	1.70	53.85



Linear Regression

Sampler slope (m) :	**35.3116**
Sampler intercept (b) :	**-7.0060**
Correlation coefficient (R^2) :	**0.9915**

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

Performed by: _____ Date: 12-3-14

Checked by: _____ Date: 24-3-~~13~~14

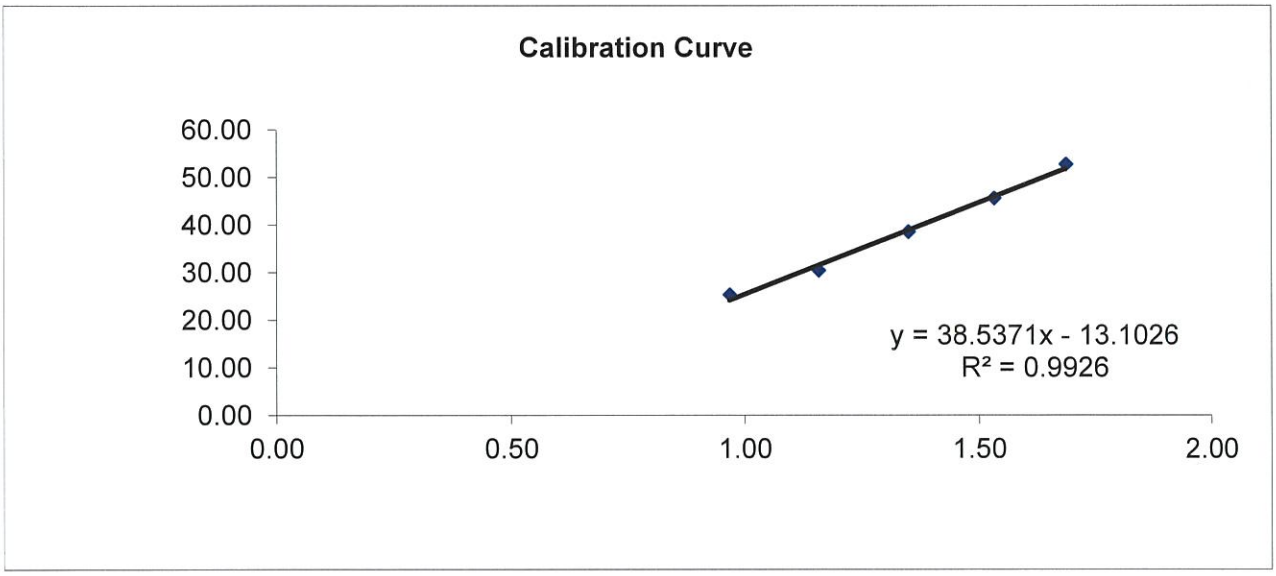
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	14-Mar-14	**Barometric pressure**	761 mm Hg
Next Calibration date	13-May-14	**Tempature (°C)**	18 °C
Sampler location	DMS2 - Price Memorial Catholic Pri	**Tempature (K)**	291 K
Sampler model	TE-5170	**P_{std}**	760 mm Hg
Sampler serial number	3761	**T_{std}**	298 K

Calibrator model	GMW-2535
Calibrator serial number	2421
Slope of the standard curve, m_s	2.06238
Intercept of the standard curve, b_s	-0.2415

Resistance Plate No.	Manometer Reading (inch H_2O)	Flow Recorder Reading (CFM)	Calculated Q_{std} (m^3/min)	Continuous Flow Recorder Reading IC (CFM)
5	3.00	25.00	0.97	25.32
7	4.50	30.00	1.16	30.38
10	6.30	38.00	1.35	38.48
13	8.30	45.00	1.53	45.57
18	10.20	52.00	1.69	52.66



Linear Regression

Sampler slope (m) :	**38.5371**
Sampler intercept (b) :	**-13.1026**
Correlation coefficient (R^2) :	**0.9926**

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

Performed by: _____ Date: 14-3-14

Checked by: _____ Date: 24-3-14

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 - Jan 27, 2014 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 2421 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	1.4360	3.2	2.00
2	NA	NA	1.00	1.0120	6.4	4.00
3	NA	NA	1.00	0.9090	7.9	5.00
4	NA	NA	1.00	0.8650	8.8	5.50
5	NA	NA	1.00	0.7140	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0052	0.7000	1.4209		0.9957	0.6934	0.8814
1.0010	0.9891	2.0095		0.9915	0.9798	1.2464
0.9989	1.0989	2.2467		0.9894	1.0885	1.3936
0.9977	1.1535	2.3564		0.9883	1.1426	1.4616
0.9925	1.3901	2.8419		0.9831	1.3769	1.7627
Qstd slope (m) =		2.06238		Qa slope (m) =		1.29142
intercept (b) =		-0.02415		intercept (b) =		-0.01498
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}

ThermoFisher
SCIENTIFIC
27 FORGE PARKWAY
FRANKLIN MA 02038
TOLL FREE: 866-282-0430
TEL: 508-553-6949
FAX: 508-541-8366
www.thermofisher.com

PDR1000 CALIBRATION CERTIFICATE

This calibration is traceable to the National Institute of Standards and Technology

SERIAL NUMBER:	**4705**
CALIBRATION RATIO:	**1.003**
AVG. PDR CONCENTRATION:	**1.65 mg/m3**
MASTER AVG CONCENTRATION:	**1.42 mg/m3**
PDR BACKROUND CONCENTRATION:	**0.231 mg/m3**
PDR BKGRND PRIOR TO CLEANING:	**0.356 mg/m3**

TEMPERATURE:	**79 F**
RH:	**53 %**

CALIBRATION MASTER: D-659
LAST CALIBRATED: 5/23/2013

TECHNICIAN: Ramsi Almonte **DATE: 6/10/2013**

Appendix E

Dust Results

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

Details of 24-Hour TSP Monitoring

Filter No.	Month	Date	Time periods		Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m^3/min)		Average Flow Rate (m^3/min)	Elapse Time		Sampling Time (mins.)	Total vol. (m^3)	24-hour TSP Level ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
			Start	Finish				Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish					
205321	Mar-14	5-Mar-14	00:00	00:00	DMS1	Cloudy	Normal Operation	758.0	758.0	16.0	17.0	40.0	40.0	2.8792	2.9240	0.0448	0.8992	0.8981	0.8987	1728.29	1752.29	1440.00	1294.06	34.6	148.7	260.0
204345	Mar-14	11-Mar-14	00:00	00:00	DMS1	Cloudy	Normal Operation	761.0	761.0	16.0	18.0	40.0	40.0	2.8504	2.9263	0.0759	0.9004	0.8983	0.8994	1752.29	1776.29	1440.00	1295.06	58.6	148.7	260.0
205324	Mar-14	17-Mar-14	00:00	00:00	DMS1	Cloudy	Normal Operation	760.0	761.0	22.0	24.0	41.0	41.0	2.8748	2.9234	0.0486	1.2191	1.2145	1.2168	1776.29	1800.29	1440.00	1752.19	27.7	148.7	260.0
205327	Mar-14	22-Mar-14	00:00	00:00	DMS1	Fine	Normal Operation	761.0	759.0	20.0	20.0	42.0	42.0	2.8932	3.0228	0.1296	1.2679	1.2656	1.2668	1800.29	1824.29	1440.00	1824.12	71.0	148.7	260.0
205326	Mar-14	28-Mar-14	00:00	00:00	DMS1	Fine	Normal Operation	760.0	760.0	24.0	23.0	41.0	41.0	2.8863	2.9813	0.0950	1.2134	1.2162	1.2148	1824.29	1848.29	1440.00	1749.31	54.3	148.7	260.0

Average (µg/m3)	49.2
Max (µg/m3)	71.0
Min (µg/m3)	27.7

Location: DMS-2 Price Memorial Catholic Primary School

Details of 24-Hour TSP Monitoring

Filter No.	Month	Date	Time periods		Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m^3/min)		Average Flow Rate (m^3/min)	Elapse Time		Sampling Time (mins.)	Total vol. (m^3)	24-hour TSP Level ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
			Start	Finish				Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish					
-	Mar-14	5-Mar-14	10:56	10:56	DMS2	Cloudy	Normal Operation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1440.00	-	82.8	167.4	260.0
-	Mar-14	11-Mar-14	11:26	11:26	DMS2	Cloudy	Normal Operation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1440.00	-	66.4	167.4	260.0
205320	Mar-14	17-Mar-14	00:00	00:00	DMS2	Cloudy	Normal Operation	760.0	761.0	22.0	24.0	42.0	42.0	2.8828	2.9364	0.0536	1.4354	1.4324	1.4339	1272.39	1296.39	1440.00	2064.82	26.0	167.4	260.0
205322	Mar-14	22-Mar-14	00:00	00:00	DMS2	Fine	Normal Operation	761.0	759.0	20.0	20.0	41.0	42.0	2.8767	3.0306	0.1539	1.4137	1.4384	1.4261	1296.39	1320.39	1440.00	2053.51	74.9	167.4	260.0
205330	Mar-14	28-Mar-14	00:00	00:00	DMS2	Fine	Normal Operation	760.0	760.0	24.0	23.0	40.0	41.0	2.8690	2.9406	0.0716	1.3797	1.4075	1.3936	1320.39	1344.39	1440.00	2006.78	35.7	167.4	260.0

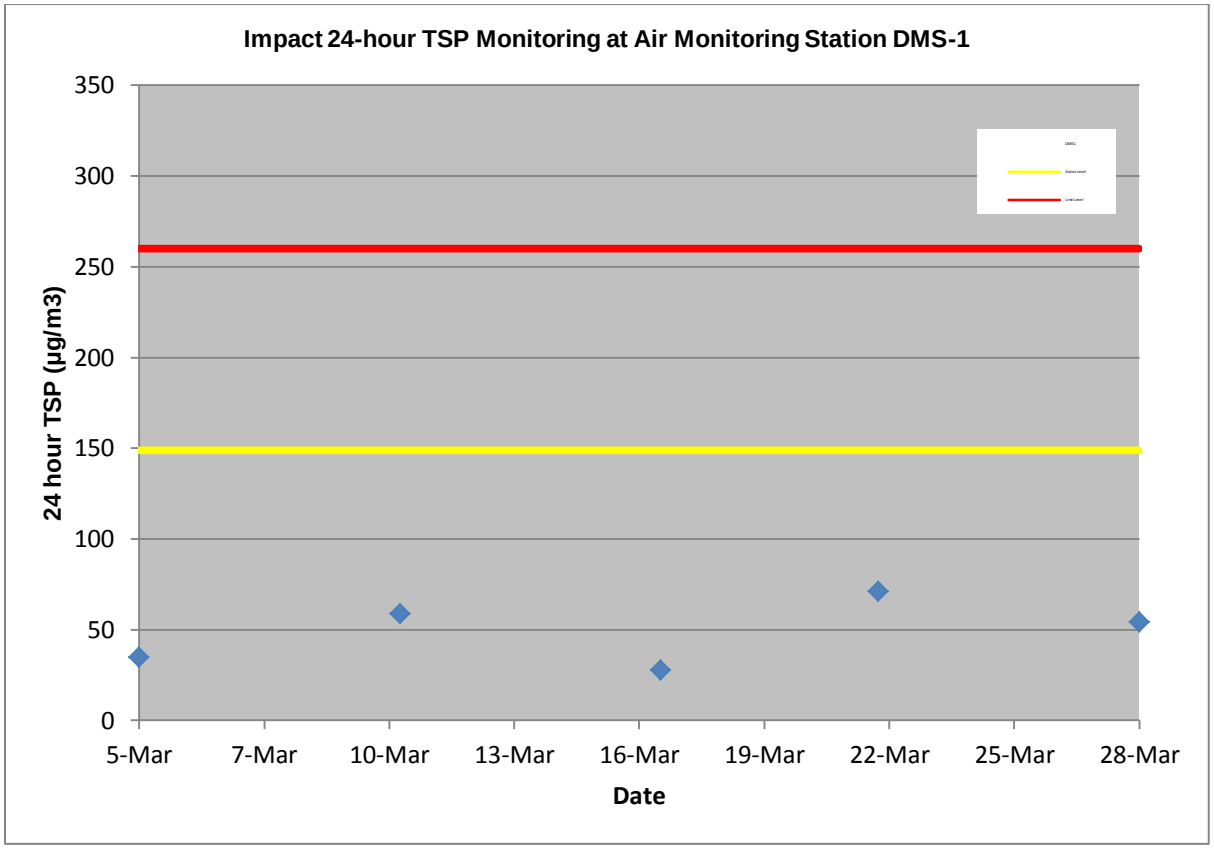
Average (µg/m3)	57.2
Max (µg/m3)	82.8
Min (µg/m3)	26.0

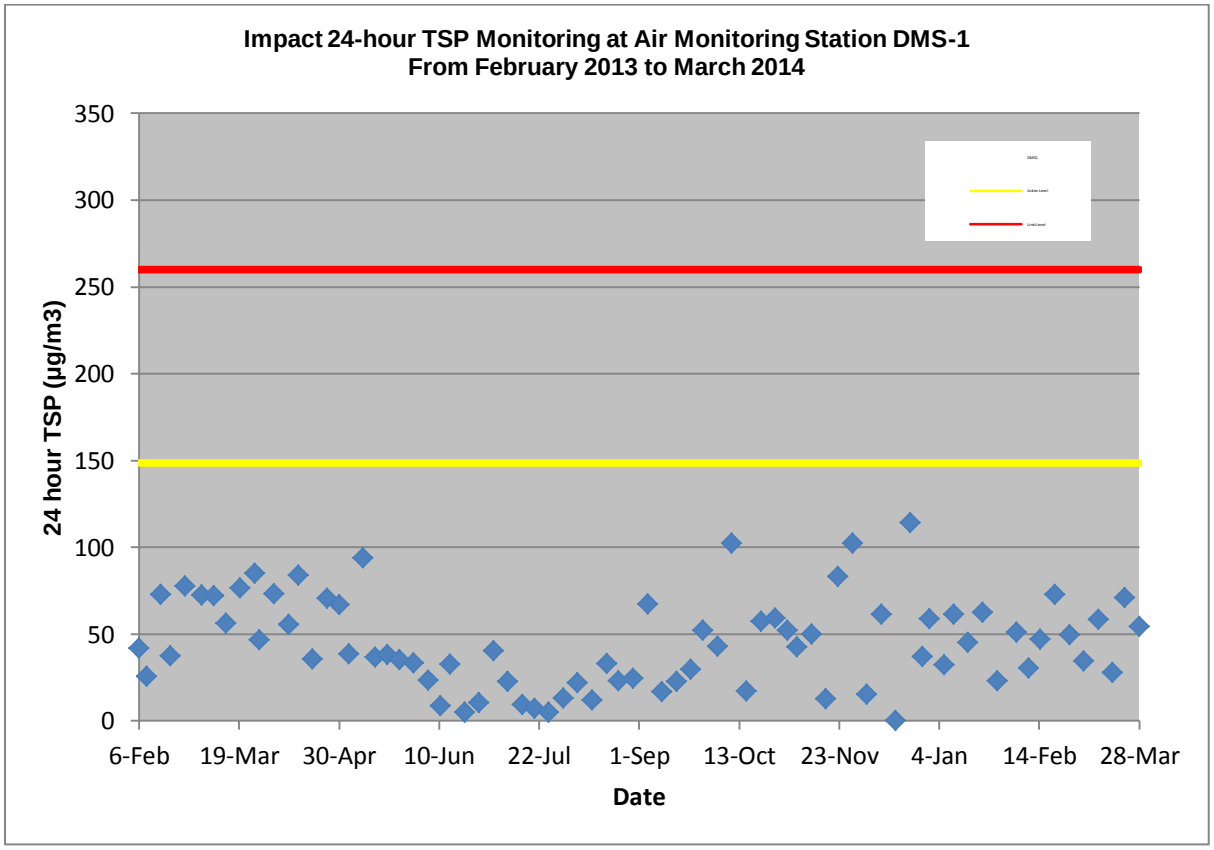
Location: DMS-3/DMS-4 - Hong Kong Sheng Kung Hui Nursing Home

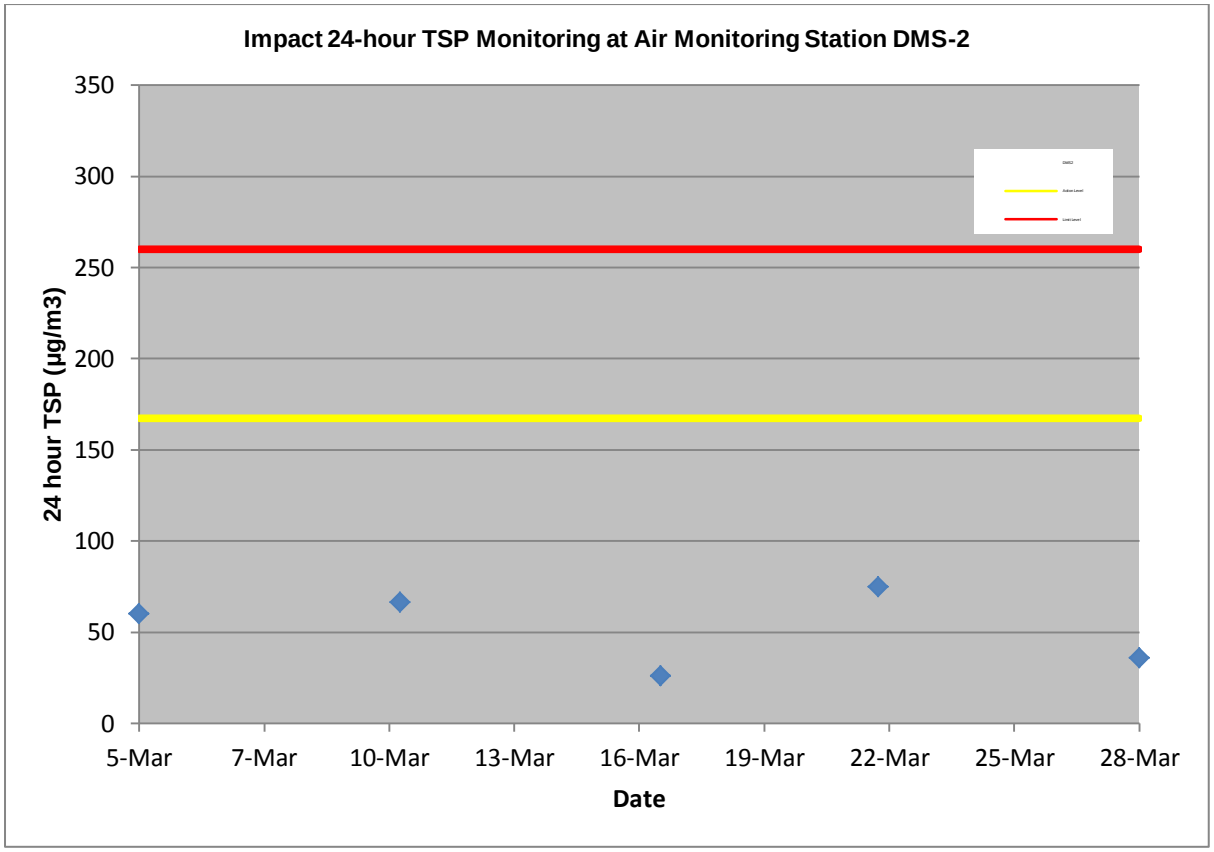
Details of 24-Hour TSP Monitoring

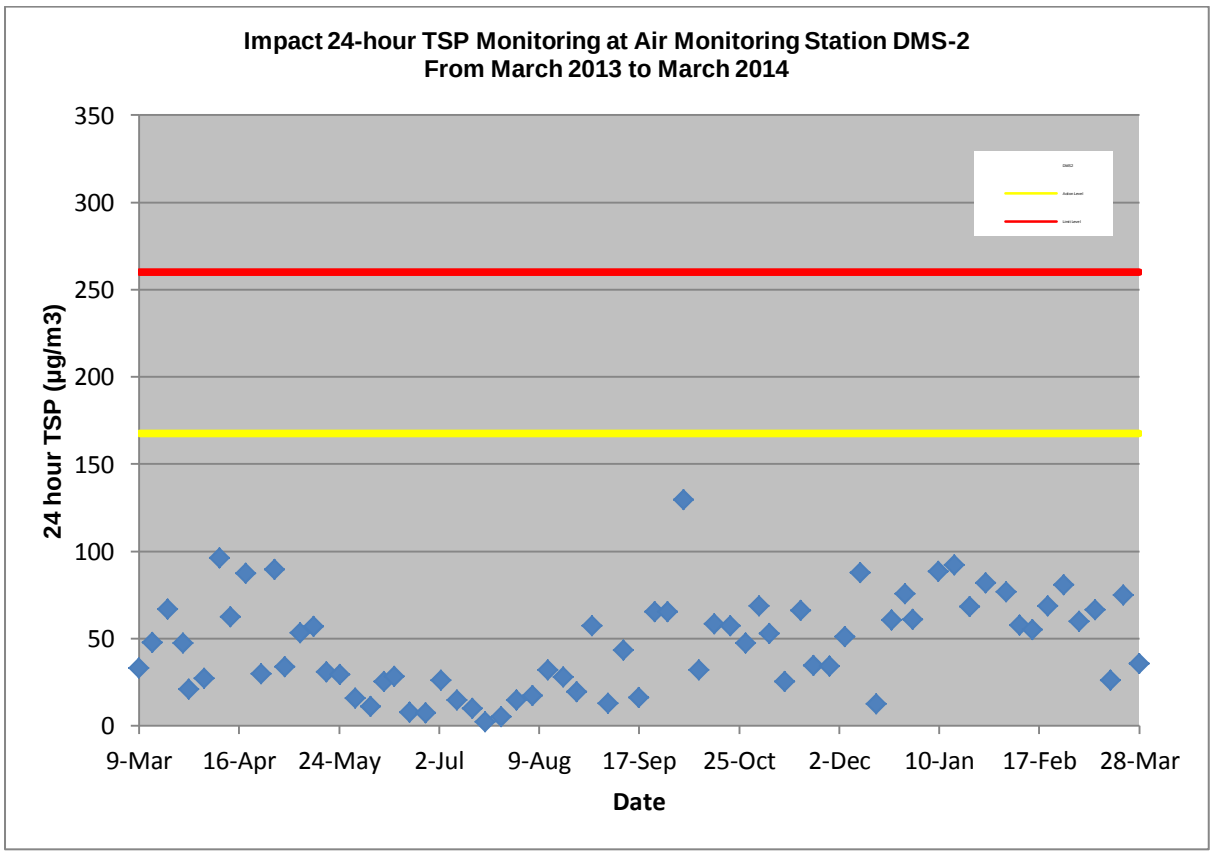
Filter No.	Month	Date	Time periods		Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m^3/min)		Average Flow Rate (m^3/min)	Elapse Time		Sampling Time (mins.)	Total vol. (m^3)	24-hour TSP Level ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
			Start	Finish				Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish					
205317	Mar-14	5-Mar-14	00:00	00:00	DMS3	Cloudy	Normal Operation	758.0	758.0	16.0	17.0	41.0	40.0	2.8547	2.9448	0.0901	1.0892	1.0640	1.0766	1776.40	1800.40	1440.00	1550.30	58.1	159.1	260.0
204346	Mar-14	11-Mar-14	00:00	00:00	DMS3	Cloudy	Normal Operation	761.0	761.0	16.0	18.0	41.0	40.0	2.8484	2.9086	0.0602	1.0911	1.0642	1.0777	1800.40	1824.40	1440.00	1551.82	38.8	159.1	260.0
205323	Mar-14	17-Mar-14	00:00	00:00	DMS3	Cloudy	Normal Operation	760.0	761.0	22.0	24.0	44.0	42.0	2.8604	2.9610	0.1006	1.4508	1.3906	1.4207	1824.40	1848.40	1440.00	2045.81	49.2	159.1	260.0
205325	Mar-14	22-Mar-14	00:00	00:00	DMS3	Fine	Normal Operation	761.0	759.0	20.0	20.0	41.0	41.0	2.8936	3.0594	0.1658	1.3701	1.3686	1.3694	1848.40	1872.40	1440.00	1971.86	84.1	159.1	260.0
205328	Mar-14	28-Mar-14	00:00	00:00	DMS3	Fine	Normal Operation	760.0	760.0	24.0	23.0	41.0	41.0	2.8538	2.9788	0.1250	1.3615	1.3634	1.3625	1872.40	1896.40	1440.00	1961.93	63.7	159.1	260.0

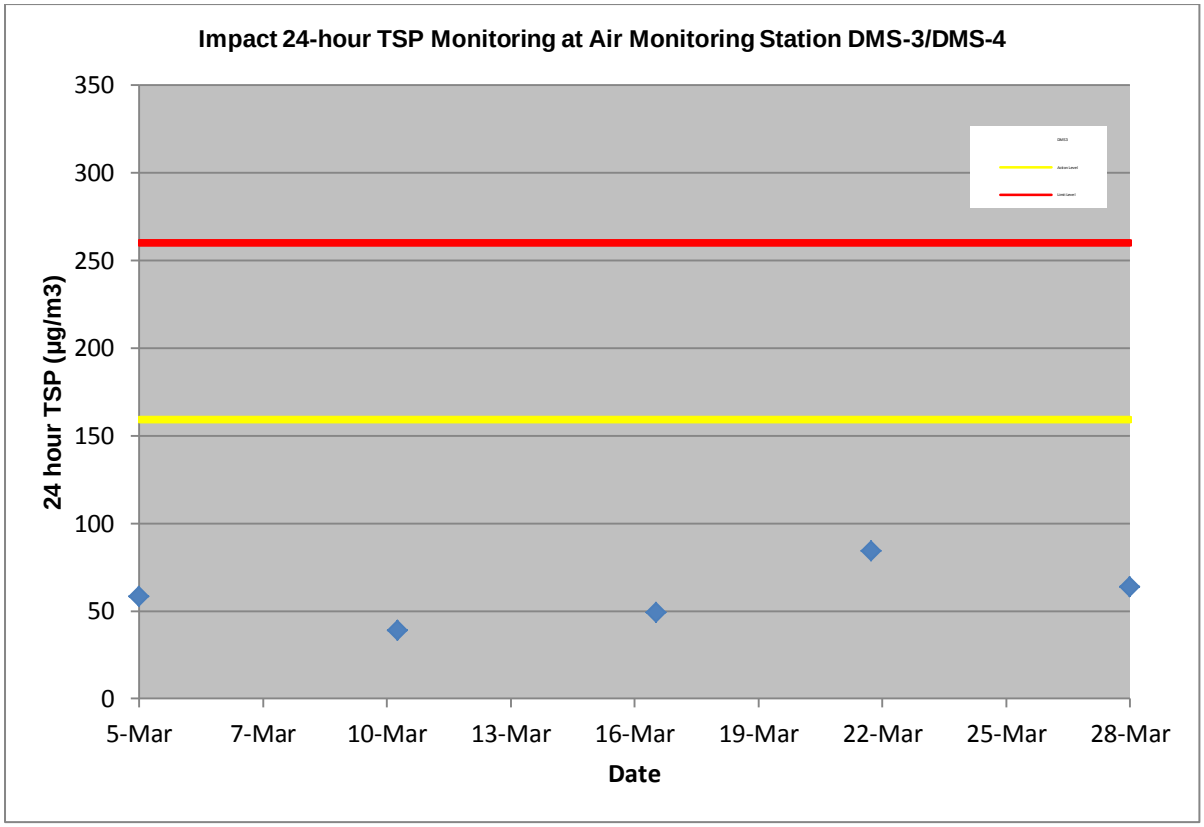
Average (µg/m3)	58.8
Max (µg/m3)	84.1
Min (µg/m3)	38.8

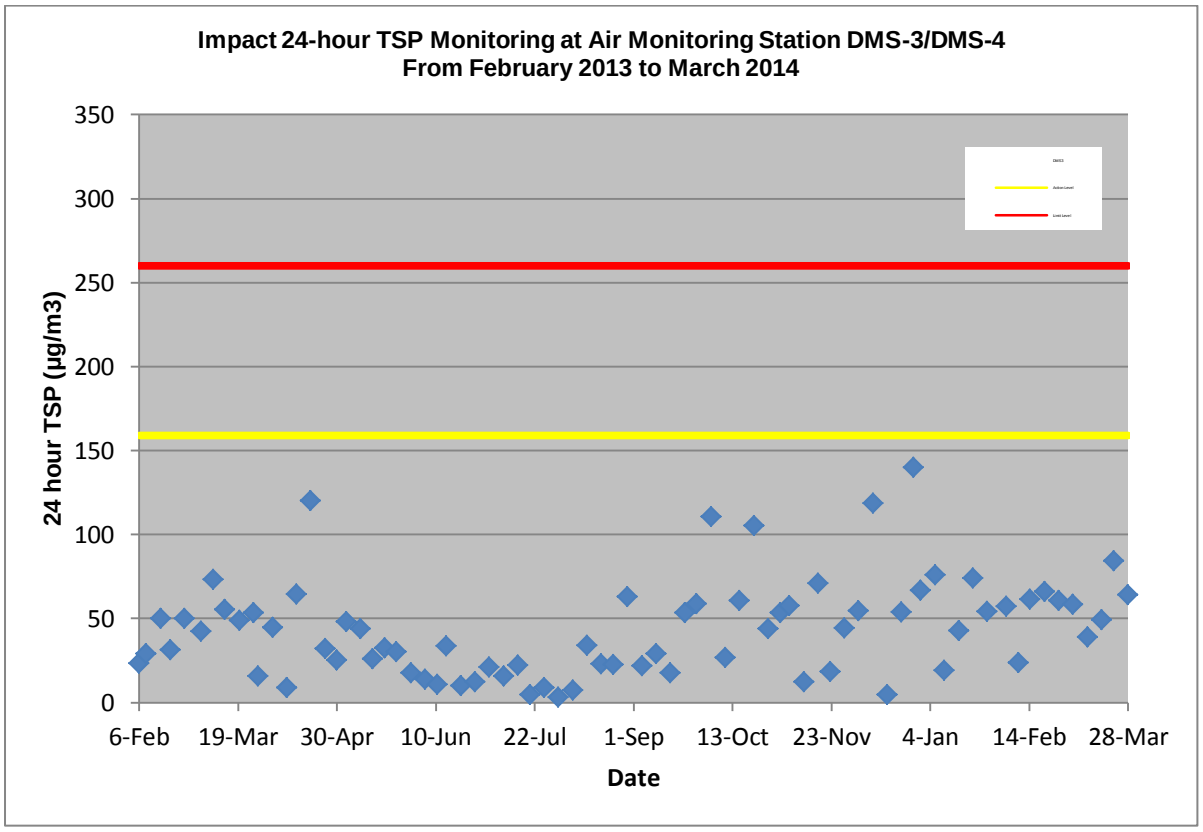

Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-1
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
5-Mar
7-Mar
10-Mar
13-Mar
16-Mar
19-Mar
22-Mar
25-Mar
28-Mar
Date


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-1
From February 2013 to March 2014
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
6-Feb
19-Mar
30-Apr
10-Jun
22-Jul
1-Sep
13-Oct
23-Nov
4-Jan
14-Feb
28-Mar
Date


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-2
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
5-Mar
7-Mar
10-Mar
13-Mar
16-Mar
19-Mar
22-Mar
25-Mar
28-Mar
Date


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-2
From March 2013 to March 2014
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
9-Mar
16-Apr
24-May
2-Jul
9-Aug
17-Sep
25-Oct
2-Dec
10-Jan
17-Feb
28-Mar
Date


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-3/DMS-4
24 hour TSP (µg/m3)
350
300
250
200
150
100
50
0
5-Mar
7-Mar
10-Mar
13-Mar
16-Mar
19-Mar
22-Mar
25-Mar
28-Mar
Date

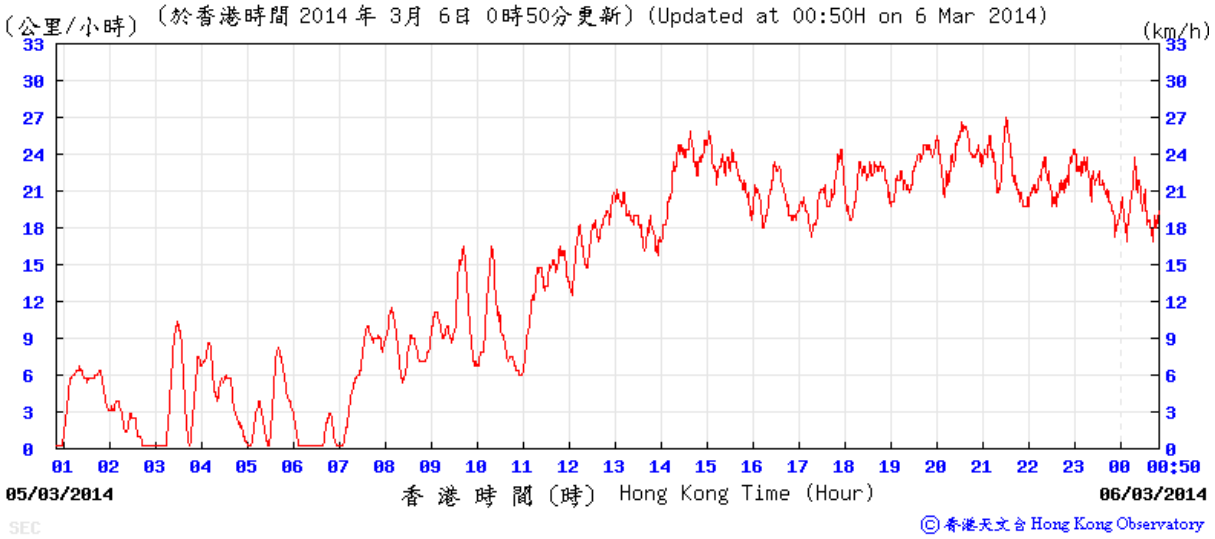

Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-3/DMS-4
From February 2013 to March 2014
24 hour TSP (µg/m3)
350
300
250
200
150
100
50
0
6-Feb
19-Mar
30-Apr
10-Jun
22-Jul
1-Sep
13-Oct
23-Nov
4-Jan
14-Feb
28-Mar
Date

Appendix F

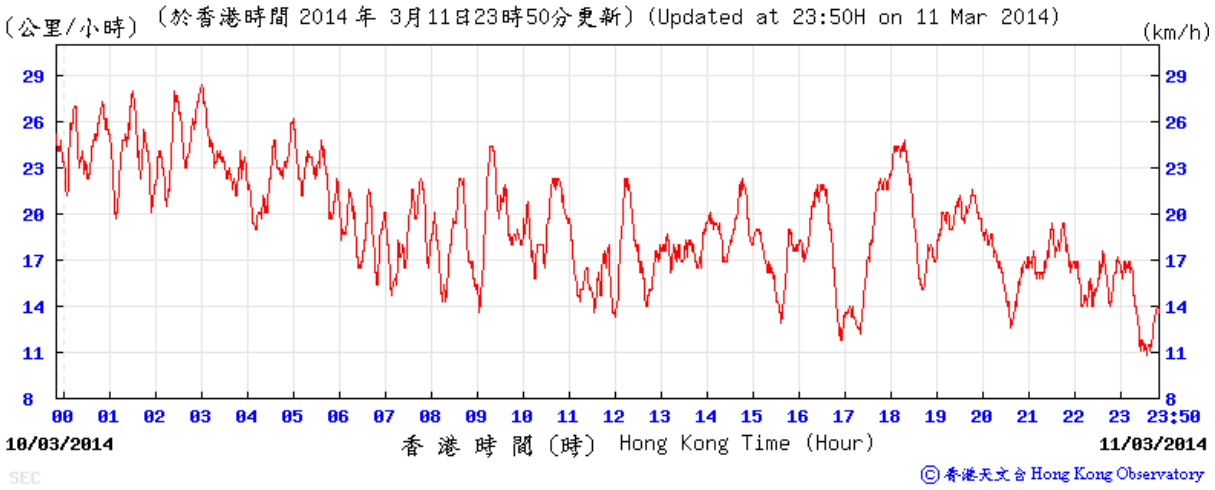
Wind data

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

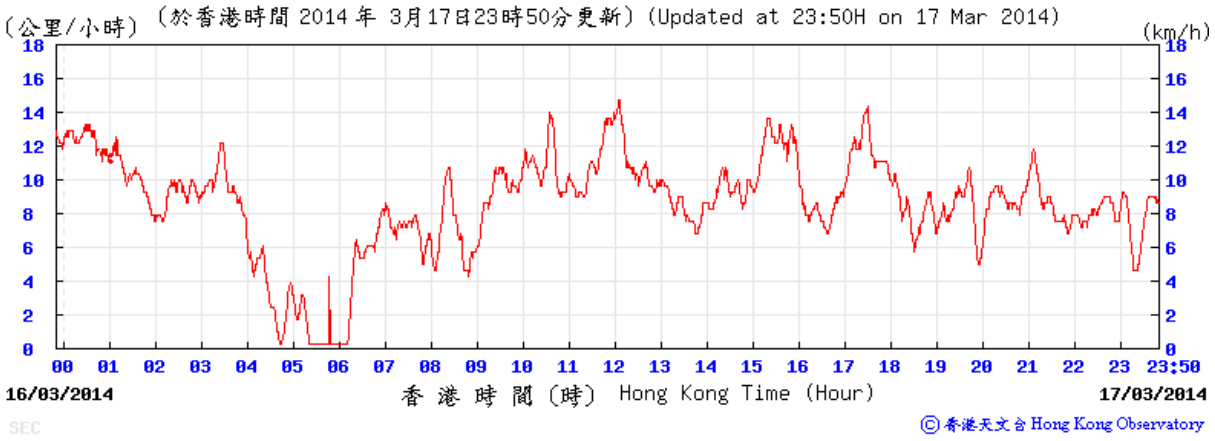
5 March 2014



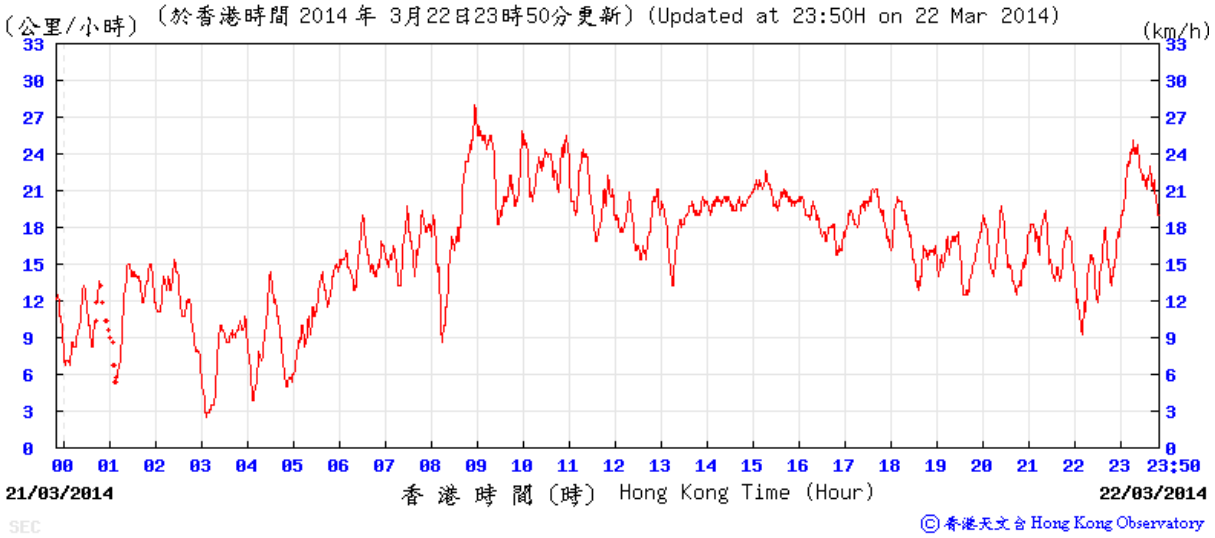
11 March 2014



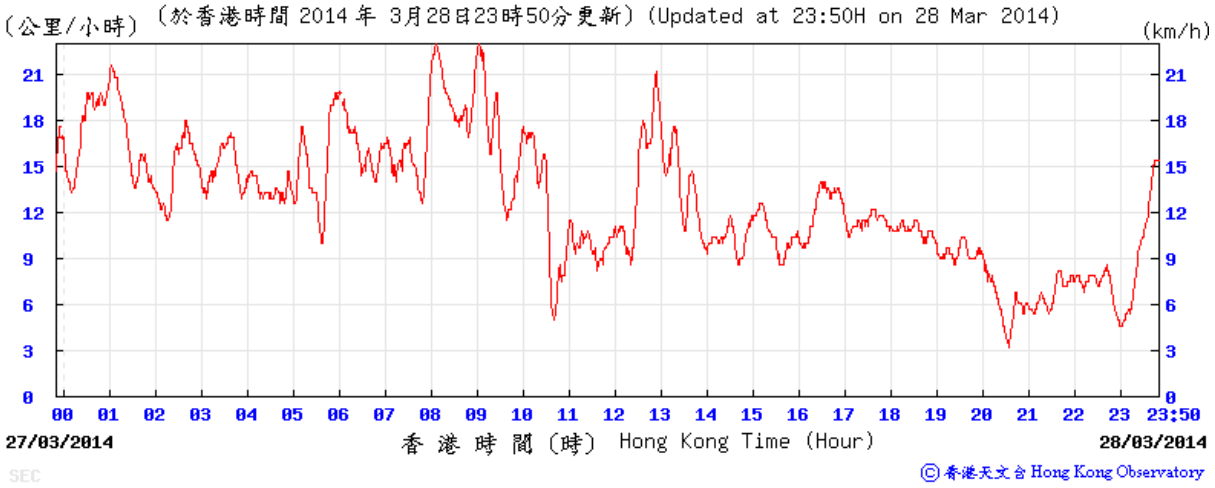
17 March 2014



22 March 2014

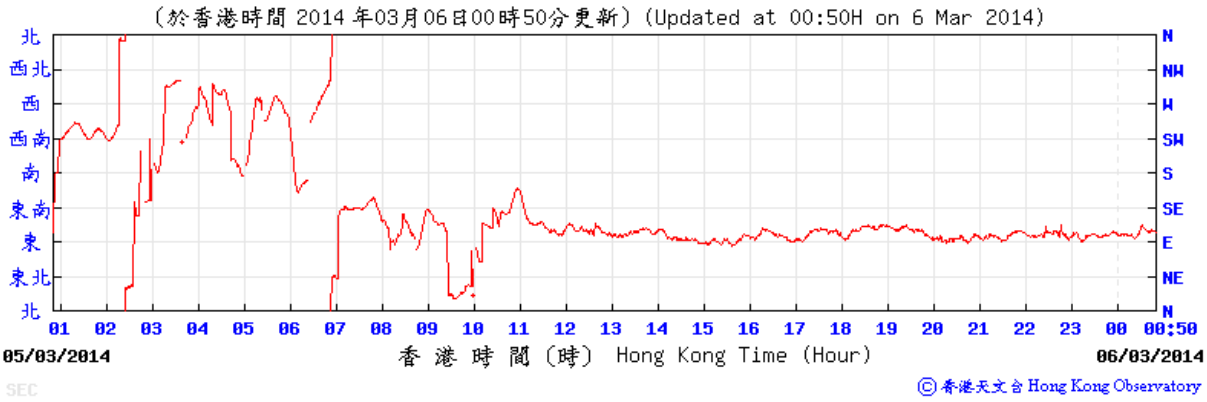


28 March 2014



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

5 March 2014



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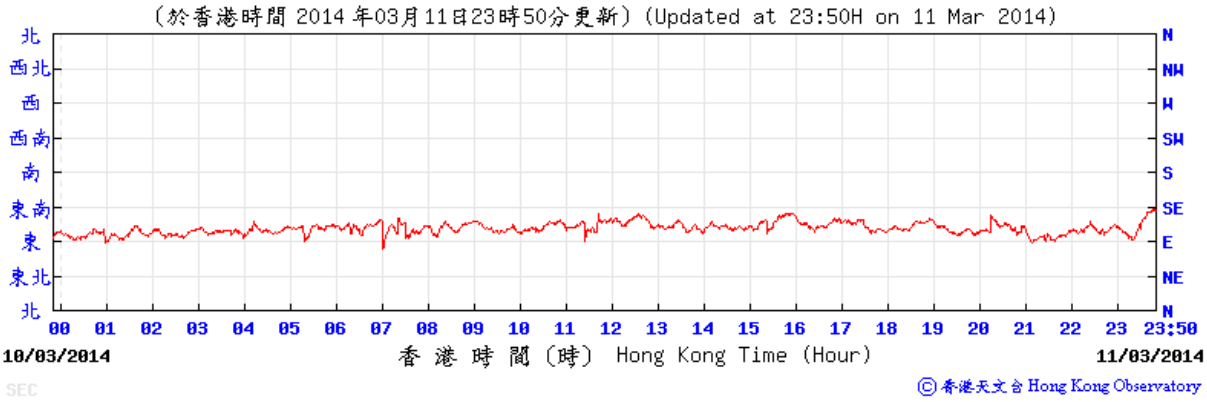
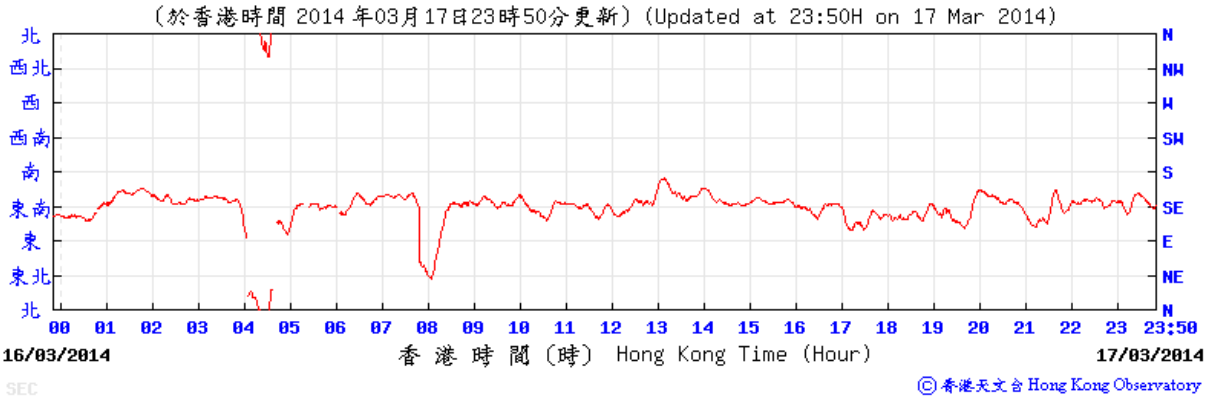
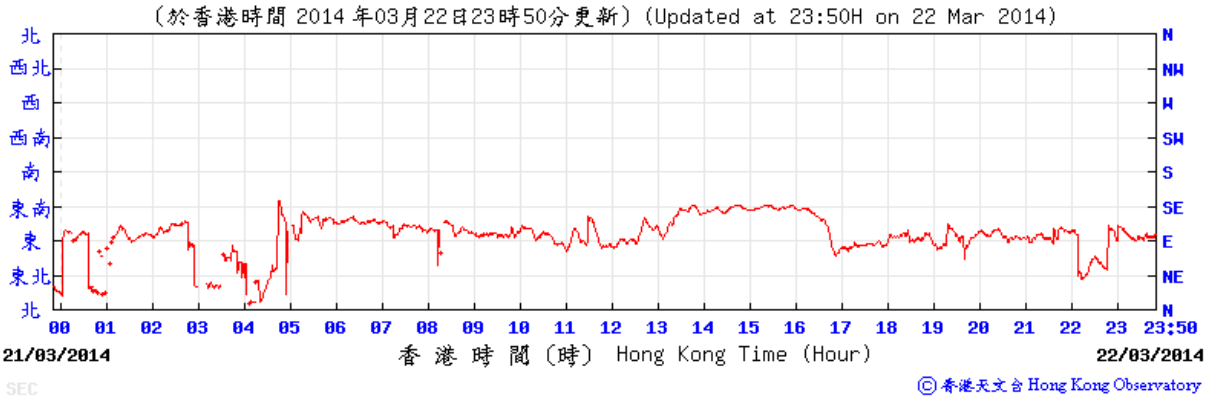


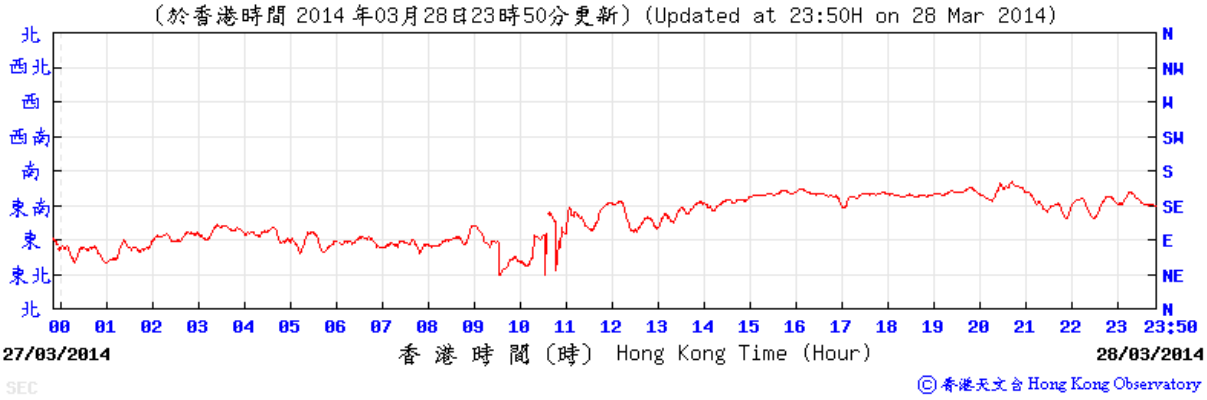
17 March 2014



22 March 2014

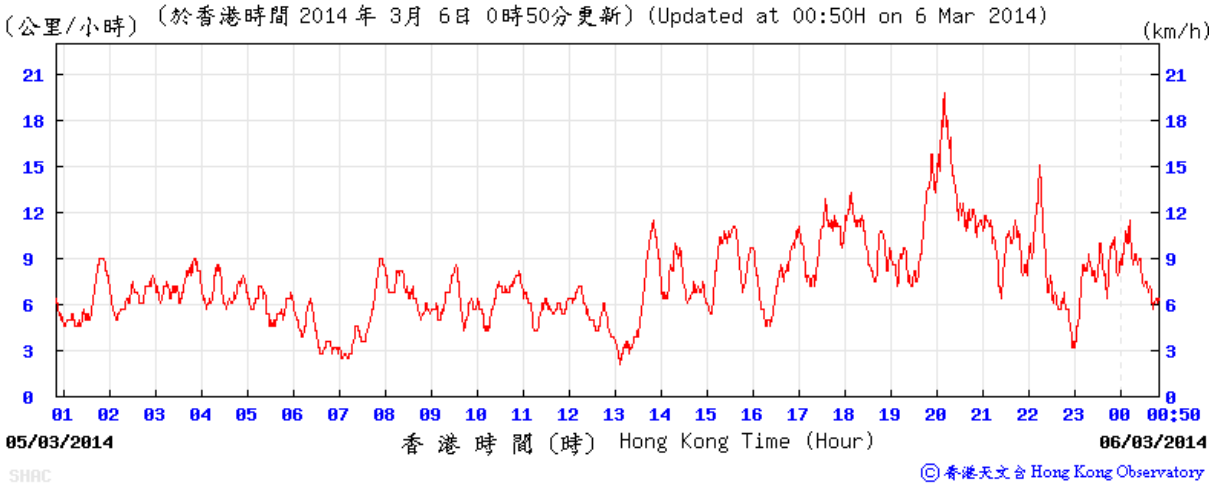


28 March 2014

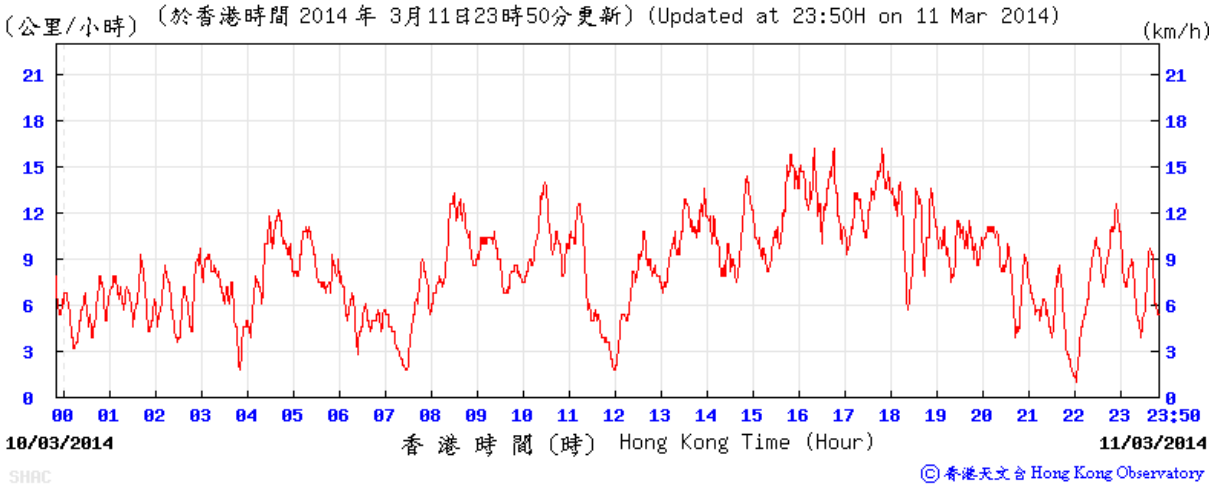


Average wind speed obtained from the meteorological station at Sha Tin from the Hong Kong Observatory (HKO)

5 March 2014



11 March 2014



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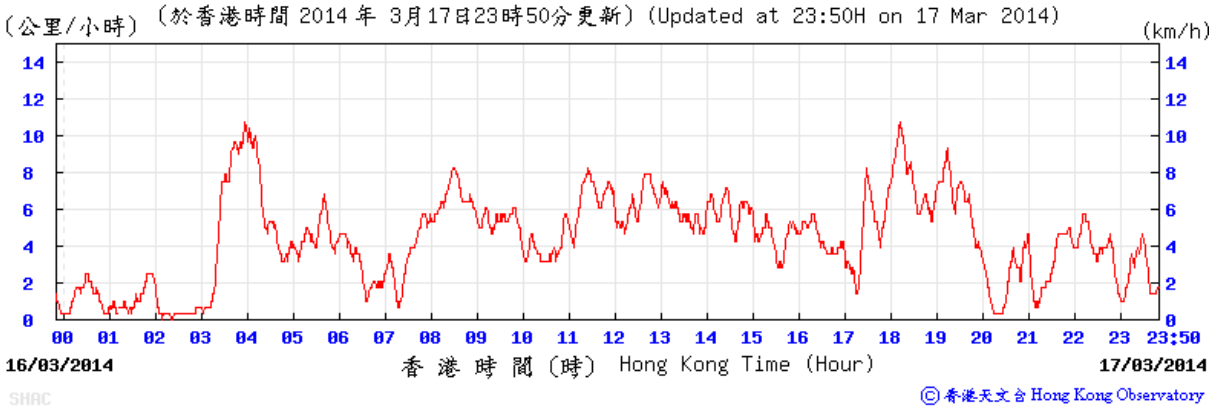
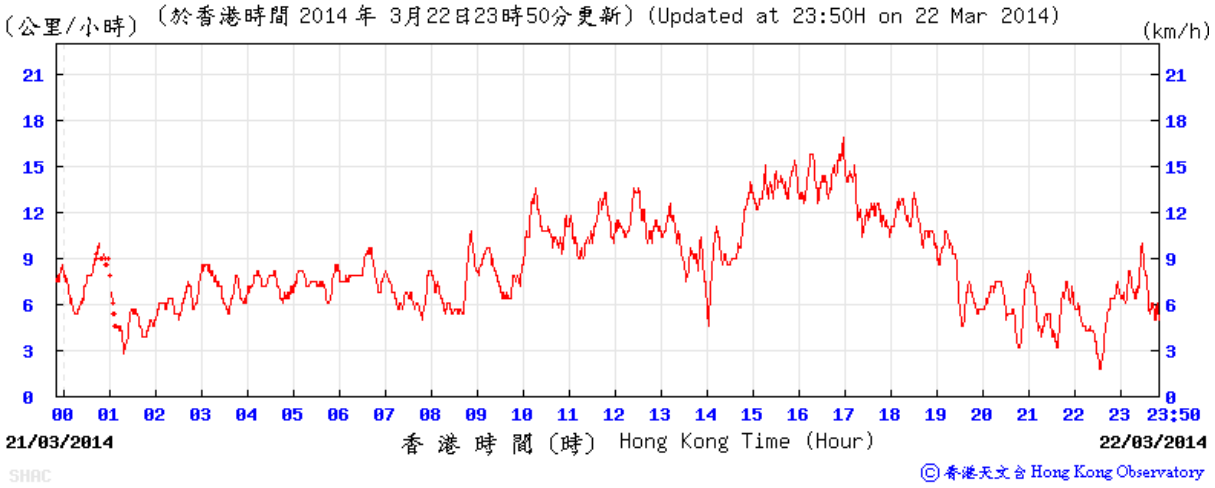
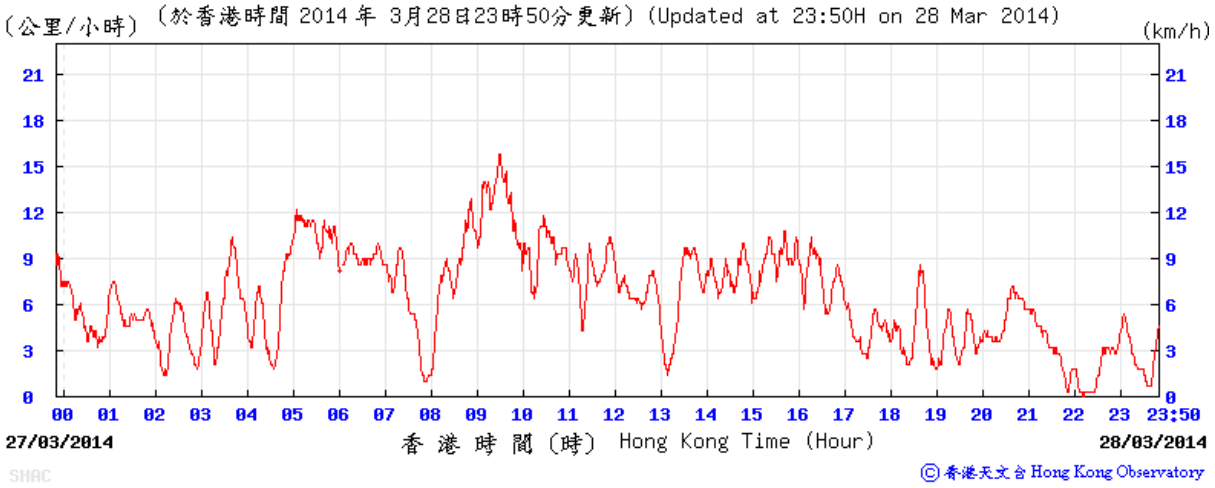


22 March 2014

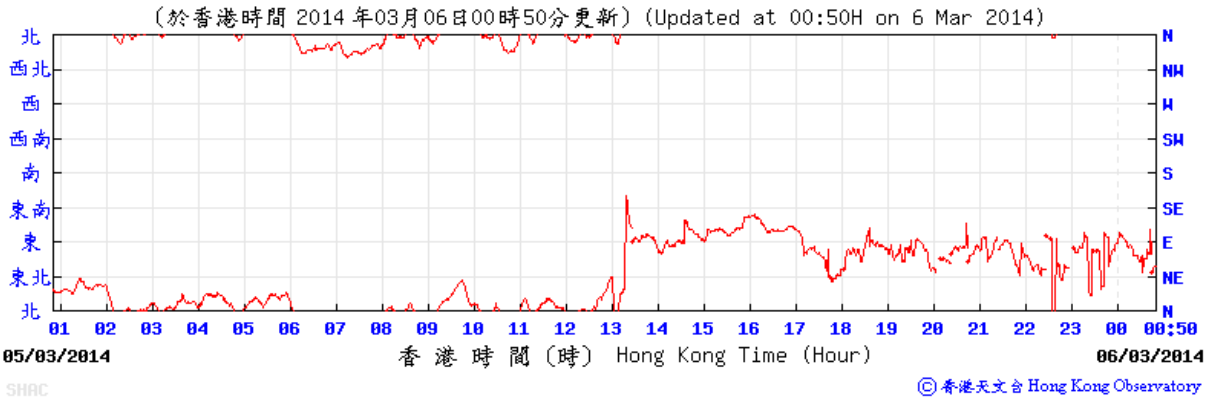


28 March 2014

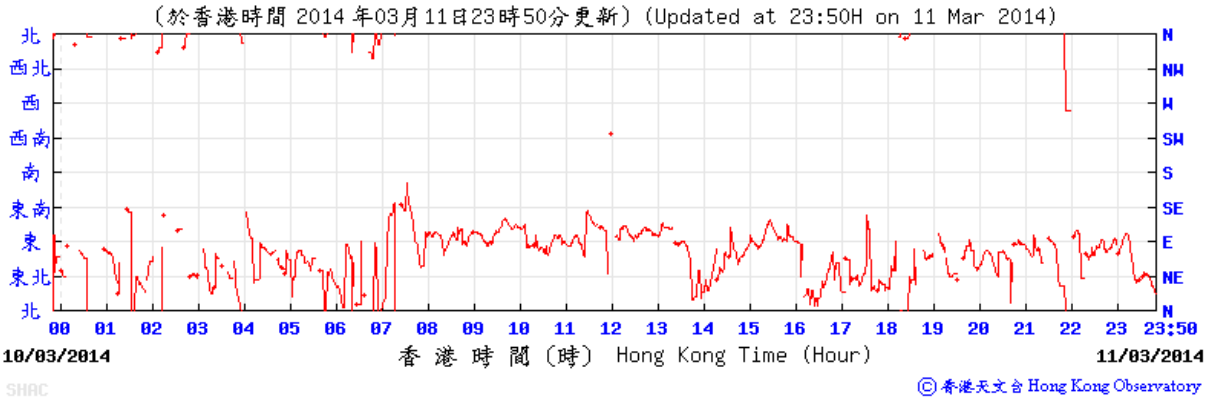


Average wind direction obtained from the meteorological station at Sha Tin from the Hong Kong Observatory (HKO)

5 March 2014



11 March 2014



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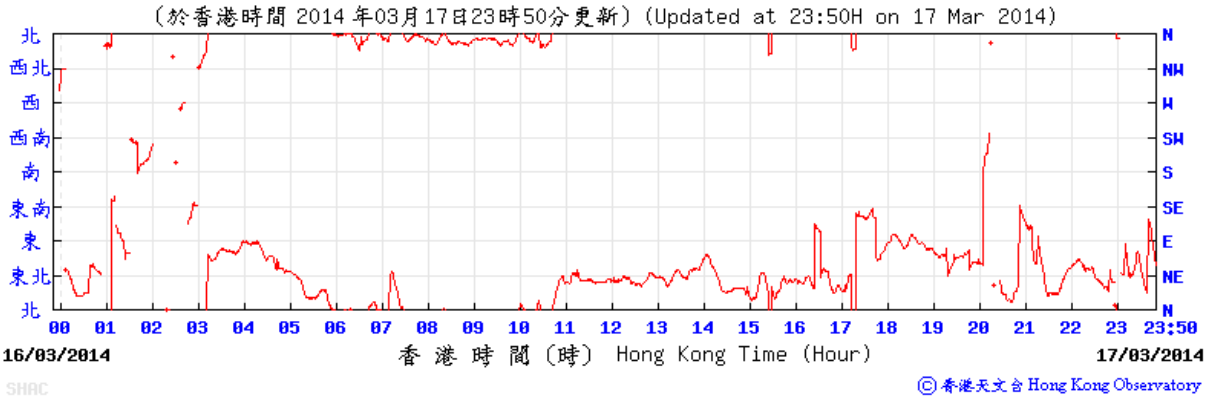

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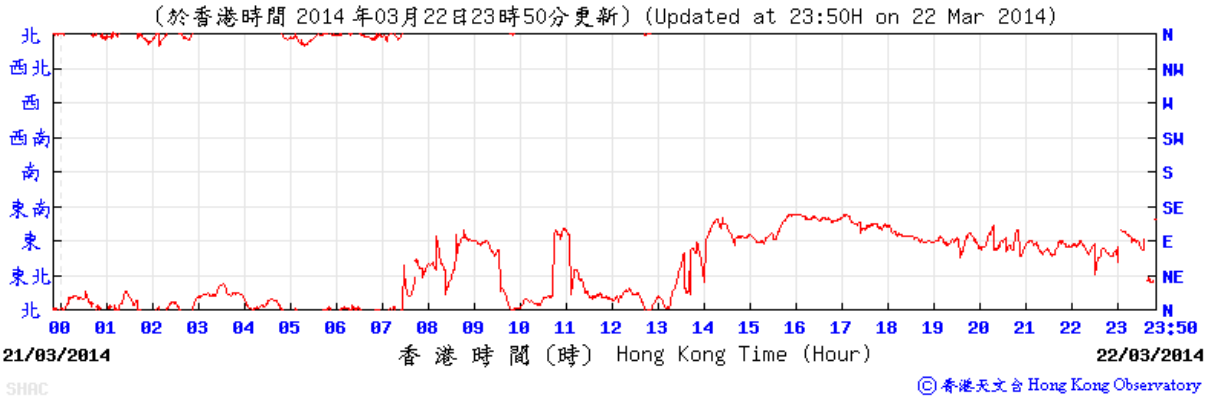
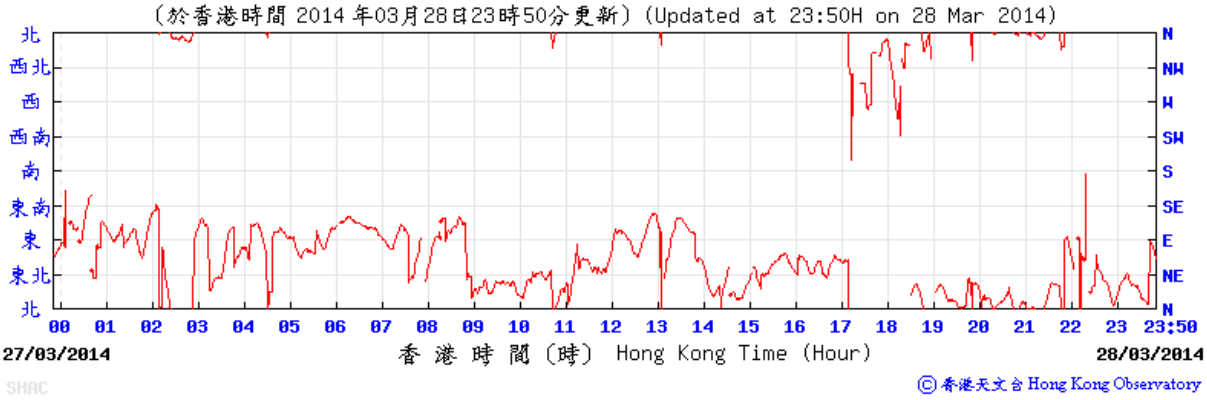


28 March 2014



Appendix G

Calibration Certificates of Noise Monitoring Equipment

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

Certificate of Calibration
校正證書

Certificate No. : C134619
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC13-1856)

Description / 儀器名稱	:	Integrating Sound Level Meter
Manufacturer / 製造商	:	Brüel & Kjær
Model No. / 型號	:	2238
Serial No. / 編號	:	2562763
Supplied By / 委託者	:	Ove Arup & Partners Hong Kong Co., Ltd. Level 5, Festival Walk, 80 Tat Chee Avenue, Kowloon Tong, Kowloon

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 23 July 2013

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within 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
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee

Certified By 核證 : K M Wu

Date of Issue 簽發日期 : 24 July 2013

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

Certificate of Calibration
校正證書

Certificate No. : C134619
證書編號

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

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

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

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C130019
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L_{AFP}	A	F	94.00	1	94.4

6.1.1.2 After Self-calibration

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

6.1.2 Linearity

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

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

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

Certificate of Calibration
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6.2 Time Weighting

6.2.1 Continuous Signal

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

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L_{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L_{AFMax}				200 ms	105.0	-1.0 ± 1.0
	L_{ASP}		S		Continuous	106.0	Ref.
	L_{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{AFP}	A	F	94.00	31.5 Hz	54.9	-39.4 ± 1.5
					63 Hz	68.0	-26.2 ± 1.5
					125 Hz	77.9	-16.1 ± 1.0
					250 Hz	85.4	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.1	Ref.
					2 kHz	95.3	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.9	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.9	-4.3 (+3.0 ; -6.0)

Certificate of Calibration
校正證書

Certificate No. : C134619
證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L_{CFP}	C	F	94.00	31.5 Hz	91.2	-3.0 ± 1.5
					63 Hz	93.3	-0.8 ± 1.5
					125 Hz	93.9	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.1	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	91.0	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.9	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
						$1/10^2$		90	90.1	± 0.5
			60 sec.			$1/10^3$		80	79.8	± 1.0
			5 min.			$1/10^4$		70	69.8	± 1.0

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2658559

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

- Uncertainties of Applied Value :

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

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

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

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. : C134617
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC13-1856)

Description / 儀器名稱	:	Acoustical Calibrator
Manufacturer / 製造商	:	Brüel & Kjær
Model No. / 型號	:	4231
Serial No. / 編號	:	2713427
Supplied By / 委託者	:	Ove Arup & Partners Hong Kong Co., Ltd. Level 5, Festival Walk, 80 Tat Chee Avenue, Kowloon Tong, Kowloon

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 23 July 2013

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within 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
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee

Certified By 核證 : K M Wu

Date of Issue 簽發日期 : 24 July 2013

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. : C134617
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	C133632
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C120886

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	± 0.2	± 0.2
114 dB, 1 kHz	114.1		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 0.1 %	± 0.1

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

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

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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

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
06-Mar-14	10:20-10:50	59.5	70.0	61.5	56.5	57.0	55.9
12-Mar-14	10:10-10:40	59.1	70.0	61.0	56.5	57.0	54.9
18-Mar-14	14:00-14:30	58.6	70.0	60.5	53.5	57.0	53.5
24-Mar-14	09:00-09:30	58.4	70.0	60.5	56.0	57.0	52.8

Notes: (*): Façade correction is included

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

Average	L_{Aeq},30min	58.9
Max	L_{Aeq},30min	59.5
Min	L_{Aeq},30min	58.4

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

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
06-Mar-14	15:10- 15:40	70.5	70.0	73.5	69.0	66.0	68.6
12-Mar-14	14:30-15:00	68.9	70.0	70.5	66.0	66.0	65.8
18-Mar-14	08:00-08:30	69.4	70.0	71.0	63.5	66.0	66.7
24-Mar-14	11:00-11:30	70.8	70.0	72.5	68.5	66.0	69.1

Notes: (*): Façade correction is included

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

Average	L_{Aeq},30min	69.9
Max	L_{Aeq},30min	70.8
Min	L_{Aeq},30min	68.9

Location: NMS-CA-3 / NMS-CA-4 - Hong Kong Sheng Kung Hui Nursing Home

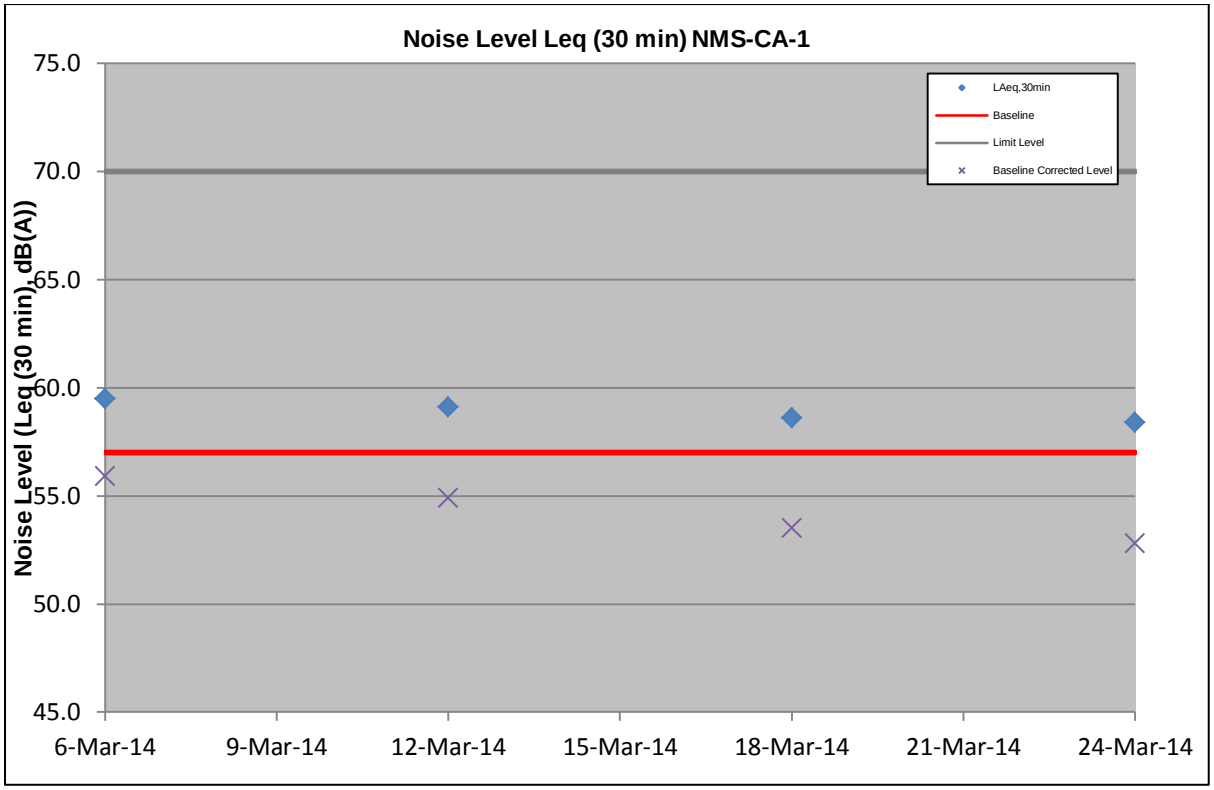
Daytime Noise Monitoring Results

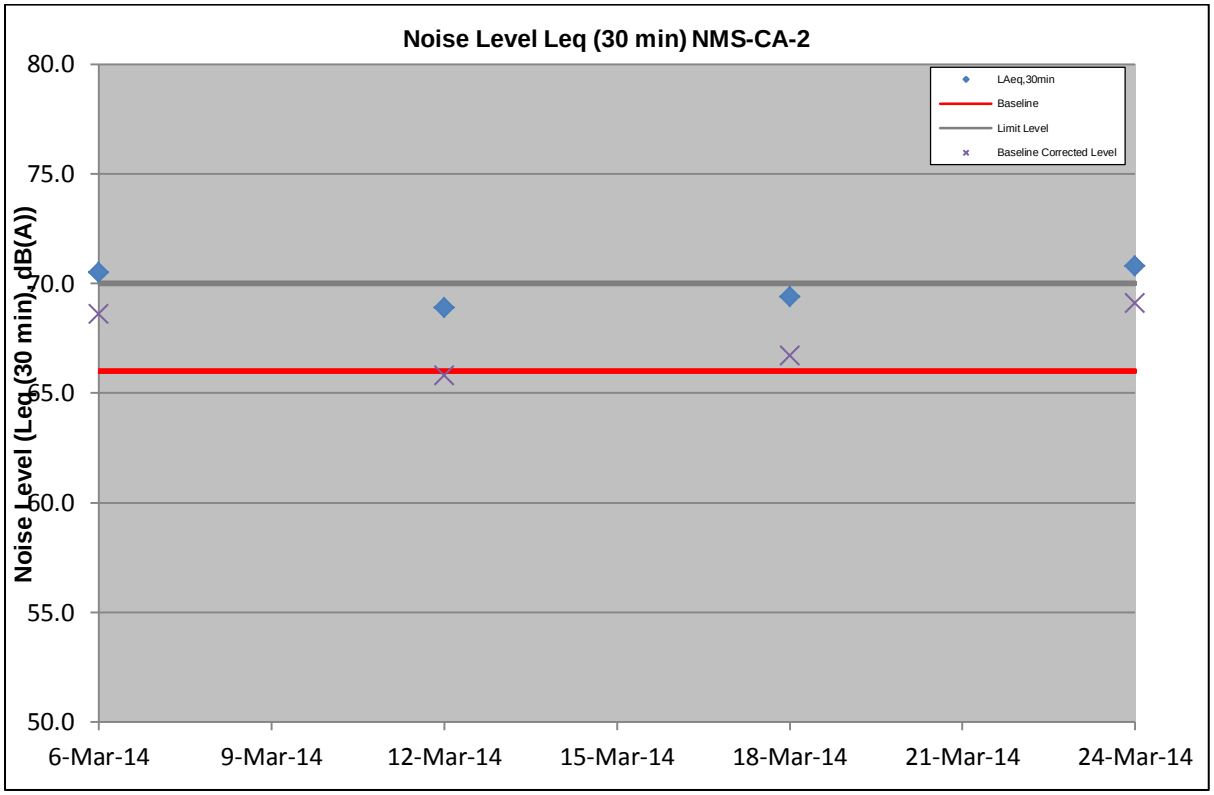
Date	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Baseline Corrected Level
		L_{Aeq},30min	Limit	L_{10},30min	L_{90},30min	L_{Aeq},30min	L_{Aeq},30min
06-Mar-14	13:00- 13:30	67.3	70.0	69.0	65.0	73.0	< Baseline Level
12-Mar-14	13:00-13:30	68.6	70.0	70.5	63.5	73.0	< Baseline Level
18-Mar-14	9:10-09:40	67.5	70.0	69.0	63.0	73.0	< Baseline Level
24-Mar-14	10:05- 10:35	68.6	70.0	70.5	64.5	73.0	< Baseline Level

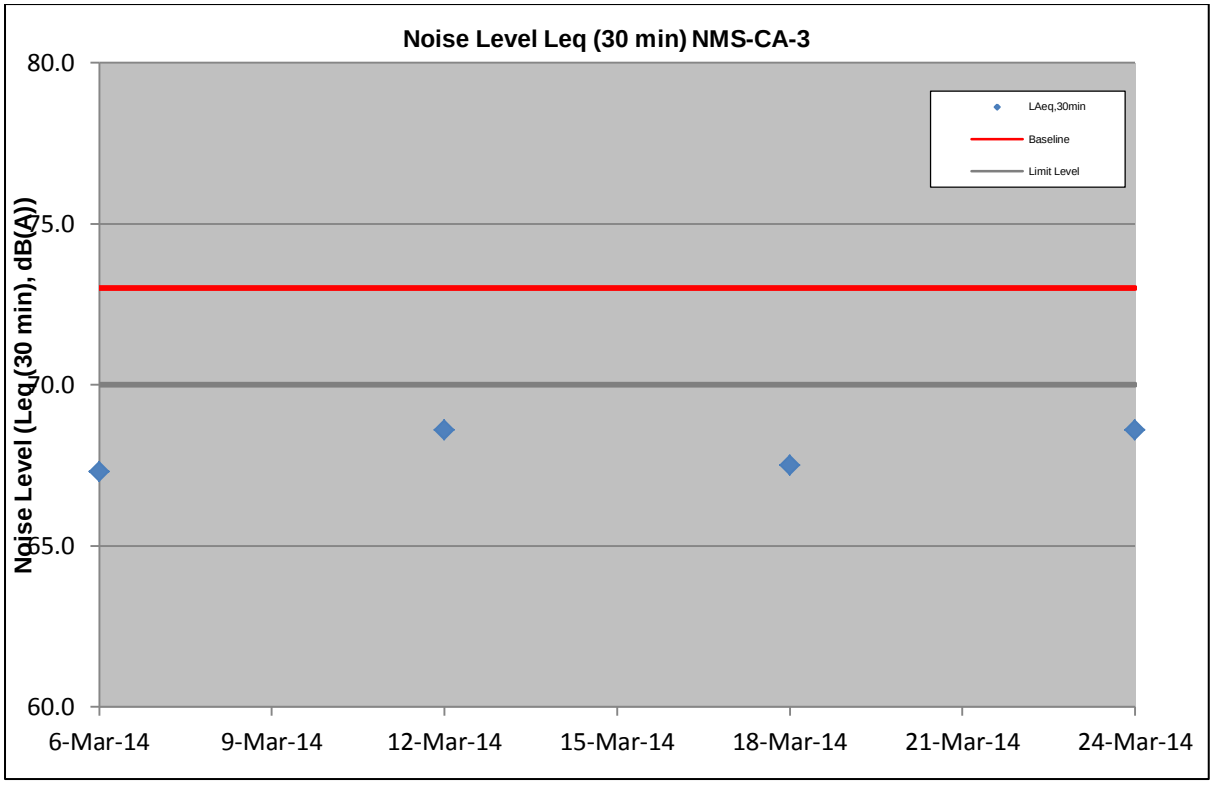
Notes: (*): Façade correction is included

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

Average	L_{Aeq},30min	68.0
Max	L_{Aeq},30min	68.6
Min	L_{Aeq},30min	67.3


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-14
9-Mar-14
12-Mar-14
15-Mar-14
18-Mar-14
21-Mar-14
24-Mar-14
LAeq,30min
Baseline
Limit Level
Baseline Corrected Level


Noise Level Leq (30 min) NMS-CA-2
Noise Level (Leq (30 min), dB(A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
6-Mar-14
9-Mar-14
12-Mar-14
15-Mar-14
18-Mar-14
21-Mar-14
24-Mar-14
LAeq,30min
Baseline
Limit Level
Baseline Corrected Level


Noise Level Leq (30 min) NMS-CA-3
Noise Level (Leq (30 min), dB(A))
80.0
75.0
70.0
65.0
60.0
6-Mar-14
9-Mar-14
12-Mar-14
15-Mar-14
18-Mar-14
21-Mar-14
24-Mar-14
LAeq,30min
Baseline
Limit 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

MONTHLY SUMMARY WASTE FLOW TABLE

Name of Department: ENV

Contract No.:MTR-SCL1103

Monthly Summary Waste Flow Table for 2014

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 (see Note 3)	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	17.414	0.000	0.000	10.800	6.243	0.371	0.000	0.000	0.000	1.400	0.056
Feb	8.651	0.000	0.000	5.637	2.953	0.062	0.000	0.000	0.000	0.800	0.090
Mar	13.909	0.000	0.173	7.040	5.845	0.851	0.000	0.000	0.000	0.000	0.117
Apr											
May											
Jun											
Sub-total	39.975	0.000	0.173	23.477	15.041	1.284	0.000	0.000	0.000	2.200	0.264
July											
August											
September											
October											
November											
December											
Total	39.975	0.000	0.173	23.477	15.041	1.284	0.000	0.000	0.000	2.200	0.264

Comment:

1) Assumption: The densities of Rock, Soil, Mix 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 31/3/2014 for TKO137FB/TM38FB, NENT landfill and 25/3/2014 for Kai Tak 1108A.

3) The amounts of waste in Mar are 117.33 tons for NENT Landfill, 11690.8 tons for TKO137FB/TM38 FB, 14080.1 tons for Kai Tak (Contract 1108A).

4) The amount of waste reused in Mar are 23 trucks, approximately 345 tons, in the Contract for cut-off date as 31/3/2014.

5) The amount of imported fill in Mar is 1702.01 tons, for cut-off date as 31/3/2014.

6) The amount of chemcial waste in Mar is 0L for cut-off date as 31/3/2014.

Appendix K

Environmental Monitoring Programme for Coming Month

SCL Works Contract 1103 - Hin Keng to Diamond Hill Tunnels
Tentative Impact Monitoring Schedule - April 2014

Date		Air Quality	Noise	Site Inspection
		24-hours TSP	L_{Aeq}, 30 min	
01-Apr-14	Tue			
02-Apr-14	Wed			
03-Apr-14	Thu			
04-Apr-14	Fri			
05-Apr-14	Sat			
06-Apr-14	Sun			
07-Apr-14	Mon			
08-Apr-14	Tue			
09-Apr-14	Wed			
10-Apr-14	Thu			
11-Apr-14	Fri			
12-Apr-14	Sat			
13-Apr-14	Sun			
14-Apr-14	Mon			
15-Apr-14	Tue			
16-Apr-14	Wed			
17-Apr-14	Thu			
18-Apr-14	Fri			
19-Apr-14	Sat			
20-Apr-14	Sun			
21-Apr-14	Mon			
22-Apr-14	Tue			
23-Apr-14	Wed			
24-Apr-14	Thu			
25-Apr-14	Fri			
26-Apr-14	Sat			
27-Apr-14	Sun			
28-Apr-14	Mon			
29-Apr-14	Tue			
30-Apr-14	Wed			

	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 and DMS-3 / DMS-4 - Hong Kong Sheng Kung Hui Nursing Home	24-hour TSP
Noise	NMS-CA-1 - C.U.H.K.A.A Thomas Cheung School, NMS-CA-2 - Price Memorial Catholic Primary School and NMS-CA-3 /NMS-CA-4 - Hong Kong Sheng Kung Hui Nursing Home	$L_{Aeq(30\ min)}$, 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 2014)

ET's Complaint Log Ref. no.	Incoming Complaint Ref no.	Name of Complainant	Date Complaint Received	Complaint Date/ Period	Complaint Location	Area of Concern	Details of Complaint	Date Complaint Received by ET	ET's Investigation Date	Investigation/Mitigation Measures	Validity to Project	Status
-	-	-	-	-	-	-	-	-	-	-	-	-

SCL 1103 Hin Keng to Diamond Hill Tunnels Construction Stage
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
Total	0	0	0

Appendix F

13th EM&A Report for Works Contract 1106 – Diamond Hill Station

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report No. 13

[Period from 1 to 31 March 2014]

Works Contract 1106 – Diamond Hill Station

(April 2014)

Certified by: Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 9th April 2014

Sembawang – Leader Joint Venture

Shatin to Central Link – Contract 1106 Diamond Hill Station

Monthly Environmental Monitoring and Audit Report for March 2014

(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 13th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for **MTR Shatin to Central Link (SCL) Works Contract 1106 – Diamond Hill Station**. This report documents the findings of EM&A Works conducted from 1 to 31 March 2014.

Summary of Construction Works undertaken during the Reporting Month

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

- D-wall construction;
- Construction of pumping wells;
- King post construction works;
- Construction of capping beam;
- Gas main diversion works;
- Construction of Pedestrian Underpass at Luen Yee Road;
- Vertical piling work at Diamond Hill Station exit A1;
- Construction of temporary storage compound for Former RAF Hangar and Old Pillbox; and
- Construction of construction site office.

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

- Construction Dust (24-hour TSP) Monitoring

Dust Monitoring Station ID

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

Remarks:
(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) Noise monitoring on NMS-CA-3(1)/ NMS-CA-4(2) (Hong Kong Sheng Kung Hui Nursing Home) is carried out by Environmental Team of SCL Works Contract 1103.
(4) Dust monitoring on DMS-3(1)/ DMS-4(2) (Hong Kong Sheng Kung Hui Nursing Home) is carried out by Environmental Team of SCL Works Contract 1103.

Cultural Heritage

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

Search for Antiquities under Antiquities and Monuments Ordinance has been subsequently obtained from Antiquities and Monuments Office (AMO) on 19 April 2013. The archaeological survey-cum-excavation at Former Tai Hom Village commenced on 25 April 2013 and the fieldwork had been completed in September 2013 in accordance with the Licence granted and the approved AAP.

The 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.

Waste Management

5. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. About 5,081 m^3 of inert C&D materials were generated from the Project and were sent to SCL1108A and Tuen Mun Area 38 Fill Bank during the reporting month. About 49 m^3 of non-recyclable non-inert C&D materials, such as general refuse, were disposed of at NENT Landfill. 1,760 kg chemical waste was collected by licensed collector during the reporting month. No plastics, steel material but 20 kg paper/cardboard packaging was collected by the recycler during this reporting month.

Landscape and Visual

6. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 12 and 27 March 2014. Most of the necessary mitigation measures have been implemented and recommended follow-up actions have been discharged by the Contractor. Details of the audit findings and implementation status are presented in Section 6.

Environmental Site Inspection

7. Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 4, 12, 20 and 27 March 2014. The representative of the IEC joined the site inspection on 27 March 2014. Details of the audit findings and implementation status are presented in Section 6.

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

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

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

10. No Project related environmental complaint and notification of summons/ successful prosecutions were received in this reporting period.

Future Key Issues

11. Major site activities for the coming reporting month will include:

- D-wall construction;
- Pipe pile wall construction;
- Construction of capping beam;
- Gas main diversion works;
- Construction of Pedestrian Underpass at Luen Yee Road;
- Vertical piling work at Diamond Hill Station exit A1;
- Horizontal pipe pile works for tree transplantation;
- Excavation works at the SCL-Diamond Hill Station;
- Construction of temporary storage compound for Former RAF Hangar & Old Pillbox;
- Construction of construction site office; and
- Construction of pumping wells.

1 INTRODUCTION

1.1 Cinotech Consultants Limited (Cinotech) was appointed by Sembawang – Leader Joint Venture (SLJV) 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 13th 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 2014.

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. The alignment and works area 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**.

- D-wall construction;
- Construction of pumping wells;
- King post construction works;
- Construction of capping beam;
- Gas main diversion works;
- Construction of Pedestrian Underpass at Luen Yee Road;
- Vertical piling work at Diamond Hill Station exit A1;
- Construction of temporary storage compound for Former RAF Hangar and Old Pillbox; and
- Construction of construction site office.

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/D	13/09/2013	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
No.: 353668	19/12/2012	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-S3711-01	11/01/2013	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00014959-2012	14/01/2013	31/01/2018	Valid
WT00016920-2013	06/09/2013	30/09/2018	Valid
Construction Noise Permit (CNP)			
GW-RE1076-13	07/10/2013	06/04/2014	Valid
GW-RE1077-13	11/10/2013	10/04/2014	Valid
GW-RE0060-14	22/01/2014	27/05/2014	Valid
GW-RE0176-14	19/02/2014	08/03/2014	Expired

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)(4)/ NMS-CA-4 (2)(3)(4)	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) (5)/ NMS-CA-2(2)(5)	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) Noise monitoring on NMS-CA-3(1)/ NMS-CA-4(2) (Hong Kong Sheng Kung Hui Nursing Home) is carried out by Environmental Team of SCL Works Contract 1103.
(5) 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 and 957 (Serial no.: 14303 and 21459)
Calibrator	SV30A and B&K 4231 (Serial no.: 10929, 24803 and 2412367)

Maintenance and Calibration

3.6 Maintenance and Calibration procedures were as follows:

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

Action & Limit Level for Construction Noise Monitoring

3.7 The Action and Limit Levels are presented in **Appendix B** and the Event / Action Plan (EAP) for noise monitoring is presented in **Appendix I.**

Continuous Noise Monitoring

3.8 With reference to the latest Continuous Noise Monitoring Plan (CNMP) and Construction Noise Mitigation Measures Plan (CNMMP) prepared 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 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)(4)]/ DMS-4[(2)(3)(4)]/	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.
(4) Dust monitoring on DMS-3[(1)]/DMS-4[(2)] (Hong Kong Sheng Kung Hui Nursing Home) is carried out by Environmental Team of SCL Works Contract 1103.

Monitoring Parameter and Frequency

3.10 The dust monitoring (in terms of Total Suspended Particulates (TSP)) was conducted at the designated monitoring stations in accordance with the requirements stipulated in the EM&A Manual. The 24-hour TSP levels were monitored at the frequency and duration stated in **Table 3.4**. The TSP monitoring at Rhythm Garden was conducted as per the schedule presented in **Appendix D**.

Table 3.4 Dust Monitoring Parameters and Frequency

Monitoring Period	Duration	Parameter	Frequency
Impact Monitoring(1)	Throughout the construction period	24-hour TSP	Once per 6 days

Note:
(1) 1- hour TSP shall be conducted when one documented valid complaint is received.

Monitoring Equipment

3.11 **Table 3.5** summarizes the equipment used for the dust monitoring.

Table 3.5 Dust Monitoring Equipment

Equipment	Model and Make	Qty.
HVS	Tisch Environmental, Inc.; Model no. TE-5170, Serial no.: 2352	1
Calibration Orifice	Tisch Environmental, Inc.; Model no. TE – 5025A Orifice ID: 0993	1

Instrumentation

3.12 High Volume Samplers (HVS) connected with appropriate sampling inlets were employed for air quality monitoring. Each sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 Appendix B (Part 50).

HVS Installation

3.13 The following guidelines were adopted during the installation of HVS:

- Sufficient support was provided to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The samplers were more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction

during monitoring.

Filters Preparation

3.14 Fiberglass filters were used which have a collection efficiency of larger than 99% for particles of 0.3 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.

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 2014)	14th March 2014

5 MONITORING RESULTS

Regular Construction Noise Monitoring

5.1 A total of 10 sets of 30-minute construction noise measurements were carried out at the monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. No exceedance of the limit level was recorded at designated monitoring stations.

5.2 The noise monitoring results recorded at NMS-CA-5(1)/NMS-CA-2(2) (Block 1, Rhythm Garden (northern façade)) on 3, 10, 20, 25 and 31 March 2014 exceeded the daytime construction noise criterion. However, the results are not considered as exceedance as they were below the baseline noise level while the noise monitoring results recorded at NMS-CA-4(1)/NMS-CA-3(2) (Block 1, Rhythm Garden (north-eastern façade)) did not exceed the daytime construction noise criterion.

5.3 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.

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

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

Regular Dust Monitoring

5.6 A total of 5 sets of 24-hour TSP monitoring were carried out at the designated monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. The monitoring results together with their graphical presentations are presented in **Appendix E**(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/m^3	Maximum µg/m^3	Average µg/m^3	Action Level, µg/m^3	Limit Level, µg/m^3
24-hr TSP (DMS-3(1)(4)/ DMS-4(2)(4))	38.8	84.1	58.8	159.1	260
24-hr TSP (DMS-4(1)/ DMS-3(2))	47.1	140.1	81.2	160.4	260

Remarks:
(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) The monitoring results and graphical presentation for H.K. Sheng Kung Hui Nursing Home are presented in Monthly EM&A Report for Contract 1103.
(4) Dust monitoring on DMS-3(1)/DMS-4(2) (Hong Kong Sheng Kung Hui Nursing Home) is carried out by Environmental Team of SCL Works Contract 1103

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

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

Cultural Heritage

5.10 An Archaeological Action Plan (AAP) for the survey-cum-excavation at the former Tai Hom Village site was approved by EPD on 8 April 2013. A Licence to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance has been subsequently obtained from Antiquities and Monuments Office (AMO) on 19 April 2013. The archaeological survey-cum-excavation at Former Tai Hom Village commenced on 25 April 2013 and completed in September 2013 in accordance with the Licence granted and the approved AAP.

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

Waste Management

5.12 Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, vegetative wastes and recyclable wastes like plastics and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in **Table 5.2**. No Plastic, steel material but 20 kg paper/cardboard packaging was collected by the recycler during 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 2014	5,081 m^3	49 m^3	*1,760 kg*	20 *kg*	0 *kg*	0 *kg*

Notes:
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil, which were delivered to SCL 1108A and Tuen Mun Area 38 Fill Bank during the reporting month.
(b) Non-inert C&D materials include steel, paper/cardboard packaging waste, plastics and other wastes such as general refuse and vegetative wastes. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. General refuse was delivered to designated landfill for disposal.

Landscape and Visual

5.13 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 12 and 27 March 2014. 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 4, 12, 20 and 27 March 2014 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 27 March 2014. No site visit was conducted by EPD. 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 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	N/A	N/A	N/A
Noise	N/A	N/A	N/A
Landscape and Visual	25 Feb 2014	Construction material observed at the tree root of the tree DT2121. The contractor is reminded to remove the materials away from the tree.	Construction materials were removed from root of tree DT2121 on 7 March 2014.
	25 Feb 2014	Reminder: Properly provide fencing for the protection area of tree DT1846.	Fencing was provided for the tree protection zone of tree DT1846 on 7 March 2014.
	12 Mar 2014	Remove the material and general refuse in the tree protection area at tree DT1770.	The construction material and general refuse was removed from the tree protection area on 20 March 2014.
Cultural Heritage	N/A	N/A	N/A
Air Quality	4 Mar 2014	Reminder: Properly cover the cement bags (including the bottom part) by top and 3 sides placed in nearby Lung Cheung Road.	The bottom part of the cement bags storage area was properly covered on 12 March 2014.
	20 Mar 2014	Reminder: Provide water spray to haul road near pumping well and de-sander to avoid dust generation.	Water Spray provided to haul road and unpaved area in the site on 27 March 2014.
	27 Mar 2014	The Contractor was reminded to cover the stockpile of cement bags properly by impervious material. (near the de-sander)	Follow up actions will be reported next month.
Waste / Chemical Management	25 Feb 2014	Reminder: To remove regularly the soil near the generator to avoid accumulation of oil stain (near Lung Cheung Road).	The soil near the generator has been removed and replaced on 25 Mar 2014

Parameters	Date	Observations and Recommendations	Follow-up
	4 Mar 2014	Properly provide a drip tray for chemical containers nearby pumping well area.	The chemical containers had been disposed as chemical waste. Other chemical containers were stored in drip tray nearby on 12 March 2014.
	12 Mar 2014	Drip tray should be provided to chemical containers in cement mixing area near Lung Cheung Road.	Tarpaulin sheets and metallic bunding was provided to the containers to avoid chemical leakage to the ground on 20 March 2014. The containers are removed from the site on 27 March 2014.
	20 Mar 2014	Reminder: Clear the oily stagnant water in the drip tray of generator-set placed near Lung Cheung Road.	The generator set has been removed from the site on 27 March 2014.
	27 Mar 2014	Chemical oil was observed leaked out of the mobile crane to ground. The Contractor is reminded to properly clear the contaminated soil as "chemical waste". (near the de-sander)	Follow up actions will be reported next month.
Permits/ Licenses	N/A	N/A	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 G**.

Summary of Environmental Non-Compliance

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

Summary of Environmental Complaint

7.3 No environmental Project-related complaint was received in the reporting month. The Cumulative Complaint Log since the commencement of the Project is presented in **Appendix L**.

Summary of Environmental Summon and Successful Prosecution

7.4 There was no successful environmental prosecution or notification of summons received since the Project commencement. The Cumulative Log for environmental summon and successful prosecution since the commencement of the Project is presented in Appendix **L**.

8 FUTURE KEY ISSUES

Construction Programme for the Next Month

8.1 A tentative construction programme is provided in **Appendix A**. The major construction activities in the coming month will include:

- D-wall construction;
- Pipe pile wall construction;
- Construction of capping beam;
- Gas main diversion works;
- Construction of Pedestrian Underpass at Luen Yee Road;
- Vertical piling work at Diamond Hill Station exit A1;
- Horizontal pipe pile works for tree transplantation;
- Excavation works at the SCL-Diamond Hill Station;
- Construction of temporary storage compound for Former RAF Hangar & Old Pillbox;
- Construction of construction site office; and
- Construction of pumping wells.

Key Issues in the Next Month

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

- Dust arising from loading, unloading, transfer, handling or storage of bulk cement or dry PFA and bentonite and excavated materials;
- Control of silty surface runoff;
- Preservation of Former Royal Air Force Hangar and Old Pillbox after dismantling and relocation;
- Preservation and protection of retained and transplanted trees; and
- Implementation of mitigation measures for noise nuisance from construction works.

Monitoring Schedule in the Next Month

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

9 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

9.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 to 31 March 2014 in accordance with EM&A Manual and the requirement under EP.

9.2 No exceedance of the Action and Limit Levels of regular construction noise and 24-hour TSP monitoring was recorded at the designated monitoring stations during the reporting month.

9.3 4 times of joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET and 2 times of bi-weekly inspection of the implementation of landscape and visual mitigation measures were conducted during the reporting period.

9.4 There was no Project related environmental complaint, successful prosecution or notification of summons received during the reporting month.

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

Recommendations

9.6 Water Quality

- All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times.
- It is recommended particular attention should be paid to the control of silty surface runoff.
- Slurry on the haul road should be cleared regularly to reduce the runoff generation.

Construction Noise

- Regular review on the noise mitigation measures and the conditions of the implemented noise mitigation measures shall be properly maintained.
- Idling equipment and plants should be switched off when not in use to reduce noise generation.
- Door of operating engine and other noise generation parts should be closed at all time.

Landscape and Visual

- "No-intrusion zone" should be established and maintained for existing trees as far as practicible. The Contractor is reminded to closely monitor and restrict the site working staff and construction plants from entering the erected "no-intrusion zone" for existing trees and avoid placing construction materials within the tree protection zone for maximizing the protection. No construction works should be carried out in the "no-intrusion zone" for existing trees.
- The contractor is reminded to keep the materials away from the tree.

Air Quality

- Regular water spraying on site is reminded to be implemented as per EP requirement.
- Any excavated or stockpile of dusty material should be covered entirely by

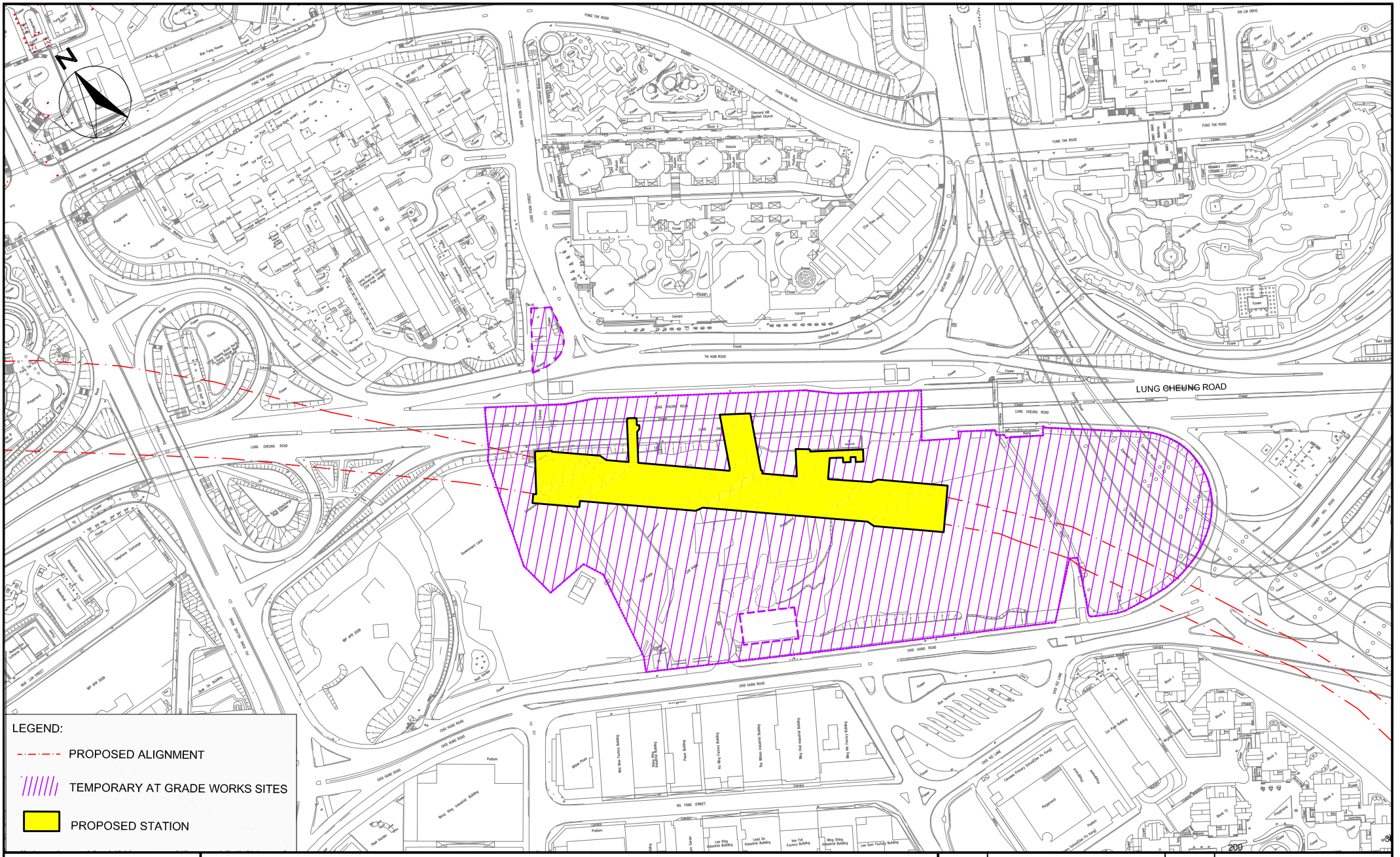
impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading.

- Regular maintenance should be provided to plants to prevent black smoke emission.
- 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

Waste/Chemical Management

- Good site practice of providing drip trays for temporary use of chemicals shall be sustained. Drip trays should be properly maintained.
- Provision and enhancement of the preventive mitigation measures to avoid oil leakage during oil filling works and from working plants.

FIGURES



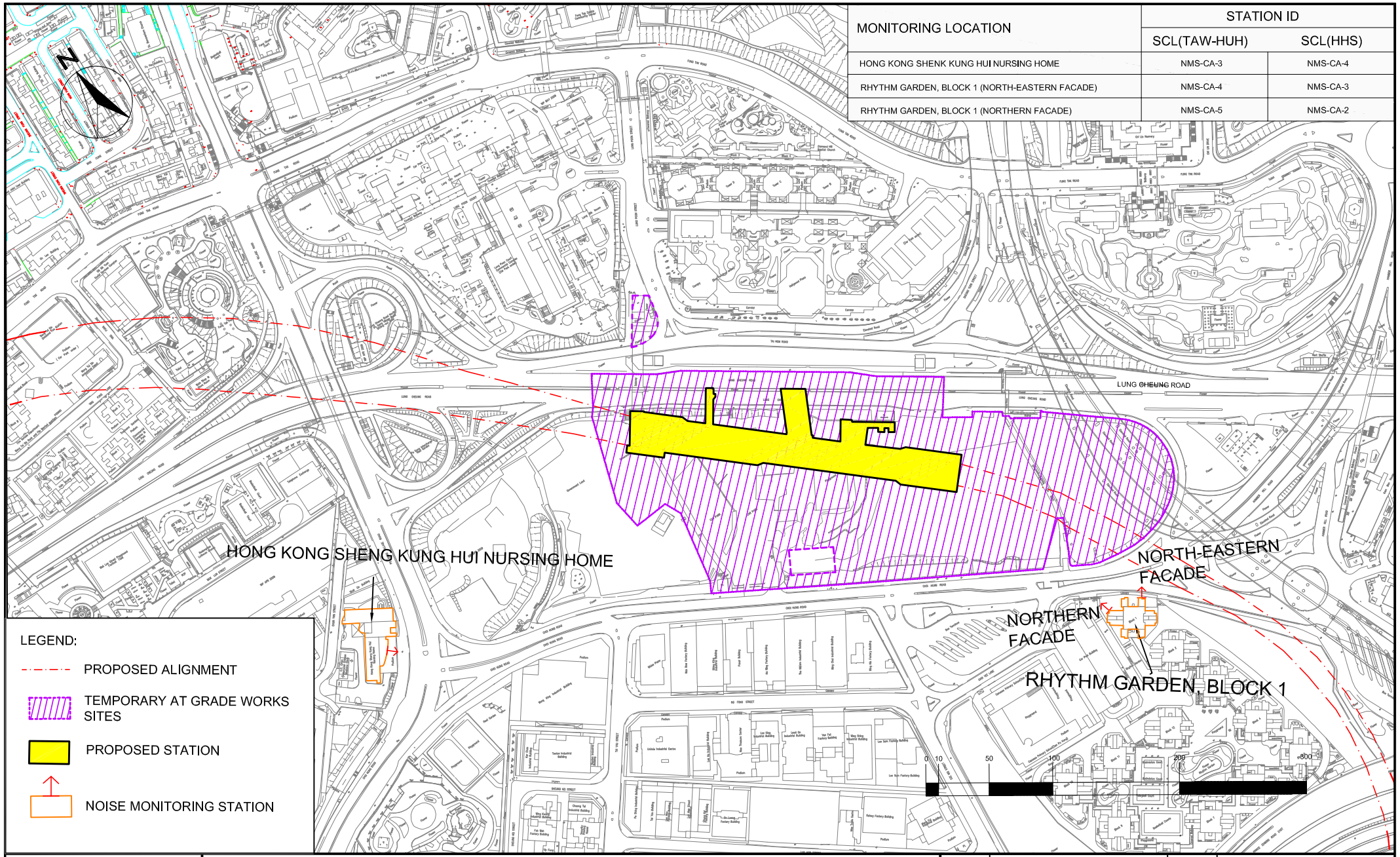
CINOTECH
Cinotech Consultants Limited

SHATIN TO CENTRAL LINK CONTRACT 1106
DIAMOND HILL STATION

SITE LAYOUT PLAN

SCALE	1:80	DATE	MAY 2013
CHECK	KC	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

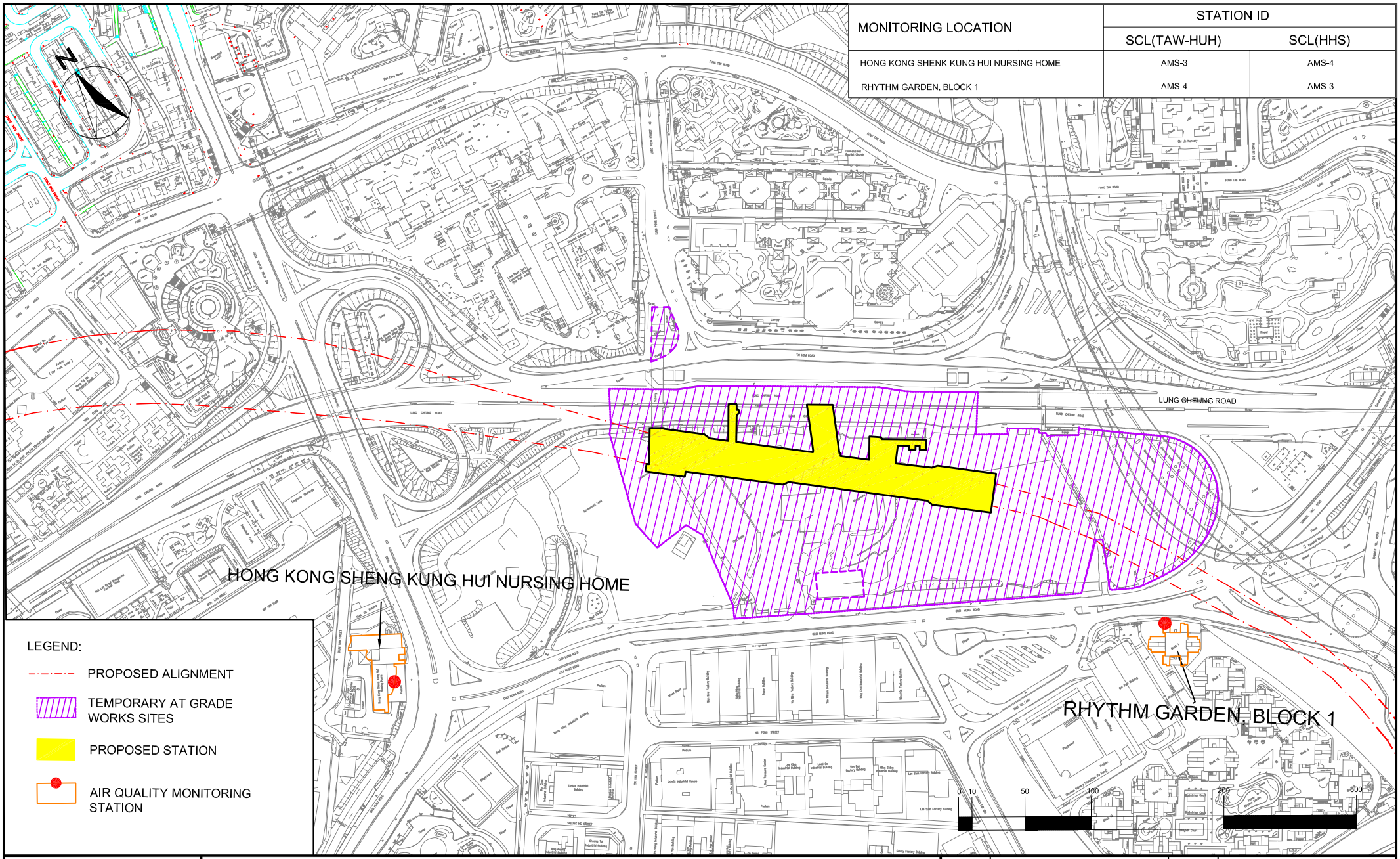


CINOTECH
Cinotech Consultants Limited

SHATIN TO CENTRAL LINK CONTRACT 1106
DIAMOND HILL STATION

LOCATION OF NOISE MONITORING STATIONS(CONSTRUCTION AIRBORNE NOISE)

SCALE	1:100	DATE	MAY 2013
CHECK	KC	DRAWN	JW
JOB No.	MA12051	FIGURE NO. 2	REV -



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

LEGEND:

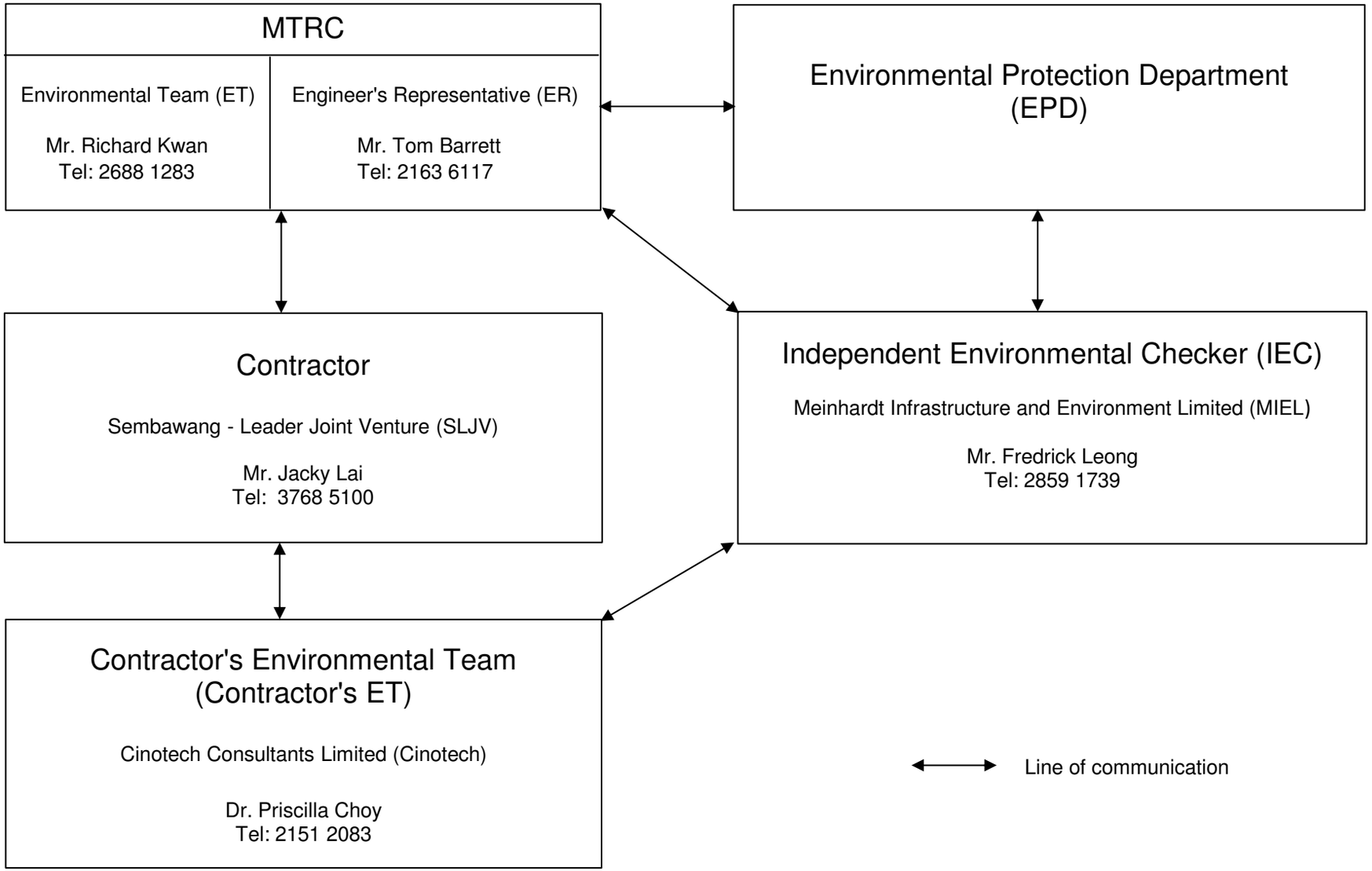
- PROPOSED ALIGNMENT
- TEMPORARY AT GRADE WORKS SITES
- PROPOSED STATION
- AIR QUALITY MONITORING STATION

CINOTECH
Cinotech Consultants Limited

SHATIN TO CENTRAL LINK CONTRACT 1106
DIAMOND HILL STATION

LOCATION OF AIR QUALITY MONITORING STATIONS

SCALE	1:100	DATE	MAY 2013
CHECK	KC	DRAWN	JW
JOB No.	MA12051	FIGURE NO. 3	REV -



Title	Scale	Proposal
MTR SCL Works Contract 1106 Diamond Hill Station Organisation Chart and Key Contact of the Project	N.T.S	No. MA12051
	Date Jun-13	Figure 4

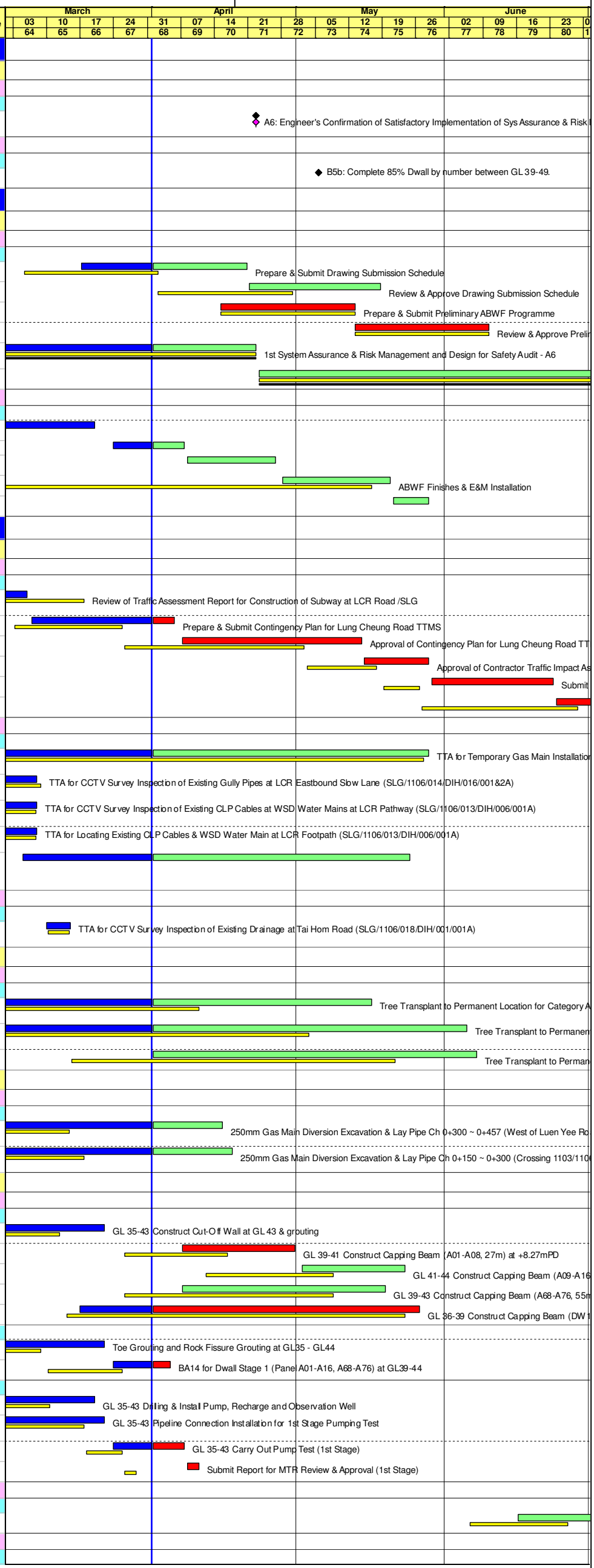
CINOTECH

APPENDIX A
TENTATIVE CONSTRCUTION PROGRAMME

Contract 1106 - Diamond Hill Station

Sembawang - Leader Joint Venture

Activity ID	Activity Name	Orig Dur	Forecast Start	Forecast Finish	% Complete
Contract Dates					
Milestone Dates					
Cost Centre A Milestones					
Preliminaries					
C1106.MSA06	A6: Engineer's Confirmation of Satisfactory Implementation of Sys Assurance & Risk Management and Design for Safety	0		22-Apr-14	0%
Cost Centre B (Option 5 Tender (SCL), Entrances & Adits)					
Completion Dates					
C1106.MSB05b	B5b: Complete 85% Dwall by number between GL 39-49.	0		05-May-14	0%
Cost Centre A - Preliminaries					
General Requirements					
Submissions					
General					
C1106.GS0270	Prepare & Submit Drawing Submission Schedule	28	17-Mar-14 A	20-Apr-14	28.57%
C1106.GS0275	Review & Approve Drawing Submission Schedule	28	21-Apr-14	18-May-14	0%
C1106.GS0278	Prepare & Submit Preliminary ABWF Programme	28	15-Apr-14*	13-May-14	0%
C1106.GS0282	Review & Approve Preliminary ABWF Programme	28	13-May-14	10-Jun-14	0%
C1106.GS0325	1st System Assurance & Risk Management and Design for Safety Audit - A6	92	21-Jan-14 A	22-Apr-14	20%
C1106.GS0327	2nd Safety Management & Environmental Monitoring Audit -A7	90	23-Apr-14	21-Jul-14	0%
Engineer's Site Office					
Construction / Installation					
C1106.GS0520	Construct of 1st Floor Slab	12	21-Feb-14 A	20-Mar-14 A	100%
C1106.GS0525	Fixing Wall Cladding including Frame Support	14	24-Mar-14 A	07-Apr-14	60%
C1106.GS0530	Install of Roof Truss and Sheeting	14	08-Apr-14	26-Apr-14	0%
C1106.GS0575	ABWF Finishes & E&M Installation	18	28-Apr-14	20-May-14	0%
C1106.GS0580	Inspection and Handover	7	21-May-14	28-May-14	0%
Cost Centre B: SCL- DIH Station, Entrances and Adits					
TTMS Implementation					
Submissions					
TTM Submission					
C1106.TMS0320	Review of Traffic Assessment Report for Construction of Subway at LCR Road /SLG	28	30-Nov-13 A	06-Mar-14 A	100%
C1106.TMS0325	Prepare & Submit Contingency Plan for Lung Cheung Road TTMS	23	07-Mar-14 A	05-Apr-14	80%
C1106.TMS0328	Approval of Contingency Plan for Lung Cheung Road TTMS	28	07-Apr-14	14-May-14	0%
C1106.TMS0330	Approval of Contractor Traffic Impact Assessment Report	12	15-May-14	28-May-14	0%
C1106.TMS0332	Submit Lung Cheung Road TTMS Plan to Engineer /SLG	21	29-May-14	23-Jun-14	0%
C1106.TMS0333	Approval of TTMS Plan	28	24-Jun-14	26-Jul-14	0%
Lung Cheung Road					
TTA Implementation					
C1106.TMS0490	TTA for Temporary Gas Main Installation at Lung Cheung Road near Entrance A2 (SLG/1106/015/DIH/005/001&2B)	107	10-Feb-14 A	28-May-14	20%
C1106.TMS0505	TTA for CCTV Survey Inspection of Existing Gully Pipes at LCR Eastbound Slow Lane (SLG/1106/014/DIH/016/001&2A)	13	24-Feb-14 A	08-Mar-14 A	100%
C1106.TMS0520	TTA for CCTV Survey Inspection of Existing CLP Cables at WSD Water Mains at LCR Pathway (SLG/1106/013/DIH/006/001A)	12	24-Feb-14 A	08-Mar-14 A	100%
C1106.TMS0545	TTA for Locating Existing CLP Cables & WSD Water Main at LCR Footpath (SLG/1106/013/DIH/006/001A)	7	24-Feb-14 A	08-Mar-14 A	100%
C1106.TMS0550	TTA for Temporary Gas Main Diversion at Lung Cheung Road Footpath near MTR Entrance A2-Stage 1(SLG/1106/011/DIH/008/001)	64	05-Mar-14 A	24-May-14	30%
Tai Hom Road					
TTA Implementation					
C1106.TMS0515	TTA for CCTV Survey Inspection of Existing Drainage at Tai Hom Road (SLG/1106/018/DIH/001/001A)	5	10-Mar-14 A	15-Mar-14 A	100%
Tree Feeling / Transplanting					
General					
Tree Transplanting					
C1106.BTP1445	Tree Transplant to Permanent Location for Category A&B Tree (DT1774, DT2789, DT2791)	60	26-Jan-14 A	16-May-14	50%
C1106.BTP1482	Tree Transplant to Permanent Location for Category C Trees - (DT1904, DT1906-1907, DT1913)	43	27-Sep-13 A	05-Jun-14	85%
C1106.BTP1530	Tree Transplant to Permanent Location for DT1911 - 1 no.	52	01-Apr-14*	07-Jun-14	0%
Utility Diversions					
Towngas (HKCG)					
Works Area other than Lung Cheung Road					
C1106.BTP1570	250mm Gas Main Diversion Excavation & Lay Pipe Ch 0+300 ~ 0+457 (West of Luen Yee Road)	20	07-Jan-14 A	15-Apr-14	95%
C1106.BTP1575	250mm Gas Main Diversion Excavation & Lay Pipe Ch 0+150 ~ 0+300 (Crossing 1103/1106 Site Entrance)	20	06-Jan-14 A	17-Apr-14	95%
Diaphragm Wall & Foundation Works					
DIH (SCL) Gridline 35 - 43					
Capping Beam & Sheet Pile					
C1106.BDW4118	GL 35-43 Construct Cut-Off Wall at GL 43 & grouting	16	08-Feb-14 A	22-Mar-14 A	100%
C1106.BDW4120	GL 39-41 Construct Capping Beam (A01-A08, 27m) at +8.27mPD	18	07-Apr-14*	30-Apr-14	0%
C1106.BDW4125	GL 41-44 Construct Capping Beam (A09-A16, 25m) at +8.27mPD	18	02-May-14	23-May-14	0%
C1106.BDW4435	GL 39-43 Construct Capping Beam (A68-A76, 55m) at +8.27mPD	32	07-Apr-14*	19-May-14	0%
C1106.BDW4465	GL 36-39 Construct Capping Beam (DW13-DW21) at +12mPD	55	17-Mar-14 A	26-May-14	20%
Grouting					
C1106.BDW4813	Toe Grouting and Rock Fissure Grouting at GL35 - GL44	25	13-Jan-14 A	22-Mar-14 A	100%
C1106.BDW4823	BA14 for Dwall Stage 1 (Panel A01-A16, A68-A76) at GL39-44	14	24-Mar-14 A	04-Apr-14	60%
Pump Test					
C1106.BDW4850	GL 35-43 Drilling & Install Pump, Recharge and Observation Well	30	03-Jan-14 A	20-Mar-14 A	100%
C1106.BDW4851	GL 35-43 Pipeline Connection Installation for 1st Stage Pumping Test	14	01-Mar-14 A	22-Mar-14 A	100%
C1106.BDW4856	GL 35-43 Carry Out Pump Test (1st Stage)	7	24-Mar-14 A	07-Apr-14	60%
C1106.BDW4858	Submit Report for MTR Review & Approval (1st Stage)	3	08-Apr-14	10-Apr-14	0%
DIH (SCL) Gridline 43 - 50					
Capping Beam & Sheet Pile					
C1106.BDW4840	GL 50-47 Construct Capping Beam (A56-A61, 35m) at +8.52mPD	18	16-Jun-14	07-Jul-14	0%
DIH (SCL) Gridline 50- 53					
Dwall Construction					



Remaining Work
Critical Remaining Work
Previous Month (Feb)
Baseline (PMP)
Actual Work
Baseline Milestone
Milestone

MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 31 March 2014

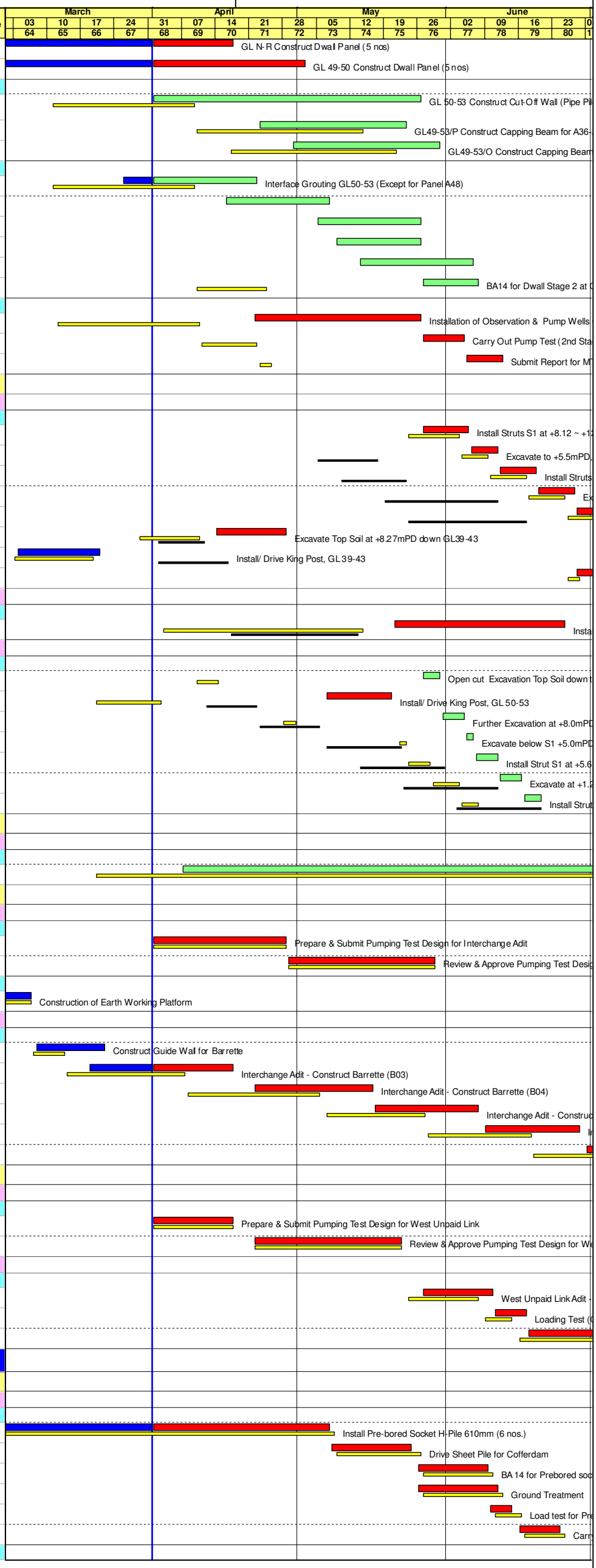
3 Month Rolling Programme			
Date	Revision	Checked	Appr...
01-Apr-14	C-1106-3MRP/ 15	RR	RB

Contract 1106 - Diamond Hill Station

MTR

Sembawang - Leader Joint Venture

Activity ID	Activity Name	Orig Dur	Forecast Start	Forecast Finish	% Complete
C1106.BDW4067	GL N-R Construct Dwall Panel (5 nos)	75	13-Dec-13 A	17-Apr-14	50%
C1106.BDW4505	GL 49-50 Construct Dwall Panel (5 nos)	90	02-Jan-14 A	02-May-14	80%
Capping Beam & Sheet Pile					
C1106.BDW5348	GL 50-53 Construct Cut-Off Wall (Pipe Pile) at GL 50 (Include TAM grout)	42	01-Apr-14	26-May-14	0%
C1106.BDW5370	GL49-53/P Construct Capping Beam for A36-A45; 57m at 8.77mPD	25	23-Apr-14	23-May-14	0%
C1106.BDW5385	GL49-53/O Construct Capping Beam for A46-A54; 50m at 8.77mPD	25	30-Apr-14	30-May-14	0%
Grouting					
C1106.BDW4818	Interface Grouting GL50-53 (Except for Panel A48)	25	26-Mar-14 A	22-Apr-14	20%
C1106.BDW4822	Toe Grouting GL50-53 (Except for Panel A48)	14	16-Apr-14*	07-May-14	0%
C1106.BDW4824	Fissure Grout GL50-53 (Except for Panel A48)	18	05-May-14	26-May-14	0%
C1106.BDW4826	Interface Grout, Toe and Fissure Grout for Panel A48	15	09-May-14*	26-May-14	0%
C1106.BDW4827	Shear Pin (Panel A39, A40, A42, A43, A44 & A48)	20	14-May-14	06-Jun-14	0%
C1106.BDW4828	BA14 for Dwall Stage 2 at GL50-53	10	27-May-14	07-Jun-14	0%
Pump Test					
C1106.BDW4863	Installation of Observation & Pump Wells GL50-53	28	22-Apr-14*	26-May-14	0%
C1106.BDW4868	Carry Out Pump Test (2nd Stage) between GL50-53	7	27-May-14	04-Jun-14	0%
C1106.BDW4873	Submit Report for MTR Review (2nd stage)	7	05-Jun-14	12-Jun-14	0%
Earthworks					
DIH (SCL) Gridline 35 - 43					
Excavation & ELS Works					
C1106.BEX3508	Install Struts S1 at +8.12 ~ +12.0mPD GL 35-39	8	27-May-14	05-Jun-14	0%
C1106.BEX3510	Excavate to +5.5mPD, GL 35-39	5	06-Jun-14	11-Jun-14	0%
C1106.BEX3518	Install Struts S2 at +6.1~+8.5mPD GL 35-39	7	12-Jun-14	19-Jun-14	0%
C1106.BEX3520	Excavate to +4.5mPD, GL 36.5-39	7	20-Jun-14	27-Jun-14	0%
C1106.BEX3525	Install Strut S3 at +5.1 ~ 5.6mPD, GL 35-39	7	28-Jun-14	07-Jul-14	0%
C1106.BEX3900	Excavate Top Soil at +8.27mPD down GL39-43	10	14-Apr-14	28-Apr-14	0%
C1106.BEX3905	Install/ Drive King Post, GL 39-43	15	04-Mar-14 A	21-Mar-14 A	100%
C1106.BEX3906	Excavate 600mm below Strut 1 at +5.6mPD	3	28-Jun-14	02-Jul-14	0%
DIH (SCL) Gridline 43 - 50					
Excavation & ELS Works					
C1106.BEX3920	Install/ Drive King Post, GL 44-50	30	21-May-14	25-Jun-14	0%
DIH (SCL) Gridline 50- 53					
Excavation & ELS Works					
C1106.BEX4903	Open cut Excavation Top Soil down to +8mPD, GL49-53	4	27-May-14	30-May-14	0%
C1106.BEX4905	Install/ Drive King Post, GL 50-53	12	07-May-14*	20-May-14	0%
C1106.BEX4910	Further Excavation at +8.0mPD ~ +6.0mPD, GL49-53	3	31-May-14	04-Jun-14	0%
C1106.BEX4920	Excavate below S1 +5.0mPD, GL 49-53	2	05-Jun-14	06-Jun-14	0%
C1106.BEX4925	Install Strut S1 at +5.6 mPD, GL 49-53	4	07-Jun-14	11-Jun-14	0%
C1106.BEX4930	Excavate at +1.2mPD, GL 49-53	4	12-Jun-14	16-Jun-14	0%
C1106.BEX4935	Install Strut S2 at +1.8 mPD, GL 49-53	4	17-Jun-14	20-Jun-14	0%
ABWF & Miscellaneous Works					
Procurement of Major Works					
General					
C1106.BML5963	ABWF Design Period, Sample and Shop Drawings	120	07-Apr-14*	01-Sep-14	0%
Construction of Interchange Adit					
Submissions					
General					
C1106.BIA6022	Prepare & Submit Pumping Test Design for Interchange Adit	20	01-Apr-14*	28-Apr-14	0%
C1106.BIA6027	Review & Approve Pumping Test Design for Interchange Adit	25	29-Apr-14	29-May-14	0%
Site Preparation					
C1106.BIA6068	Construction of Earth Working Platform	12	25-Feb-14 A	06-Mar-14 A	100%
Construction of Interchange Adit					
Gridline U-V					
C1106.BIA7002	Construct Guide Wall for Barrette	6	08-Mar-14 A	22-Mar-14 A	100%
C1106.BIA7005	Interchange Adit - Construct Barrette (B03)	20	19-Mar-14 A	17-Apr-14	50%
C1106.BIA7007	Interchange Adit - Construct Barrette (B04)	20	22-Apr-14	16-May-14	0%
C1106.BIA7010	Interchange Adit - Construct Barrette (B02)	18	17-May-14	07-Jun-14	0%
C1106.BIA7013	Interchange Adit - Construct Barrette (B01)	18	09-Jun-14	28-Jun-14	0%
C1106.BIA7015	Install Prebored Socketed H-Pile (2 nos.)	12	30-Jun-14	14-Jul-14	0%
Construction of West Unpaid Link Adit					
Submissions					
General					
C1106.BWA7570	Prepare & Submit Pumping Test Design for West Unpaid Link	14	01-Apr-14*	17-Apr-14	0%
C1106.BWA7575	Review & Approve Pumping Test Design for West Unpaid Link	25	22-Apr-14	22-May-14	0%
West Adit Link - South Section					
Adit Cofferdam					
C1106.BWA8270	West Unpaid Link Adit - Install Prebored Socketed H-Pile (610mm)	12	27-May-14	10-Jun-14	0%
C1106.BWA8275	Loading Test (Compresion & Tension Test Test)	6	11-Jun-14	17-Jun-14	0%
C1106.BWA8300	West Unpaid Link Adit - Install Sheet Pile for ELS	21	18-Jun-14	12-Jul-14	0%
Cost Centre C: KTL - DIH Entrance A1 Works					
Entrance A1 (24 hr Walkway and New Lift)					
Piling and Excavation					
Piling Works					
C1106.CEA3142	Install Pre-bored Socket H-Pile 610mm (6 nos.)	55	27-Feb-14 A	07-May-14	50%
C1106.CEA3145	Drive Sheet Pile for Cofferdam	15	08-May-14	24-May-14	0%
C1106.CEA3148	BA 14 for Prebored socket H-pile	12	26-May-14	09-Jun-14	0%
C1106.CEA3155	Ground Treatment	14	26-May-14	11-Jun-14	0%
C1106.CEA3160	Load test for Pre-bored H-pile	5	10-Jun-14	14-Jun-14	0%
C1106.CEA3165	Carry-out Pumping Test	8	16-Jun-14	24-Jun-14	0%
Excavation & Structural Works					



Remaining Work
Critical Remaining Work
Previous Month (Feb)
Baseline (PMP)
Actual Work
Baseline Milestone
Milestone

MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 31 March 2014

3 Month Rolling Programme

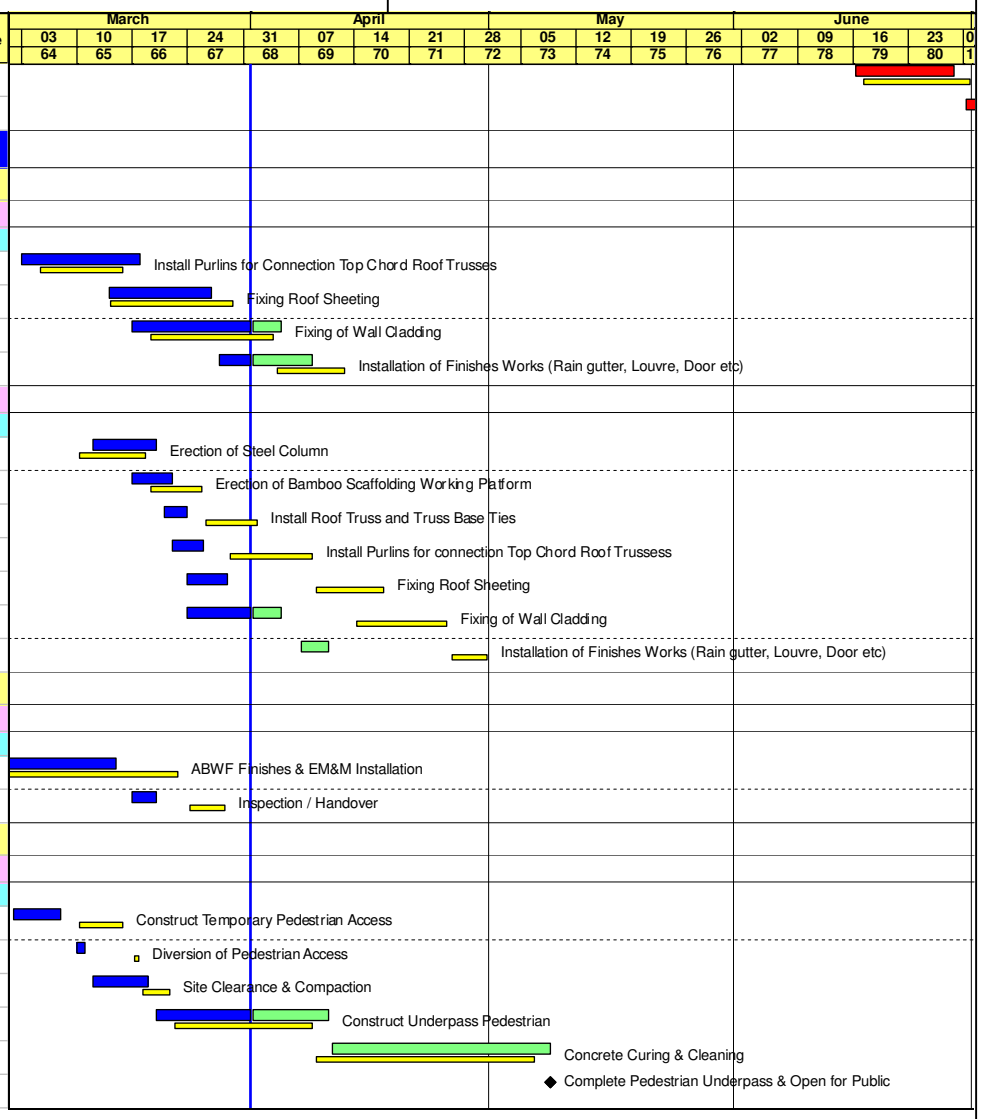
Date	Revision	Checked	Appr...
01-Apr-14	C-1106-3MRP/ 15	RR	RB

Contract 1106 - Diamond Hill Station

MTR

Sembawang - Leader Joint Venture

Activity ID	Activity Name	Orig Dur	Forecast Start	Forecast Finish	% Complete
C1106.CEA3168	Erect Temporary Working Platform	12	16-Jun-14	28-Jun-14	0%
C1106.CEA3172	Excavation and ELS Works down to +10.00 mPD	15	30-Jun-14	17-Jul-14	0%
Cost Centre D - Reprovisioning, Remedial and Improvement Works (RRIW)					
Preservation of Old Pillbox & RAF Hanger and Archaeological Survey-Cum-Excavation					
Storage Compound A&B RAF Hangar					
General					
C1106.DRIW499	Install Purlins for Connection Top Chord Roof Trusses	10	03-Mar-14 A	18-Mar-14 A	100%
C1106.DRIW504	Fixing Roof Sheeting	14	14-Mar-14 A	27-Mar-14 A	100%
C1106.DRIW509	Fixing of Wall Cladding	14	17-Mar-14 A	04-Apr-14	90%
C1106.DRIW514	Installation of Finishes Works (Rain gutter, Louvre, Door etc)	7	28-Mar-14 A	08-Apr-14	20%
Storage Compound Pill Box					
General					
C1106.DRIW519	Erection of Steel Column	8	12-Mar-14 A	20-Mar-14 A	100%
C1106.DRIW524	Erection of Bamboo Scaffolding Working Platform	6	17-Mar-14 A	22-Mar-14 A	100%
C1106.DRIW529	Install Roof Truss and Truss Base Ties	6	21-Mar-14 A	24-Mar-14 A	100%
C1106.DRIW534	Install Purlins for connection Top Chord Roof Trussess	8	22-Mar-14 A	26-Mar-14 A	100%
C1106.DRIW539	Fixing Roof Sheeting	8	24-Mar-14 A	29-Mar-14 A	100%
C1106.DRIW544	Fixing of Wall Cladding	8	24-Mar-14 A	04-Apr-14	75%
C1106.DRIW549	Installation of Finishes Works (Rain gutter, Louvre, Door etc)	4	07-Apr-14	10-Apr-14	0%
Site Office for 1164 Contractor					
Construcion of Site Office					
Construction / Installation					
C1106.DRIW570	ABWF Finishes & EM&M Installation	14	26-Feb-14 A	15-Mar-14 A	100%
C1106.DRIW575	Inspection / Handover	5	17-Mar-14 A	20-Mar-14 A	100%
Pedestrian Underpass at Luen Yee Road					
Construction of Underpass					
General					
C1106.DRIW505	Construct Temporary Pedestrian Access	6	02-Mar-14 A	08-Mar-14 A	100%
C1106.DRIW510	Diversion of Pedestrian Access	1	10-Mar-14 A	11-Mar-14 A	100%
C1106.DRIW515	Site Clearance & Compaction	4	12-Mar-14 A	19-Mar-14 A	100%
C1106.DRIW520	Construct Underpass Pedestrian	14	20-Mar-14 A	10-Apr-14	50%
C1106.DRIW525	Concrete Curing & Cleaning	28	11-Apr-14	08-May-14	0%
C1106.DRIW530	Complete Pedestrian Underpass & Open for Public	0		08-May-14	0%



Remaining Work
Critical Remaining Work
Previous Month (Feb)
Baseline (PMP)
Actual Work
Baseline Milestone
Milestone

MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 31 March 2014

3 Month Rolling Programme			
Date	Revision	Checked	Appr...
01-Apr-14	C-1106-3MRP/ 15	RR	RB

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$^{(1)(3)(4)}$/ DMS-4$^{(2)(3)(4)}$/	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.
(4) Dust monitoring on DMS-3$^{(1)}$/DMS-4$^{(2)}$ is carried out by Environmental Team of SCL Works Contract 1103.

Construction Noise

Regular Construction Noise Monitoring Location$^{(1)}$	Description	Time Period	Action Level	Limit Level (Leq (30-min))
NMS-CA-3$^{(1)(3)(4)}$/ NMS-CA-4$^{(2)(3)(4)}$	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$^{(1)(5)}$/ NMS-CA-2$^{(2)(5)}$	Block 1, Rhythm Garden (northern façade)			65 / 70 dB(A)$^{(6)}$

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) Noise monitoring on NMS-CA-3$^{(1)}$/ NMS-CA-4$^{(2)}$ is carried out by Environmental Team of SCL Works Contract 1103.
(5) 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.
(6) Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period.

APPENDIX C
CALIBRATION CERTIFICATES FOR MONITORING EQUIPEMENT

CINOTECH

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA12051/57/0007

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

Date: 3-Mar-14 Next Due Date: 2-May-14

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

Ambient Condition			
Temperature, Ta (K)	289	Pressure, Pa (mmHg)	766

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0588	Intercept, bc	-0.0461
Last Calibration Date:	30-Sep-13	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	29-Sep-14	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.3	3.43	59.07	7.2	2.74
2	8.5	2.97	51.33	5.4	2.37
3	7.5	2.79	48.27	4.8	2.23
4	4.1	2.06	35.89	2.7	1.68
5	3.1	1.79	31.31	1.9	1.41

By Linear Regression of Y on X

Slope , mw = 0.0472 **Intercept, bw =** -0.0471

Correlation coefficient* = 0.9993

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.78**

Remarks:

Conducted by: Wk Tang Signature: Kwan Date: 3/3/14

Checked by: Hr Signature: Date: 3 March 2014

WELLAB 匯力
Testing & Research

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

TEST REPORT

Description	Calibration Orifice	**Manufacturer**	TISCH
Serial No.	0993	**Temperature,Ta (K)**	300.8
Model No.	TE-5025A	**Pressure, Pa (mmHg)**	759.3
Date	30 September 2013	**Equipment No.:**	A-04-04

Plate	Diff.Vol (m^3)	Diff.Time (min)	Diff.Hg (mm)	Diff.H_2O (in.)
1	1.00	1.4103	3.4	2.00
2	1.00	0.9980	6.8	4.00
3	1.00	0.8970	8.5	5.00
4	1.00	0.8540	9.4	5.50
5	1.00	0.7060	13.6	8.00

DATA TABULATION

Vstd	(X axis) Qstd	(Y axis)
0.9853	0.6986	1.4069
0.9808	0.9828	1.9897
0.9786	1.0910	2.2245
0.9775	1.1446	2.3331
0.9720	1.3768	2.8138

Y axis= SQRT[H_2O(Pa/760)(298/Ta)]

Qstd Slope (m) = 2.07768
Intercept (b) = -0.04613
Coefficient (r) = 0.99997

Va	(X axis) Qa	(Y axis)
0.9955	0.7059	0.8901
0.9910	0.9930	1.2589
0.9888	1.1023	1.4074
0.9876	1.1565	1.4761
0.9821	1.3911	1.7803

Y axis= SQRT[H_2O(Ta/Pa)]

Qa Slope (m) = 1.30101
Intercept (b) = -0.02919
Coefficient (r) = 0.99997

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(H_2O(Pa/760)(298/Ta))]-b}
Qa=1/m{[SQRT H_2O(Ta/Pa)]-b}

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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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/140104
Date of Issue:	2014-01-05
Date Received:	2014-01-04
Date Tested:	2014-01-04
Date Completed:	2014-01-05
Next Due Date:	2015-01-04

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.	: 14303
Microphone No.	: 35222
Equipment No.	: N-08-05

Test conditions:

Room Temperatre	: 19 degree Celsius
Relative Humidity	: 52%

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

Remark: 1)This report supersedes the one dated 2012/01/21 with certificate number C/N/120120/1.

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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

TEST REPORT

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

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

Test Report No.:	C/N/130830/2
Date of Issue:	2013-08-31
Date Received:	2013-08-30
Date Tested:	2013-08-30
Date Completed:	2013-08-31
Next Due Date:	2014-08-30
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	: 21 degree Celsius
Relative Humidity	: 69%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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

TEST REPORT

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

Test Report No.:	C/N/130919/3
Date of Issue:	2013-09-21
Date Received:	2013-09-19
Date Tested:	2013-09-21
Date Completed:	2013-09-21
Next Due Date:	2014-09-20

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

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 10929
Equipment No.	: N-09-01

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 57%

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
PATRICK TSE
Laboratory Manager

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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/131004/1
Date of Issue:	2013-10-05
Date Received:	2013-10-04
Date Tested:	2013-10-04
Date Completed:	2013-10-05
Next Due Date:	2014-10-04
Page:	1 of 1

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

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	: 57%

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

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	C/N/130830/4-v1
Date of Issue:	2014-03-07
Date Received:	2013-08-30
Date Tested:	2013-08-30
Date Completed:	2013-08-31
Next Due Date:	2014-08-30

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

Item for calibration:

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

Test conditions:

Room Temperatre	: 20 degree Celsius
Relative Humidity	: 64%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

APPENDIX D
IMPACT MONITORING SCHEDULE

Shatin to Central Link – Contract 1106 Diamond Hill Station
Impact Air Quality and Noise Monitoring Schedule for March 2014

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

Air Quality Monitoring Station

DMS-4: - Rhythm Garden, Block 1

Noise Monitoring Station

NMS-CA-4: - Block 1, Rhythm Garden (north-eastern façade)
NMS-CA-5: - Block 1, Rhythm Garden (northern façade)

Shatin to Central Link – Contract 1106 Diamond Hill Station
Tentative Impact Air Quality and Noise Monitoring Schedule for April 2014

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

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

Air Quality Monitoring Station

DMS-4: - Rhythm Garden, Block 1

Noise Monitoring Station

NMS-CA-4: - Block 1, Rhythm Garden (north-eastern façade)
NMS-CA-5: - Block 1, Rhythm Garden (northern façade)

APPENDIX E
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONIS

Appendix E - 24-hour TSP Monitoring Results

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

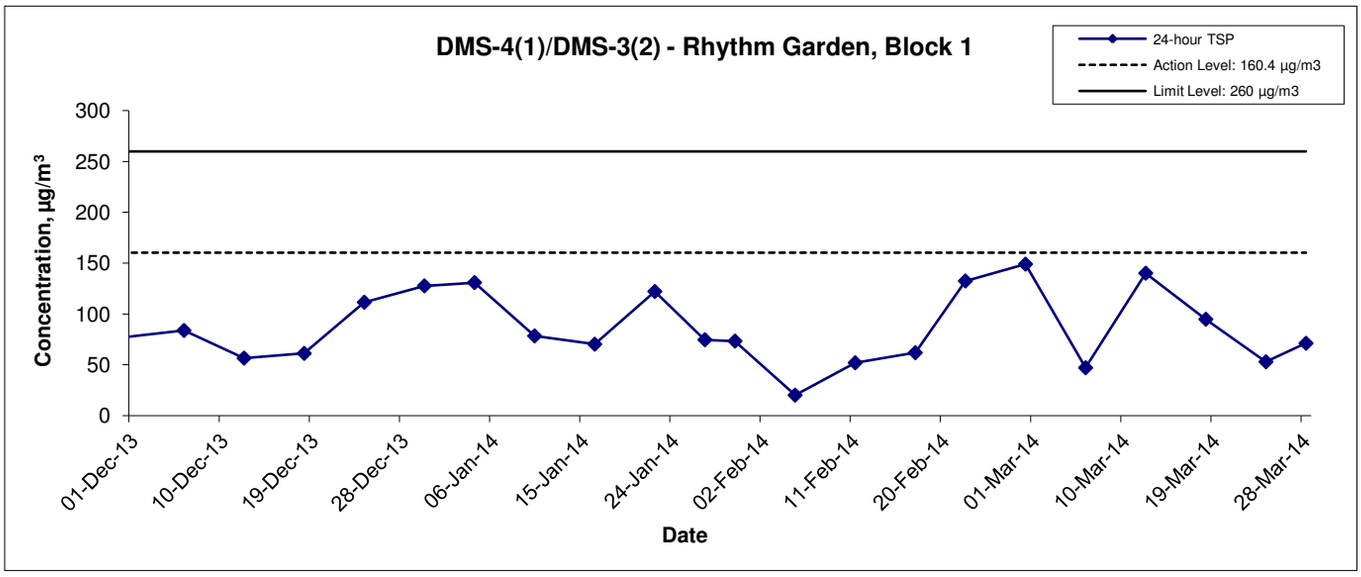
Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (µg/m^3)
					Initial	Final		Initial	Final		Initial	Final			
6-Mar-14	09:00	Cloudy	288.3	767.2	3.8819	3.9656	0.0837	2335.6	2359.6	24.0	1.23	1.23	1.23	1776.7	47.1
12-Mar-14	09:00	Cloudy	290.1	764.8	3.7472	3.9927	0.2455	2359.6	2383.6	24.0	1.22	1.22	1.22	1752.0	140.1
18-Mar-14	09:00	Sunny	292.3	766.7	3.7522	3.9179	0.1657	2383.6	2407.6	24.0	1.21	1.21	1.21	1747.5	94.8
24-Mar-14	09:00	Sunny	292.6	768.8	3.7296	3.8223	0.0927	2407.6	2431.6	24.0	1.21	1.21	1.21	1749.0	53.0
28-Mar-14	09:00	Cloudy	294.6	762.6	3.6695	3.7931	0.1236	2431.6	2455.6	24.0	1.21	1.21	1.21	1736.2	71.2
														Min	47.1
														Max	140.1
														Average	81.2

Remarks:

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

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

24-hour TSP Concentration Levels



Remarks:

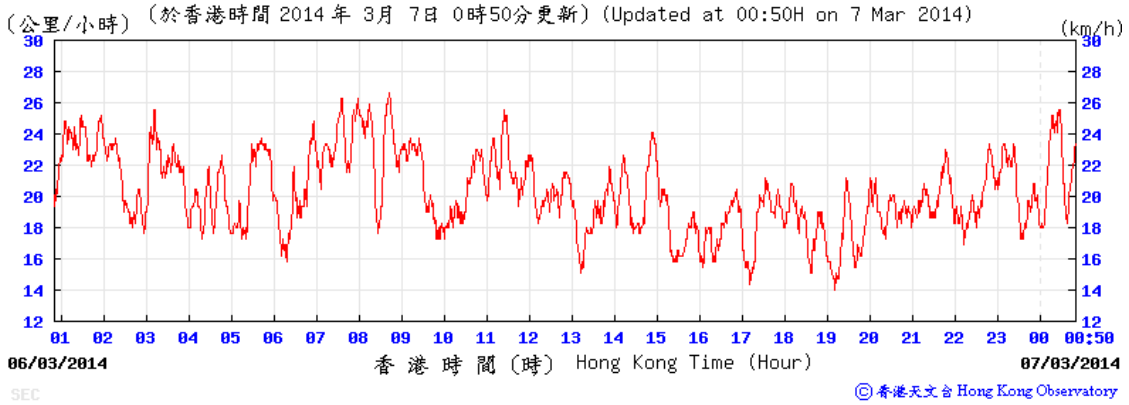
(1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

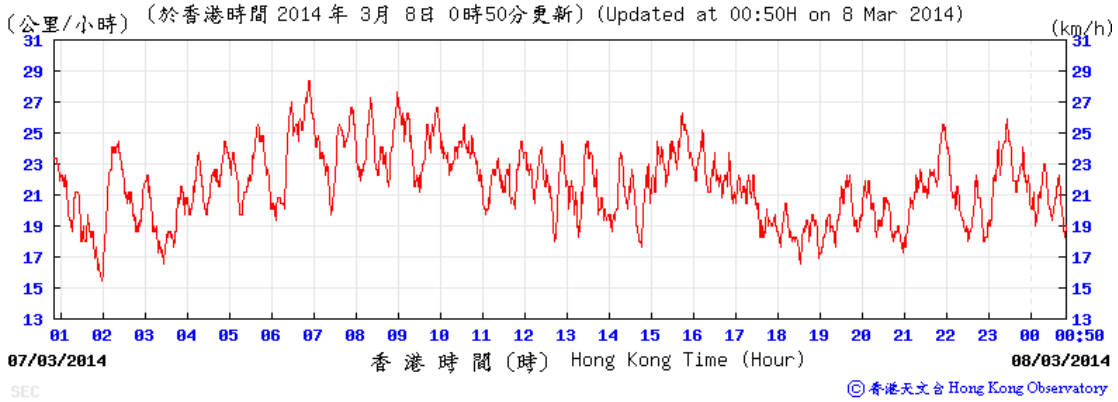
(2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

Title	Scale	Project No.	
Shatin to Central Link – Contract 1106 Diamond Hill Station Graphical Presentation of 24-hour TSP Monitoring Results	N.T.S	MA12051	CINOTECH
	Date: Mar 14	Appendix: E	

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

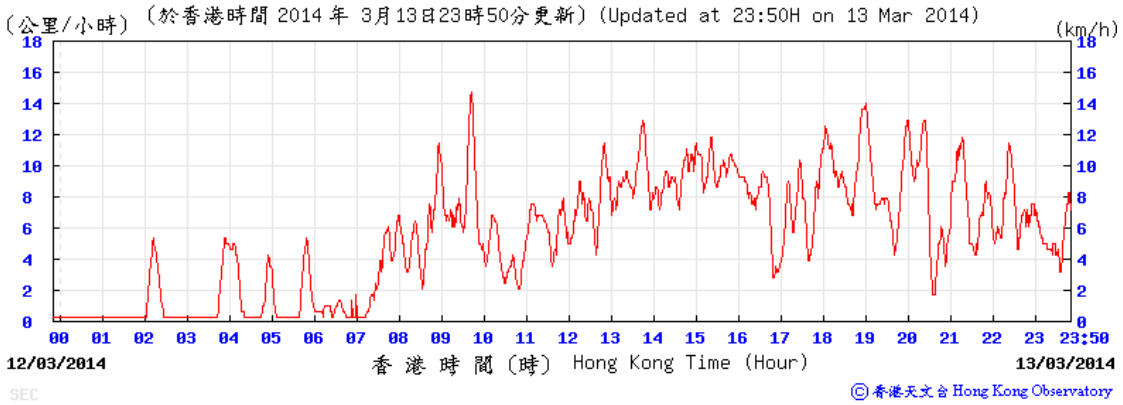
6-7 March 2014

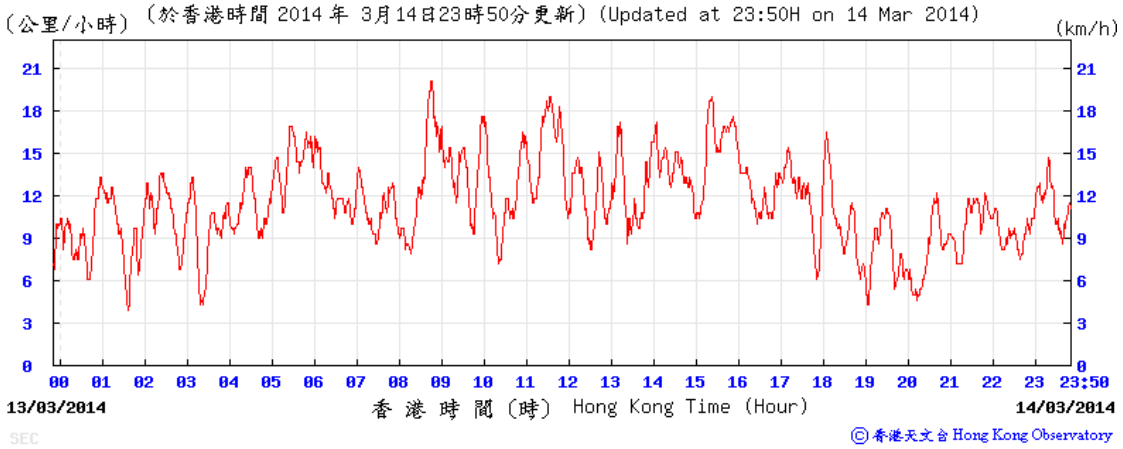




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

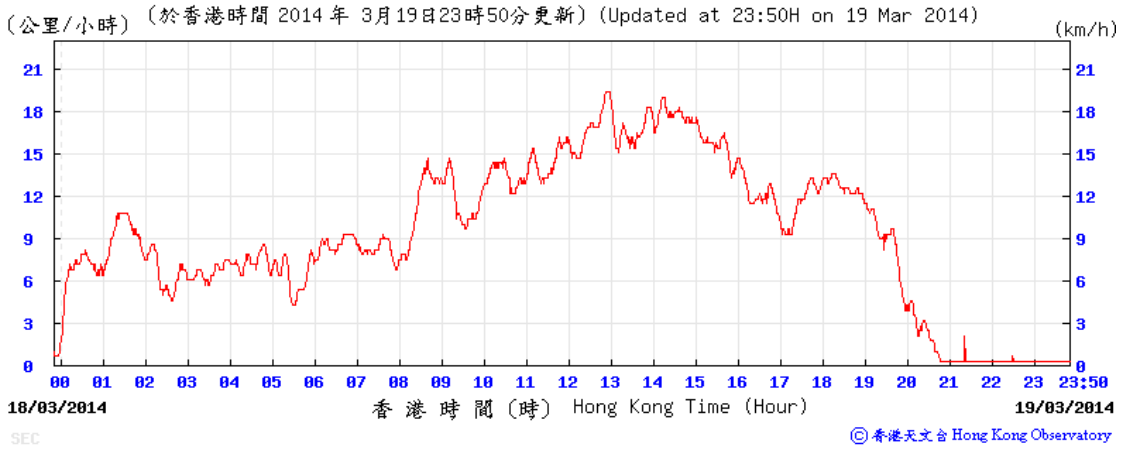
12-13 March 2014

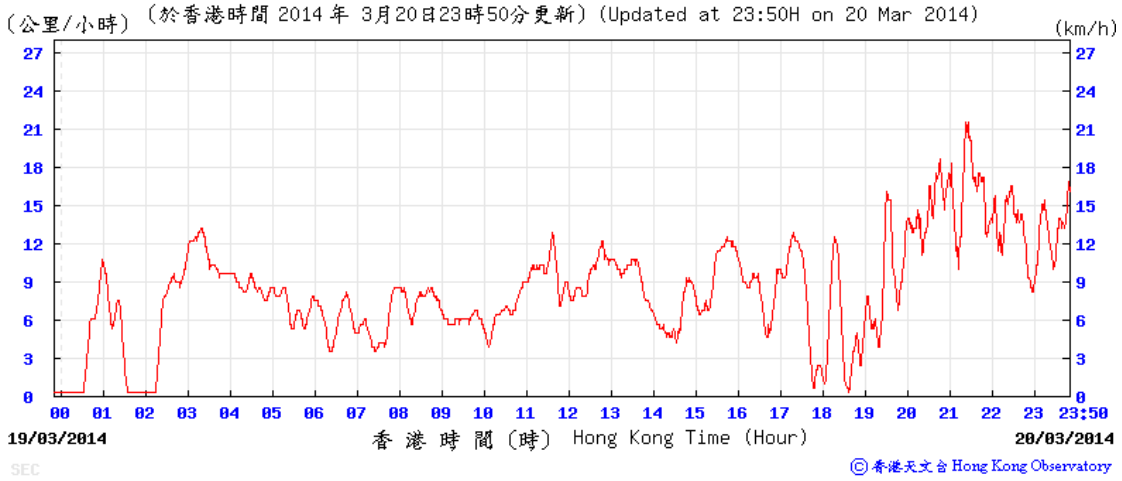




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

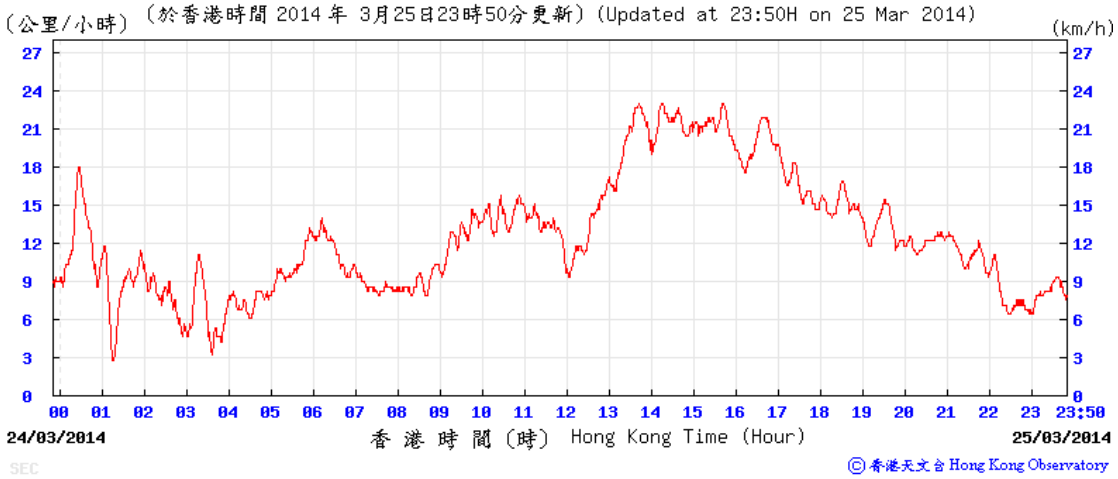
18-19 March 2014

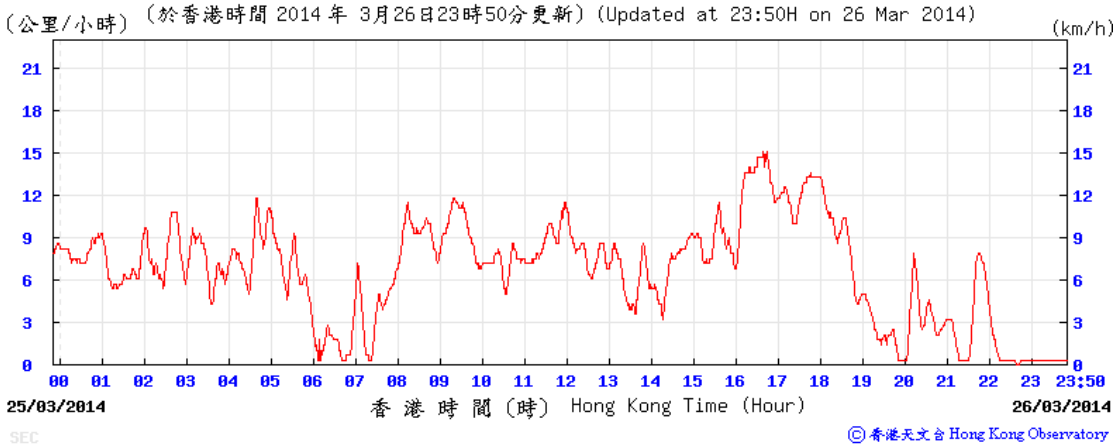




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

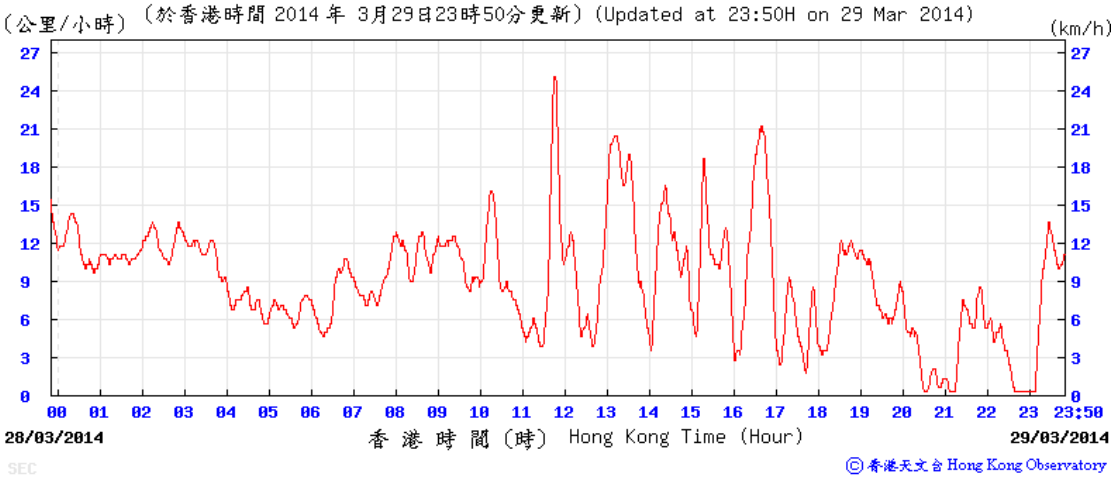
<u>24-25 March 2014</u>

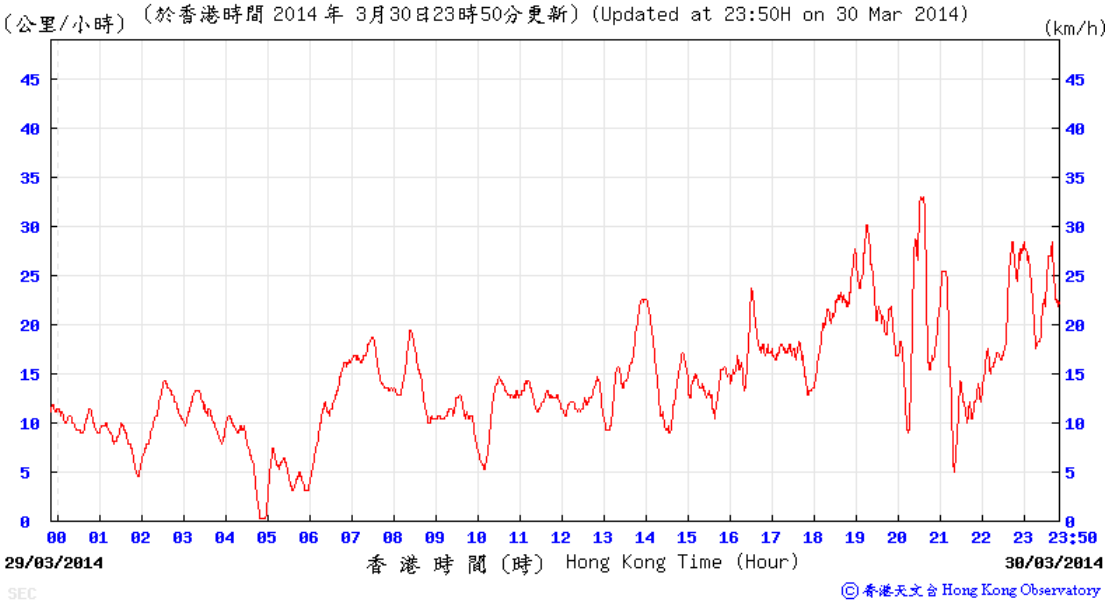




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

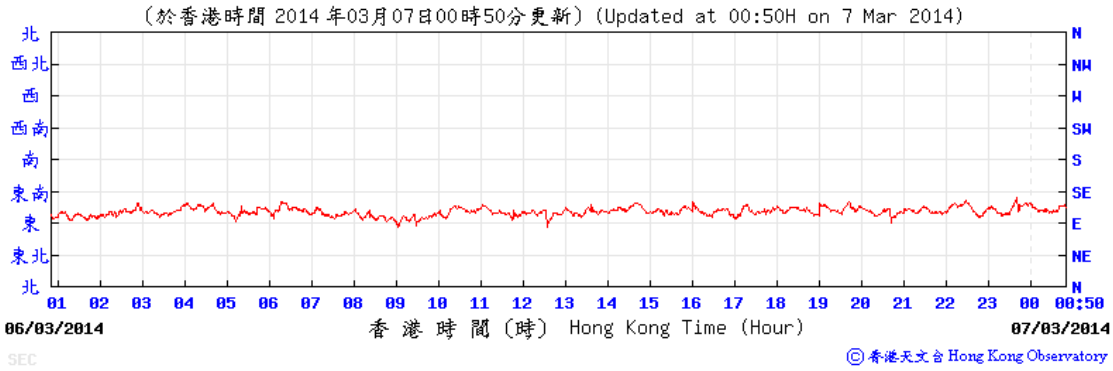
28-29 March 2014

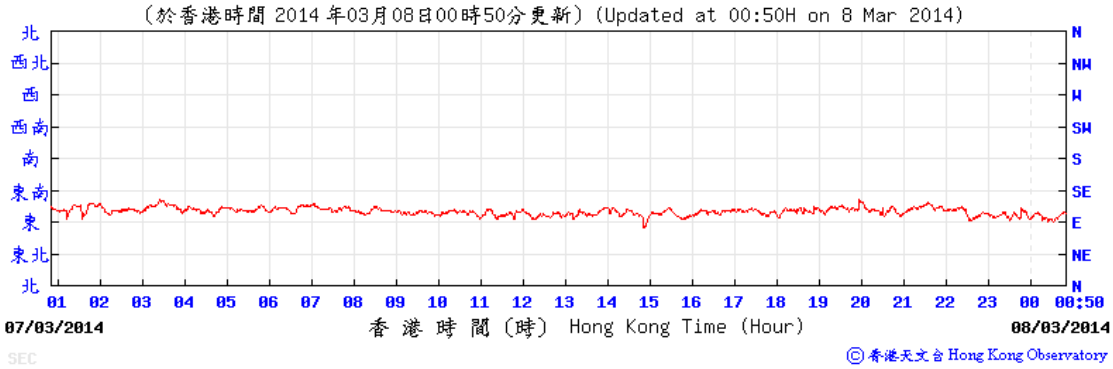




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

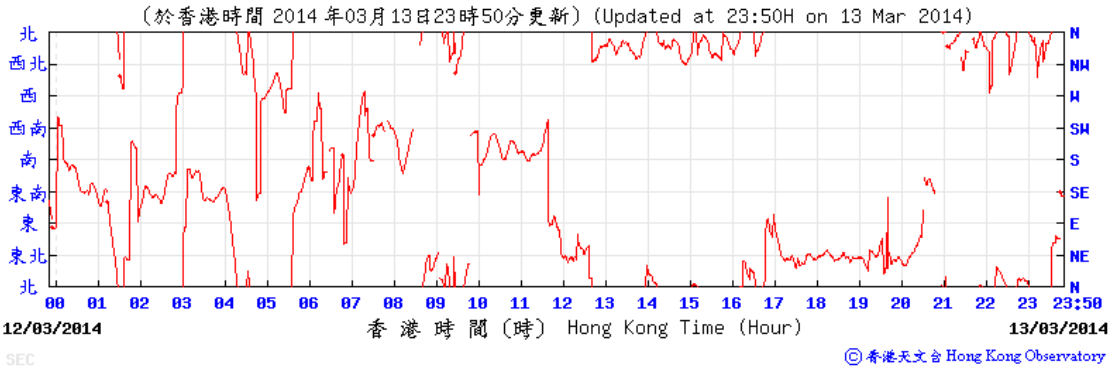
6-7 March 2014

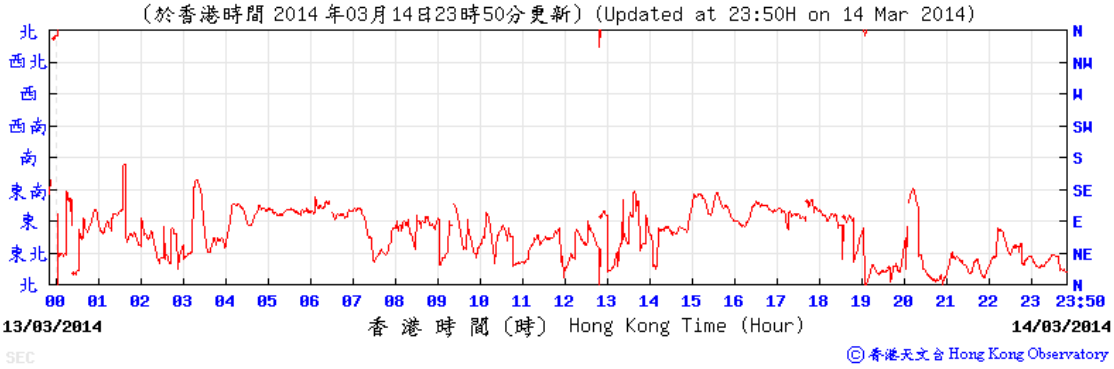




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

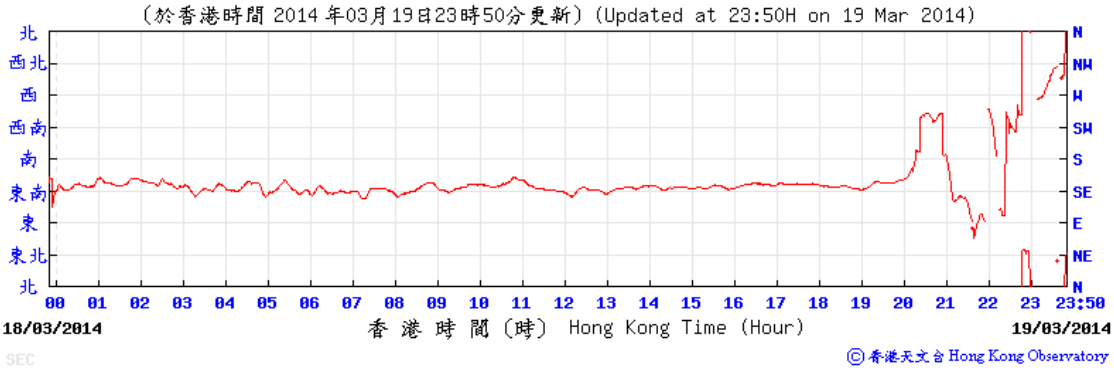
12-13 March 2014

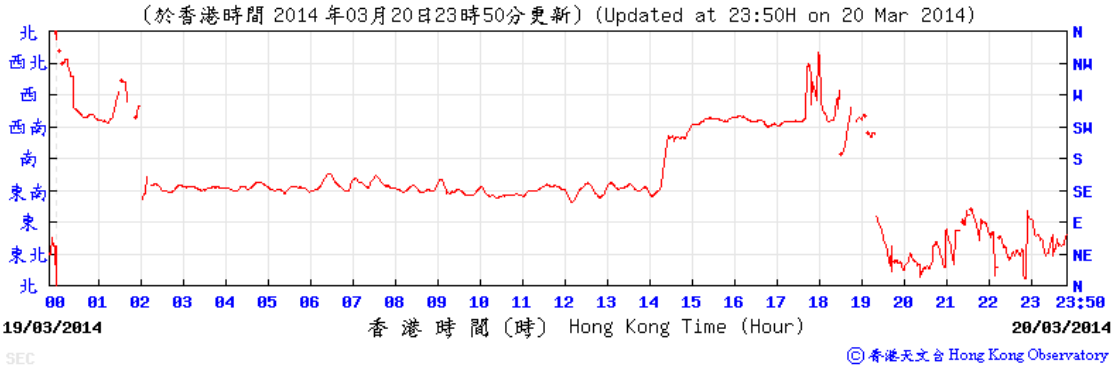




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

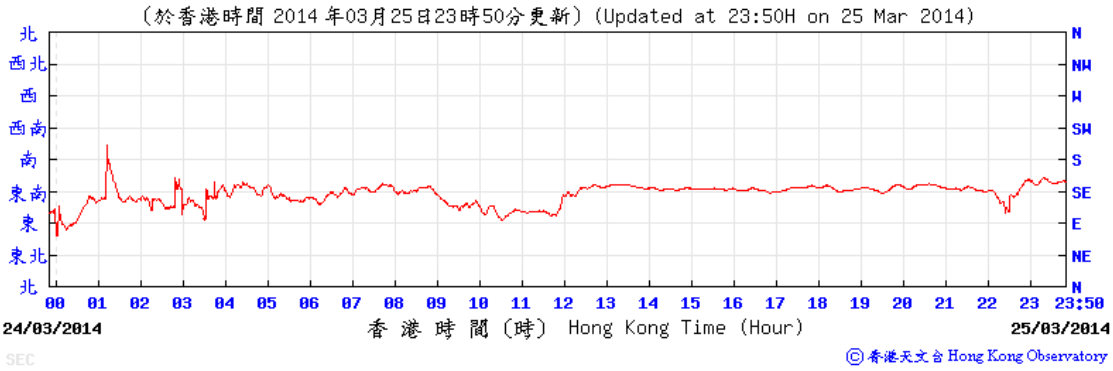
18-19 March 2014

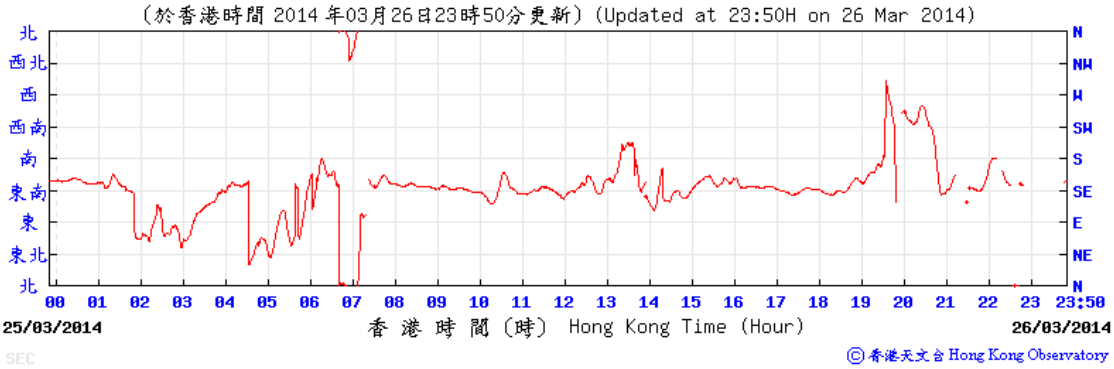




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

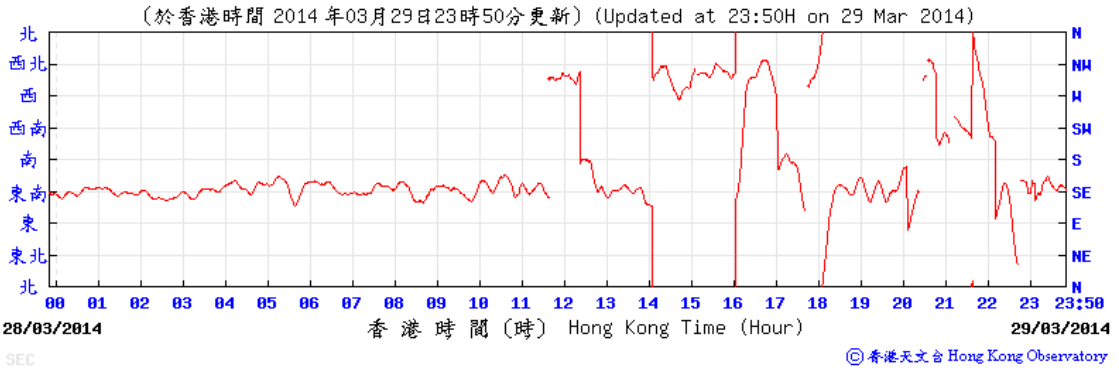
24-25 March 2014

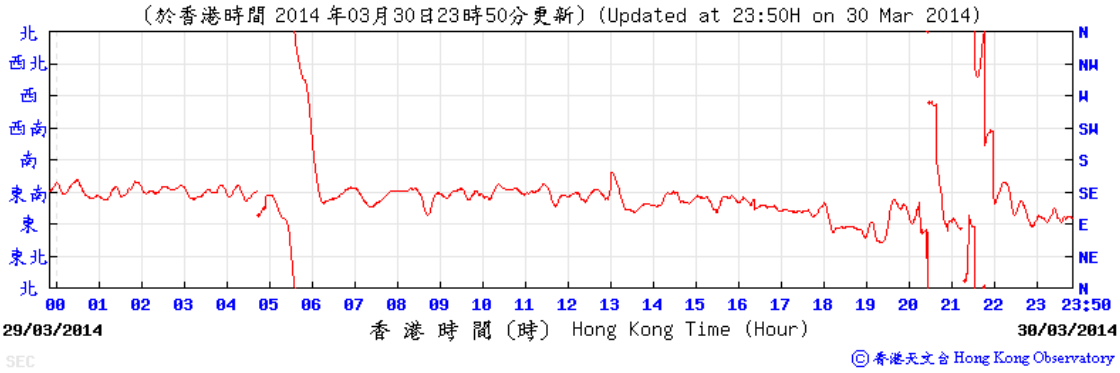




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

28-29 March 2014





APPENDIX F
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix F - Noise Monitoring Results

Location NMS-CA-4(1)/NMS-CA-3(2) - Block 1, Rhythm Garden (north-eastern façade)								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
3-Mar-14	Cloudy	11:00	73.3	74.4	72.0	73.5	71	69.9
		11:05	74.2	75.5	72.1			
		11:10	73.0	74.2	71.8			
		11:15	73.7	74.8	72.2			
		11:20	73.5	74.7	72.1			
		11:25	73.1	74.5	71.4			
10-Mar-14	Cloudy	10:55	73.8	74.8	72.5	73.6		70.1
		11:00	73.5	74.7	72.1			
		11:05	73.5	74.7	72.2			
		11:10	73.6	74.7	72.1			
		11:15	73.4	74.6	72.0			
		11:20	73.5	74.7	72.0			
20-Mar-14	Sunny	09:37	73.8	74.9	72.3	73.4		69.7
		09:42	73.3	74.6	71.5			
		09:47	73.4	74.6	72.1			
		09:52	73.5	74.6	72.2			
		09:57	73.1	74.1	71.8			
		10:02	73.0	74.0	72.0			
25-Mar-14	Sunny	11:03	73.8	75.1	72.2	73.7		70.4
		11:08	73.8	75.0	72.3			
		11:13	73.7	74.8	72.1			
		11:18	73.7	74.7	72.1			
		11:23	73.7	74.7	72.2			
		11:28	73.7	74.7	72.1			
31-Mar-14	Cloudy	14:23	72.4	73.3	71.1	72.3		66.4
		14:28	72.2	72.9	71.2			
		14:33	72.4	73.4	71.2			
		14:38	72.2	73.0	71.2			
		14:43	72.3	73.2	71.0			
		14:48	72.3	73.2	71.1			

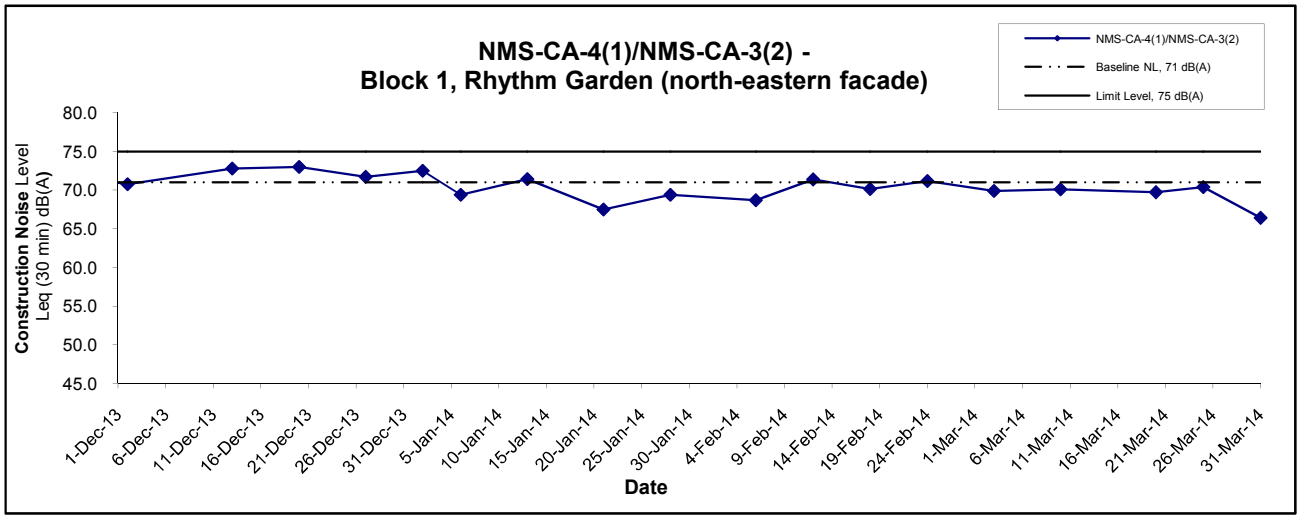
Remarks:
(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

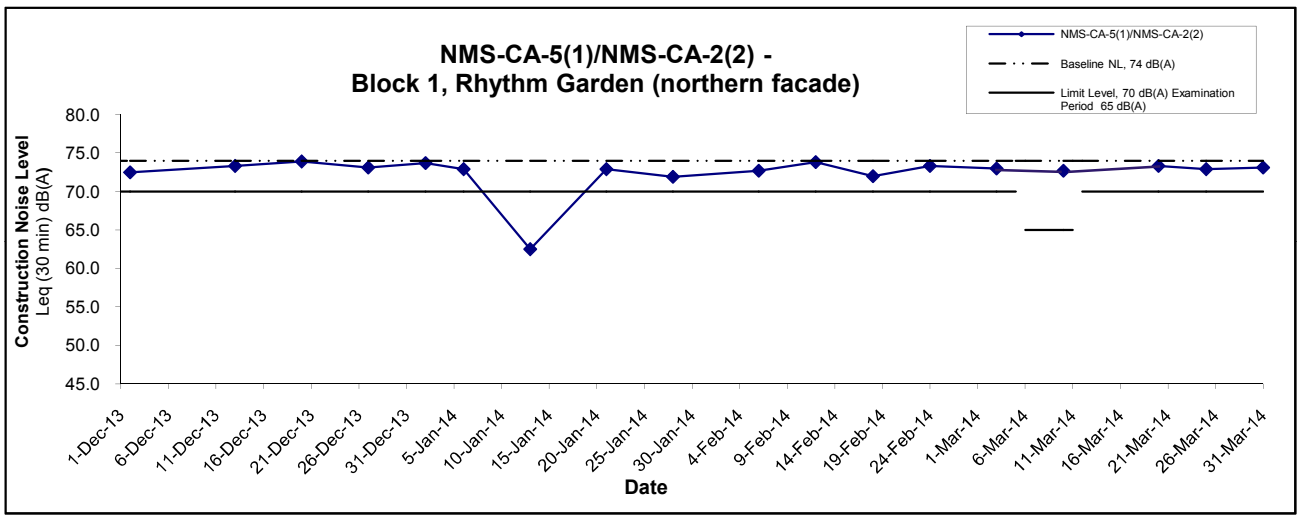
Appendix F - Noise Monitoring Results

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}
3-Mar-14	Cloudy	10:13	73.1	74.1	71.9	73.0	74	73.0 Measured≦ Baseline Level
		10:18	73.1	73.8	71.9			
		10:23	72.9	73.9	71.5			
		10:28	73.0	73.8	71.9			
		10:33	73.2	74.3	72.0			
		10:38	72.9	73.8	71.9			
10-Mar-14	Cloudy	10:18	72.4	73.5	71.1	72.7		72.7 Measured≦ Baseline Level
		10:23	72.3	73.6	70.8			
		10:28	72.5	73.7	71.1			
		10:33	73.0	74.4	71.5			
		10:38	73.0	74.1	71.6			
		10:43	73.0	73.9	72.0			
20-Mar-14	Sunny	09:05	73.4	74.6	72.1	73.3		73.3 Measured≦ Baseline Level
		09:10	73.1	74.3	71.8			
		09:15	73.2	74.4	72.0			
		09:20	73.4	74.7	72.1			
		09:25	73.4	74.6	72.0			
		09:30	73.3	74.7	72.0			
25-Mar-14	Sunny	10:30	73.0	74.1	71.7	72.9		72.9 Measured≦ Baseline Level
		10:35	72.9	74.0	71.7			
		10:40	72.9	74.0	71.6			
		10:45	73.0	74.1	71.6			
		10:50	72.9	74.0	71.6			
		10:55	72.8	73.9	71.5			
31-Mar-14	Cloudy	13:50	72.9	74.1	71.4	73.1		73.1 Measured≦ Baseline Level
		13:55	73.2	74.3	72.0			
		14:00	73.2	74.9	72.1			
		14:05	72.9	73.9	71.6			
		14:10	73.4	74.1	72.0			
		14:15	73.0	74.1	71.4			

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

Noise Levels





Remarks:

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

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

(3) In case of Measured Level ≦ Baseline Level, only Measured Level is presented on the graphical presentation.

Title	Shatin to Central Link - Contract 1106 - Diamond Hill Station Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Mar 14	Project No.: MA12051 Appendix: F	CINOTECH

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: March 2014

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	140304
Date	4 March 2014 (Tuesday)
Time	09:00 – 11:30

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***	
140304-R02	• Properly cover the cement bags (including the bottom part) by top and 3 sides nearby Lung Cheung Road.	E 6
	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***	
140304-O01	• Properly provide a drip tray for chemical containers nearby pumping well area.	H 10
	Part I – Permits/Licenses • No environmental deficiency was identified during the site inspection. ***Part J - Others*** • Follow-up on previous audit section (Ref. No.:140225), all identified environmental deficiencies were observed improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kevin Lam		4 March 2014
Checked by	Dr. Priscilla Choy		4 March 2014

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140312
Date	12 March 2014 (Wednesday)
Time	09:30 – 11:15

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

Ref. No.	Remarks/Observations	Related Item No.
140312-R02	***Part B – Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • Remove the material and general refuse in the tree protection area at tree DT1770. ***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.	D 3
140312-O01	***Part H – Waste/Chemical Management*** • Drip tray should be provided to chemical containers in cement mixing area near Lung Cheung Road. ***Part I – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part J - Others*** • Follow-up on previous audit section (Ref. No.:140304), all identified environmental deficiencies were observed improved/rectified by the Contractor.	H 10

	Name	Signature	Date
Recorded by	Johnny Fung		12 March 2014
Checked by	Dr. Priscilla Choy		12 March 2014

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140320
Date	20 March 2014 (Thursday)
Time	13:00 – 15:00

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***	
140320-R01	• Provide water spray to haul road near pumping well and de-sander to avoid dust generation. ***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***	E 6
140320-R02	• Clear the oily stagnant water in the drip tray of generator-set near Lung Cheung Road. ***Part I – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part J - Others*** • Follow-up on previous audit section (Ref. No.:140312), all identified environmental deficiencies were observed improved/rectified by the Contractor.	H 10

	Name	Signature	Date
Recorded by	Johnny Fung		20 March 2014
Checked by	Dr. Priscilla Choy		20 March 2014

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140327
Date	27 March 2014 (Thursday)
Time	13:00 – 14:30

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

Ref. No.	Remarks/Observations	Related Item No.
140327-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*** • The Contractor was reminded to cover the stockpile of cement bags properly by impervious material. (near the de-sander) ***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.	E 6
140327-O02	***Part H – Waste/Chemical Management*** • Chemical oil observed leaked out of the mobile crane to ground. The Contractor is reminded to properly clear the contaminated soil as "chemical waste". (near the de-sander) ***Part I – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part J - Others*** • Follow-up on previous audit section (Ref. No.:140320), all identified environmental deficiencies were observed improved/rectified by the Contractor.	H 9

	Name	Signature	Date
Recorded by	Johnny Fung		27 March 2014
Checked by	Dr. Priscilla Choy		27 March 2014

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	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
		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: • 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 no-intrusion zone. The contractor should closely monitor and	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	•TM-EIAO	^ *

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
		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 control on the height and disposition/ arrangement of all facilities on	Minimize the visual and landscape impact of the Project during construction phase	Contractor	Within Project Site	Detailed design and construction stage	• EIAO – TM •ETWB TCW 2/2004 • ETWB TCW 3/2006	^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		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.						N/A
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 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	Minimize dust impact at	Contractor	All Construction	Construction	• APCO	*

EIA Ref.	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
		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	the nearby sensitive receivers		Sites	stage	• 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
		hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel						^ ^ ^ 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
		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
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	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
		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.	noise		practicable			^ ^ ^ ^ ^
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	Screen the noisy plant	Contractor	All Construction	Construction	• 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
		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.	items to be used at all construction sites		Sites	stage		
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 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:	To minimize water quality impact from construction site runoff and general	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • 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
		Construction Runoff and Site Drainage • 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	construction activities				• 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
		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						^ ^ ^ 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
		drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m^3 should be covered with tarpaulin or similar fabric during rainstorms. • Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers • Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular 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						^ ^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		construction site 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 and sited on sealed areas, within bunds of a capacity equal to						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
		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.						N/A ^
S10.7.1	W3	Sewage Effluent • Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • 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	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	* ^ ^

EIA Ref.	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
		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.						^
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 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	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
		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; • 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	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	^ ^ ^ 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
		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						^
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	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
		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 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	• Waste Disposal Ordinance	^ ^ N/A N/A

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
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 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	* ^ ^

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
		• 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, 2014**

Monthly Summary Waste Flow Table for 2014

Monthly	Actual Quantities of C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly					Remarks
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects (See Note 2)	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste (See Note 3)	Others, e.g. general refuse	
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)	
Jan	2.940	0.000	0.000	2.529	0.411	0.000	0.000	0.000	0.000	0.000	0.073	
Feb	2.869	0.000	0.000	2.348	0.521	0.000	0.000	0.225	0.000	1.600	0.090	
Mar	5.081	0.000	0.000	2.957	2.124	0.000	0.000	0.020	0.000	1.760	0.049	
Apr												
May												
Jun												
Sub-total	10.890	0.000	0.000	7.834	3.055	0.000	0.000	0.245	0.000	3.360	0.211	
Jul												
Aug												
Sept												
Oct												
Nov												
Dec												
Total	10.890	0.000	0.000	7.834	3.055	0.000	0.000	0.245	0.000	3.360	0.211	

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 Kai Tak Barging Point Facility (Contract 1108A)
3) Chemical waste includes waste diesel oil. It is assumed density of diesel oil to be 0.8kg/L.

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

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

Cumulative Complaint Log

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	File Closed
--	--	--	--	--	--

Cumulative Log for Notifications of Summons

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

Cumulative Log for Successful Prosecutions

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

Appendix G

11th EM&A Report for Works Contract 1107 –
Diamond Hill to Kai Tak Tunnels

MTR Corporation Limited

Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report No.11

[Period from 1 to 31 March 2014]

Works Contract 1107 – Diamond Hill to Kai Tak Tunnels

(April 2014)

Certified by: Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 9th April 2014

Chun Wo – SELI Joint Venture

Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels

Monthly Environmental Monitoring and Audit Report For March 2014

(Version 2.0)

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 11th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for **MTR Shatin to Central Link (SCL) Works Contract 1107 – Diamond Hill to Kai Tak Tunnels**. This report documents the findings of EM&A Works conducted from 1 March to 31 March 2014.

Summary of Construction Works undertaken during Reporting Month

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

- Site investigation works;
- Investigation and removal of old foundation works;
- Hoarding erection;
- Sheet piling works;
- Shaft excavation;
- Nullah diversion;
- Pipe Pile work;
- King Post Installation work; and
- Site preparation works.

Variation in Construction Method

3. 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 and the updated EP (EP No.: EP-438/2012/D) was issued by EPD on 13 September 2013 for the varied construction method.

Environmental Monitoring and Audit Progress

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

Regular Construction Noise and Construction Dust Monitoring

- Regular construction noise monitoring during normal working hours
  Noise Monitoring Station ID
  - NMS-CA-4(1)(3)/NMS-CA-3(2)(3) (Block 1, Rhythm Garden (north-eastern façade)) 5 times
  - NMS-CA-5(1)(4)/NMS-CA-2(2)(4) (Block 1, Rhythm Garden (northern façade)) 5 times
- Construction Dust (24-hour TSP) Monitoring
  Dust Monitoring Station ID
  - DMS-4(1)(5)/ DMS-3(2)(5) (Block 1, Rhythm Garden) 5 times

Remarks:
(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) Noise monitoring on NMS-CA-4(1)/ NMS-CA-3(2) (Block 1, Rhythm Garden (north-eastern façade) is carried out by Environmental Team of SCL Works Contract 1106.

(4) Noise monitoring on NMS-CA-5[(1)]/ NMS-CA-2[(2)] (Block 1, Rhythm Garden (northern façade) is carried out by Environmental Team of SCL Works Contract 1106.
(5) Dust monitoring on DMS-4[(1)]/ DMS-3[(2)] (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.

Waste Management

5. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. Details of waste management data is presented in Section 5 and **Appendix K**.

Landscape and Visual

6. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 7 and 21 March 2014. Most of the necessary mitigation measures have been implemented and recommended follow-up actions have been discharged by the Contractor. Details of the audit findings and implementation status are presented in Section 6.

Environmental Site Inspection

7. Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 7, 14, 21 and 28 March 2014. The representative of the IEC joined the site inspection on 14 March 2014. Details of the audit findings and implementation status are presented in Section 6.

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

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

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

10. No Project related environmental complaint and notification of summons/ successful prosecutions was received in this reporting period.

Future Key Issues

11. Major site activities for the coming reporting month will include:

- Site investigation works;
- Investigation and removal of old foundation works;
- Hoarding erection;
- Sheet piling works;
- Shaft excavation;
- Nullah diversion;
- Pipe Pile work;
- King Post installation work; and
- Site preparation works.

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 11th EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1 March to 31 March 2014. The major construction works for Contract 1107 commenced on 27 May 2013.

Structure of the Report

1.3 The structure of the report is as follows:

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

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

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

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

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

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

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

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

Section 9: **Conclusions and Recommendations**

2 PROJECT INFORMATION

Background

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

2.2 The construction of the SCL (TAW-HUH) and SCL (HHS) have been divided into a series of civil construction works contracts. This Works Contract 1107 covers the construction of running tunnel from Kai Tak (KAT) North to SCL Diamond Hill (DIH) Station which is under the approved SCL (HHS) EIA Report. This construction contract was awarded to Chun Wo - SELI Joint Venture (CSJV) in March 2013.

General Site Description

2.3 The construction of tunnel from KAT to DIH will employ either cut-and-cover method or bored tunneling. The alignment and works area for the Works Contract 1107 are shown in **Figure 1**.

Construction Programme and Activities

2.4 A summary of the major construction activities undertaken in this reporting period is shown as follows. The tentative construction programme is presented in **Appendix A**.

- Site investigation works;
- Investigation and removal of old foundation works;
- Hoarding erection;
- Sheet piling works;
- Shaft excavation;
- Nullah diversion;
- Pipe Pile work;
- King Post installation work; and
- Site preparation 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 is presented in **Table 2.1**. No new Construction Noise Permit (CNP) was granted by EPD in this reporting month.

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

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-438/2012/C	30/04/2013	12/09/2013	Superseded by EP-438/2012/D since 13 September 2013
EP-438/2012/D	13/09/2013	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
Ref no.: 357051	18/03/2013	N/A	Valid
Billing Account for Construction Waste Disposal			
Account No. 7017163	26/03/2013	N/A	Valid
Registration of Chemical Waste Producer			
5213-286-C3798-01	29/04/2013	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00015861-2013	13/05/2013	31/05/2018	Valid
WT00016009-2013	23/05/2013	31/05/2018	Valid
Construction Noise Permit (CNP)			
GW-RE1064-13	08/10/2013	31/03/2014	Expired
GW-RE1423-13	07/01/2014	30/06/2014	Valid
GW-RE1444-13	10/01/2014	30/06/2014	Valid
GW-RE0110-14	05/02/2014	04/08/2014	Valid
GW-RE0205-14	03/03/2014	17/04/2014	Valid

Summary of EM&A Requirements

2.7 The EM&A programme under Works Contract 1107 require regular dust and noise monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:

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

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

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

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Regular Construction Noise Monitoring

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

Table 3.1 Regular Construction Noise Monitoring Location

Regular Construction Noise Monitoring Location[4][5]	Description	Type of Measurement
NMS-CA-4[1]/ NMS-CA-3[2]	Block 1, Rhythm Garden (north-eastern façade)	Façade
NMS-CA-5[1][3]/ NMS-CA-2[2][3]	Block 1, Rhythm Garden (northern façade)	Façade

Note:
(1) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) Access to the monitoring location at Canossa Primary School (San Po Kong) (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Block 1, Rhythm Garden (northern façade)) was proposed and approved by the ER and agreed by the IEC and EPD.
(4) Noise monitoring on NMS-CA-4[1]/ NMS-CA-3[2] (Block 1, Rhythm Garden (north-eastern façade) is carried out by Environmental Team of SCL Works Contract 1106.
(5) Noise monitoring on NMS-CA-5[1]/ NMS-CA-2[2] (Block 1, Rhythm Garden (northern façade) is carried out by Environmental Team of SCL Works Contract 1106.

Monitoring Parameter and Frequency

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

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

Monitoring Equipment and Methodology

Field Monitoring

3.4 The monitoring procedures are as follows:

- The microphone head of the sound level meter was positioned 1m exterior of the noise sensitive facade and lowered sufficiently so that the building's external wall acts as a reflecting surface.
- The battery condition was checked to ensure good functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

  - frequency weighting : A
  - time weighting : Fast
  - measurement time : 5 minutes (obtaining six consecutive $L_{eq,5min}$ readings for a $L_{eq,30\ min}$ reading)

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

Monitoring Equipment

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

Table 3.2 Noise Monitoring Equipment

Monitoring Equipment	Model (Serial no.)
Sound Level Meter	SVAN 955 and 957 (Serial no.: 14303 and 21459)
Calibrator	SV30A and B&K 4231 (Serial no.: 10929, 24803 and 2412367)

Maintenance and Calibration

3.6 Maintenance and Calibration procedures were as follows:

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

Action & Limit Level for Construction Noise Monitoring

3.7 The Action and Limit Levels are presented in **Appendix B** and the Event / Action Plan (EAP) for noise monitoring is presented in **Appendix I.**

Continuous Noise Monitoring

3.8 With reference to the latest Continuous Noise Monitoring Plan (CNMP) and Construction Noise Mitigation Measures Plan (CNMMP) prepared submitted under EP Condition 2.9 and Condition 2.10 respectively, it is predicted that no residual air-borne construction noise impacts exceeding the relevant noise criteria will be anticipated. Therefore, no continuous noise monitoring is required during the construction of the SCL (TAW-HUH) under Works Contract 1107.

Regular Construction Dust Monitoring

3.9 The proposed dust monitoring stations for the construction phase of the Project, as recommended in the approved EM&A Manual, are listed in **Table 3.3** and shown in **Figure 3**. The proposed locations have been agreed with the ER, EPD and IEC.

Table 3.3 Dust Monitoring Location

Regular Dust Monitoring Location	Description
DMS-4[(1)(3)]/ DMS-3[(2)(3)]	Block 1, Rhythm Garden

Note:
(1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) Dust monitoring on DMS-4[(1)]/DMS-3[(2)] (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.

Monitoring Parameter and Frequency

3.10 The dust monitoring (in terms of Total Suspended Particulates (TSP)) was conducted at the designated monitoring stations in accordance with the requirements stipulated in the EM&A Manual. The 24-hour TSP levels were monitored at the frequency and duration stated in **Table 3.4**. The TSP monitoring at Rhythm Garden was conducted as per the schedule presented in **Appendix D**.

Table 3.4 Dust Monitoring Parameters and Frequency

Monitoring Period	Duration	Parameter	Frequency
Impact Monitoring(1)	Throughout the construction period	24-hour TSP	Once per 6 days

Note:
(1) 1- hour TSP shall be conducted when one documented valid complaint is received.

Monitoring Equipment

3.11 **Table 3.5** summarizes the equipment used for the dust monitoring.

Table 3.5 Dust Monitoring Equipment

Equipment	Model and Make	Qty.
HVS	Tisch Environmental, Inc.; Model no. TE-5170, Serial no.: 2352	1
Calibration Orifice	Tisch Environmental, Inc.; Model no. TE – 5025A Orifice ID: 0993	1

Instrumentation

3.12 High Volume Samplers (HVS) connected with appropriate sampling inlets were employed for air quality monitoring. Each sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 Appendix B (Part 50).

HVS Installation

3.13 The following guidelines were adopted during the installation of HVS:

- Sufficient support was provided to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The samplers were more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

Filters Preparation

3.14 Fiberglass filters were used which have a collection efficiency of larger than 99% for particles of 0.3 μm diameter. A HOKLAS accredited laboratory, Wellab Ltd. (HOKLAS Registration No. 083), was responsible for the preparation of pre-weighed filter papers for Cinotech's monitoring team.

3.15 All filters, which were prepared by Wellab Ltd., were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%.

3.16 Wellab Ltd. has a comprehensive quality assurance and quality control programmes.

Operating/Analytical Procedures

3.17 Operating/analytical procedures for the TSP monitoring were highlighted as follows:

- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard.
- The power supply was checked to ensure the sampler worked properly.
- The filter holding frame and the area surrounding the filter were cleaned.
- On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the air quality monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts to avoid air leakage at the edges.
- The shelter lid was closed and secured with the aluminum strip.
- A new flow rate record chart was set into the flow recorder.
- The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- The flow rate of the HVS sampler would be verified to be constant and recorded on the data sheet before and after sampling.
- The elapsed time and other relevant information was recorded. After sampling, the sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
- It was then placed in a clean plastic envelope and sealed and sent to the Wellab Ltd. for weighing.
- Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%. Weighing results were returned to Cinotech for further analysis of TSP concentrations collected by each filter.

Maintenance/Calibration

3.18 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- Calibration of the HVS (five point calibration) using Calibration Kit was carried out every two months. Copies of calibration certificates are attached in **Appendix C**.
- The HVS calibration orifice will be calibrated annually.

Action and Limit Levels for Dust Monitoring

3.19 The Action and Limit levels have been established and are presented in **Appendix B** and the Event / Action Plan (EAP) for dust monitoring is presented in **Appendix I.**

Landscape and Visual

3.20 In accordance with the EM&A Manual, the landscape and visual mitigation measures shall be implemented and a site inspection shall be conducted once every two weeks throughout the construction period. The Event / Action Plan (EAP) for landscape and visual is presented in **Appendix I**. The implementation status is given in **Appendix J**.

4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

4.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status of the environmental mitigation measures of the reporting period is summarized in **Appendix J**. Status of required submissions under the Environmental Permit (EP) of the reporting period is presented in **Table 4.1**.

Table 4.1 Status of Required Submissions under EP

EP Condition	Submission	Submission Date
Condition 3.4	Monthly EM&A Report (February 2014)	14th March 2014

5 MONITORING RESULTS

Regular Construction Noise Monitoring

5.1 A total of 10 sets of 30-minute construction noise measurements were carried out at the monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. No exceedance of the limit level was recorded at designated monitoring stations.

5.2 The noise monitoring results recorded at NMS-CA-5[(1)]/NMS-CA-2[(2)] (Block 1, Rhythm Garden (northern façade)) on 3, 10, 20, 25 and 31 March 2014 exceeded the daytime construction noise criterion. However, the results are not considered as exceedance as they were below the baseline noise level while the noise monitoring results recorded at NMS-CA-4[(1)]/NMS-CA-3[(2)] (Block 1, Rhythm Garden (north-eastern façade)) did not exceed the daytime construction noise criterion.

5.3 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.

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

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

Regular Dust Monitoring

5.6 5 sets of 24-hour TSP monitoring were carried out at the designated monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. The monitoring results together with their graphical presentations are presented in **Appendix E** and a summary of the dust monitoring results in this reporting month is given in **Table 5.1**.

Table 5.1 Summary Table of Dust Monitoring Results during the reporting month

Parameter	Minimum $\mu g/m^3$	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 (DMS-4[(1)(3)]/ DMS-3[(2)(3)])	47.1	140.1	81.2	160.4	260

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

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

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

(3) Dust monitoring on DMS-4[(1)]/DMS-3[(2)] (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.

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, 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**. No metals and plastics were generated during this reporting month. Details of waste management data is presented in **Appendix K**.

Table 5.2 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	C&D Materials (inert) [(a)]	C&D Materials (non-inert) [(b)]				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
March 2014	*5, 945 m^3*	*25 m^3*	*0 litre*	*135 kg*	*0kg*	*0 kg*

Notes:
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil,
(b) Non-inert C&D materials include steel, paper/cardboard packaging waste, plastics and other wastes such as general refuse and vegetative wastes. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.

Landscape and Visual

5.11 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 7 and 21 March 2014. The observations and recommendations made during the audit sessions are summarized in **Table 6.1**.

6 ENVIRONMENTAL SITE INSPECTION

Site Audit

6.1 Site audit was carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audit are attached in **Appendix H**.

6.2 Site audits were conducted on 7, 14, 21 and 28 March 2014 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 14 March 2014. No site inspection was conducted by EPD during the reporting month. The details of observations during site audit can refer to **Table 6.1**.

Implementation Status of Environmental Mitigation Measures

6.3 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix J**.

6.4 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 6.1**.

Table 6.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	--	--	--
Noise	28 Feb 2014	Reminder: Noise barrier should be provided near the generator-set near the hoarding of Kai Ching Estate	The observation was observed to be improved/rectified by the Contractor during the audit session on 7 Mar 2014.
	7 Mar 2014	Reminder: Provide noise barrier to hoardings near the air-compressors and properly erect or repair the noise barriers at hoardings near Kai Ching Estate.	The observation was observed to be improved/rectified by the Contractor during the audit session on 14 Mar 2014.
Landscape and Visual	--	--	--
Air Quality	7 Mar 2014	Reminder: Cover the dusty stockpile by impervious sheets at the storage area.	The observation was observed to be improved/rectified by the Contractor during the audit session on 14 Mar 2014.
	21 Mar 2014	Reminder: Cover the dusty stockpile properly by impervious material.	The observation was observed to be improved/rectified by the Contractor during the audit session on 28 Mar 2014.
	28 Mar 2014	Reminder: Provide water spray to exposed haul road to avoid dust generation.	Follow up action will be reported in next reporting month.
Waste / Chemical Management	7 Mar 2014	Reminder: Properly dispose the empty chemical containers as “chemical waste”.	The observation was observed to be improved/rectified by the Contractor during the audit session on 14 Mar 2014.

Parameters	Date	Observations and Recommendations	Follow-up
	14 Mar 2014	Reminder: The Contractor is reminded to remove the construction material from the drip tray of air-compressor-set near the interface of 1108.	The observation was observed to be improved/rectified by the Contractor during the audit session on 21 Mar 2014.
	21 Mar 2014	The Contractor is reminded to properly remove the empty chemical containers as "chemical waste" and provide drip tray to the chemical containers in use near the grouting plant.	The observation was observed to be improved/rectified by the Contractor during the audit session on 28 Mar 2014.
	28 Mar 2014	Reminder: Properly clear the chemical leakage from excavator to ground.	Follow up action will be reported in next reporting month.
Permits/ Licenses	--	--	--

7 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

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

Summary of Environmental Non-Compliance

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

Summary of Environmental Complaint

7.3 No environmental Project-related complaint was received in the reporting month. The Cumulative Complaint Log since the commencement of the Project is presented in **Appendix L**.

Summary of Environmental Summon and Successful Prosecution

7.4 There was no successful environmental prosecution or notification of summons received since the Project commencement. The Cumulative Log for environmental summon and successful prosecution since the commencement of the Project is presented in **Appendix L**.

8 FUTURE KEY ISSUES

Construction Programme for the Next Month

8.1 A tentative construction programme is provided in **Appendix A**. The major construction activities in the coming month will include:

- Site investigation works;
- Investigation and removal of old foundation works;
- Hoarding erection;
- Sheet piling works;
- Shaft excavation;
- Nullah diversion;
- Pipe Pile work;
- King Post installation work; and
- Site preparation works.

Key Issues in the Next Month

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

- Dust impact from excavating works;
- Dust arising from loading, unloading, transfer, handling or storage of bulk cement or dry PFA and bentonite;
- Treatment of wastewater from D-wall construction;
- To ensure the performance of sorting of C&D materials at source (during generation); and
- To carry out inspection of dump truck at site exit to ensure inert and non-inert C&D materials are properly segregated before removing off site.

Monitoring Schedule in the Next Month

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

9 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

9.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 to 31 March 2014 in accordance with EM&A Manual and the requirement under EP.

9.2 No exceedance of the Action and Limit Levels of regular construction noise and 24-hour TSP monitoring was recorded at the designated monitoring stations during the reporting month.

9.3 4 times of joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET and 2 times of bi-weekly inspection of the implementation of landscape and visual mitigation measures were conducted during the reporting period.

9.4 There was no Project related environmental complaint, successful prosecution or notification of summons received during the reporting month.

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

Recommendations

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

Water Quality

- N/A

Landscape and Visual

- N/A

Noise

- The Contractor is reminded to properly erect or repair the noise barriers at hoardings near Kai Ching Estate.

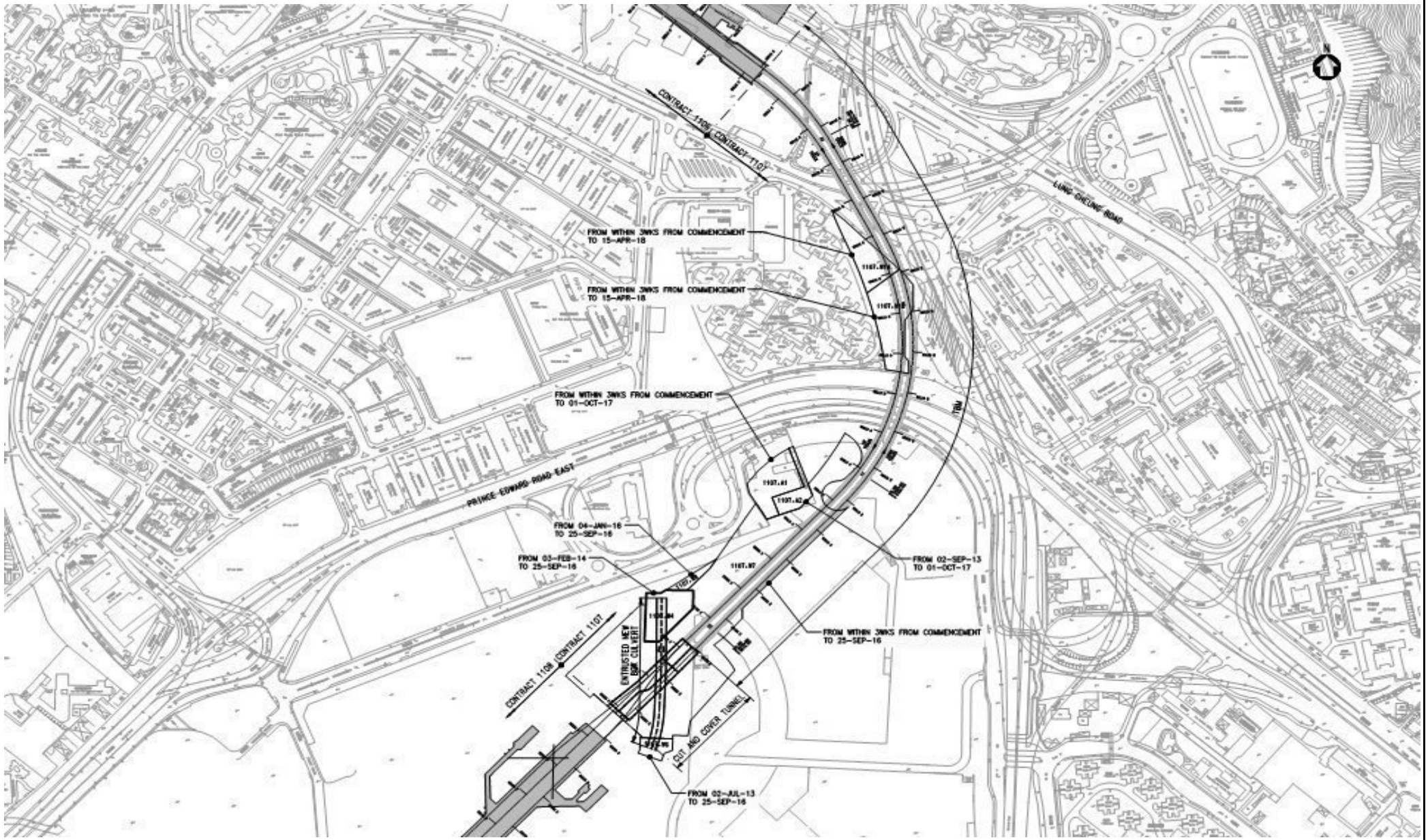
Air Quality

- The Contractor is reminded to provide water spray to exposed haul road to avoid dust generation.
- Covering by impervious materials should be provided to stockpile.

Waste/Chemical Management

- The Contractor is reminded to remove the construction material from the drip tray.
- The Contractor is reminded to properly remove the empty chemical containers as "chemical waste" and provide drip tray to the chemical containers in use.
- The Contractor is reminded to properly clear the chemical leakage from excavator to ground.

FIGURES



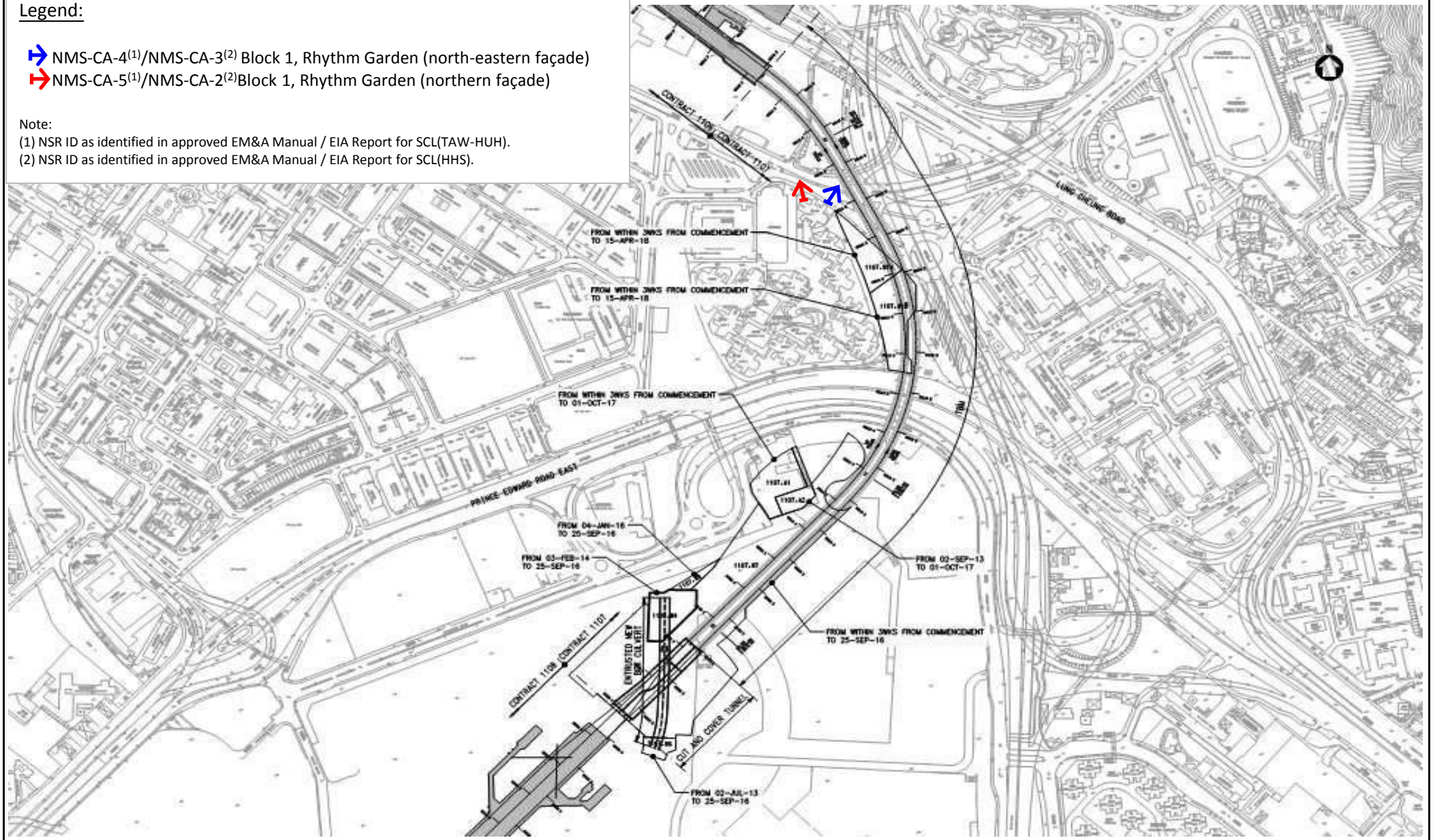
Title	MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Site Layout Plan	Scale N.T.S Date May-13	Project No. MA13018 Figure 1

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).

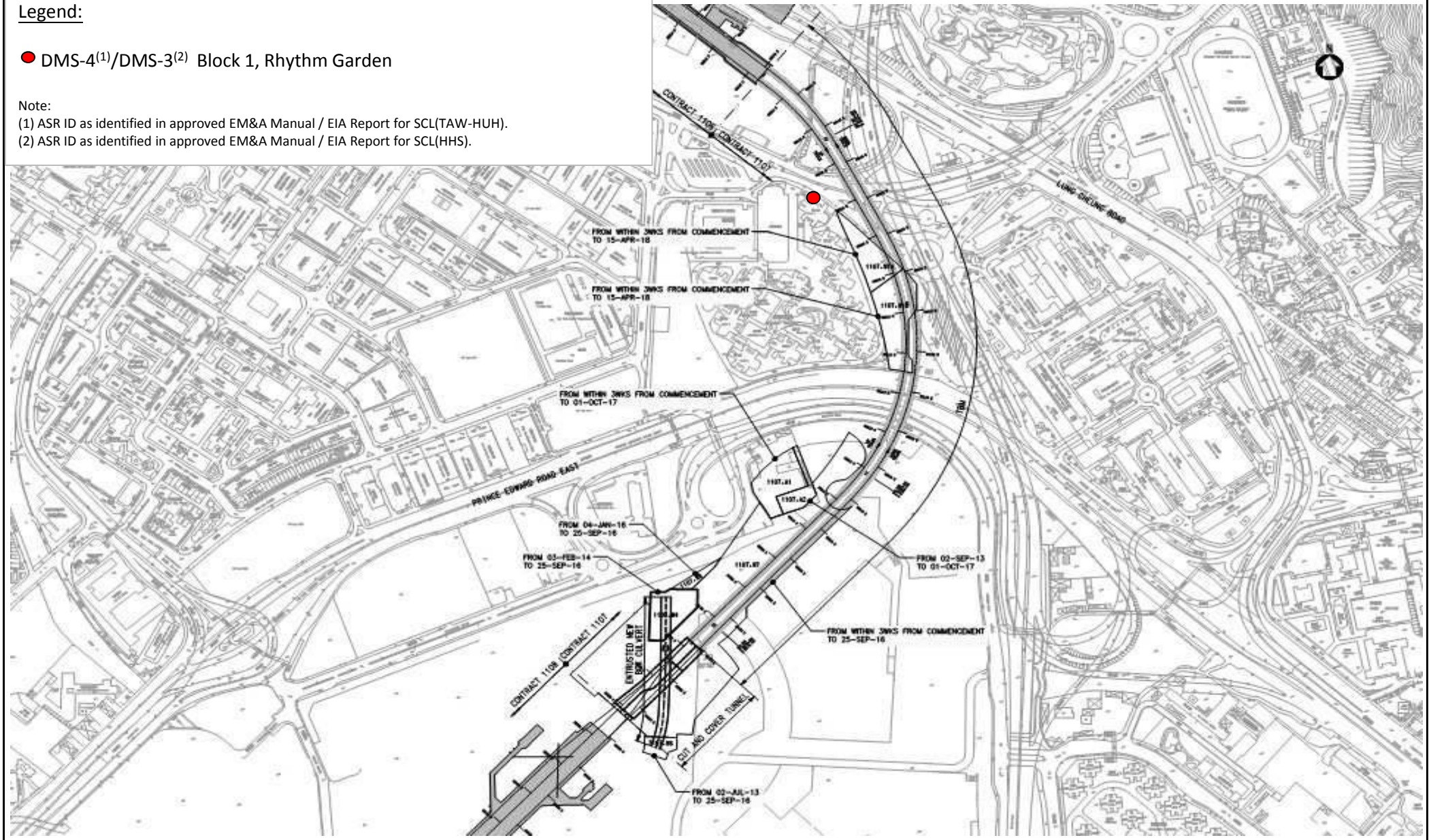


Title	MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Locations of Constrcution Noise Monitoring	Scale N.T.S	Project No. MA13018	CINOTECH
		Date May-13	Figure 2	

Legend:

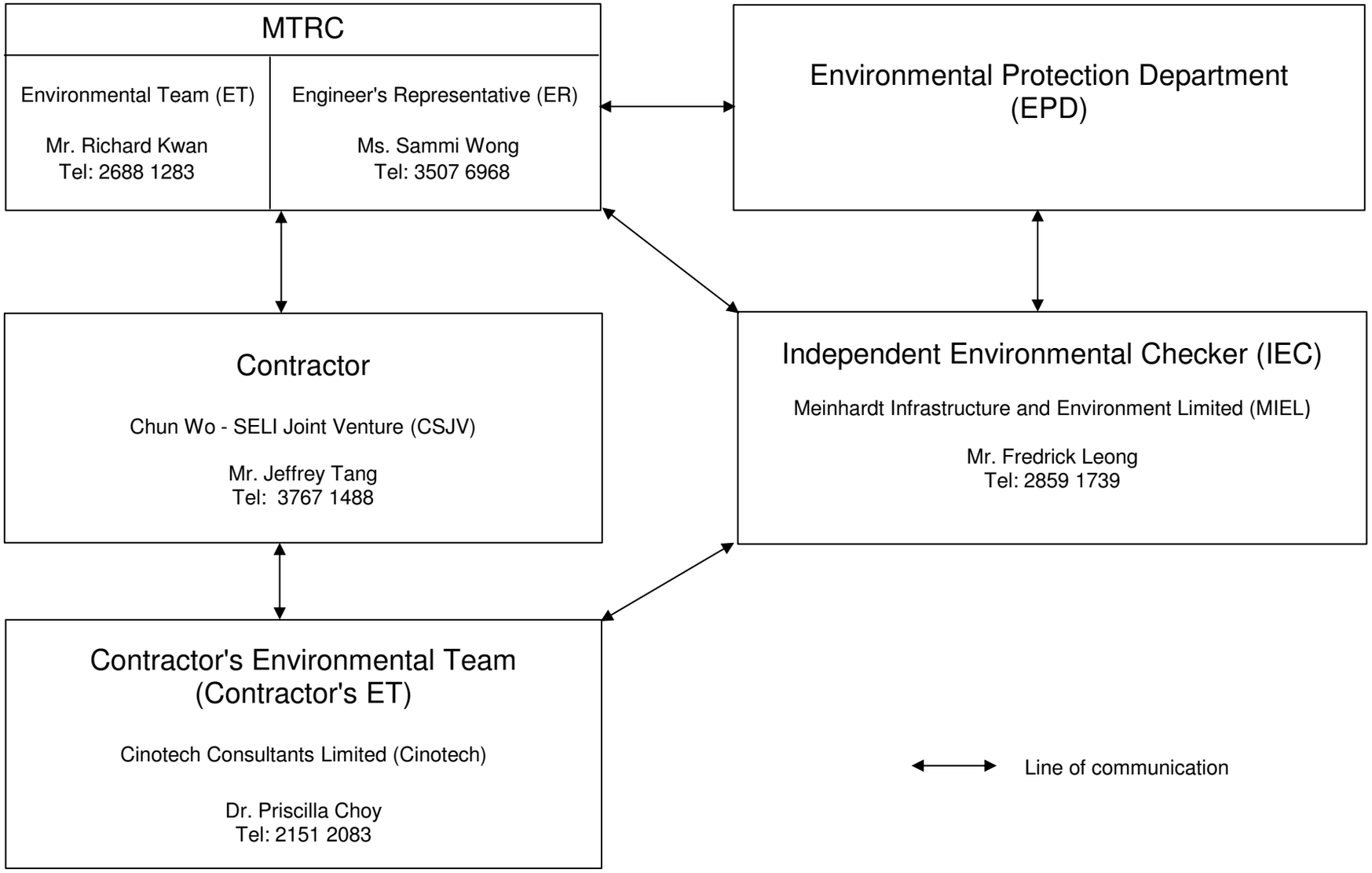
● DMS-4(1)/DMS-3(2) Block 1, Rhythm Garden

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

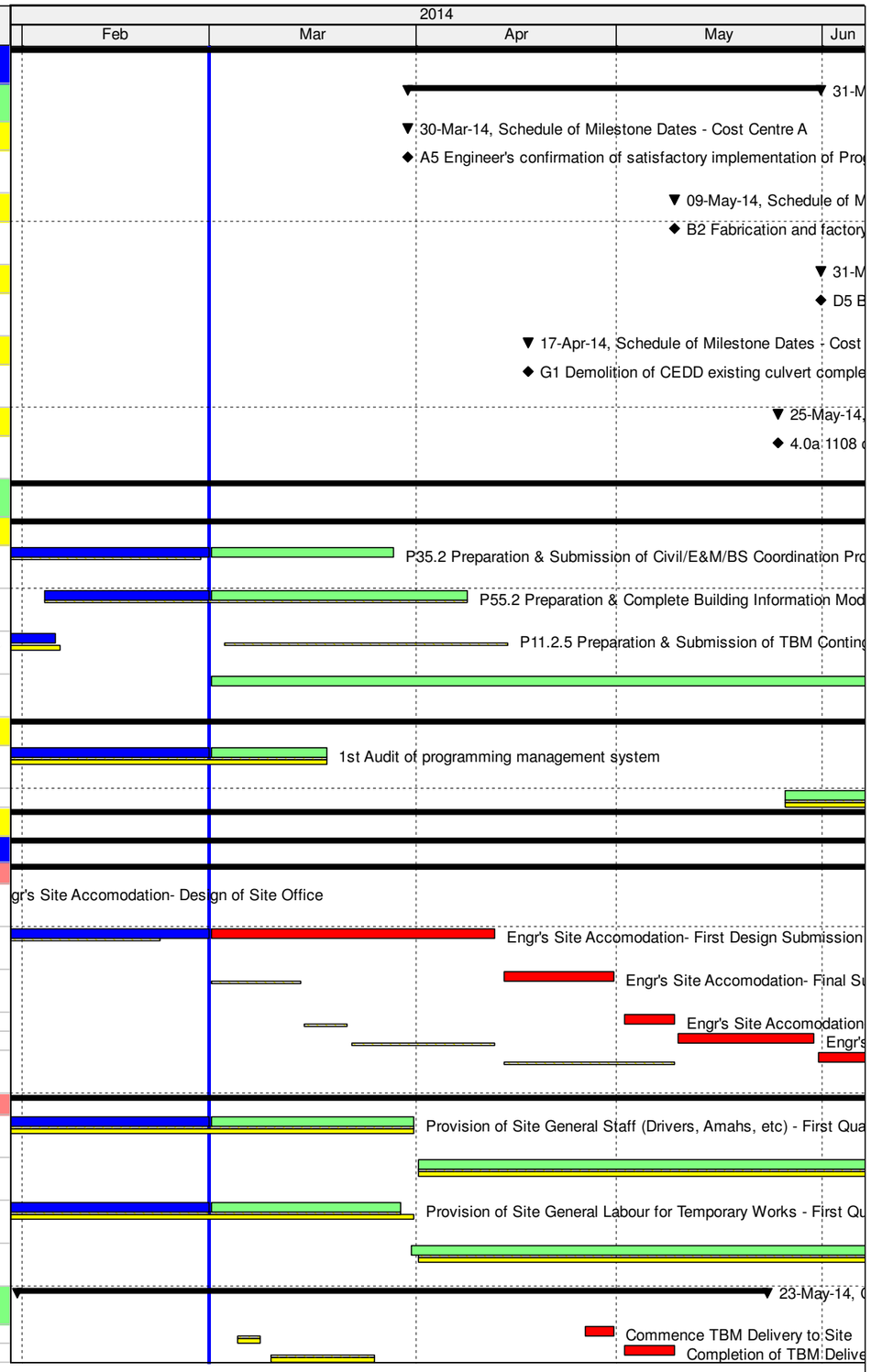


Title	Scale	Proposal
MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Organisation Chart and Key Contact of the Project	N.T.S	No. MA13018
	Date: Jun-13	Figure: 4

CINOTECH

APPENDIX A
TENTATIVE CONSTRUCTION PROGRAMME

Activity ID	Activity Name	O Dur	MP Start	MP Finish	Last Mth Start	Last Mth Finish	Start	Finish
**MTRC SCL 1107 Diamond Hill to Kai Tak ' **		308	11-Mar-13	08-Jan-15	01-Feb-14	26-Mar-15	26-Jul-13 A	07-Aug-14
Shedule of Completion Obligation & Oth		62	12-Mar-14	25-May-14	25-Mar-14	31-May-14	30-Mar-14	31-May-14
Schedule of Milestone Dates - Cost Centre A		0	30-Mar-14	30-Mar-14	30-Mar-14	30-Mar-14	30-Mar-14	30-Mar-14
1107.MS10200	A5 Engineer's confirmation of satisfactory implementation of Programming Management System	0		30-Mar-14	30-Mar-14	30-Mar-14		30-Mar-14*
Schedule of Milestone Dates - Cost Centre B		0	25-Mar-14	25-Mar-14	25-Mar-14	25-Mar-14	09-May-14	09-May-14
1107.MS10350	B2 Fabrication and factory tests of the TBM complete and delivery to site 27APR14	0		25-Mar-14	25-Mar-14	25-Mar-14		09-May-14*
Schedule of Milestone Dates - Cost Centre D		0	12-Mar-14	12-Mar-14	31-May-14	31-May-14	31-May-14	31-May-14
1107.MS10590	D5 Base slab of Kai Tak Box 2A Shaft complete 23FEB14 proposed to be changed to 23MAR14	0		12-Mar-14	31-May-14	31-May-14		31-May-14*
Schedule of Milestone Dates - Cost Centre G		0	14-Apr-14	14-Apr-14	14-Apr-14	14-Apr-14	17-Apr-14	17-Apr-14
1107.MS10710	G1 Demolition of CEDD existing culvert complete and ready for remaining Dwall panels commencement 27APR14	0		14-Apr-14	14-Apr-14	14-Apr-14		17-Apr-14*
Programme Data		0	25-May-14	25-May-14	25-May-14	25-May-14	25-May-14	25-May-14
1107.ID10980	4.0a 1108 complete final excavation level at Intf with 1107 @ KAT station for 1107 to construct stub tunnels (TBC)	0	25-May-14		25-May-14	25-May-14	25-May-14*	
Cost Centre A - Preliminaries		146	11-Mar-13	08-Jan-15	01-Feb-14	26-Mar-15	21-Dec-13 A	30-Jun-14
Contractor Submission Schedule		127	11-Mar-13	08-Jan-15	04-Feb-14	26-Mar-15	21-Dec-13 A	07-Jun-14
1107.11580	P35.2 Preparation & Submission of Civil/E&M/BS Coordination Programme	48	25-Nov-13	22-Jan-14	04-Feb-14	27-Feb-14	31-Dec-13 A	28-Mar-14
1107.11690	P55.2 Preparation & Complete Building Information Model based on Engr's Dwgs	54	11-Mar-13	08-Jun-13	04-Feb-14	08-Apr-14	04-Feb-14 A	08-Apr-14
1107.12180	P11.2.5 Preparation & Submission of TBM Contingency/Surveillance Plan	36	21-Dec-13	06-Feb-14	03-Mar-14	14-Apr-14	21-Dec-13 A	06-Feb-14 A
1107.12200	P14.29 Submission of Designated & Interfacing Contracts Information	78	07-Oct-14	08-Jan-15	19-Dec-14	26-Mar-15	01-Mar-14	07-Jun-14
Project Audit		124	20-Jan-14	23-Jun-14	04-Feb-14	23-Jun-14	20-Jan-14 A	23-Jun-14
1107.12450	1st Audit of programming management system	48	20-Jan-14	18-Mar-14	04-Feb-14	18-Mar-14	20-Jan-14 A	18-Mar-14
1107.12480	2nd Audit of safety & environmental plans	24	26-May-14	23-Jun-14	26-May-14	23-Jun-14	26-May-14*	23-Jun-14
Site Enabling Works		146	05-Apr-13	30-Jun-14	01-Feb-14	30-Jun-14	31-Dec-13 A	30-Jun-14
Site Setup		146	05-Apr-13	30-Jun-14	01-Feb-14	30-Jun-14	31-Dec-13 A	30-Jun-14
Engineer's Site Accomodation		138	05-Apr-13	10-Sep-13	01-Feb-14	09-May-14	02-Jan-14 A	21-Jun-14
1107.12610	Engr's Site Accomodation- Design of Site Office	21	05-Apr-13	29-Apr-13	01-Feb-14	01-Feb-14	02-Jan-14 A	25-Jan-14 A
1107.12620	Engr's Site Accomodation- First Design Submission & Review of Building Plans	21	30-Apr-13	25-May-13	04-Feb-14	28-Feb-14	27-Jan-14 A	12-Apr-14
1107.12630	Engr's Site Accomodation- Final Submission of Building Plans	12	27-May-13	08-Jun-13	01-Mar-14	14-Mar-14	14-Apr-14	30-Apr-14
1107.12640	Engr's Site Accomodation- Final Approval of Building Plans	6	10-Jun-13	17-Jun-13	15-Mar-14	21-Mar-14	02-May-14	09-May-14
1107.12650	Engr's Site Accomodation- Construction Works- Footings	18	18-Jun-13	10-Sep-13	22-Mar-14	12-Apr-14	10-May-14	30-May-14
1107.12650a	Engr's Site Accomodation- Construction Works- Structural Works	18			14-Apr-14	09-May-14	31-May-14	21-Jun-14
Misc Items		146	02-Jan-14	30-Jun-14	04-Feb-14	30-Jun-14	31-Dec-13 A	30-Jun-14
1107.18980	Provision of Site General Staff (Drivers, Amahs, etc) - First Quarter of 2014	74	02-Jan-14	31-Mar-14	04-Feb-14	31-Mar-14	02-Jan-14 A	31-Mar-14
1107.18990	Provision of Site General Staff (Drivers, Amahs, etc) - Second Quarter of 2014	71	01-Apr-14	30-Jun-14	01-Apr-14	30-Jun-14	01-Apr-14	30-Jun-14
1107.19170	Provision of Site General Labour for Temporary Works - First Quarter of 2014	74	02-Jan-14	31-Mar-14	04-Feb-14	31-Mar-14	31-Dec-13 A	29-Mar-14
1107.19180	Provision of Site General Labour for Temporary Works - Second Quarter of 2014	71	01-Apr-14	30-Jun-14	01-Apr-14	30-Jun-14	31-Mar-14	28-Jun-14
Cost Centre B - Procurement of TBM		89	18-Dec-13	27-Apr-14	04-Feb-14	27-Apr-14	31-Jan-14 A	23-May-14
1107.12900	Commence TBM Delivery to Site	4	05-Mar-14	08-Mar-14	05-Mar-14	08-Mar-14	26-Apr-14	30-Apr-14
1107.12910	Completion of TBM Delivery	6	10-Mar-14	25-Mar-14	10-Mar-14	25-Mar-14	02-May-14	09-May-14



Data Date 01-Mar-14 Page 1 of 6 SCL1107 M-3MR-012 Printed 21-Mar-1409:36	**MTRC SCL 1107 Diamond Hill to Kai Tak Tunnels 3 Month Rolling Programme** **No 012 DD 1st MAR 2014**	Date	Revision	Checked	Approved
		See 2nd Col	0	KCL	KCL

Contract MP Baseline Bar ◆ Milestone
Last Month's Forecast ▼ Summary
Actual Work
Remaining Work
Critical Remaining Work

Activity ID	Activity Name	O Dur	MP Start	MP Finish	Last Mth Start	Last Mth Finish	Start	Finish
1107.12930	B2 Fabrication and factory tests of the TBM complete and delivery to site	0		27-Apr-14	27-Apr-14	27-Apr-14		27-Apr-14*
Pre-assembly		13			04-Feb-14	17-Feb-14	31-Jan-14 A	17-Feb-14 A
TBM		13			04-Feb-14	17-Feb-14	31-Jan-14 A	17-Feb-14 A
Intermediate Shield Installation		2			04-Feb-14	04-Feb-14	31-Jan-14 A	04-Feb-14 A
1107.19770	Left, Right & Top Section Installation	2			04-Feb-14	04-Feb-14	31-Jan-14 A	04-Feb-14 A
Coupling		13			04-Feb-14	17-Feb-14	31-Jan-14 A	17-Feb-14 A
1107.20480	FS & IS Coupling	2			04-Feb-14	04-Feb-14	31-Jan-14 A	04-Feb-14 A
1107.20490	Erector Coupling & Assembling	2			05-Feb-14	06-Feb-14	05-Feb-14 A	06-Feb-14 A
1107.20500	Screw Conveyor Installation	1			07-Feb-14	07-Feb-14	07-Feb-14 A	07-Feb-14 A
1107.20510	Tail Shield Installation	2			08-Feb-14	10-Feb-14	08-Feb-14 A	10-Feb-14 A
1107.20520	TS & IS Coupling	1			11-Feb-14	11-Feb-14	11-Feb-14 A	11-Feb-14 A
1107.20530	Cutterhead Welding	4			12-Feb-14	15-Feb-14	12-Feb-14 A	15-Feb-14 A
1107.20540	Cutterhead Coupling	1			17-Feb-14	17-Feb-14	17-Feb-14 A	17-Feb-14 A
1107.20550	TBM Walkway Installation	6			11-Feb-14	17-Feb-14	11-Feb-14 A	17-Feb-14 A
TBM & BU Connections		40			05-Feb-14	26-Feb-14	05-Feb-14 A	22-Mar-14
Hydraulic Connection		16			05-Feb-14	22-Feb-14	05-Feb-14 A	22-Feb-14 A
1107.20560	Main Thrust System Installation	4			05-Feb-14	08-Feb-14	05-Feb-14 A	08-Feb-14 A
1107.20570	Active Articulation System Installation	2			10-Feb-14	11-Feb-14	10-Feb-14 A	11-Feb-14 A
1107.20580	Passive Articulation System Installation	1			12-Feb-14	12-Feb-14	12-Feb-14 A	12-Feb-14 A
1107.20590	Cutting Wheel Drive System Installation	2			13-Feb-14	14-Feb-14	13-Feb-14 A	14-Feb-14 A
1107.20600	Piping	7			15-Feb-14	22-Feb-14	15-Feb-14 A	22-Feb-14 A
TBM/BU Electric System Connection		19			10-Feb-14	26-Feb-14	01-Mar-14	22-Mar-14
1107.20610	Main Thrust System Wiring	14			10-Feb-14	20-Feb-14	01-Mar-14	17-Mar-14
1107.20620	Active / Passive Articulation Wiring	2			21-Feb-14	22-Feb-14	18-Mar-14	19-Mar-14
1107.20630	Cutting Wheel Drive System Wiring	1			24-Feb-14	24-Feb-14	20-Mar-14	20-Mar-14
1107.20640	Electric Services Wiring	2			25-Feb-14	26-Feb-14	21-Mar-14	22-Mar-14
1107.20650	Erector & Segment Crane Vacumn Clamp Installation	2			24-Feb-14	25-Feb-14	01-Mar-14	03-Mar-14
1107.20660	VMT Installation	2			24-Feb-14	25-Feb-14	01-Mar-14	03-Mar-14
Test		66	18-Dec-13	01-Mar-14	26-Feb-14	25-Mar-14	01-Mar-14	23-May-14
1107.12870	TBM Acceptance Test	3	18-Dec-13	20-Dec-13	26-Feb-14	27-Feb-14	24-Mar-14	26-Mar-14
1107.12880	TBM Disassembly	20	21-Dec-13	13-Jan-14	03-Mar-14	25-Mar-14	27-Mar-14	23-Apr-14
1107.19390	Place order for Cutting Tools & Spare Parts	12	24-Jan-14	05-Feb-14			01-Mar-14	14-Mar-14
1107.19420	Manufacture of Cutting Tools and Spare Parts	48	25-Feb-14	01-Mar-14			15-Mar-14	16-May-14
1107.19930	Delivery of Cutting Tools and Spare Parts	6					17-May-14	23-May-14
Cost Centre C - Tunnel Construction by T		308	26-Jul-13	26-Jun-14	01-Feb-14	14-Jul-14	26-Jul-13 A	07-Aug-14
Site Enabling Works for TBM		288	26-Jul-13	26-Jun-14	01-Feb-14	14-Jul-14	26-Jul-13 A	15-Jul-14
Ground Treatment		288	26-Jul-13	26-Jun-14	01-Feb-14	26-Jun-14	26-Jul-13 A	15-Jul-14
Jet Grouting Treatment for KAT TBM Launch Shaft		83			04-Feb-14	14-Apr-14	17-Jan-14 A	30-Apr-14
1107.12990a	Launch Shaft Jet Grouting Stage 1 1st 3m (60nos)	12			04-Feb-14	18-Feb-14	17-Jan-14 A	30-Jan-14 A
1107.12990b	Launch Shaft Jet Grouting Stage 2 Next 7m (approx 127nos)	26			19-Feb-14	20-Mar-14	19-Feb-14 A	04-Apr-14
1107.12990b1	Demobilise	3			21-Mar-14	24-Mar-14	07-Apr-14	09-Apr-14
1107.12990b2	Curing of Grout	21			25-Mar-14	14-Apr-14	10-Apr-14	30-Apr-14
Jet Grouting Treatment for Cross Passage 3		133	17-Dec-13	30-Jan-14	01-Feb-14	25-Apr-14	31-Dec-13 A	14-Jun-14

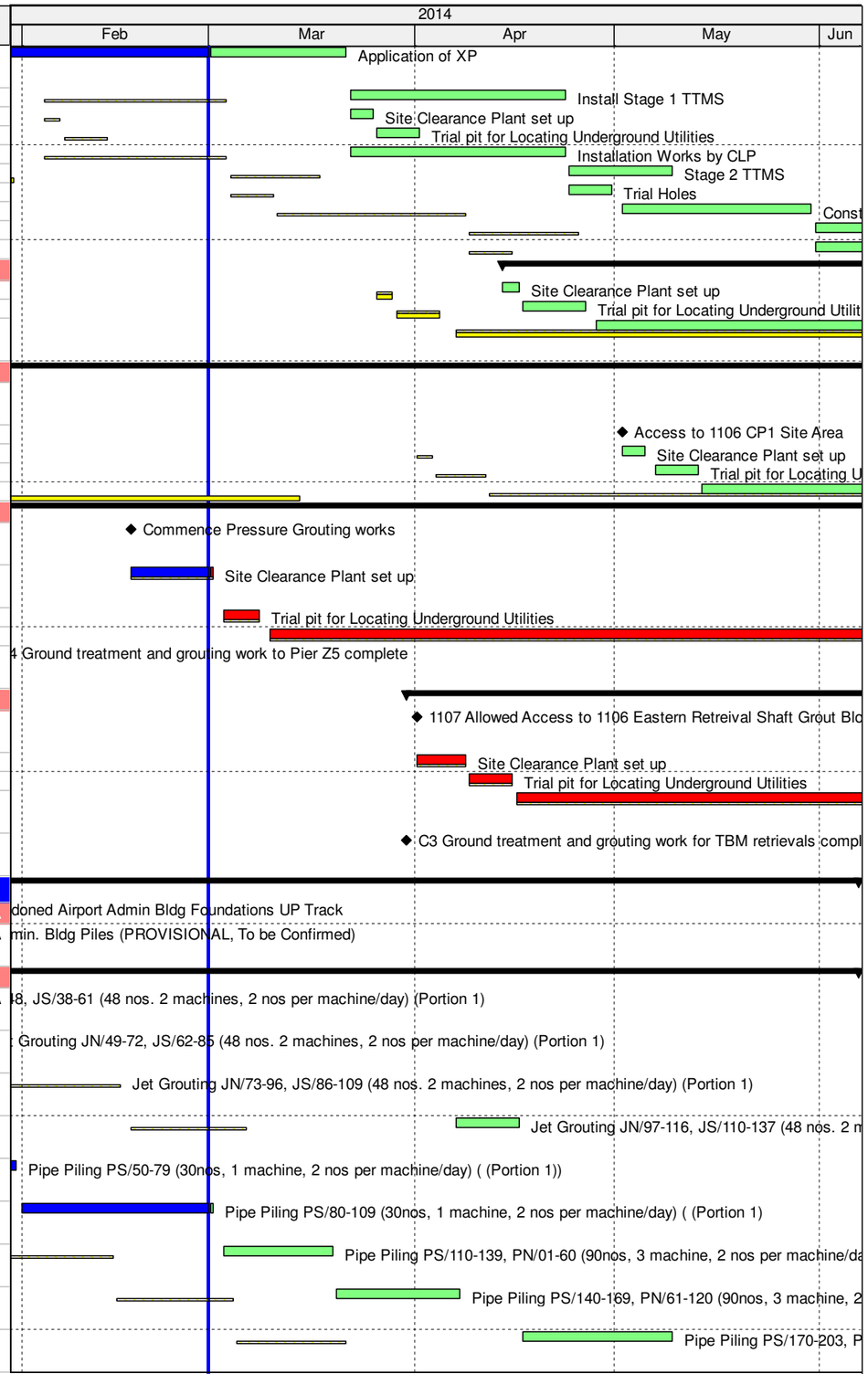
MTRC SCL 1107 Diamond Hill to Kai Tak Tunnels 3 Month Rolling Programme

No 012 DD 1st MAR 2014

Date	Revision	Checked	Approved
See 2nd Col	0	KCL	KCL

Contract MP Baseline Bar ◆ ◆ Milestone
Last Month's Forecast ▼ Summary
Actual Work
Remaining Work
Critical Remaining Work

Activity ID	Activity Name	O Dur	MP Start	MP Finish	Last Mth Start	Last Mth Finish	Start	Finish
1107.13040b	Application of XP	20			01-Feb-14	01-Feb-14	31-Dec-13 A	21-Mar-14
1107.13050	Install Stage 1 TTMS	24	17-Dec-13	23-Dec-13	04-Feb-14	03-Mar-14	22-Mar-14	23-Apr-14
1107.13060	Site Clearance Plant set up	3	24-Dec-13	28-Dec-13	04-Feb-14	06-Feb-14	22-Mar-14	25-Mar-14
1107.13070	Trial pit for Locating Underground Utilities	6	30-Dec-13	06-Jan-14	07-Feb-14	13-Feb-14	26-Mar-14	01-Apr-14
1107.13081	Installation Works by CLP	24			04-Feb-14	03-Mar-14	22-Mar-14	23-Apr-14
1107.13090	Stage 2 TTMS	12	30-Jan-14	30-Jan-14	04-Mar-14	17-Mar-14	24-Apr-14	09-May-14
1107.13091	Trial Holes	6			04-Mar-14	10-Mar-14	24-Apr-14	30-Apr-14
1107.13092	Construction of Temp Road	24			11-Mar-14	08-Apr-14	02-May-14	30-May-14
1107.13093	Stage 3 TTMS	12			09-Apr-14	25-Apr-14	31-May-14	14-Jun-14
1107.13094	Trial Holes	6			09-Apr-14	15-Apr-14	31-May-14	07-Jun-14
Jet Grouting Treatment for Cross Passage 2		73	26-Mar-14	26-Jun-14	26-Mar-14	26-Jun-14	14-Apr-14	15-Jul-14
1107.13170	Site Clearance Plant set up	3	26-Mar-14	28-Mar-14	26-Mar-14	28-Mar-14	14-Apr-14*	16-Apr-14
1107.13180	Trial pit for Locating Underground Utilities	6	29-Mar-14	04-Apr-14	29-Mar-14	04-Apr-14	17-Apr-14	26-Apr-14
1107.13190	Jet Grouting (144 nos incl of TBM Intervention) Average 2.25 Grout Columns per day	64	07-Apr-14	26-Jun-14	07-Apr-14	26-Jun-14	28-Apr-14	15-Jul-14
Jet Grouting Treatment for Cross Passage 1		282	26-Jul-13	14-Mar-14	01-Feb-14	11-Jun-14	26-Jul-13 A	08-Jul-14
1107.13239	Design of Grouting	72	26-Jul-13	21-Oct-13	01-Feb-14	01-Feb-14	26-Jul-13 A	21-Oct-13 A
1107.13239a	Access to 1106 CP1 Site Area	0			01-Apr-14	01-Apr-14	02-May-14*	
1107.13240	Site Clearance Plant set up	3	08-Jan-14	10-Jan-14	01-Apr-14	03-Apr-14	02-May-14	05-May-14
1107.13250	Trial pit for Locating Underground Utilities	6	11-Jan-14	17-Jan-14	04-Apr-14	11-Apr-14	07-May-14	13-May-14
1107.13260	Jet Grouting (104 nos) Average 2.25 Grout Columns	46	18-Jan-14	14-Mar-14	12-Apr-14	11-Jun-14	14-May-14	08-Jul-14
Pressure Grouting Treatment to Pier Z5 Foundation		108	16-Sep-13	26-Jan-14	01-Feb-14	11-Jun-14	26-Jan-14 A	11-Jun-14
1107.13300	Commence Pressure Grouting works	0	16-Sep-13		17-Feb-14	17-Feb-14	17-Feb-14 A	
1107.13310	Site Clearance Plant set up	12	16-Sep-13	30-Sep-13	17-Feb-14	01-Mar-14	17-Feb-14 A	01-Mar-14
1107.13320	Trial pit for Locating Underground Utilities	6	02-Oct-13	08-Oct-13	03-Mar-14	08-Mar-14	03-Mar-14	08-Mar-14
1107.13330	Pressure Grouting (148 nos) Average 2 Points per day	74	09-Oct-13	07-Jan-14	10-Mar-14	11-Jun-14	10-Mar-14*	11-Jun-14
1107.13334	F4 Ground treatment and grouting work to Pier Z5 complete	0		26-Jan-14	01-Feb-14	01-Feb-14		26-Jan-14 A
Pressure Grouting Treatment for DIH TBM Retrieval Shaft		58	09-Nov-13	30-Mar-14	30-Mar-14	13-Jun-14	30-Mar-14	13-Jun-14
1107.13390	1107 Allowed Access to 1106 Eastern Retreival Shaft Grout Block Work Area	0	09-Nov-13		01-Apr-14	01-Apr-14	01-Apr-14*	
1107.13410	Site Clearance Plant set up	6	09-Nov-13	15-Nov-13	01-Apr-14	08-Apr-14	01-Apr-14	08-Apr-14
1107.13420	Trial pit for Locating Underground Utilities	6	16-Nov-13	22-Nov-13	09-Apr-14	15-Apr-14	09-Apr-14	15-Apr-14
1107.13430	Pressure Grouting UP Track (181 nos) Average 4 Points/day with 2 machines	45	03-Dec-13	27-Jan-14	16-Apr-14	13-Jun-14	16-Apr-14	13-Jun-14
1107.13480	C3 Ground treatment and grouting work for TBM retrievals complete	0		30-Mar-14	30-Mar-14	30-Mar-14		30-Mar-14*
OPTION 3 - Obstruction Removal		206	09-Sep-13	05-Mar-14	01-Feb-14	14-Jul-14	24-Sep-13 A	06-Jun-14
Removal of Abandoned Airport Admin Bldg Foundations UP Track		78	09-Sep-13	11-Dec-13	01-Feb-14	01-Feb-14	24-Sep-13 A	27-Dec-13 A
1107.13510	Remove Abandoned Airport Admin. Bldg Piles (PROVISIONAL, To be Confirmed)	78	09-Sep-13	11-Dec-13	01-Feb-14	01-Feb-14	24-Sep-13 A	27-Dec-13 A
Removal of Abandoned Airport Admin Bldg Foundations DN Track		152			01-Feb-14	14-Jul-14	28-Nov-13 A	06-Jun-14
1107.19980	Jet Grouting JN/25-48, JS/38-61 (48 nos. 2 machines, 2 nos per machine/day) (Portion 1)	16			01-Feb-14	01-Feb-14	10-Dec-13 A	24-Dec-13 A
1107.19990	Jet Grouting JN/49-72, JS/62-85 (48 nos. 2 machines, 2 nos per machine/day) (Portion 1)	16			01-Feb-14	01-Feb-14	25-Dec-13 A	04-Jan-14 A
1107.20000	Jet Grouting JN/73-96, JS/86-109 (48 nos. 2 machines, 2 nos per machine/day) (Portion 1)	16			04-Feb-14	15-Feb-14	06-Jan-14 A	17-Jan-14 A
1107.20010	Jet Grouting JN/97-116, JS/110-137 (48 nos. 2 machines, 2 nos per machine/day) (Portion 2)	9			17-Feb-14	06-Mar-14	07-Apr-14	16-Apr-14
1107.20030	Pipe Piling PS/50-79 (30nos, 1 machine, 2 nos per machine/day) ((Portion 1))	15			01-Feb-14	01-Feb-14	02-Jan-14 A	31-Jan-14 A
1107.20040	Pipe Piling PS/80-109 (30nos, 1 machine, 2 nos per machine/day) ((Portion 1)	15			01-Feb-14	01-Feb-14	01-Feb-14 A	01-Mar-14
1107.20050	Pipe Piling PS/110-139, PN/01-60 (90nos, 3 machine, 2 nos per machine/day) (Portion 1)	15			04-Feb-14	14-Feb-14	03-Mar-14	19-Mar-14
1107.20051	Pipe Piling PS/140-169, PN/61-120 (90nos, 3 machine, 2 nos per machine/day) (Portion 1)	15			15-Feb-14	04-Mar-14	20-Mar-14	07-Apr-14
1107.20052	Pipe Piling PS/170-203, PN/121-170 (87nos, 3 machine, 2 nos per machine/day) (Portion 2)	15			05-Mar-14	21-Mar-14	17-Apr-14	09-May-14



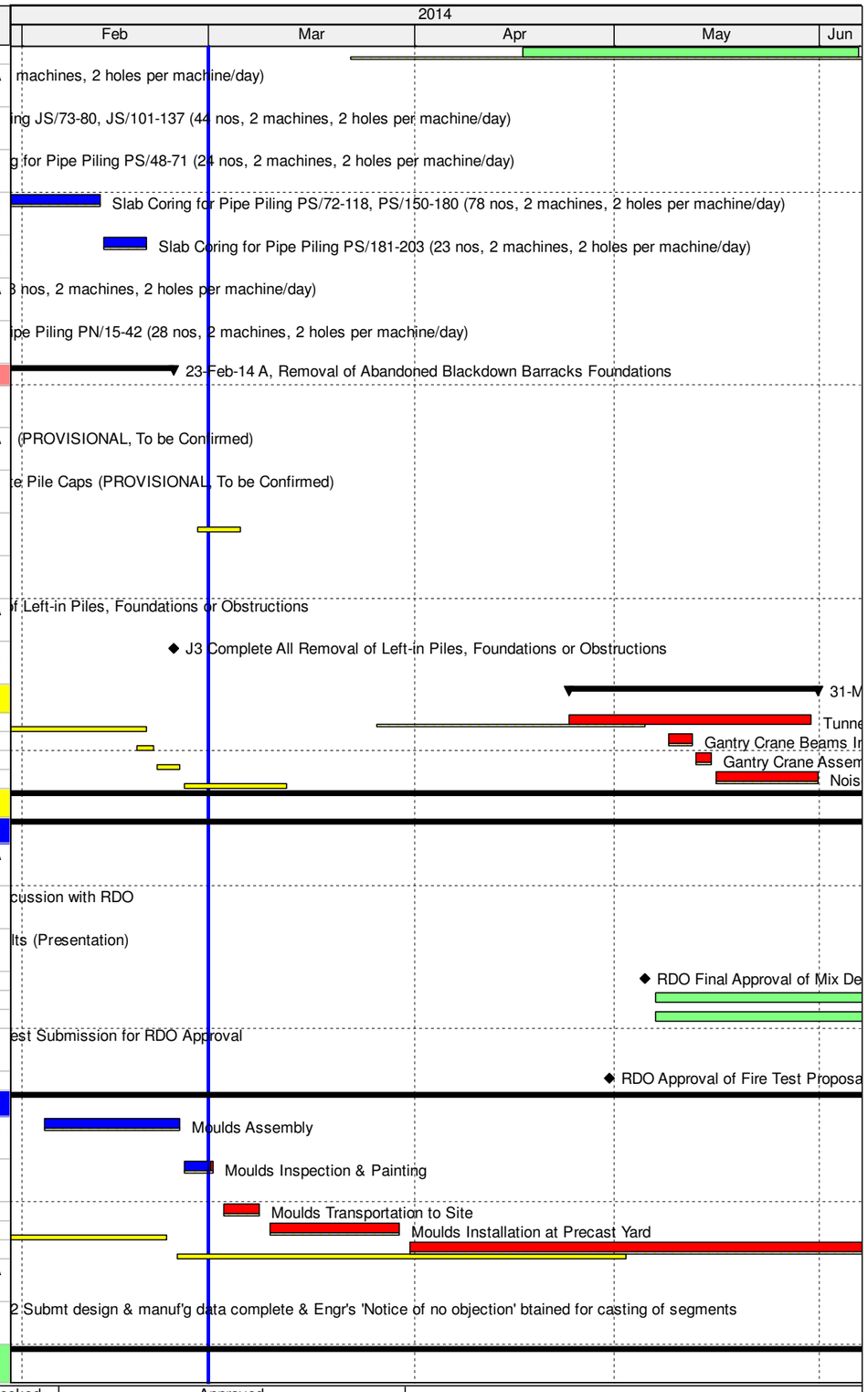
MTRC SCL 1107 Diamond Hill to Kai Tak Tunnels 3 Month Rolling Programme

No 012 DD 1st MAR 2014

Date	Revision	Checked	Approved
See 2nd Col	0	KCL	KCL

Contract MP Baseline Bar ◆ Milestone
Last Month's Forecast Summary
Actual Work
Remaining Work
Critical Remaining Work

Activity ID	Activity Name	O Dur	MP Start	MP Finish	Last Mth Start	Last Mth Finish	Start	Finish
1107.20060	ELS to Locate Foundations (Portion 1)	38			22-Mar-14	14-Jul-14	17-Apr-14	06-Jun-14
1107.20350	Slab Coring for Jet Grouting JS/33-72 (35 nos, 2 machines, 2 holes per machine/day)	10			01-Feb-14	01-Feb-14	28-Nov-13 A	09-Dec-13 A
1107.20360	Slab Coring for Jet Grouting JS/73-80, JS/101-137 (44 nos, 2 machines, 2 holes per machine/day)	11			01-Feb-14	01-Feb-14	18-Dec-13 A	02-Jan-14 A
1107.20370	Slab Coring for Pipe Piling PS/48-71 (24 nos, 2 machines, 2 holes per machine/day)	6			01-Feb-14	01-Feb-14	11-Jan-14 A	17-Jan-14 A
1107.20380	Slab Coring for Pipe Piling PS/72-118, PS/150-180 (78 nos, 2 machines, 2 holes per machine/day)	20			04-Feb-14	12-Feb-14	18-Jan-14 A	12-Feb-14 A
1107.20390	Slab Coring for Pipe Piling PS/181-203 (23 nos, 2 machines, 2 holes per machine/day)	6			13-Feb-14	19-Feb-14	13-Feb-14 A	19-Feb-14 A
1107.20400	Slab Coring for Jet Grouting JN/11-28 (18 nos, 2 machines, 2 holes per machine/day)	5			01-Feb-14	01-Feb-14	12-Dec-13 A	17-Dec-13 A
1107.20410	Slab Coring for Pipe Piling PN/15-42 (28 nos, 2 machines, 2 holes per machine/day)	7			01-Feb-14	01-Feb-14	03-Jan-14 A	10-Jan-14 A
Removal of Abandoned Blackdown Barracks Foundations		114	17-Sep-13	05-Mar-14	01-Feb-14	16-Jun-14	21-Oct-13 A	23-Feb-14 A
1107.13780	Site Setup of Foundation Removal Plant (PROVISIONAL, To be Confirmed)	6	17-Sep-13	24-Sep-13	01-Feb-14	01-Feb-14	21-Oct-13 A	26-Oct-13 A
1107.13790	Trial Pit to Locate Foundations (PROVISIONAL, To be Confirmed)	12	25-Sep-13	09-Oct-13	01-Feb-14	01-Feb-14	02-Dec-13 A	28-Dec-13 A
1107.13800	Trial Coring to locate Pile Caps (PROVISIONAL, To be Confirmed)	18	10-Oct-13	31-Oct-13	04-Feb-14	08-Feb-14	16-Dec-13 A	08-Jan-14 A
1107.13830	Reinstatement of Area (PROVISIONAL, To be Confirmed)	6	27-Feb-14	05-Mar-14	10-Jun-14	16-Jun-14	09-Jan-14 A	11-Jan-14 A
1107.MS10940	J1 Complete 30% Removal of Left-in Piles, Foundations or Obstructions	0		27-Oct-13	01-Feb-14	01-Feb-14		27-Oct-13 A
1107.MS10950	J2 Complete 60% Removal of Left-in Piles, Foundations or Obstructions	0		29-Dec-13	01-Feb-14	01-Feb-14		29-Dec-13 A
1107.MS10960	J3 Complete All Removal of Left-in Piles, Foundations or Obstructions	0		23-Feb-14	23-Feb-14	23-Feb-14		23-Feb-14 A
Mobilisation of TBM		31	14-Jan-14	12-Mar-14	26-Mar-14	31-May-14	24-Apr-14	31-May-14
1107.13850	Tunnel Facilities Installation at External Yard	30	14-Jan-14	19-Feb-14	26-Mar-14	05-May-14	24-Apr-14	30-May-14
1107.13860	Gantry Crane Beams Installation	3	18-Feb-14	20-Feb-14	09-May-14	12-May-14	09-May-14	12-May-14
1107.13870	Gantry Crane Assembly	3	21-Feb-14	24-Feb-14	13-May-14	15-May-14	13-May-14	15-May-14
1107.13880	Noise Enclosure - Frame Partial Installation (Dn Track)	14	25-Feb-14	12-Mar-14	16-May-14	31-May-14	16-May-14	31-May-14
Production of Pre - Cast Tunnel Lining		282	25-Aug-13	02-May-14	01-Feb-14	09-Jun-14	25-Aug-13 A	07-Aug-14
Procurement of SFRC Fibres		201			01-Feb-14	01-Feb-14	02-Dec-13 A	07-Aug-14
1107.20090	BEAM Tests	7			01-Feb-14	01-Feb-14	20-Dec-13 A	30-Dec-13 A
1107.20100	Technical Paper Discussion with RDO	29			01-Feb-14	01-Feb-14	02-Dec-13 A	07-Jan-14 A
1107.20110	BEAM Test Results (Presentation)	4			01-Feb-14	01-Feb-14	07-Jan-14 A	10-Jan-14 A
1107.20110a	RDO Final Approval of Mix Design on Beam Test Trial	0						05-May-14*
1107.20110b	Concrete Durability Test	78					07-May-14	07-Aug-14
1107.20110c	Formal Beam Test Commencement in line of RDO Approval	51					07-May-14	07-Jul-14
1107.20110d	Fire Test Submission for RDO Approval	7					15-Jan-14 A	22-Jan-14 A
1107.20110e	RDO Approval of Fire Test Proposal	0					30-Apr-14*	
Production of Segments		232	25-Aug-13	02-May-14	01-Feb-14	09-Jun-14	25-Aug-13 A	09-Jun-14
1107.14683	Moulds Assembly	18	29-Oct-13	25-Nov-13	04-Feb-14	24-Feb-14	04-Feb-14 A	24-Feb-14 A
1107.14684	Moulds Inspection & Painting	5	26-Nov-13	16-Dec-13	25-Feb-14	01-Mar-14	25-Feb-14 A	01-Mar-14
1107.14690	Moulds Transportation to Site	6	17-Dec-13	16-Jan-14	03-Mar-14	08-Mar-14	03-Mar-14	08-Mar-14
1107.14700	Moulds Installation at Precast Yard	18	17-Jan-14	22-Feb-14	10-Mar-14	29-Mar-14	10-Mar-14	29-Mar-14
1107.14710	First 10% of Segment Production (Culmalative 10%) (RC)	54	24-Feb-14	02-May-14	31-Mar-14	09-Jun-14	31-Mar-14	09-Jun-14
1107.14760	C1 Submit design and manuf'g data complete & Engr's 'notice of no objection' obtained for mould manufacture	0		25-Aug-13	01-Feb-14	01-Feb-14		25-Aug-13 A
1107.14770	C2 Submt design & manuf'g data complete & Engr's 'Notice of no objection' btained for casting of segments	0		26-Jan-14	01-Feb-14	01-Feb-14		26-Jan-14 A
Cost Centre D - KAT Cut & Cover Tunnels		177	04-Oct-13	09-Jun-14	01-Feb-14	09-Jun-14	01-Nov-13 A	09-Jun-14



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Activity ID	Activity Name	O Dur	MP Start	MP Finish	Last Mth Start	Last Mth Finish	Start	Finish
Diaphragm Walls		97	04-Oct-13	09-Nov-13	01-Feb-14	08-Mar-14	06-Jan-14 A	04-Jun-14
TBM Launch Shafts		97	04-Oct-13	09-Nov-13	01-Feb-14	08-Mar-14	06-Jan-14 A	04-Jun-14
Temporary Muck Pit		97	04-Oct-13	09-Nov-13	01-Feb-14	08-Mar-14	06-Jan-14 A	04-Jun-14
1107.19430	Sheet Pile Installation for Muck Pit Temp Cofferdam 450m2@50m2/d	9	04-Oct-13	15-Oct-13	01-Feb-14	01-Feb-14	06-Jan-14 A	16-Jan-14 A
1107.19440	Install Strut S1	3	16-Oct-13	18-Oct-13	12-Feb-14	14-Feb-14	09-May-14	12-May-14
1107.19450	Excavate to Strut S2 Level	5	19-Oct-13	24-Oct-13	15-Feb-14	20-Feb-14	13-May-14	17-May-14
1107.19460	Install Strut S2	6	25-Oct-13	31-Oct-13	21-Feb-14	27-Feb-14	19-May-14	24-May-14
1107.19470	Excavate to Foundation Level	5	01-Nov-13	06-Nov-13	28-Feb-14	05-Mar-14	26-May-14	30-May-14
1107.19480	Muck Pit Base Slab	3	07-Nov-13	09-Nov-13	06-Mar-14	08-Mar-14	31-May-14	04-Jun-14
Sheet Piling		158	09-Oct-13	16-May-14	01-Feb-14	16-May-14	01-Nov-13 A	16-May-14
1107.15880	Sheet Pile Installation inside Nullah Foorprint Strech SC (18m)	18	24-Apr-14	16-May-14	24-Apr-14	16-May-14	24-Apr-14	16-May-14
1107.15881	Sheet Pile Installation inside Nullah Foorprint Strech NC (18m)	18	24-Apr-14	16-May-14	24-Apr-14	16-May-14	24-Apr-14	16-May-14
1107.15890	King Posts Installation for Diversion Bridge	27	09-Oct-13	09-Nov-13	01-Feb-14	01-Feb-14	01-Nov-13 A	02-Dec-13 A
1107.15900	King Posts Installation for ELS	48	11-Nov-13	22-Jan-14	04-Feb-14	31-Mar-14	01-Mar-14	30-Apr-14
Pump Tests		79	23-Jan-14	09-Jun-14	01-Apr-14	09-Jun-14	01-Mar-14	09-Jun-14
C & C Tunnels		79	23-Jan-14	09-Jun-14	01-Apr-14	09-Jun-14	01-Mar-14	09-Jun-14
1107.15970	Install Groundwater pumps 4 nos	14	23-Jan-14	17-Feb-14	01-Apr-14	17-Apr-14	01-Mar-14	17-Mar-14
1107.15980	Install Groundwater Monitoring Points 4 nos	16	18-Feb-14	07-Mar-14	22-Apr-14	12-May-14	18-Mar-14	04-Apr-14
1107.15990	Pump Test - First Drawdown	6	17-May-14	23-May-14	17-May-14	23-May-14	17-May-14	23-May-14
1107.16000	Pump Test - Remedial Grouting (if required)	5	24-May-14	29-May-14	24-May-14	29-May-14	24-May-14	29-May-14
1107.16010	Pump Test - 2nd Drawdown	8	30-May-14	09-Jun-14	30-May-14	09-Jun-14	30-May-14	09-Jun-14
Excavation & C&C Tunnel Structure		171	25-Nov-13	12-Mar-14	01-Feb-14	31-May-14	01-Nov-13 A	31-May-14
Launch Shafts - Pre- TBM Works		171	25-Nov-13	12-Mar-14	01-Feb-14	31-May-14	01-Nov-13 A	31-May-14
1107.16040	Install Strut S1	18	25-Nov-13	30-Nov-13	01-Feb-14	01-Feb-14	04-Jan-14 A	24-Jan-14 A
1107.16050	Excavate to Strut S2 Level	11	02-Dec-13	13-Dec-13	04-Feb-14	11-Feb-14	31-Jan-14 A	14-Feb-14 A
1107.16060	Install Strut S2	18	14-Dec-13	20-Dec-13	12-Feb-14	04-Mar-14	12-Feb-14 A	10-Mar-14
1107.16070	Excavate to Strut S3 Level	7	21-Dec-13	04-Jan-14	05-Mar-14	15-Mar-14	11-Mar-14	18-Mar-14
1107.16080	Install Strut S3	11	06-Jan-14	11-Jan-14	17-Mar-14	28-Mar-14	19-Mar-14	31-Mar-14
1107.16090	Excavate to Strut S4 Level	12	13-Jan-14	28-Jan-14	29-Mar-14	15-Apr-14	01-Apr-14	15-Apr-14
1107.16100	Install Strut S4	7	29-Jan-14	07-Feb-14	16-Apr-14	26-Apr-14	16-Apr-14	26-Apr-14
1107.16110	Excavate to Formation Level	8	08-Feb-14	17-Feb-14	28-Apr-14	08-May-14	28-Apr-14	08-May-14
1107.16120	Temp TBM Launch Shaft Slab Panel 1	6	18-Feb-14	24-Feb-14	09-May-14	15-May-14	09-May-14	15-May-14
1107.16130	Temp TBM Launch Shaft Slab Panel 2	6	25-Feb-14	03-Mar-14	16-May-14	22-May-14	16-May-14	22-May-14
1107.16140	Remove Strut S4	4	04-Mar-14	07-Mar-14	23-May-14	27-May-14	23-May-14	27-May-14
1107.16150	Remove Strut S3, Launch Shaft Up (& Dn) Track Ready for TBM Assembly	4	08-Mar-14	12-Mar-14	28-May-14	31-May-14	28-May-14	31-May-14
1107.17310	Fabrication of ELS- Shop Drawings	20			01-Feb-14	01-Feb-14	01-Nov-13 A	30-Nov-13 A
1107.19530	Fabrication of ELS- Level S1	24			01-Feb-14	01-Feb-14	02-Dec-13 A	31-Dec-13 A
1107.19540	Fabrication of ELS- Level S2	24			04-Feb-14	26-Feb-14	13-Jan-14 A	11-Feb-14 A
1107.19550	Fabrication of ELS- Level S3	21			27-Feb-14	22-Mar-14	27-Feb-14 A	22-Mar-14
1107.19560	Fabrication of ELS- Level S4	21			24-Mar-14	17-Apr-14	24-Mar-14	17-Apr-14
Cost Centre F3 - Utilities Protection / Div		140			01-Feb-14	10-May-14	16-Dec-13 A	10-Jun-14
Diversion/ Replacement of WaterMains at Choi Hung F		140			01-Feb-14	10-May-14	16-Dec-13 A	10-Jun-14
Trial Holes and Pipe Installation		140			01-Feb-14	10-May-14	16-Dec-13 A	10-Jun-14
1107.20240	TP10 Outside Lane of Roundabout (N)	37			01-Feb-14	01-Feb-14	16-Dec-13 A	30-Jan-14 A
1107.20250	TP09 Lane 2 (25m - 24hrs)	37			04-Feb-14	18-Mar-14	04-Feb-14 A	17-Apr-14
1107.20260	TP08 Lane 2 (21m)	40			19-Mar-14	10-May-14	22-Apr-14	10-Jun-14
Cost Centre G CEDD Entrusted Works		144	13-Nov-13	06-Jun-14	01-Feb-14	06-Jun-14	11-Dec-13 A	10-Jun-14
New Reprovisioned Culvert		18	16-May-14	06-Jun-14	16-May-14	06-Jun-14	20-May-14	10-Jun-14

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Contract MP Baseline Bar ◆ ◆ Milestone
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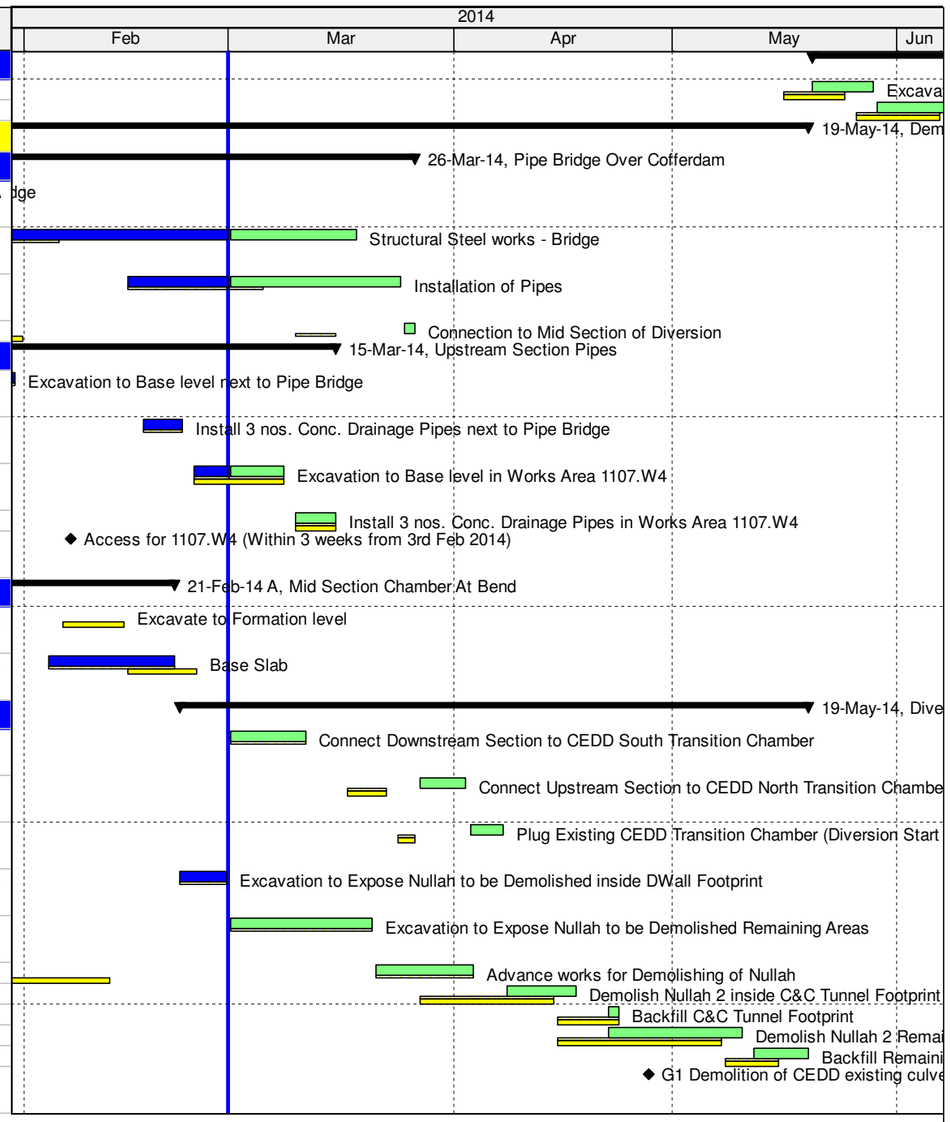
Activity ID	Activity Name	O Dur	MP Start	MP Finish	Last Mth Start	Last Mth Finish	Start	Finish
North Section of Culvert		18	16-May-14	06-Jun-14	16-May-14	06-Jun-14	20-May-14	10-Jun-14
1107.18290	Excavation for North Section of New Culvert	8	16-May-14	24-May-14	16-May-14	24-May-14	20-May-14	28-May-14
1107.18300	Bay 4 Sub base, Blinding & Base Slab	10	26-May-14	06-Jun-14	26-May-14	06-Jun-14	29-May-14	10-Jun-14
Demolition & Diversion of Nullah 2		126	13-Nov-13	15-May-14	01-Feb-14	15-May-14	11-Dec-13 A	19-May-14
Pipe Bridge Over Cofferdam		86	13-Nov-13	31-Jan-14	04-Feb-14	15-Mar-14	11-Dec-13 A	26-Mar-14
1107.17830	Pile Caps for Diversion Bridge	16	13-Nov-13	03-Dec-13	04-Feb-14	22-Feb-14	11-Dec-13 A	31-Dec-13 A
1107.17840	Structural Steel works - Bridge	16	04-Dec-13	24-Dec-13	04-Feb-14	08-Mar-14	16-Jan-14 A	18-Mar-14
1107.17850	Installation of Pipes	16	27-Dec-13	17-Jan-14	15-Feb-14	05-Mar-14	15-Feb-14 A	24-Mar-14
1107.17860	Connection to Mid Section of Diversion	2	18-Jan-14	31-Jan-14	10-Mar-14	15-Mar-14	25-Mar-14	26-Mar-14
Upstream Section Pipes		61	09-Dec-13	15-Mar-14	04-Feb-14	15-Mar-14	02-Jan-14 A	15-Mar-14
1107.17920	Excavation to Base level next to Pipe Bridge	25	09-Dec-13	09-Jan-14	04-Feb-14	15-Feb-14	02-Jan-14 A	30-Jan-14 A
1107.17930	Install 3 nos. Conc. Drainage Pipes next to Pipe Bridge	6	10-Jan-14	20-Jan-14	17-Feb-14	22-Feb-14	17-Feb-14 A	22-Feb-14 A
1107.17940	Excavation to Base level in Works Area 1107.W4	12	24-Feb-14	08-Mar-14	24-Feb-14	08-Mar-14	24-Feb-14 A	08-Mar-14
1107.17950	Install 3 nos. Conc. Drainage Pipes in Works Area 1107.W4	6	10-Mar-14	15-Mar-14	10-Mar-14	15-Mar-14	10-Mar-14	15-Mar-14
1107.17960	Access for 1107.W4 (Within 3 weeks from 3rd Feb 2014)	0	24-Feb-14		07-Feb-14	07-Feb-14	07-Feb-14 A	
Mid Section Chamber At Bend		32	06-Feb-14	24-Feb-14	01-Feb-14	21-Feb-14	14-Jan-14 A	21-Feb-14 A
1107.19400	Excavate to Formation level	12	06-Feb-14	14-Feb-14	01-Feb-14	01-Feb-14	14-Jan-14 A	27-Jan-14 A
1107.19410	Base Slab	16	15-Feb-14	24-Feb-14	04-Feb-14	21-Feb-14	04-Feb-14 A	21-Feb-14 A
Diversion & Demolition of Existing Nullah 2		68	09-Dec-13	15-May-14	22-Feb-14	15-May-14	22-Feb-14 A	19-May-14
1107.17990	Connect Downstream Section to CEDD South Transition Chamber	9	09-Dec-13	14-Dec-13	01-Mar-14	11-Mar-14	01-Mar-14	11-Mar-14
1107.18000	Connect Upstream Section to CEDD North Transition Chamber	6	17-Mar-14	22-Mar-14	17-Mar-14	22-Mar-14	27-Mar-14	02-Apr-14
1107.18010	Plug Existing CEDD Transition Chamber (Diversion Start Functioning)	3	24-Mar-14	26-Mar-14	24-Mar-14	26-Mar-14	03-Apr-14	07-Apr-14
1107.18020	Excavation to Expose Nullah to be Demolished inside DWall Footprint	6	16-Dec-13	07-Jan-14	22-Feb-14	28-Feb-14	22-Feb-14 A	28-Feb-14 A
1107.18030	Excavation to Expose Nullah to be Demolished Remaining Areas	17	08-Jan-14	27-Jan-14	01-Mar-14	20-Mar-14	01-Mar-14	20-Mar-14
1107.18040	Advance works for Demolishing of Nullah	12	28-Jan-14	12-Feb-14	21-Mar-14	03-Apr-14	21-Mar-14	03-Apr-14
1107.18050	Demolish Nullah 2 inside C&C Tunnel Footprint	9	27-Mar-14	14-Apr-14	27-Mar-14	14-Apr-14	08-Apr-14	17-Apr-14
1107.18060	Backfill C&C Tunnel Footprint	2	15-Apr-14	23-Apr-14	15-Apr-14	23-Apr-14	22-Apr-14	23-Apr-14
1107.18070	Demolish Nullah 2 Remaining Areas	15	15-Apr-14	07-May-14	15-Apr-14	07-May-14	22-Apr-14	10-May-14
1107.18080	Backfill Remaining Areas	7	08-May-14	15-May-14	08-May-14	15-May-14	12-May-14	19-May-14
1107.18090	G1 Demolition of CEDD existing culvert complete and ready for remaining (Sheetpile Cofferdam) Installation	0		27-Apr-14	27-Apr-14	27-Apr-14		27-Apr-14*



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Critical Remaining Work

APPENDIX B
ACTION AND LIMIT LEVELS

APPENDIX B – Action and Limit Levels

24-Hour TSP

Regular Dust Monitoring Location	Description	Action Level, µg/m^3	Limit Level, µg/m^3
DMS-4[(1)(3)]/ DMS-3[(2)(3)]	Block 1, Rhythm Garden	160.4	260

Note:
(1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) Dust monitoring on DMS-3[(1)]/DMS-4[(2)] is carried out by Environmental Team of SCL Works Contract 1106.

Construction Noise

Regular Construction Noise Monitoring Location[(1)]	Description	Time Period	Action Level	Limit Level
NMS-CA-4[(1)(5)]/ NMS-CA-3[(2)(5)]	Block 1, Rhythm Garden (north-eastern façade)	0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A)
NMS-CA-5[(1)(3)(5)]/ NMS-CA-2[(2)(3)(5)]	Block 1, Rhythm Garden (northern façade)			65 / 70 dB(A)[(4)]

Note:
(1) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) Access to the monitoring location at Canossa Primary School (San Po Kong) (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Block 1, Rhythm Garden (northern façade)) was proposed and approved by the ER and agreed by the IEC and EPD.
(4) Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period.
(5) Noise monitoring on Block 1, Rhythm Garden are carried out by Environmental Team of SCL Works Contract 1106.

APPENDIX C
CALIBRATION CERTIFICATES FOR MONITORING EQUIPEMENT

CINOTECH

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA12051/57/0007

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

Date: 3-Mar-14 Next Due Date: 2-May-14

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

Ambient Condition			
Temperature, Ta (K)	289	Pressure, Pa (mmHg)	766

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0588	Intercept, bc	-0.0461
Last Calibration Date:	30-Sep-13	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	29-Sep-14	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

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	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.3	3.43	59.07	7.2	2.74
2	8.5	2.97	51.33	5.4	2.37
3	7.5	2.79	48.27	4.8	2.23
4	4.1	2.06	35.89	2.7	1.68
5	3.1	1.79	31.31	1.9	1.41

By Linear Regression of Y on X

Slope , mw = 0.0472 **Intercept, bw =** -0.0471

Correlation coefficient* = 0.9993

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.78**

Remarks:

Conducted by: Wk Tang Signature: Kwan Date: 3/3/14

Checked by: Hr Signature: Date: 3 March 2014

WELLAB 匯力
Testing & Research

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

TEST REPORT

Description	Calibration Orifice	**Manufacturer**	TISCH
Serial No.	0993	**Temperature,Ta (K)**	300.8
Model No.	TE-5025A	**Pressure, Pa (mmHg)**	759.3
Date	30 September 2013	**Equipment No.:**	A-04-04

Plate	Diff.Vol (m^3)	Diff.Time (min)	Diff.Hg (mm)	Diff.H_2O (in.)
1	1.00	1.4103	3.4	2.00
2	1.00	0.9980	6.8	4.00
3	1.00	0.8970	8.5	5.00
4	1.00	0.8540	9.4	5.50
5	1.00	0.7060	13.6	8.00

DATA TABULATION

Vstd	(X axis) Qstd	(Y axis)
0.9853	0.6986	1.4069
0.9808	0.9828	1.9897
0.9786	1.0910	2.2245
0.9775	1.1446	2.3331
0.9720	1.3768	2.8138

Y axis= SQRT[H_2O(Pa/760)(298/Ta)]

Qstd Slope (m) = 2.07768
Intercept (b) = -0.04613
Coefficient (r) = 0.99997

Va	(X axis) Qa	(Y axis)
0.9955	0.7059	0.8901
0.9910	0.9930	1.2589
0.9888	1.1023	1.4074
0.9876	1.1565	1.4761
0.9821	1.3911	1.7803

Y axis= SQRT[H_2O(Ta/Pa)]

Qa Slope (m) = 1.30101
Intercept (b) = -0.02919
Coefficient (r) = 0.99997

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(H_2O(Pa/760)(298/Ta))]-b}
Qa=1/m{[SQRT H_2O(Ta/Pa)]-b}

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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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/140104
Date of Issue:	2014-01-05
Date Received:	2014-01-04
Date Tested:	2014-01-04
Date Completed:	2014-01-05
Next Due Date:	2015-01-04

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.	: 14303
Microphone No.	: 35222
Equipment No.	: N-08-05

Test conditions:

Room Temperatre	: 19 degree Celsius
Relative Humidity	: 52%

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

Remark: 1)This report supersedes the one dated 2012/01/21 with certificate number C/N/120120/1.

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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

TEST REPORT

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

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

Test Report No.:	C/N/130830/2
Date of Issue:	2013-08-31
Date Received:	2013-08-30
Date Tested:	2013-08-30
Date Completed:	2013-08-31
Next Due Date:	2014-08-30
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	: 21 degree Celsius
Relative Humidity	: 69%

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

TEST REPORT

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

Test Report No.:	C/N/130919/3
Date of Issue:	2013-09-21
Date Received:	2013-09-19
Date Tested:	2013-09-21
Date Completed:	2013-09-21
Next Due Date:	2014-09-20

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

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 10929
Equipment No.	: N-09-01

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 57%

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
PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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

TEST REPORT

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

Test Report No.:	C/N/131004/1
Date of Issue:	2013-10-05
Date Received:	2013-10-04
Date Tested:	2013-10-04
Date Completed:	2013-10-05
Next Due Date:	2014-10-04
Page:	1 of 1

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

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	: 57%

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

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

TEST REPORT

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

Test Report No.:	C/N/130830/4-v1
Date of Issue:	2014-03-07
Date Received:	2013-08-30
Date Tested:	2013-08-30
Date Completed:	2013-08-31
Next Due Date:	2014-08-30

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

Item for calibration:

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

Test conditions:

Room Temperatre	: 20 degree Celsius
Relative Humidity	: 64%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

APPENDIX D
IMPACT MONITORING SCHEDULE

Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels
Impact Air Quality and Noise Monitoring Schedule for March 2014

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

Air Quality Monitoring Station

DMS-4: - Rhythm Garden, Block 1

Noise Monitoring Station

NMS-CA-4: - Block 1, Rhythm Garden (north-eastern façade)
NMS-CA-5: - Block 1, Rhythm Garden (northern façade)

Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels
Tentative Impact Air Quality and Noise Monitoring Schedule for April 2014

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

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

Air Quality Monitoring Station

DMS-4: - Rhythm Garden, Block 1

Noise Monitoring Station

NMS-CA-4: - Block 1, Rhythm Garden (north-eastern façade)
NMS-CA-5: - Block 1, Rhythm Garden (northern façade)

APPENDIX E
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONIS

Appendix E - 24-hour TSP Monitoring Results

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

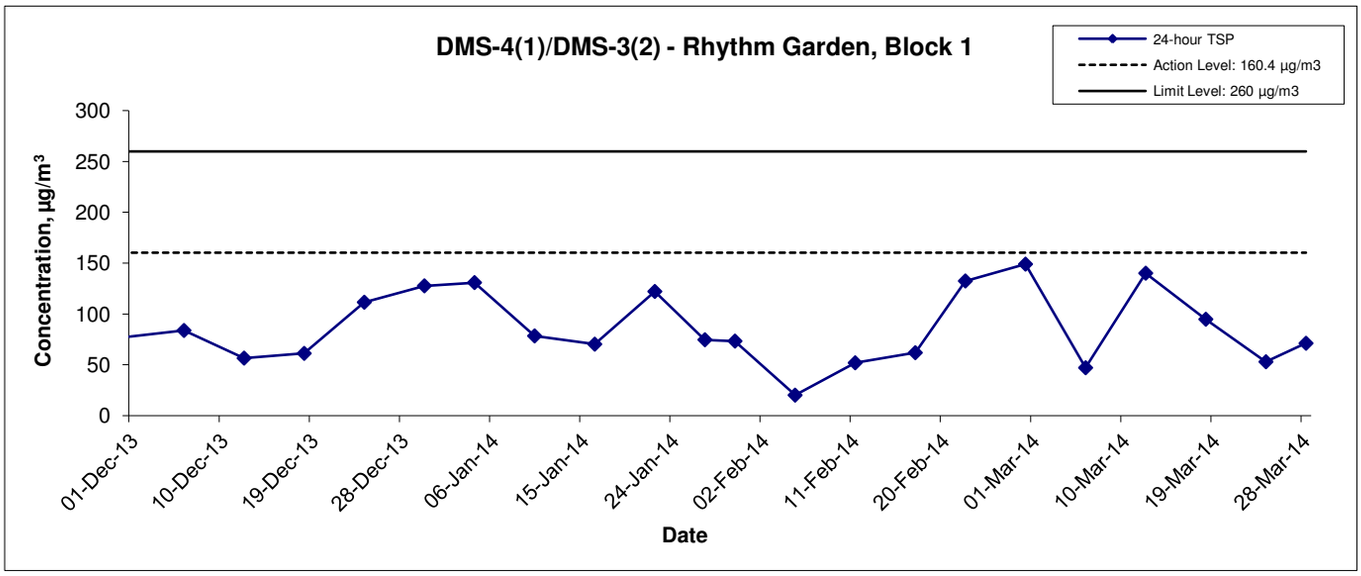
Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (µg/m^3)
					Initial	Final		Initial	Final		Initial	Final			
6-Mar-14	09:00	Cloudy	288.3	767.2	3.8819	3.9656	0.0837	2335.6	2359.6	24.0	1.23	1.23	1.23	1776.7	47.1
12-Mar-14	09:00	Cloudy	290.1	764.8	3.7472	3.9927	0.2455	2359.6	2383.6	24.0	1.22	1.22	1.22	1752.0	140.1
18-Mar-14	09:00	Sunny	292.3	766.7	3.7522	3.9179	0.1657	2383.6	2407.6	24.0	1.21	1.21	1.21	1747.5	94.8
24-Mar-14	09:00	Sunny	292.6	768.8	3.7296	3.8223	0.0927	2407.6	2431.6	24.0	1.21	1.21	1.21	1749.0	53.0
28-Mar-14	09:00	Cloudy	294.6	762.6	3.6695	3.7931	0.1236	2431.6	2455.6	24.0	1.21	1.21	1.21	1736.2	71.2
														Min	47.1
														Max	140.1
														Average	81.2

Remarks:

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

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

24-hour TSP Concentration Levels



Remarks:

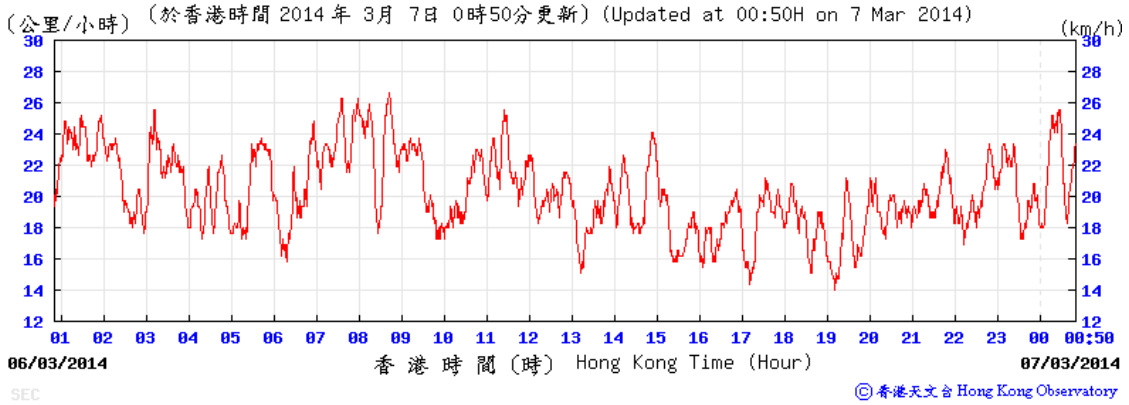
(1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

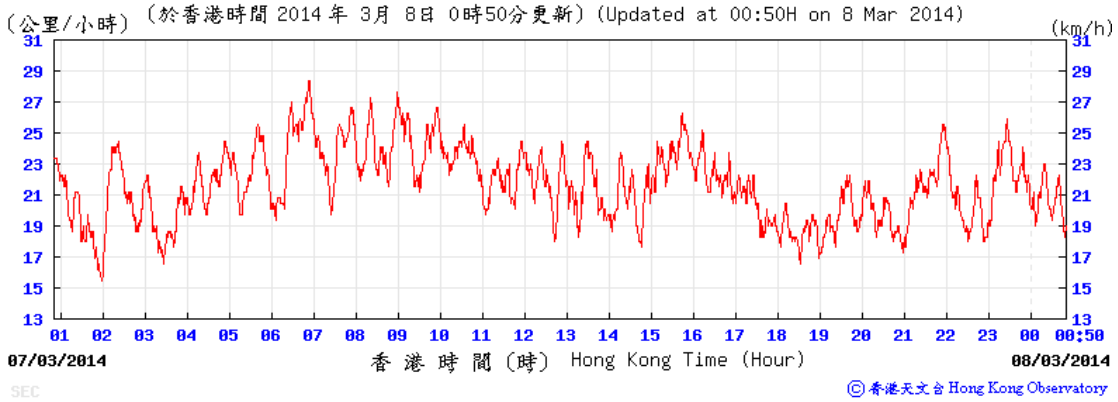
(2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

Title	Scale	Project No.	
Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels Graphical Presentation of 24-hour TSP Monitoring Results	N.T.S	MA13018	CINOTECH
	Date: Mar 14	Appendix: E	

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

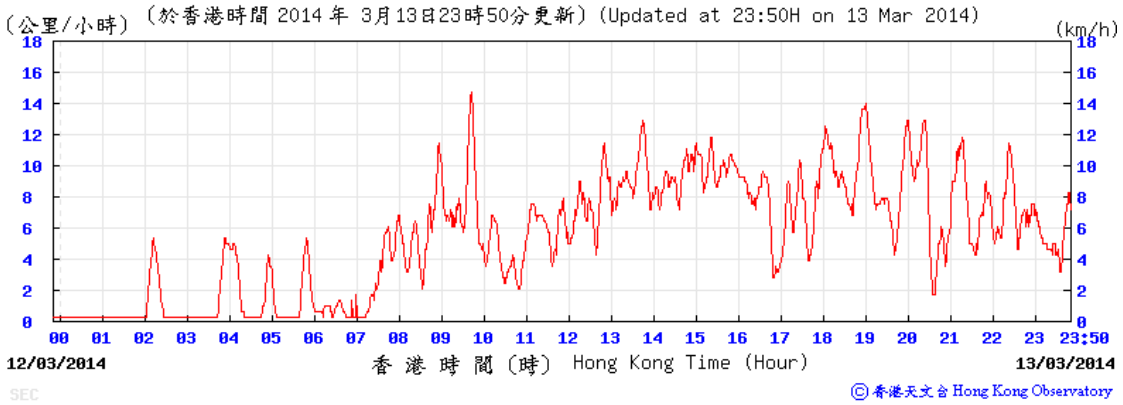
6-7 March 2014

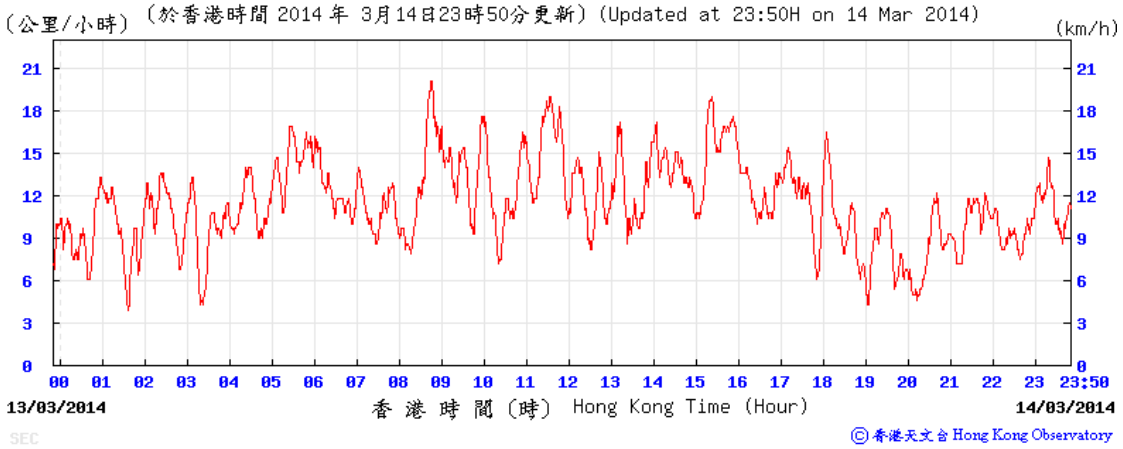




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

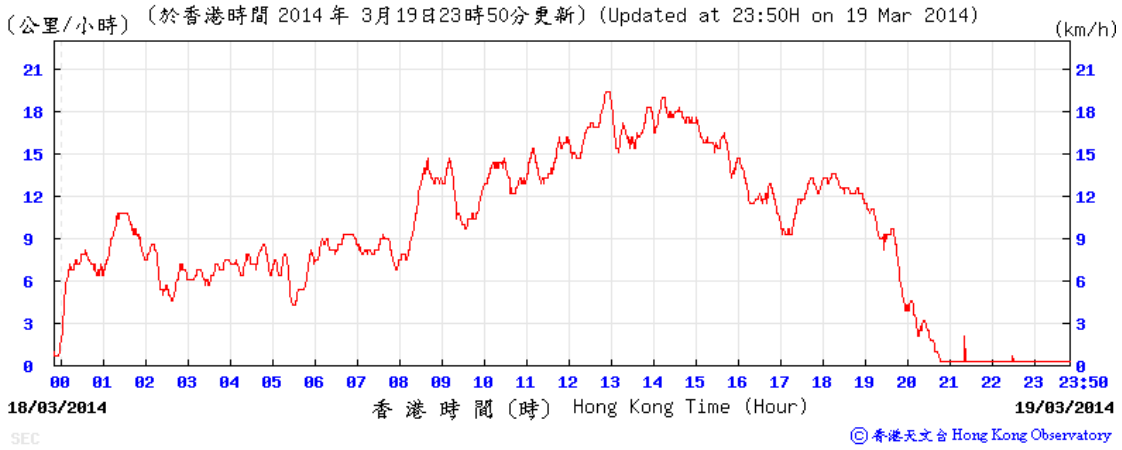
12-13 March 2014

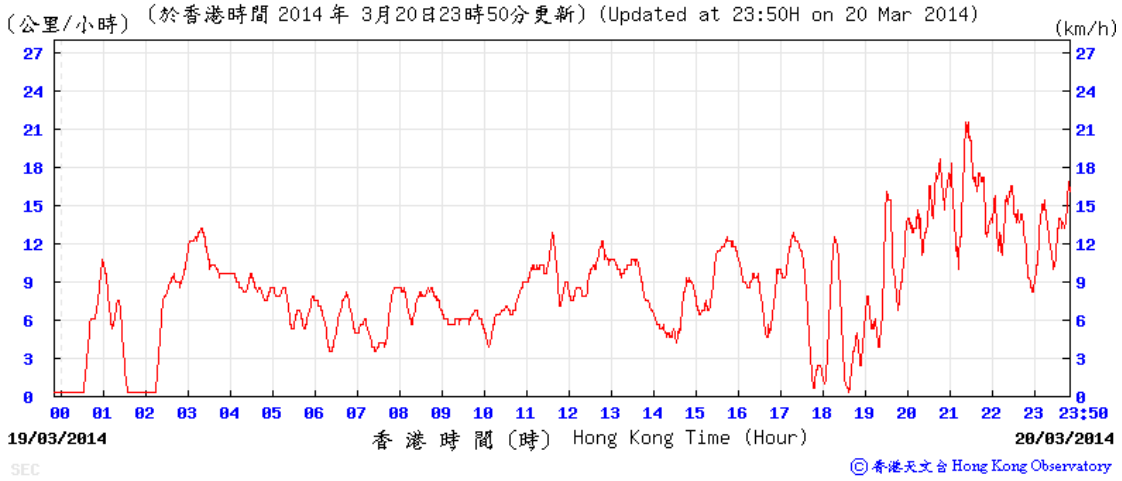




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

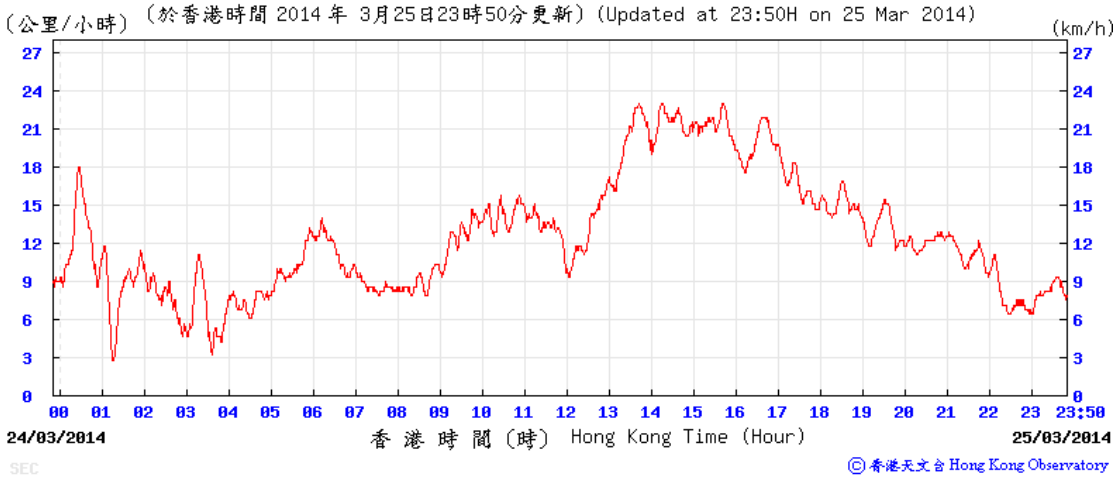
18-19 March 2014

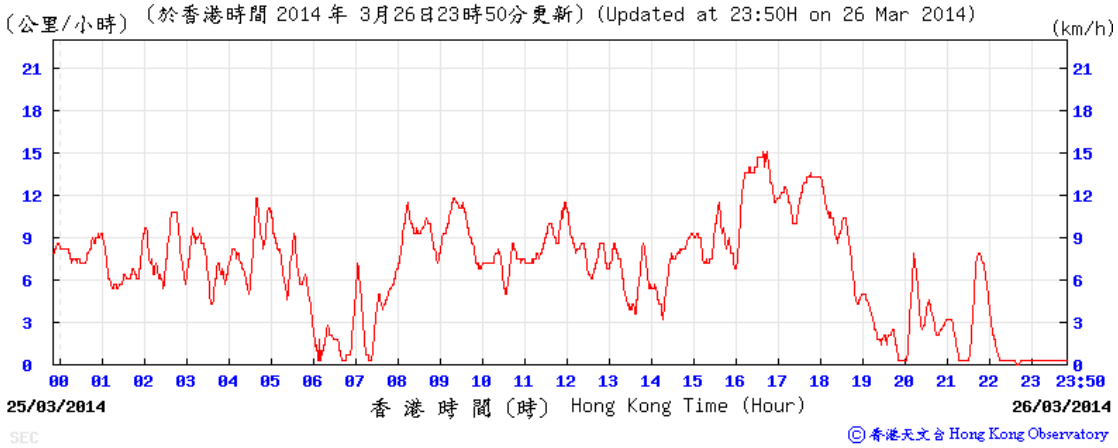




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

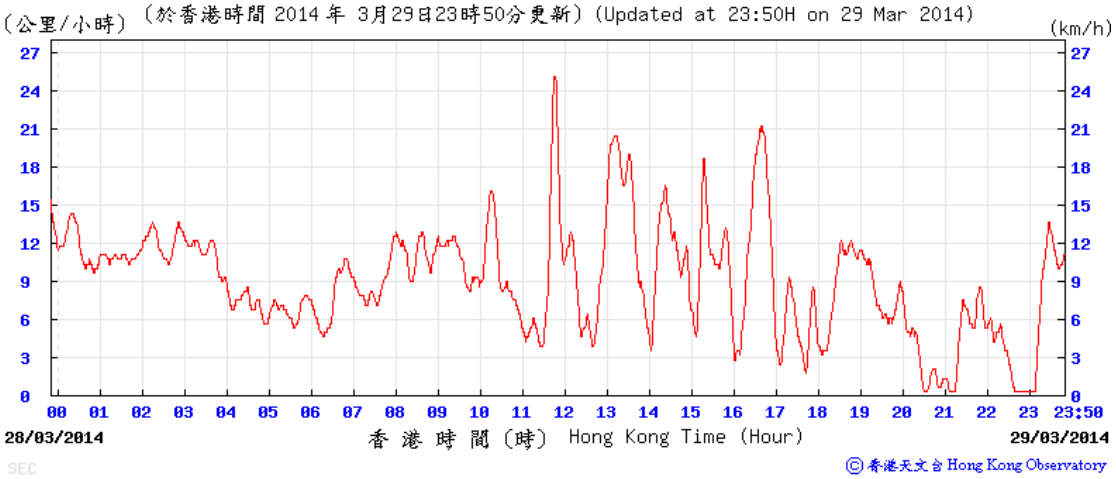
<u>24-25 March 2014</u>

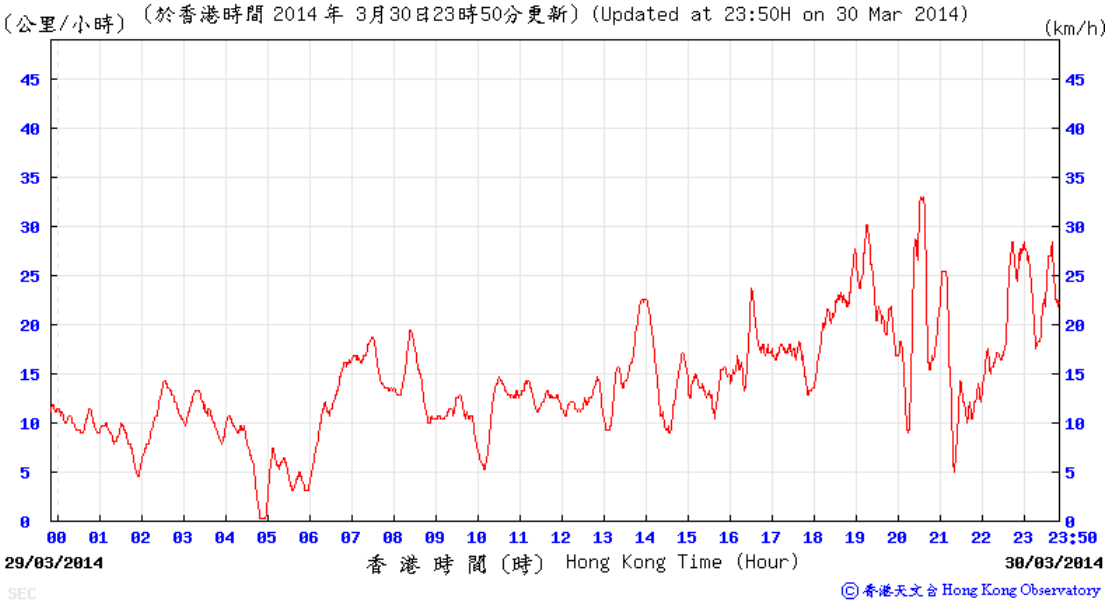




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

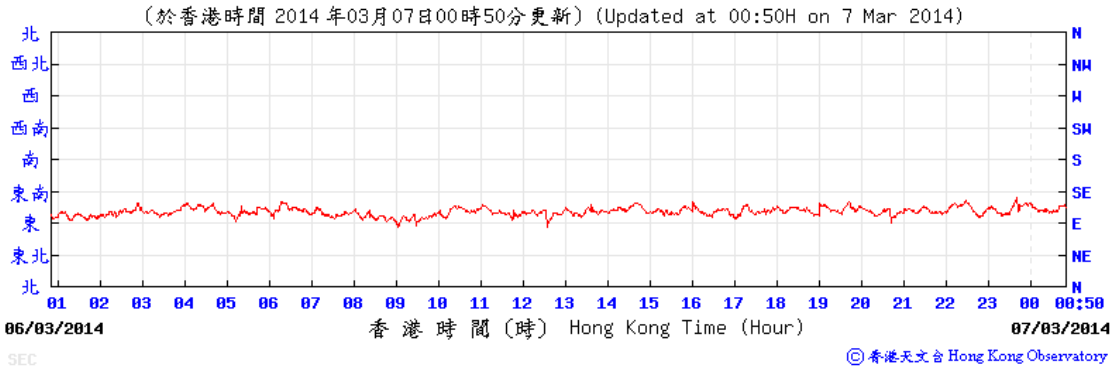
28-29 March 2014

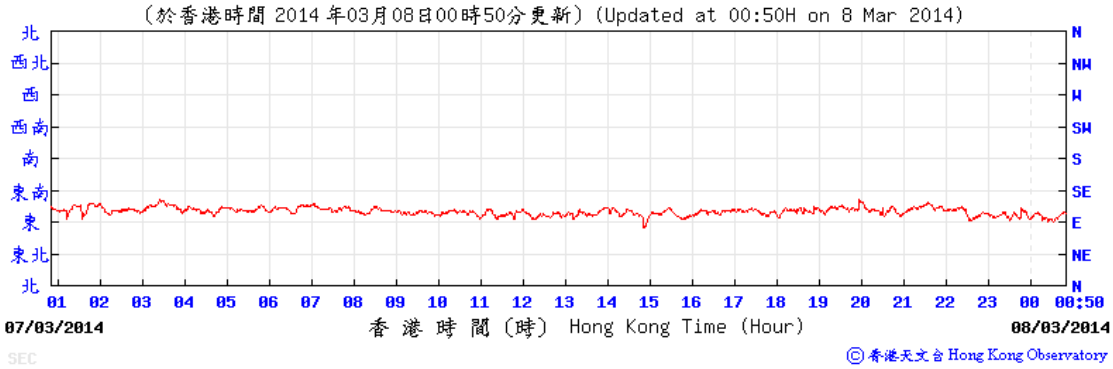




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

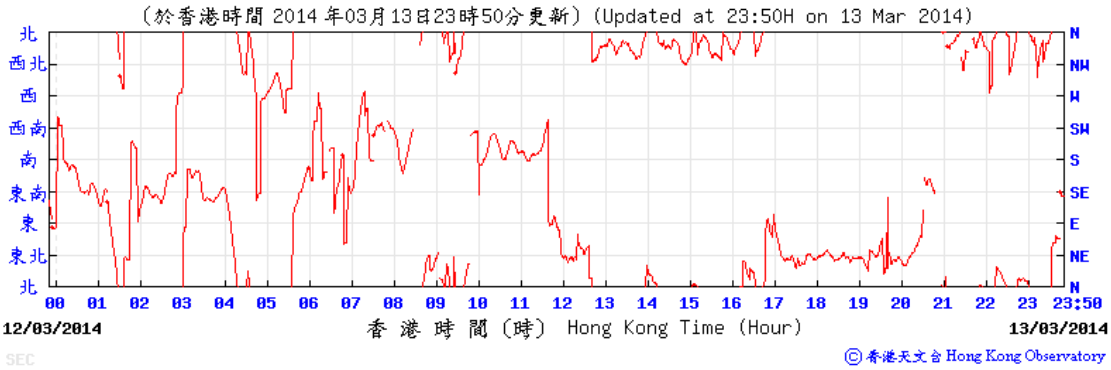
6-7 March 2014

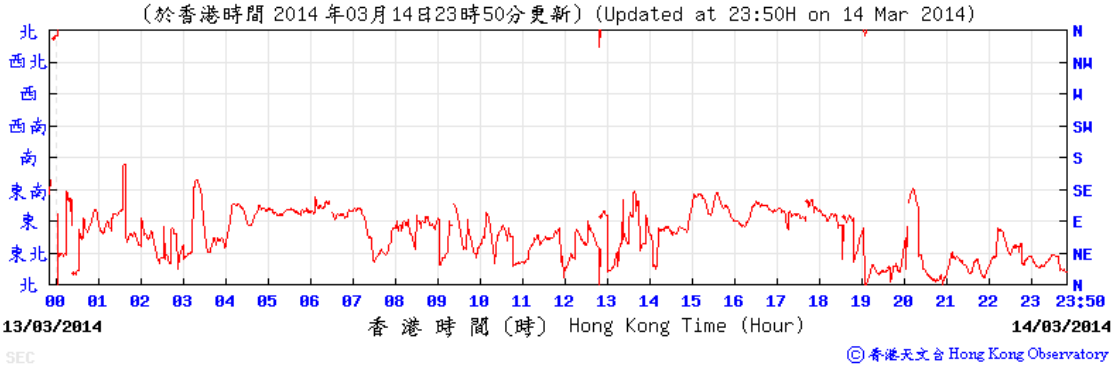




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

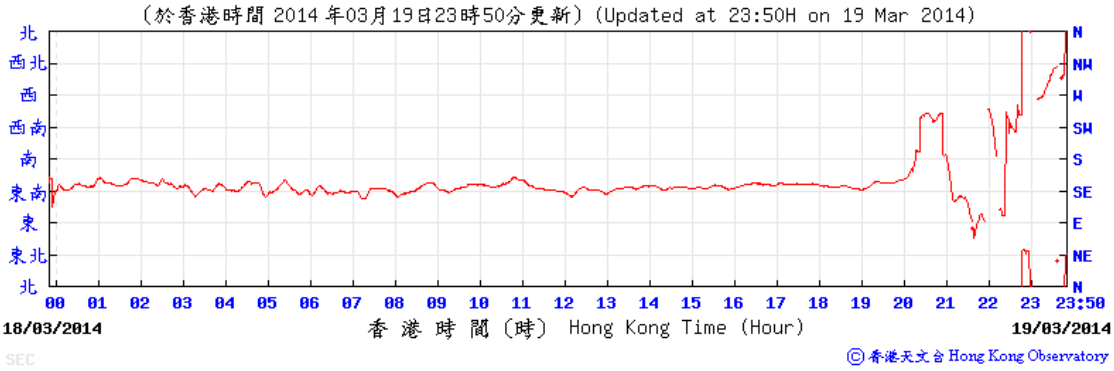
12-13 March 2014

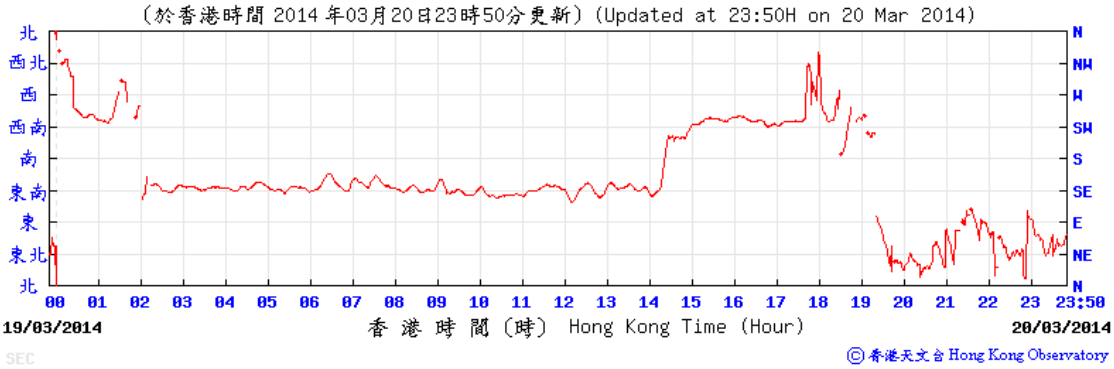




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

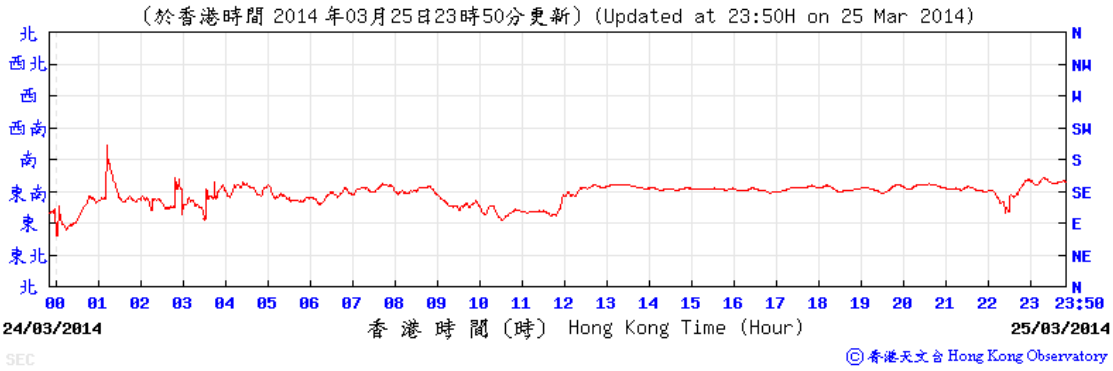
18-19 March 2014

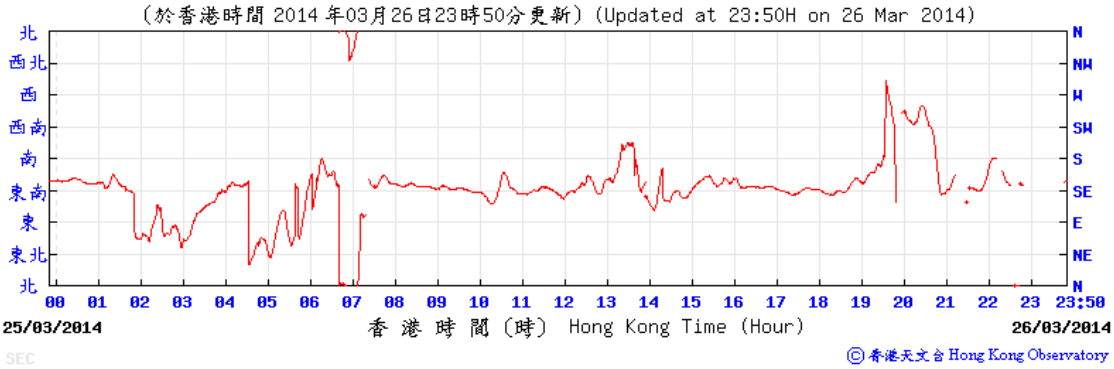




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

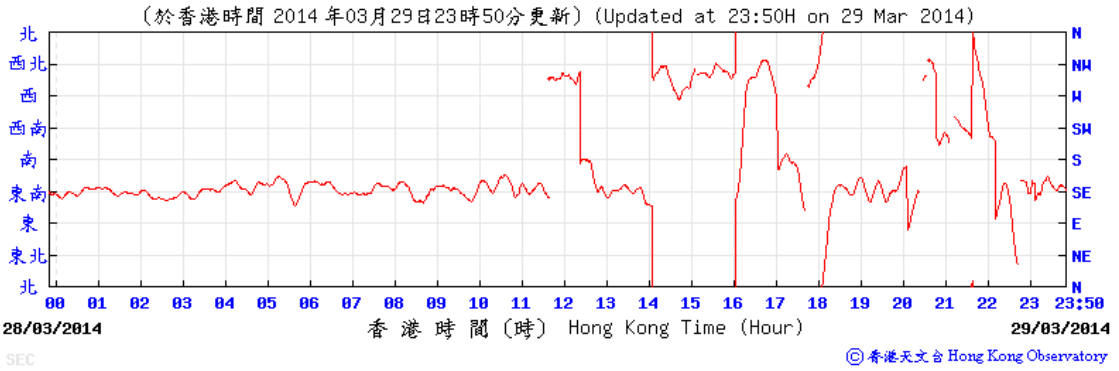
24-25 March 2014

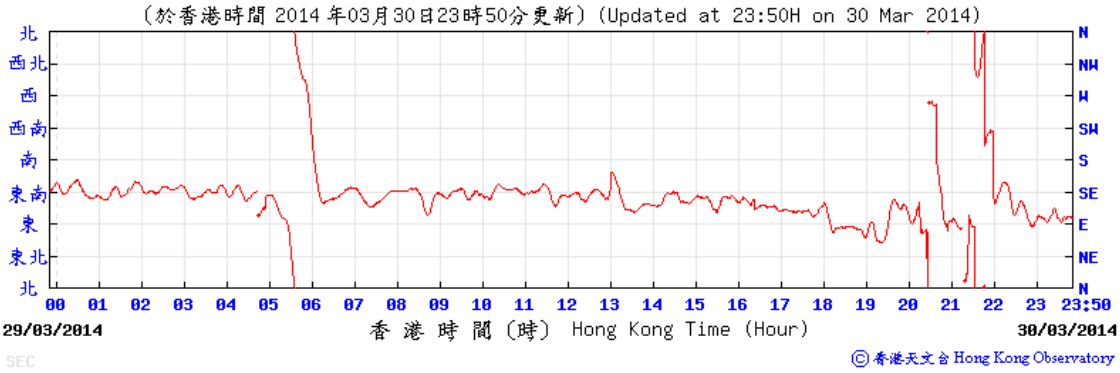




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

28-29 March 2014





APPENDIX F
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix F - Noise Monitoring Results

Location NMS-CA-4(1)/NMS-CA-3(2) - Block 1, Rhythm Garden (north-eastern façade)								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
3-Mar-14	Cloudy	11:00	73.3	74.4	72.0	73.5	71	69.9
		11:05	74.2	75.5	72.1			
		11:10	73.0	74.2	71.8			
		11:15	73.7	74.8	72.2			
		11:20	73.5	74.7	72.1			
		11:25	73.1	74.5	71.4			
10-Mar-14	Cloudy	10:55	73.8	74.8	72.5	73.6		70.1
		11:00	73.5	74.7	72.1			
		11:05	73.5	74.7	72.2			
		11:10	73.6	74.7	72.1			
		11:15	73.4	74.6	72.0			
		11:20	73.5	74.7	72.0			
20-Mar-14	Sunny	09:37	73.8	74.9	72.3	73.4		69.7
		09:42	73.3	74.6	71.5			
		09:47	73.4	74.6	72.1			
		09:52	73.5	74.6	72.2			
		09:57	73.1	74.1	71.8			
		10:02	73.0	74.0	72.0			
25-Mar-14	Sunny	11:03	73.8	75.1	72.2	73.7		70.4
		11:08	73.8	75.0	72.3			
		11:13	73.7	74.8	72.1			
		11:18	73.7	74.7	72.1			
		11:23	73.7	74.7	72.2			
		11:28	73.7	74.7	72.1			
31-Mar-14	Cloudy	14:23	72.4	73.3	71.1	72.3		66.4
		14:28	72.2	72.9	71.2			
		14:33	72.4	73.4	71.2			
		14:38	72.2	73.0	71.2			
		14:43	72.3	73.2	71.0			
		14:48	72.3	73.2	71.1			

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

Appendix F - Noise Monitoring Results

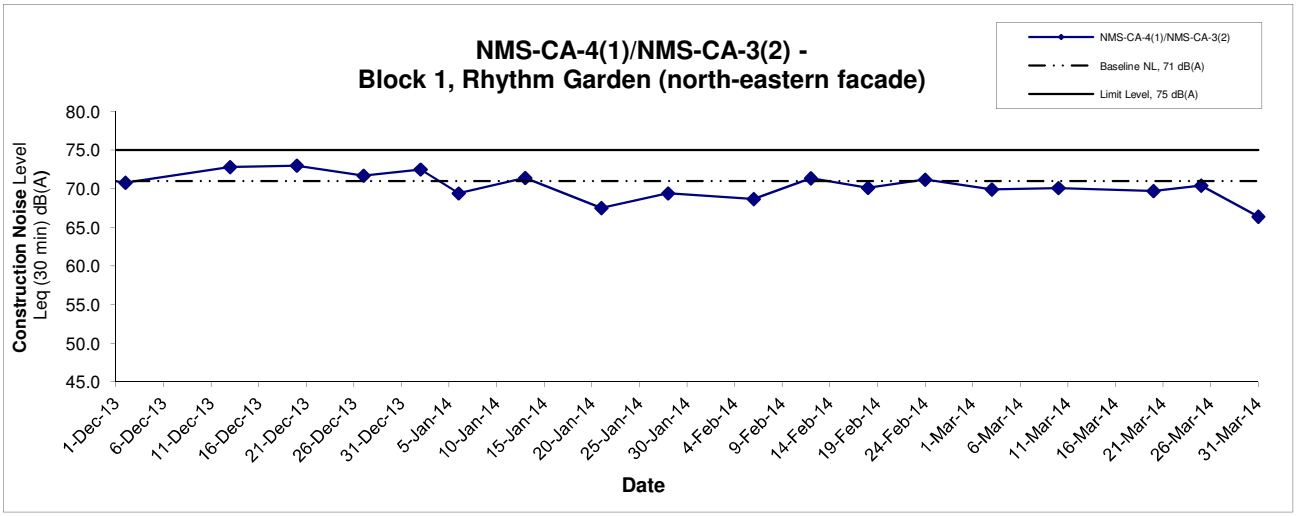
Location NMS-CA-5(1)/NMS-CA-2(2) - Block 1, Rhythm Garden (northern façade)								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
3-Mar-14	Cloudy	10:13	73.1	74.1	71.9	73.0	74	73.0 Measured ≦ Baseline Level
		10:18	73.1	73.8	71.9			
		10:23	72.9	73.9	71.5			
		10:28	73.0	73.8	71.9			
		10:33	73.2	74.3	72.0			
		10:38	72.9	73.8	71.9			
10-Mar-14	Cloudy	10:18	72.4	73.5	71.1	72.7		72.7 Measured ≦ Baseline Level
		10:23	72.3	73.6	70.8			
		10:28	72.5	73.7	71.1			
		10:33	73.0	74.4	71.5			
		10:38	73.0	74.1	71.6			
		10:43	73.0	73.9	72.0			
20-Mar-14	Sunny	09:05	73.4	74.6	72.1	73.3		73.3 Measured ≦ Baseline Level
		09:10	73.1	74.3	71.8			
		09:15	73.2	74.4	72.0			
		09:20	73.4	74.7	72.1			
		09:25	73.4	74.6	72.0			
		09:30	73.3	74.7	72.0			
25-Mar-14	Sunny	10:30	73.0	74.1	71.7	72.9		72.9 Measured ≦ Baseline Level
		10:35	72.9	74.0	71.7			
		10:40	72.9	74.0	71.6			
		10:45	73.0	74.1	71.6			
		10:50	72.9	74.0	71.6			
		10:55	72.8	73.9	71.5			
31-Mar-14	Cloudy	13:50	72.9	74.1	71.4	73.1		73.1 Measured ≦ Baseline Level
		13:55	73.2	74.3	72.0			
		14:00	73.2	74.9	72.1			
		14:05	72.9	73.9	71.6			
		14:10	73.4	74.1	72.0			
		14:15	73.0	74.1	71.4			

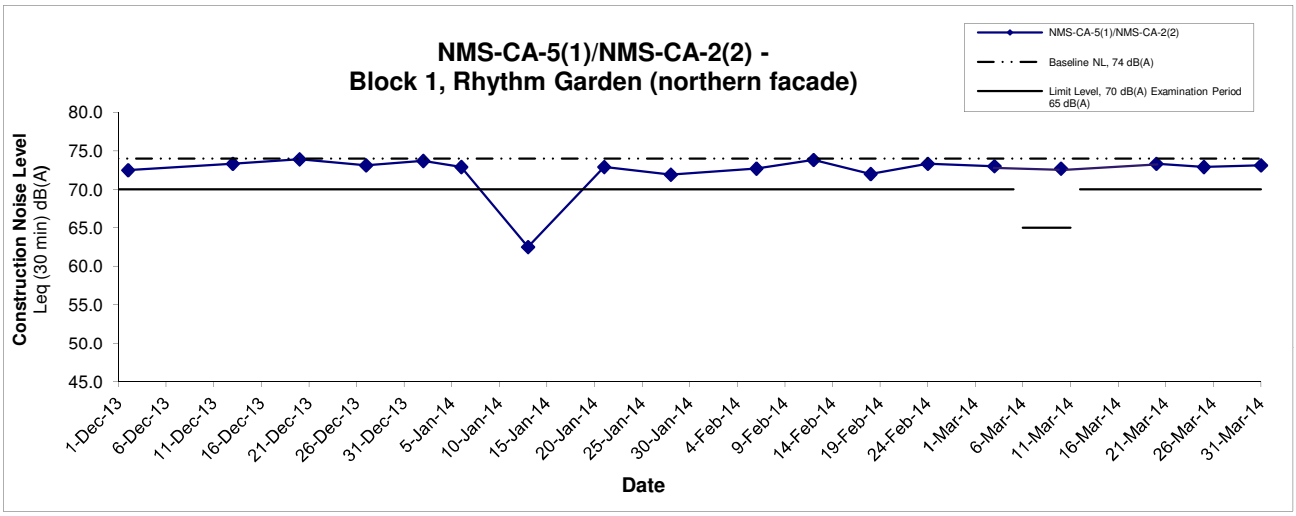
Remarks:

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

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

Noise Levels





Remarks:

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

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

(3) In case of Measured Level ≦ Baseline Level, only Measured Level is presented on the graphical presentation.

Title: Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Mar 14	Project No.: MA13018 Appendix: F	CINOTECH

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: March 2014

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	140307
Date	7 March 2014 (Friday)
Time	9:00 – 11:15

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B – Water Quality • No environmental deficiency was identified during the site inspection.	
	Part C – Landscape & Visual • No environmental deficiency was identified during the site inspection.	
140307-R03	***Part D – Air Quality*** • Cover the dusty stockpile by impervious sheets at the storage area.	D 6
140307-R01	***Part E - Construction Noise Impact*** • Provide noise barrier to hoardings near the air-compressors and properly erect or repair the noise barriers at hoardings near Kai Ching Estate	E 7
140307-R02	***Part F – Waste/Chemical Management*** • Properly dispose the empty chemical containers as "chemical waste"	F 2ii, iii
	Part G – Permits/Licenses • No environmental deficiency was identified during the site inspection.	
	Part H - Others • Follow-up on previous audit section (Ref. No.:140228), all environmental deficiency was observed improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Johnny Fung		7 March 2014
Checked by	Dr. Priscilla Choy		7 March 2014

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140314
Date	14 March 2014 (Friday)
Time	9:00 – 10:15

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

Ref. No.	Remarks/Observations	Related Item No.
140314-R01	***Part B – Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part D – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E - Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part F – Waste/Chemical Management*** • The Contractor is reminded to remove the construction material from the drip tray of air-compressor-set near the interface of 1108. ***Part G – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H - Others*** • Follow-up on previous audit section (Ref. No.:140307), all environmental deficiency was observed improved/rectified by the Contractor.	F 10

	Name	Signature	Date
Recorded by	Johnny Fung		14 March 2014
Checked by	Dr. Priscilla Choy		14 March 2014

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140321
Date	21 March 2014 (Friday)
Time	9:00 – 10:30

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

Ref. No.	Remarks/Observations	Related Item No.
140321-R02	***Part B – Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part D – Air Quality*** • Cover the dusty stockpile properly by impervious material. ***Part E - Construction Noise Impact*** • No environmental deficiency was identified during the site inspection.	D 6
140321-O01	***Part F – Waste/Chemical Management*** • The Contractor is reminded to properly remove the empty chemical containers as "chemical waste" and provide drip tray to the chemical containers in use near the grouting plant. ***Part G – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H - Others*** • Follow-up on previous audit section (Ref. No.:140314), all environmental deficiency was observed improved/rectified by the Contractor.	F 2ii, 2iii, 10

	Name	Signature	Date
Recorded by	Johnny Fung		21 March 2014
Checked by	Dr. Priscilla Choy		21 March 2014

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140328
Date	28 March 2014 (Friday)
Time	9:00 – 10:30

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B – Water Quality • No environmental deficiency was identified during the site inspection. ***Part C – Landscape & Visual*** • No environmental deficiency was identified during the site inspection.	
140328-R01	***Part D – Air Quality*** • Provide water spray to exposed haul road to avoid dust generation.	D 5
	Part E - Construction Noise Impact • No environmental deficiency was identified during the site inspection.	
140328-R02	***Part F – Waste/Chemical Management*** • Properly clear the chemical leakage from excavator to ground	F 9
	Part G – Permits/Licenses • No environmental deficiency was identified during the site inspection. ***Part H - Others*** • Follow-up on previous audit section (Ref. No.:140321), all environmental deficiency was observed improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Johnny Fung		28 March 2014
Checked by	Dr. Priscilla Choy		28 March 2014

APPENDIX I
EVENT AND ACTION PLANS

Appendix I - Event and Action Plan for Noise Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1107 ET	**IEC**	**ER**	**CONTRACTOR**
Action Level	1. Notify the IEC, Contractor and ER 2. Discuss with the ER, IEC and Contractor on the remedial measures required 3. Increase monitoring frequency to check mitigation effectiveness	1. Review the investigation results submitted by the contractor; 2. Review and advise the ET and ER on 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, and ER to discuss the remedial measures to be taken; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances 7. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET and Contractor on the potential remedial measures 4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of exceedance in writing 2. Notify the Contractor, IEC and ET 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 4. Supervise the implementation of remedial measures 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Identify source and investigate the causes of exceedance 2. Take immediate action to avoid further exceedance 3. Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification. 4. Implement the agreed proposals 5. Revise and resubmit proposals if problem still not under control 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Appendix I - Event and Action Plan for Air Quality Monitoring during Construction Phase

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

Appendix I - Event and Action Plan for Air Quality Monitoring during Construction Phase

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

Appendix I - Event and Action Plan for Landscape and Visual during Construction Phase

EVENT	ACTION			
	Works Contract 1107 ET	**IEC**	**ER**	**CONTRACTOR**
Non-conformity on one occasion	1. Inform the Contractor, the IEC and the ER 2. Discuss remedial actions with the IEC, the ER and the Contractor 3. Monitor remedial actions until rectification has been completed	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET, ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures.	1. Confirm receipt of notification of non-conformity in writing 2. Review and agree on the remedial measures proposed by the Contractor; 3. Supervise implementation of remedial measures	1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source 2. Inform the Contractor, the IEC and the ER 3. Increase inspection frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If non-conformity stops, cease additional monitoring	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 3. Supervise implementation of remedial measures.	1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.

APPENDIX J
UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

SCL Works Contract 1107 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
Landscape & Visual (Construction Phase)								
S6.12	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u> • For soil conservation, existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing ground may be set up on-site as necessary. <u>No-intrusion Zone</u> • To maximize protection to existing trees, ground vegetation and the associated under storey habitats, construction contracts may designate “No-intrusion Zone” to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone. The contractor should closely monitor and restrict the site working staff from entering the “no-intrusion zone”, even for indirect construction activities and storage of equipment. <u>Protection of Retained Trees</u> • All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period. Detailed tree protection specification shall	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	•TM-EIAO	N/A ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and the tree monitoring system. • The Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works sites.						^
Table 6.9	LV2	<u>Decorative Hoarding</u> • Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas. Hoarding should be designed to be compatible with the existing urban context. <u>Management of facilities on work sites</u> • To provide proper management of the facilities on the sites, give control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs. <u>Tree Transplanting</u> • Trees of medium to high survival rate that would be affected by the works shall be transplanted where possible and practicable. Tree transplanting proposal including final location for transplanted trees shall be submitted separately to seek relevant government department's approval, in accordance with ETWB	Minimize the visual and landscape impact of the Project during construction phase	Contractor	Within Project Site	Detailed design and construction stage	• EIAO – TM •ETWB TCW 2/2004 • ETWB TCW 3/2006	N/A N/A N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		TCW No 3/2006.						
Air Quality (Construction Phase)								
/	A1	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^
/	A2	Open burning shall be prohibited	Reduce air pollution emission from work site	Contractor	All construction sites	Construction stage	• APCO	^
Construction Dust Impact								
S7.6.6	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	*
S7.6.6	D2	Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road in the Kowloon area should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	*

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		an equivalent intensity of no less than 1.8 L/m^2 to achieve the dust removal efficiency						
S7.6.6	D3	• Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided and properly maintained as far as practicable along the site boundary	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	* ^ ^ N/A N/A N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		with provision for public crossing; Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting;						^ ^ ^ N/A N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.					^ ^ ^ N/A
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 ^ N/A
S8.5.6	AN2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All Construction Sites	Construction stage	• Annex 5, TM-EIA	N/A
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 ^ 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	^ ^ ^ N/A
S10.7.1	W3	<u>Sewage Effluent</u> • Portable chemical toilets and sewage holding tanks are	To minimize water quality from sewage effluent	Contractor	All construction sites where	Construction stage	• Water Pollution Control Ordinance	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.			practicable		• TM-water	
S10.7.1	W5	Accidental Spillage In order to prevent accidental spillage of chemicals, the following is recommended: • Proper storage and handling facilities should be provided; • All the tanks, containers, storage area should be bunded and thelocations should be locked as far as possible from the sensitive watercourse and stormwater drains; • The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings; and • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	* ^ ^ N/A
Waste Management (Construction Waste)								
S11.4.1.1	WM1	On-site sorting of C&D material • Geological assessment should be carried out by competent persons on site during excavation to identify materials which are	Separation of unsuitable rock from ending up at concrete batching plants	Contractor	All construction sites	Construction stage	• DEVB TC(W) No. 6/2010	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc). Volcanic rock and Aplite dyke rock should be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use. Details regarding control measures at source site and crushing facilities should be submitted by the Contractors for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc should also be explored.	and be turned into concrete for structural use					
S11.5.1	WM2	<u>Construction and Demolition Material</u> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting;	Good site practice to minimize the waste generation and recycle the C&D materials as far as	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance	^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and EPD and get their approval before implementation	practicable so as to reduce the amount for final disposal				• Waste Disposal Ordinance • ETWB TCW No. 19/2005	^ N/A ^ ^ ^
S11.5.1	WM3	<u>C&D Waste</u> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal	^

EIA Ref.	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
		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.	the amount for final disposal				Ordinance • 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	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	^ ^ 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
		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>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	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 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
		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. • Disposal of chemical waste should be via a licensed waste collector; and be to a facility licensed to receive chemical waste,such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.						N/A

Remarks: ^ Compliance of mitigation measure X Non-compliance of mitigation measure

• Non-compliance but rectified by the contractor

* Recommendation was made during site audit but improved/rectified by the contractor.

N/A Not Applicable

APPENDIX K
WASTE GENERATION IN THE REPORTING MONTH

CW - SELI Joint Venture

Name of Department: MTRC

Contract No.:1107

Monthly Summary Waste Flow Table for 2014

Year	Estimated Quantities of Inert C&D Materials (in '000m^3) (see Note 3)										Estimated Quantities of C&D Wastes									
	Total Quantity Generated		Suitable for Recycled Aggregates		Reused in the Contract		Reused in other Projects		Disposed as Public Fill		Metals		Paper/cardboard packaging		Plastics (see Note 2)		Chemical Waste		Others, e.g. general refuse	
	(a)		(b)		(c)		(d)		(e=a-b-c-d)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000m^3)	
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.
January	5.500	5.330	0.000	0.000	0.000	0.000	2.500	1.840	3.000	3.49	0.000	0.000	0.100	0.158	0.100	0.810	0.000	0.108	0.100	0.040
February	5.500	2.685	0.000	0.000	0.000	0.000	0.000	0.660	5.500	2.025	1.000	2.660	0.100	0.230	1.000	0.650	0.000	0.000	0.100	0.015
March	8.400	5.945	0.000	0.000	0.000	0.000	4.000	3.145	4.400	2.800	0.000	0.000	0.100	0.135	0.000	0.000	0.000	0.000	0.100	0.025
April																				
May																				
June																				
July																				
August																				
September																				
October																				
November																				
December																				
Total	**19.400**	**13.960**	**0.000**	**0.000**	**0.000**	**0.000**	**6.500**	**5.645**	**12.900**	**8.315**	**1.000**	**2.660**	**0.300**	**0.523**	**1.100**	**1.460**	**0.000**	**0.108**	**0.300**	**0.080**

Notes:
(1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
(3) The quantitles of C&D Materials, in m^3, was calculated by multiply the no. of truck with the volume of truck, which is 5m^3.

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

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

Cumulative Complaint Log

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	File Closed
--	--	--	--	--	--

Cumulative Log for Notifications of Summons

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

Cumulative Log for Successful Prosecutions

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

Appendix H

10th 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 No.10

[Period from 1 to 31 April 2014]

Contract 1112 - Hung Hom Station and Stabling Sidings

(April 2014)

Certified by: Vivian Chan

Position: Environmental Team Leader

Date: 11 April 2014

10th Monthly EM&A Report for March 2014

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

April 2014

AUSTRALIA | ASIA | MIDDLE EAST | AFRICA | PACIFIC

Project/Deliverable No.	7076187 | D13/01
Project Name	Shatin to Central Link – Works Contract 1112 Hung Hom Station and Stabling Sidings
Report Name	10th Monthly EM&A Report for March 2014
Report Date	April 2014
Report for	Leighton Contractors (Asia) Limited

PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved by
1.0 (Draft)	April 2014	Winnie MA	Vivian CHAN	Alexi BHANJA
2.0 (Draft)	April 2014	Winnie MA	Vivian CHAN	Alexi BHANJA
3.0 (Final)	April 2014	Winnie MA	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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APPENDICES

TABLES

EXECUTIVE SUMMARY

Introduction

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

Construction works of the Project commenced on 3 June 2013. This is the 10th monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 March 2014 in accordance with the EM&A manual.

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

- Bored piling for HUH and NAT
- Diaphragm wall construction at HUH
- Initial excavation at HUH
- Barging point operation at Hung Hom Freight Pier

Landscape and Visual Monitoring

Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 13 and 27 March 2014. All necessary mitigation measures have been implemented by the Contractor.

Air Quality Monitoring

Air quality (24-hour TSP) monitoring was carried out on 6, 12, 18, 26 and 29 March 2014. 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

As advised by the Contractor, 47,760 kg of general refuse was generated from the Project and disposed of at NENT landfill. 44,020 kg of metals and 254 kg of paper/cardboard packaging were recycled from the Project. A total of 10,100m^3 inert construction demolition (C&D) materials were generated from the Project, where 6,177 m^3 was reused in other projects, 3,628m^3 was disposed of at TM38 Public Fill, and 295 m^3 was disposed of at TKO137 Public Fill. No chemical waste was disposed during the reporting month.

Environmental Auditing

A total of 4 weekly environmental site audits were conducted on 6, 13, 20 and 27 March 2014. The IEC joint site audit was undertaken on 20 March 2014.

Compliant, Notification of Summons and Successful Prosecution

No complaint in relation to the environmental issues was recorded during the reporting period.

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:

- Bored piling for HUH and NAT
- Diaphragm wall construction at HUH
- Initial excavation at HUH
- Setting up of Material Receiving Hopper at Hung Hom Freight Pier
- Barging point operation at Hung Hom Freight Pier

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 February 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. A recent application for variation of the EP for SCL (TAW-HUH) was approved and a varied EP (EP No. EP-438/2012/D) was issued by Director of Environmental Protection (DEP) on 13 September 2013.

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 10th EM&A report which summarizes the monitoring results and audit findings during the reporting period from 1 to 31 March 2014.

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.

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:

- Bored piling for HUH and NAT
- Diaphragm wall construction at HUH
- Initial excavation at HUH
- Barging point operation at Hung Hom Freight Pier

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 Patrick CHENG	3127 6203	3127 6422
	SCL Project Environmental Team Leader	Mr Richard KWAN	2688 1283	2993 7577
Meinhardt	Independent Environmental Checker	Mr Fredrick LEONG	2859 1739	2540 1580
Leighton	Environmental Manager	Mr Kevin HARMAN	3973 0270	2356 9355
SMEC	ET Leader	Ms Vivian CHAN	3995 8140	3995 8101

2.4 Status of Environmental Licences, Notification and Permits

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

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

Permit / Licence No. / Notification / Reference No.	Valid Period		Status	Remark
	From	To		
Environmental Permit				
EP-437/2012	22 Mar 2012	-	Valid	EP for SCL (MKK-HUH)
EP-438/2012/D	13 Sep 2013	-	Valid	EP for SCL (TAW-HUH)
Construction Noise Permit				
GW-RE1280-13	26 Nov 2013	25 Apr 2014	Valid	Fire Services System Modification for Traverser Modification
GW-RE1332-13	04 Dec 2013	30 May 2014	Valid	ADMS installations within railway areas
GW-RE1421-13	30 Dec 2013	29 Jun 2014	Valid	Relocation of Over Head Line mast A0370
GW-RE0063-14	17 Jan 2014	16 Apr 2014	Valid	ADMS installation under podium and in concourse level
GW-RE0065-14	17 Jan 2014	15 Apr 2014	Valid	Building services system modification work for podium modification & underpinning work
GW-RE0101-14	05 Feb 2014	03 Apr 2014	Valid	Delivery of heavy vehicles
GW-RE0107-14	05 Feb 2014	05 Apr 2014	Valid	Diaphragm wall (steel cage installation and fixing) & concrete pouring under the podium
GW-RE0125-14	06 Feb 2014	21 Mar 2014	Valid until cancellation at 21 Mar 2014	Relocation of Over Head Line mast A0370

Permit / Licence No. / Notification / Reference No.	Valid Period		Status	Remark
	From	To		
GW-RE0166-14	25 Feb 2014	17 Mar 2014	Valid until cancellation on 17 Mar 2014	Installation for diversion of cooling water mains at SAT
GW-RE0238-14	10 Mar 2014	09 Sep 2014	Valid	Generator for Intrafor office in barging point
GW-RE0273-14	17 Mar 2014	15 Jun 2014	Valid	Installation for diversion of cooling water mains at SAT
Wastewater Discharge License				
WT00015983-2013	28 Jun 2013	30 Jun 2018	Valid	-
Chemical Waste Producer Registration				
5213-213-L2603-03	28 Jun 2013	-	Valid	-
Billing Account for Construction Waste Disposal				
7017179	27 Mar 2013	-	Active Account	-
Notification Under Air Pollution Control (Construction Dust) Regulation				
357078	18 Mar 2013	-	Notified	-

3 ENVIORNMENTAL 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)	1941

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

Monitoring Procedures

3.2.6 Specifications of HVS are as follow:

i. 0.6 - 1.7m^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 2014 is provided in ***Appendix G***.

3.2.11 Air monitoring scheduled on 24 March 2014 was interrupted by power failure. The monitoring was restarted on 26 March 2014.

3.3 Construction Noise Monitoring

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

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

4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

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

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

Required Submission	Environmental Permit	Date of Submission	Status
EP Condition 3.4 - Monthly Environmental Monitoring & Audit (EM&A) Report	EP-437/2012	14 March 2014	Submitted
	EP-438/2012/D	14 March 2014	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 13 and 27 March 2014. All necessary mitigation measures have been implemented by the Contractor.

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

5.2 Air Quality Monitoring

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

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

ID	Average (µg/m^3)	Range (µg/m^3)	Action Level (µg/m^3)	Limit Level (µg/m^3)
AM2	77.9	56.6-134.5	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.

5.4 Waste Management

5.4.1 Receptacles for collection of general refuse were provided at the site. As advised by the Contractor, 47.760kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 10,100m^3 inert construction demolition (C&D) materials was generated from the Project, where 6,177 m^3 was reused in other projects, 3,628m^3 was disposed of at TM38 Public Fill, 295m^3 was disposed of at TKO137 Public Fill. 44,020 kg metals, 254 kg paper/ cardboard packaging were collected by recycling contractor in the reporting month. No chemical waste was disposed and collected by licenced contractor in the reporting period. The waste flow table is presented in ***Appendix K***.

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

6 ENVIRONMENTAL SITE INSPECTION AND AUDIT

6.1.1 Weekly site audits were conducted by the ET and attended by the ER and the Contractor to monitor the timely implementation of proper environmental management practices and mitigation measures at the site. 4 site audits were carried out on 6, 13, 20 and 27 March 2014 during the reporting month. Representative of the IEC joined the site inspection on 20 March 2014. A summary of the implementation schedule of environmental mitigation measures is provided in ***Appendix H***.

6.1.2 No EPD site inspection was conducted in 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
Landscape and Visual	N/A	N/A	N/A	N/A
Air Quality	Cement mixing facility was observed to be not entirely enclosed. The Contractor should ensure that cement mixing processes to be entirely enclosed with three sides and top cover to prevent dust emission.	Gate 2	6 March 2014	The item was rectified by the Contractor on 13 March 2014.
		HUH	27 March 2014	The item will be followed-up in the next reporting month.
	Dust screen of the enclosure connecting the loading ramp was observed not being well maintained. The Contractor should ensure that the dust screens for enclosure purposes should be in good condition at all times to minimize dust generation.	Barging Point	13 March 2014	The item was rectified by the Contractor on 27 March 2014.
	Stockpiles of dusty materials were observed without dust control measures. The Contractor should cover the dusty stockpiles entirely with impervious sheeting to prevent dust generation.	NAT	27 March 2014	The item will be followed-up in the next reporting month.
Noise	N/A	N/A	N/A	N/A
Water Quality	U-Channel was observed without surface runoff control measures. The Contractor should provide sand bags around gullies to prevent surface runoff	Barging Point	6 March 2014	The item was rectified by the Contractor on 13 March2014.

Parameters	Description	Works Area	Observation Date	Status
	from entering the gullies.			
	Gullies were observed without runoff control measures. The Contractor should provide runoff control measures to ensure no sand/silt entering the drainage system.	NAT	20 March 2014	The item was rectified by the Contractor on 27 March 2014.
	Inadequate runoff control measures were observed. The Contractor should provide effective runoff control measures to ensure no sand/silt entering the drainage system.	NAT	27 March 2014	The item will be followed-up in the next reporting month.
		HHS	27 March 2014	The item will be followed-up in the next reporting month.
Waste/ Chemicals Management	Diesel lighting tower was observed without secondary containment. The Contractor should provide sufficient secondary containment to machineries to prevent land contamination.	HUH	27 February 2014	The item was rectified by the Contractor on 06 March 2014
	Oil spillage was observed. The Contractor should clear the oil spillage and dispose it as chemical waste.	HUH	13 March 2014	The item was rectified by the Contractor on 20 March 2014.
	Oil drum was placed in a secondary containment with insufficient capacity.	HUH	13 March 2014	The item was rectified by the Contractor on 20 March 2014.
	Chemical containers were observed without a secondary containment. The Contractor should provide secondary containments to all chemical containers to prevent land contamination.	HHS	27 March 2014	The item will be followed-up in the next reporting month.
		SAT	27 March 2014	The item will be followed-up in the next reporting month.
Permits/ License	N/A	N/A	N/A	N/A

Note:

1. HUH: Hung Hom Station
2. HHS: Hung Hom Stabling Sidings
3. NAT: North Approach Tunnels
4. SAT: South Approach Tunnels
5. N/A: Not Applicable

6.1.4 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. Inspection for follow-up actions that are outstanding in the reporting month will be carried out in following inspections, until the corresponding action has been undertaken 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 No environmental related complaint was reported during the reporting month.

7.3.2 Cumulative statistics on environmental complaints is provided in ***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:

- Bored piling for HUH and NAT
- Diaphragm wall construction at HUH
- Initial excavation at HUH
- Setting up of Material Receiving Hopper at Hung Hom Freight Pier
- Barging point operation at Hung Hom Freight Pier

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 2014 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 has been implemented to include air quality monitoring and environmental site audits. This is the 10th monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 March 2014.

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

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

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

9.1.5 There was no environmental complaint, prosecution or notification of summons received.

9.1.6 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

- Implement effective measures to avoid dust impact.

Water Quality Impact

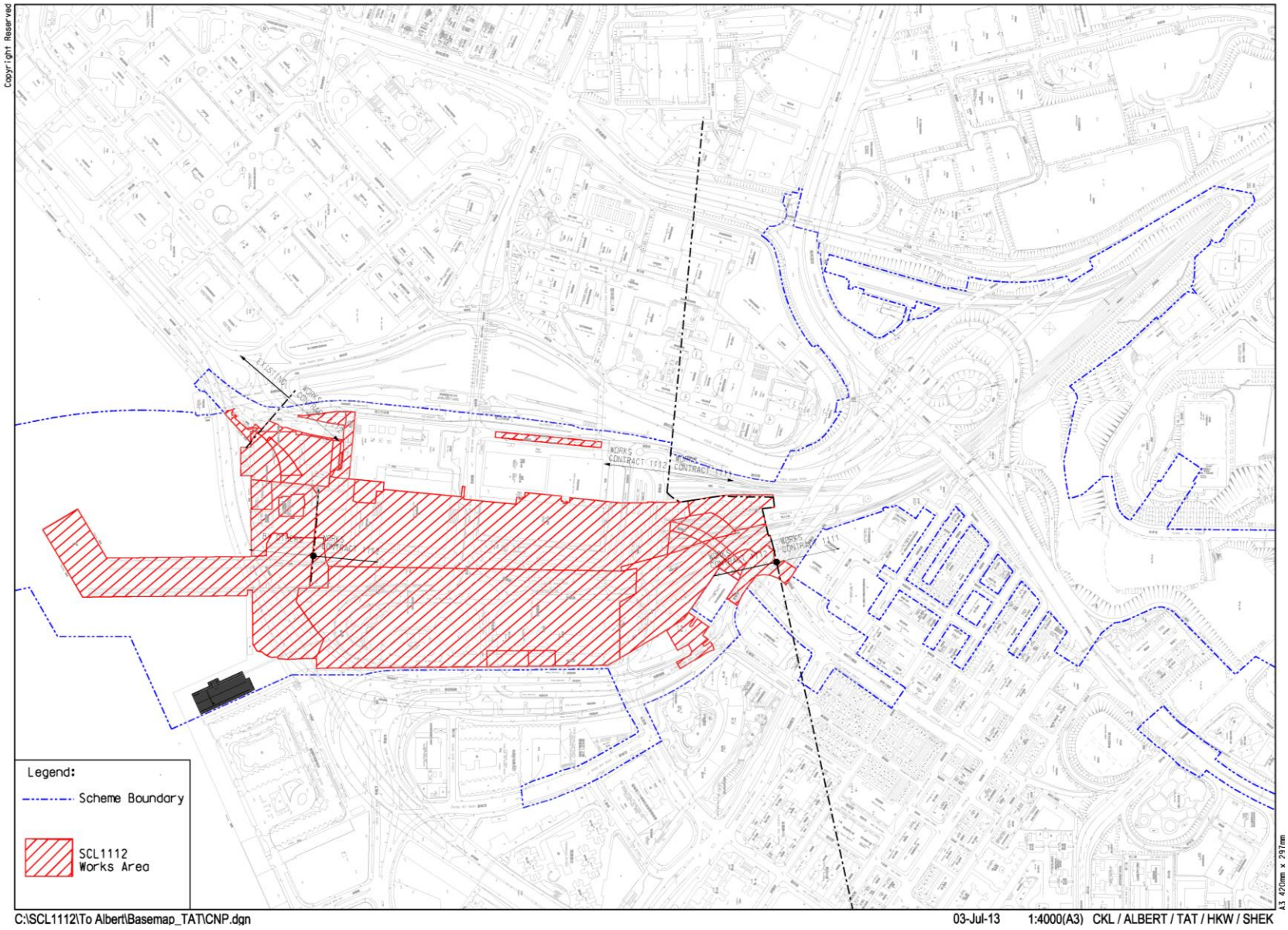
- Provide effective mitigation measures to prevent surface runoff entering the drainage system.

Chemical and Waste Management

- Provide secondary containment with proper maintenance to prevent any possibility in contaminating the land.
- Properly maintain plant/equipment and enhance training to workers on chemical/ chemical waste handling.

APPENDIX A

Project Works Boundary


Copyright Reserved
Legend:
Scheme Boundary
SCL1112
Works Area
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03-Jul-13
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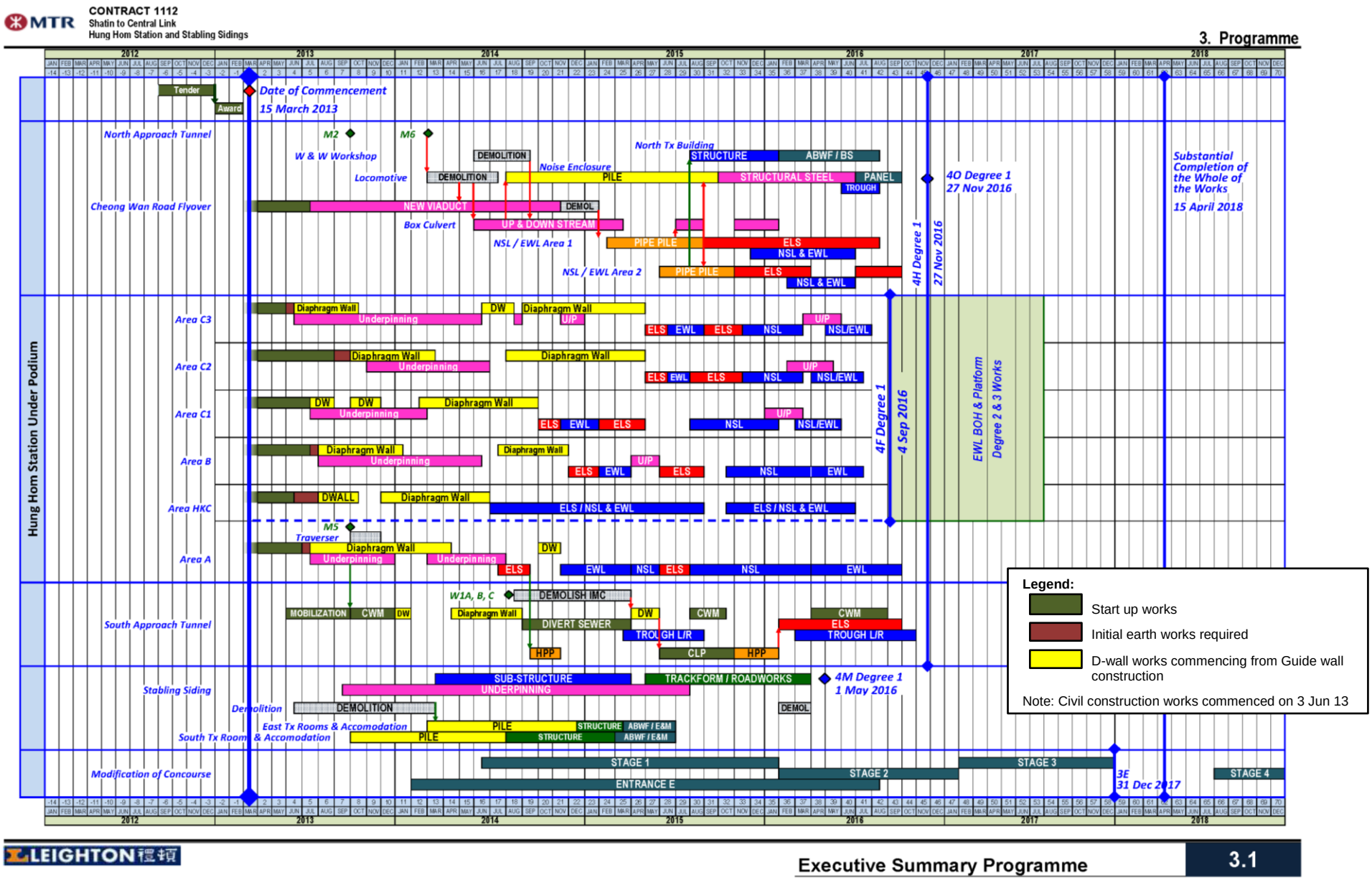
A3 420mm x 297mm

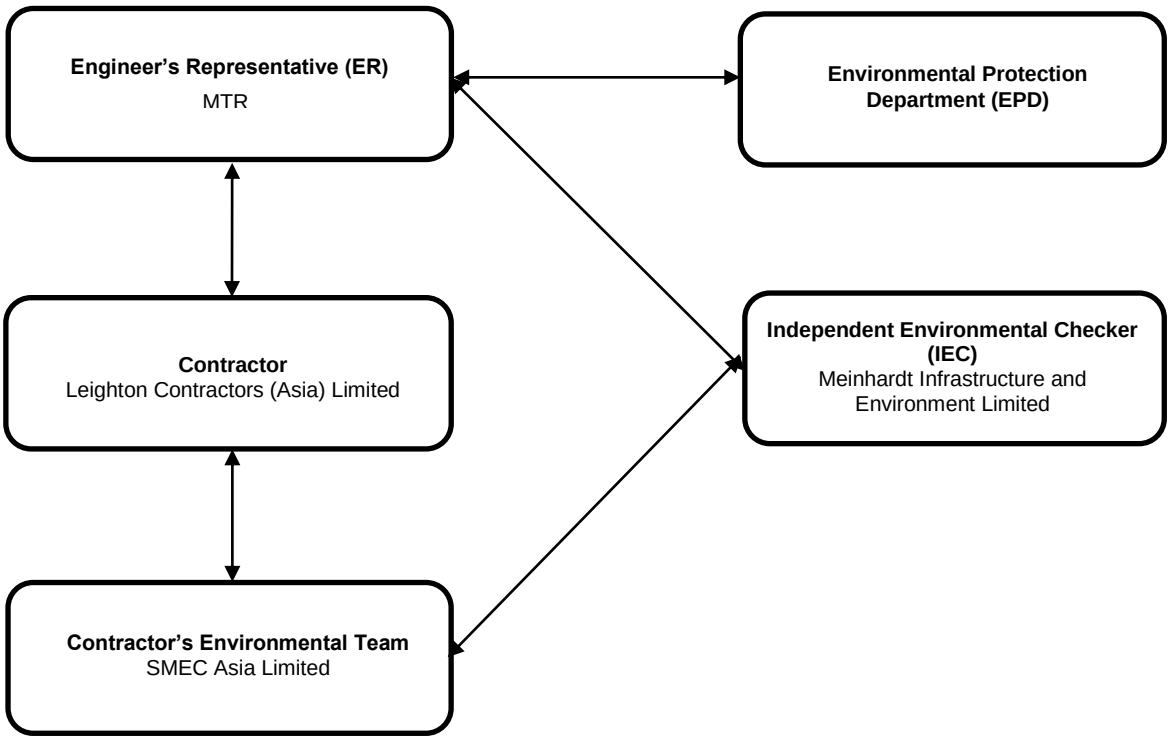
APPENDIX B

Construction Programme


CONTRACT 1112
Shatin to Central Link
Hung Hom Station and Stabling Sidings
3. Programme
Tender
Award
Date of Commencement
15 March 2013
Hung Hom Station Under Podium
North Approach Tunnel
M2
M6
W & W Workshop
Locomotive
DEMOLITION
Noise Enclosure
North Tx Building
STRUCTURE
ABWF / BS
PILE
STRUCTURAL STEEL
PANEL
TROUGH
4O Degree 1
27 Nov 2016
Substantial Completion of the Whole of the Works
15 April 2018
Cheong Wan Road Flyover
NEW VIADUCT
DEMOL
Box Culvert
UP & DOWN STREAM
NSL / EWL Area 1
PIPE PILE
ELS
NSL & EWL
NSL / EWL Area 2
4H Degree 1
27 Nov 2016
Area C3
Area C2
Area C1
Area B
Area HKC
Area A
Diaphragm Wall
Underpinning
DW
U/P
ELS
EWL
NSL
NSL/EWL
DWALL
ELS / NSL & EWL
4F Degree 1
4 Sep 2016
EWL BOH & Platform
Degree 2 & 3 Works
M5
Traverser
South Approach Tunnel
MOBILIZATION
CWM
W1A, B, C
DEMOLISH IMC
DIVERT SEWER
TROUGH L/R
HPP
CLP
Stabling Siding
SUB-STRUCTURE
TRACKFORM / ROADWORKS
UNDERPINNING
4M Degree 1
1 May 2016
Demolition
East Tx Rooms & Accomodation
South Tx Room & Accomodation
ABWF / E&M
Modification of Concourse
STAGE 1
STAGE 2
STAGE 3
STAGE 4
ENTRANCE E
3E
31 Dec 2017
Legend:
Start up works
Initial earth works required
D-wall works commencing from Guide wall construction
Note: Civil construction works commenced on 3 Jun 13
LEIGHTON 禮頓
Executive Summary Programme
3.1

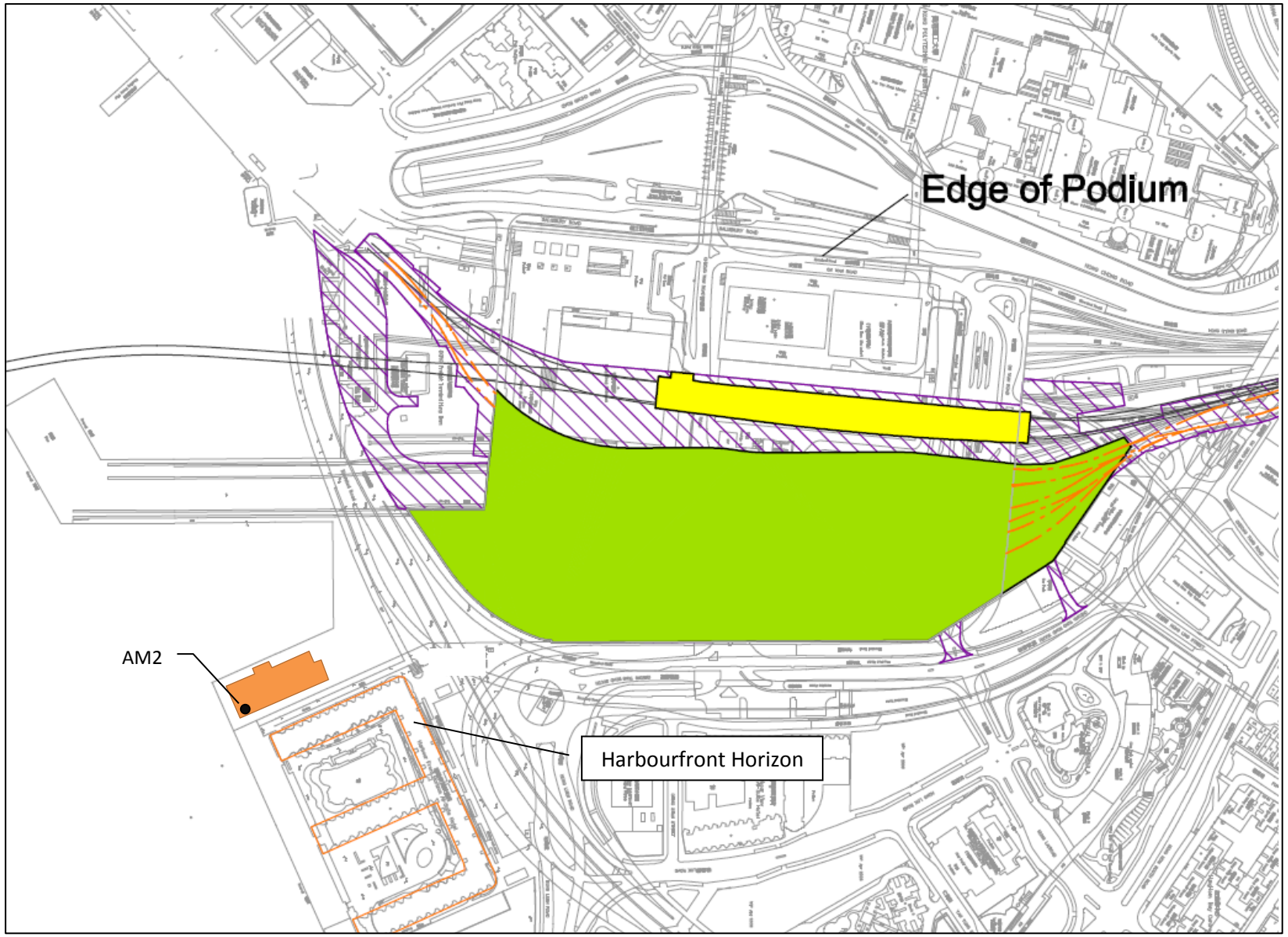
APPENDIX C

Project Organisation for Environmental Works


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

APPENDIX D

Location of Air Quality Monitoring Station


Edge of Podium
AM2
Harbourfront Horizon

APPENDIX E

Calibration Certificates for Monitoring Equipment

TSP Sampler Calibration

SITE

Location:	Hung Hom	Calibration Date:	February 5, 2014
Sampler:	Hunghom MTR TSP	Next Calibration Date:	April 5, 2014
Serial No	694-0665	Tech:	Sam Wong

CONDITIONS

Barometric Pressure (in Hg):	39.94	Corrected Pressure (mm Hg):	1014
Temperature (deg F):	64	Temperature (deg K):	291
Average Press. (in Hg):	39.94	Corrected Average (mm Hg):	1014
Average Temp. (deg F):	64	Average Temp. (deg K):	291

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.11662
Model:	TE-5025A	Qstd Intercept:	-0.01714
Serial#:	1941	Date Certified:	April 9, 2013

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	12.00	1.922	60.0	70.18	Slope =	35.6024
2	10.00	1.756	54.0	63.16	Intercept =	1.3070
3	7.80	1.551	48.0	56.14	Corr. coeff.=	0.9983
4	5.00	1.244	40.0	46.78		
5	3.00	0.965	30.0	35.09	# of Observations:	5

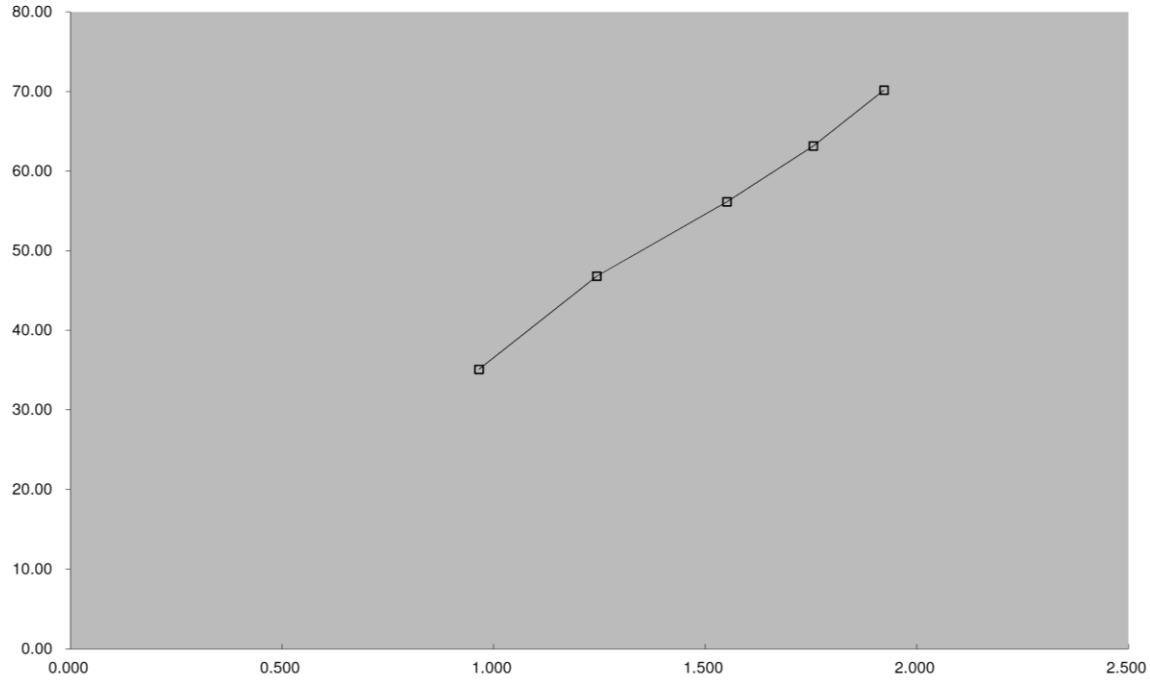
Calculations

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

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

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

Reviewer: Sam Wong Signature: _____ Date: February 5, 2014


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 ENVIROMENTAL, INC.
145 SOUTH MIAMI AVE.
VILLAGE OF CLEVES, OH 45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX
WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Apr 09, 2013 Rootsmeter S/N 0438320 Ta (K) - 296
Operator Tisch Orifice I.D. - 1941 Pa (mm) - 751.84

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	1.4710	3.3	2.00
2	NA	NA	1.00	1.0370	6.4	4.00
3	NA	NA	1.00	0.9270	7.9	5.00
4	NA	NA	1.00	0.8840	8.8	5.50
5	NA	NA	1.00	0.7300	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9916	0.6741	1.4113		0.9956	0.6768	0.8874
0.9874	0.9521	1.9959		0.9914	0.9560	1.2549
0.9854	1.0630	2.2315		0.9894	1.0673	1.4030
0.9843	1.1134	2.3405		0.9883	1.1180	1.4715
0.9790	1.3410	2.8227		0.9829	1.3465	1.7747
Qstd slope (m) =		2.11662		Qa slope (m) =		1.32539
intercept (b) =		-0.01714		intercept (b) =		-0.01078
coefficient (r) =		0.99999		coefficient (r) =		0.99999
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

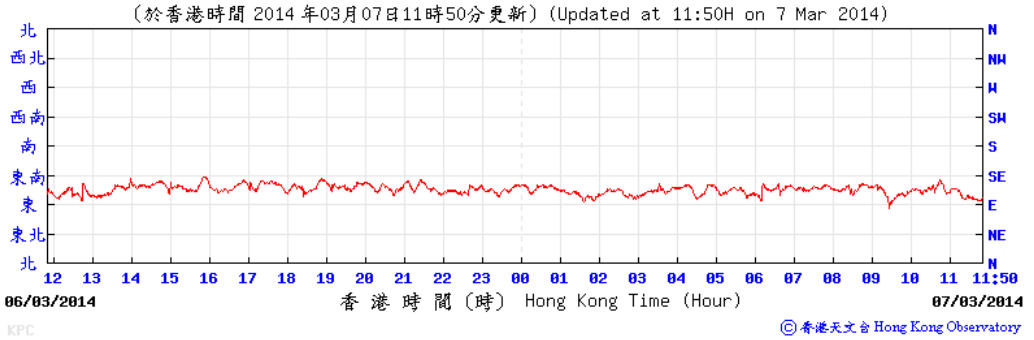
For subsequent flow rate calculations:

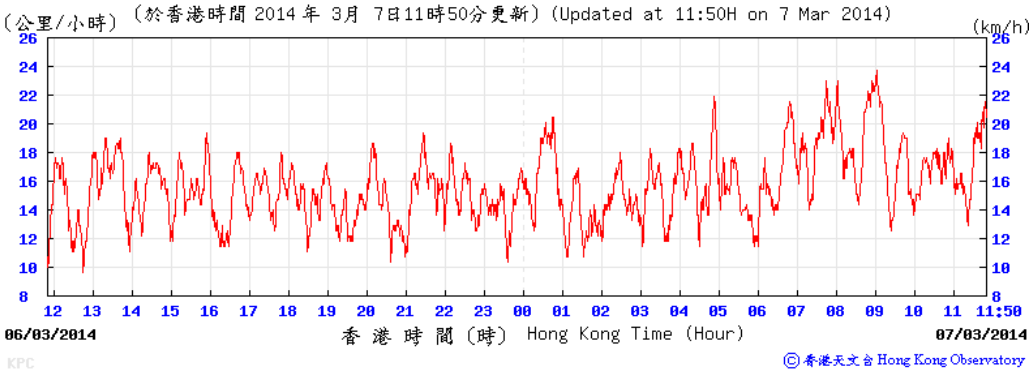
Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

Appendix F

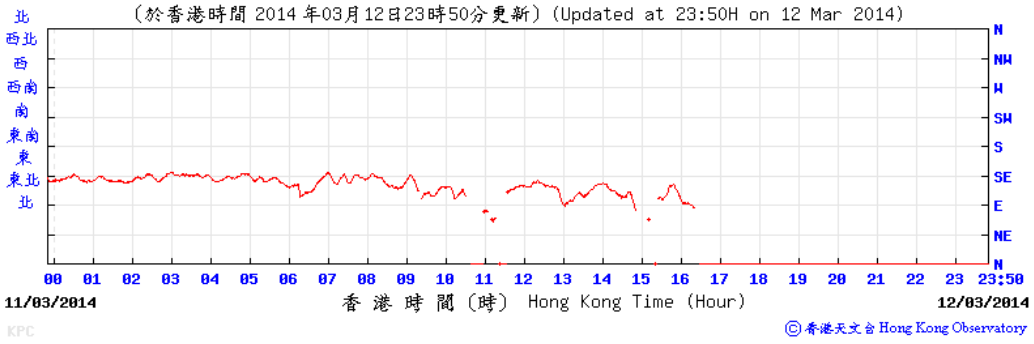
Wind Data

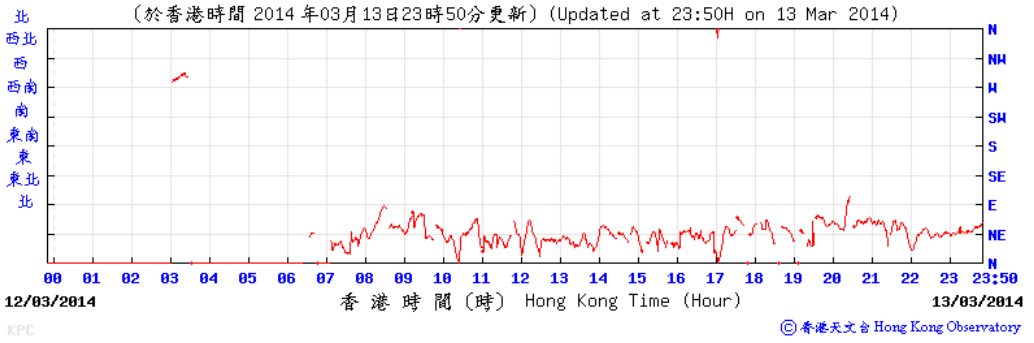
6 March 2014

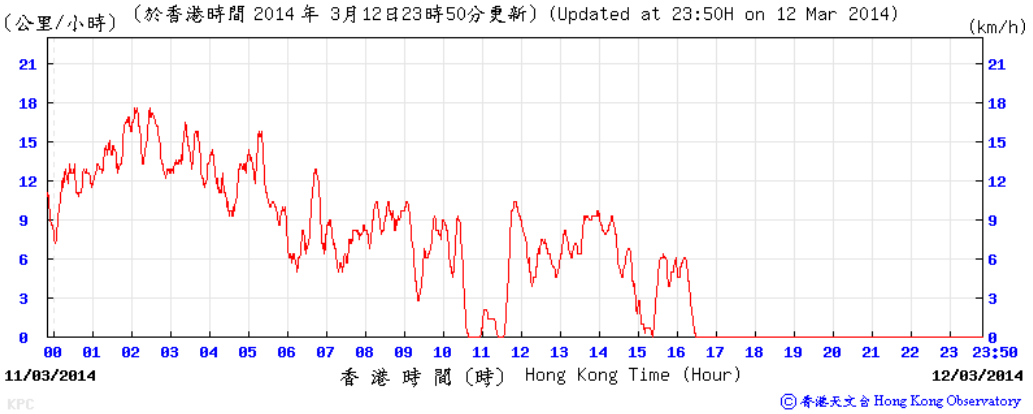


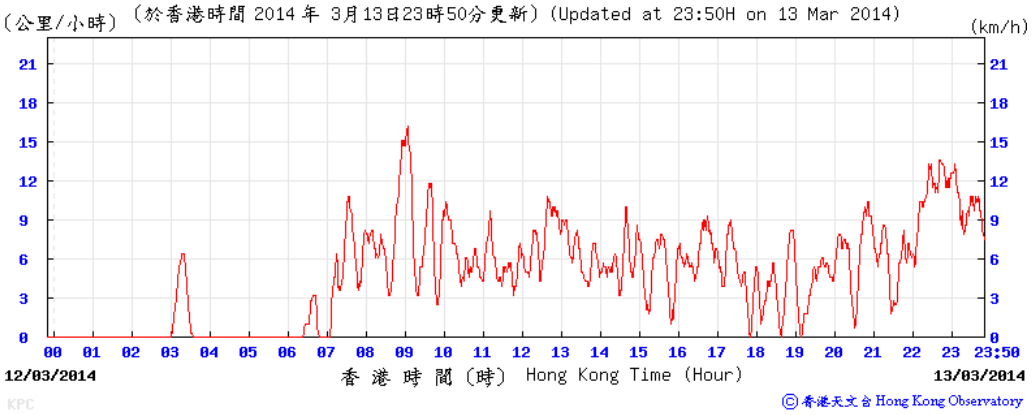


12 March 2014

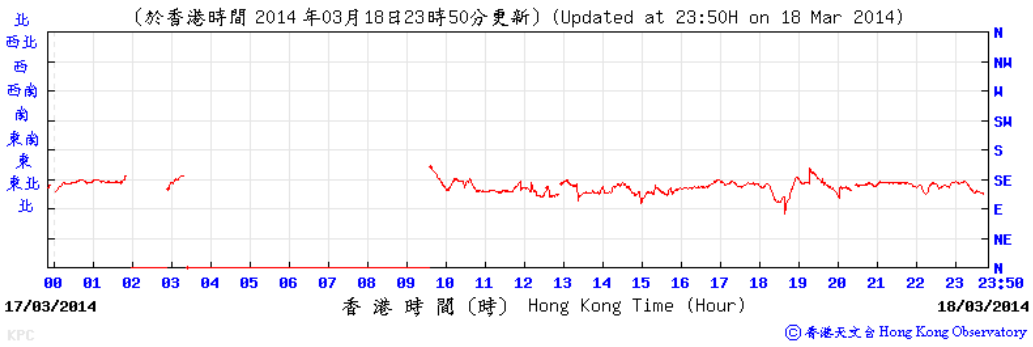


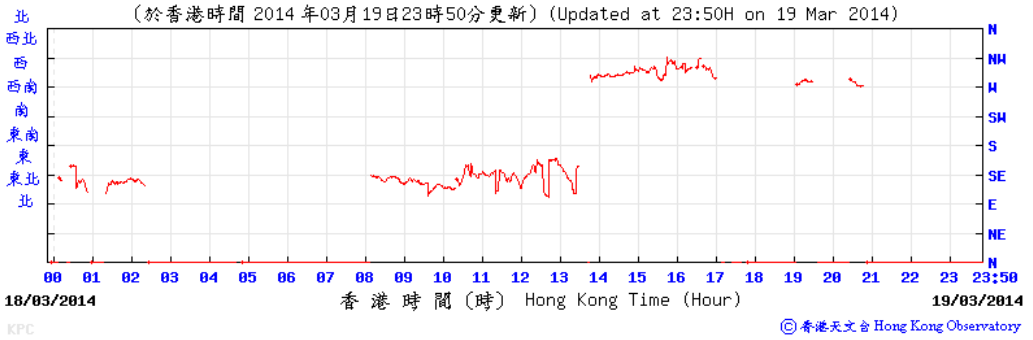


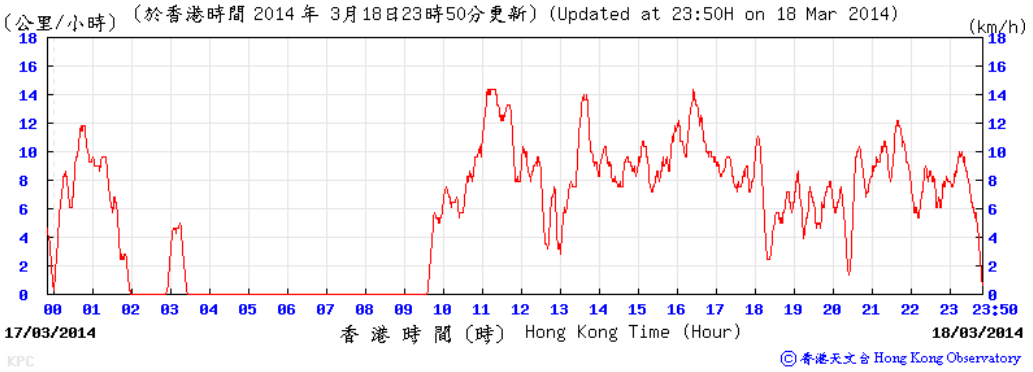


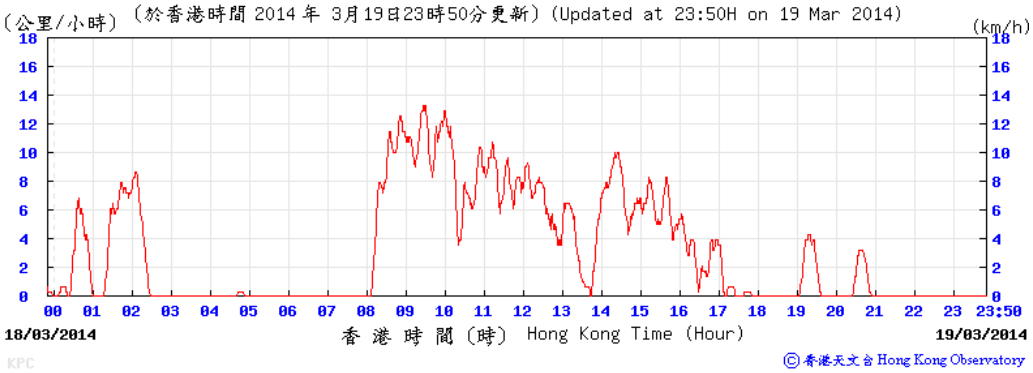


18 March 2014

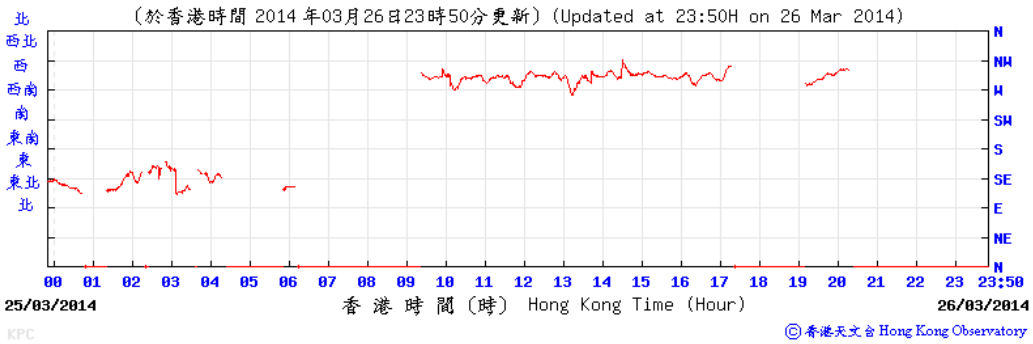


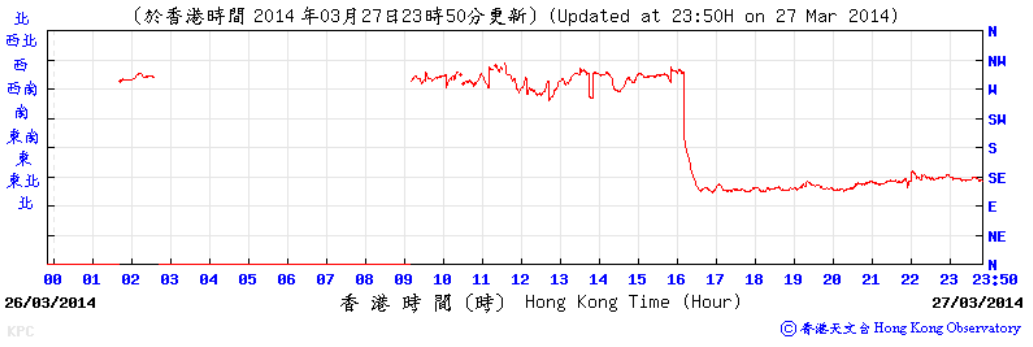


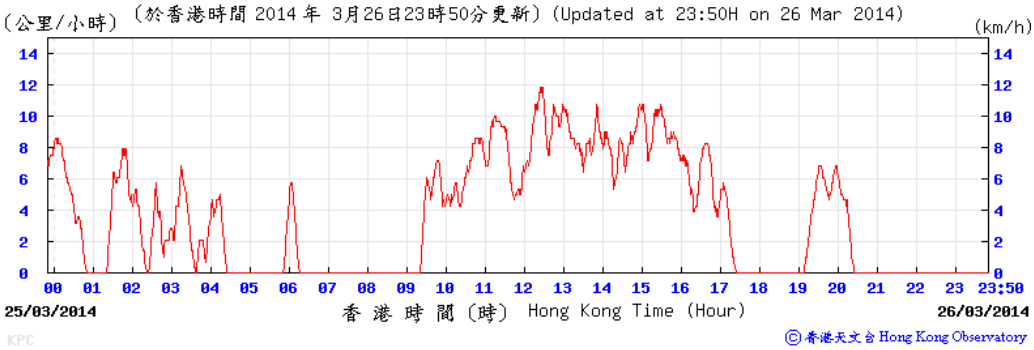


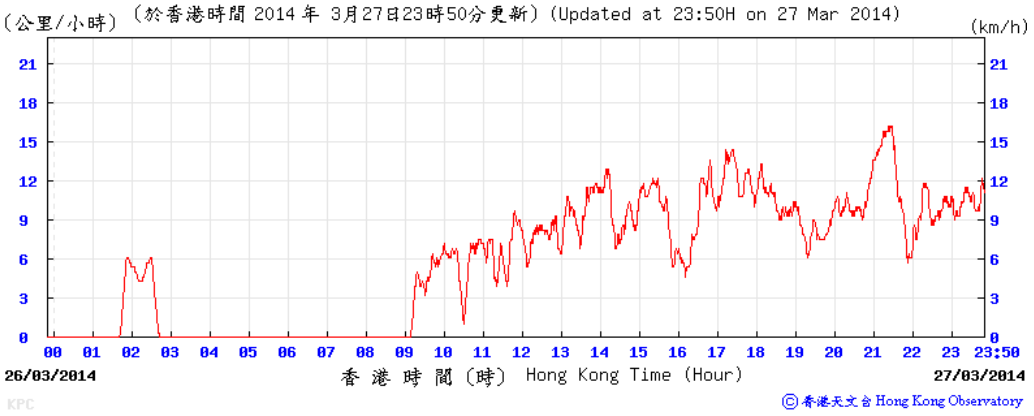


26 March 2014

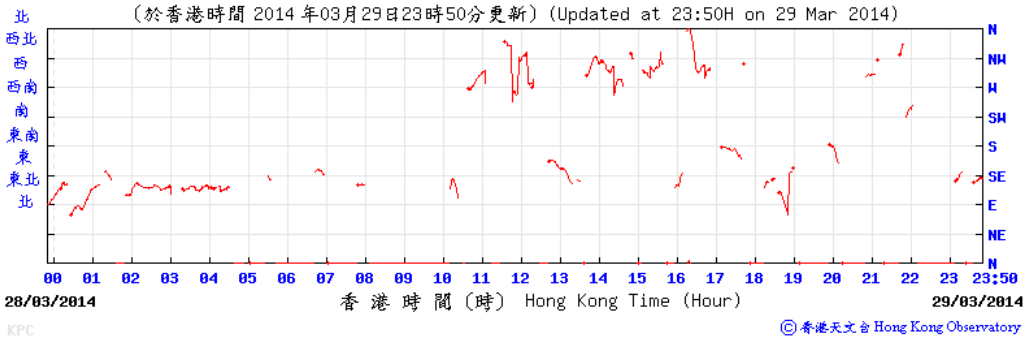


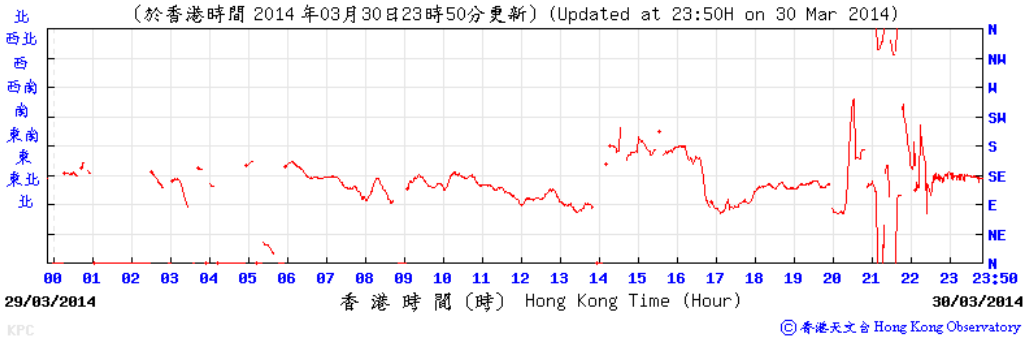


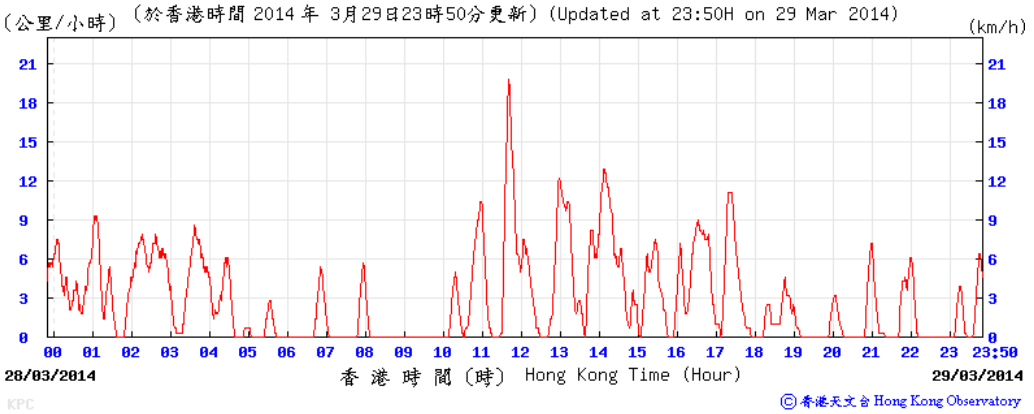




29 March 2014



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香 港 時 間 (時) Hong Kong Time (Hour)
29/03/2014
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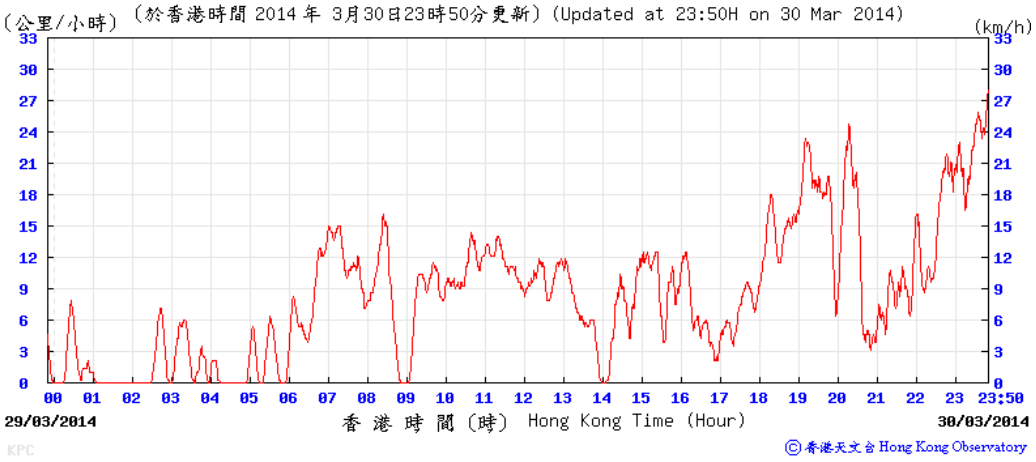
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30/03/2014
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Appendix G

Environmental Monitoring Programme

Environmental Monitoring Schedule for SCL1112 in March 2014

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

Note: Air monitoring schedule on 24 March 2014 was interrupted by power failure. The monitoring was restarted on 26 March 2014.

Environmental Monitoring Schedule for SCL1112 in April 2014

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	22 24 hr TSP	23	24	25	26
27	28 24 hr TSP	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.						
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	Air Pollution Control Ordinance (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/m2 once every working hour. Any potential dust impact and watering mitigation would be subject to the actual site condition. For example, a construction activity that produces inherently wet conditions or in cases under rainy weather, the above water application intensity may not be unreservedly applied. While the above watering frequency is to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.7L/m^2 to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&A programme as specified in the EM&A Manual. • Vehicles leaving the barging facilities – vehicles would be required to pass through the wheel washing facilities to be provided at site exit.	To minimize the construction dust impacts to the nearby sensitive receivers	Contractor	Barging point at Hung Hom Freight Pier	Construction stage	APCO	* ^ N/A
S7.6.5 of Ref.	Mitigation measures in form of regular watering under a good site	Minimise dust impact at	Contractor	Active works	Construction	APCO	^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
1; S5.50 of Ref. 2; S7.6.6 of Ref. 3	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.	the nearby sensitive receivers		areas, exposed areas and paved haul roads	stage	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 a stockpile is removed will be wetted and cleared from the surface of roads. • A stockpile of dusty material will not be extend 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, 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	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	APCO Air Pollution Control (Construction Dust) Regulation To control the dust impact to meet HKAQO and EIAO-TM criteria	# ^ ^ ^ ^ ^ ^ ^ ^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	to, during and immediately after the activities so as to maintain the entire surface wet. • Where scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground floor level of the building, or a canopy will be provided from the first floor level up to the highest level of the scaffolding. • Any skip hoist for material transport will be totally enclosed by impervious sheeting. • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) will be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. • Cement or dry PFA delivered in bulk will be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed. • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA will be carried out in a totally enclosed system or facility, and any vent or exhaust will be fitted with an effective fabric filter or equivalent air pollution control system. • Exposed earth will be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						N/A ^ ^ ^ # ^
S7.6.5 of Ref. 1; S5.57 of Ref. 2; S7.6.6 of Ref. 3	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Harbourfront Horizon	Construction stage	EIAO-TM APCO	^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
Construction Airborne Noise							
S8.3.6 of Ref. 1; S6.61 of Ref. 2; S8.5.6 of Ref. 3	Implement the following good site practices: • Only well-maintained plant will be operated on-site and plant will be serviced regularly during the construction programme. • Machines and plant (such as trucks, cranes) that may be in intermittent use will be shut down between work periods or will be throttled down to a minimum. • Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs. • Silencers or mufflers on construction equipment will be properly fitted and maintained during the construction works. • Mobile plant will be sited as far away from NSRs as possible and practicable. • Material stockpiles, mobile container site office and other structures will be effectively utilised, where practicable, to screen noise from onsite construction activities.	Control construction airborne noise	Contractor	All construction sites where practicable	Construction stage	Annex 5, EIAO-TM	^ ^ ^ ^ ^ ^
S8.3.6 of Ref. 1; S6.68 of Ref. 2; S8.5.6 of Ref. 3	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings will be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites where practicable	Construction stage	Annex 5, EIAO-TM	^
S8.3.6 of Ref. 1; S6.64 – 6.67 and Table 6.20 of Ref. 2; S8.5.6 of Ref. 3	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressor, gene rators and saw.	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction stage	Annex 5, EIAO-TM	^
S8.3.6 of Ref. 1; S6.62 – 6.63 and Table 6.19 of Ref. 2; S8.5.6 of Ref. 3	The following quiet PME should be used: • Asphalt Paver (SWL=101dB(A)) • Backhoe (SWL=106dB(A)) • Backhoe with Hydraulic Breaker (SWL=110dB(A)) • Concrete lorry mixer (SWL=96dB(A)) • Concrete mixer truck (SWL=96dB(A)) • Concrete Pump (SWL=106dB(A)) • Concrete Pump Truck (SWL=106dB(A)) • Crane, mobile (SWL=94dB(A)) • Crawler Crane (SWL=102dB(A))	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	Annex 5, EIAO-TM	^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	• Drill, hand-held (SWL=98dB(A)) • Dump truck (SWL=104dB(A)) • Excavator (SWL=106dB(A)) • Flat Bed Lorry (SWL=102dB(A)) • Generator (SWL=95dB(A)) • Giken Piler and Power-pack (SWL=94dB(A)) • Hydraulic breaker (SWL=110dB(A)) • Hydraulic excavator (SWL=106dB(A)) • Lorry (SWL=102dB(A)) • Lorry with crane/ grab (SWL=94dB(A)) • Mini Piling Rig (SWL=112dB(A)) • Piling Rig (SWL=112dB(A)) • Poker, vibrator, hand-held (SWL=98dB(A)) • Road Roller (SWL=101dB(A)) • Rock Drill (SWL = 108dB(A) • Roller (SWL = 101dB(A) • Truck (SWL=103dB(A)) • Vibratory Hammer (SWL=118dB(A))						
S8.3.6 of Ref. 1; S8.5.6 of Ref. 3	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	Annex 5, EIAO-TM	^
S8.3.6 of Ref. 1; S8.5.6 of Ref. 3	Implement noise monitoring under EM&A programme.	Monitoring of construction noise impact	Contractor	Wing Fung Building	Construction stage as required by IEC	TM-EIA	^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
Water Quality (Construction Phase)							
S10.7.1 of Ref. 1;S8.41 – 8.39 and S8.50 of Ref. 2; S10.7.1 of Ref. 3	In accordance with the Practice Note for Professional Persons on Construction Site Drainage, EPD, 1994 (ProPECC PN1/94), construction phase mitigation measures will include the following: <u>Construction runoff and site drainage</u> • At the start of site establishment, perimeter cut-off drains to direct off-site water around the site will be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers will be provided onsite to direct stormwater to silt removal facilities. The design of the temporary onsite drainage system will be undertaken by the contractor prior to commencement of construction. • The dikes or embankments for flood protection will be implemented around the boundaries of earthwork areas. Temporary ditches will be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps will be incorporated in the permanent drainage channels to enhance deposition rates. • The design of silt removal facilities will be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps will be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1m^3/s a sedimentation basin of 30m^3 would be required and for a flow rate of 0.5m^3/s the basin would be 150m^3. Detailed design of the sand/silt traps will be undertaken by the contractor prior to the commencement of works. • All exposed earth areas will be completed and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces will be covered by tarpaulin or other means. • All drainage facilities and erosion and sediment control structures will be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit will be removed regularly and disposed of by spreading evenly over stable,	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	Water Pollution Control Ordinance (WPCO) ProPECC PN1/94 EIAO-TM TM-Water Technical Memorandum on Effluent Discharge Standard (TM-DSS)	^ ^ ^ ^ ^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	vegetated areas. • Measures will be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they will be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations will be discharged into storm drains via silt removal facilities. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than $50m^3$ will be covered with tarpaulin or similar fabric during rainstorms. • Measures will be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • Manholes (including newly constructed ones) will always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. • Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention will be paid to the control of silty surface runoff during storms, especially areas near steep slopes. • All vehicles and plant will be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities will be provided at every construction site exit where practicable. Wash-water will have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road will be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. • Oil interceptors will be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors will be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass will be provided for						^ ^ # ^ ^ ^ ^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	the oil interceptors to prevent flushing during heavy rain. • Construction solid waste, debris and rubbish on site will be collected, handled and disposed of properly to avoid water quality impacts. • All fuel tanks and storage areas will be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby. • All the earth works involving will be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable. • Adopt Best Management Practices.						^ # ^ ^
S10.7.1 of Ref. 1; S10.7.1 of Ref. 3	<u>Tunnelling works</u> • Cut-and-cover/ open-cut tunnelling work will be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable. • Uncontaminated discharge will pass through sedimentation tanks prior to off-site discharge. • The wastewater with a high concentration of SS will be treated (eg, by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater. • Direct discharge of the bentonite slurry (as a result of D-wall and bored tunnelling construction) is not allowed. It will be reconditioned and reused wherever practicable. Temporary storage locations (typically a properly closed warehouse) will be provided on site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC PN 1/94 will be adhered to in the handling and disposal of bentonite slurries.	To minimize construction water quality impact from tunnelling works	Contractor	All tunnelling portion	Construction stage	WPCO ProPECC PN1/94 EIAO-TM TM-Water	^ ^ ^ ^

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

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	consumption and reduce the effluent discharge volume. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the relevant WPCO licence which is under the ambit of regional office of EPD.						
S8.62 of Ref. 2	Excavation Activities: • The construction programme should be properly planned to minimise soil excavation, if any, in rainy seasons. This prevents soil erosion from exposed soil surfaces. Any exposed soil surfaces should also be properly protected to minimise the potential for dust emission, increased siltation and contamination of runoff. In areas where a large amount of exposed soils exist, earth bunds or sand bags should be provided. Exposed stockpiles should be covered with tarpaulin or impervious sheets at all times. The stockpiles of materials should be placed at locations away from water environment so as to avoid releasing materials into the water bodies. Final surfaces of earthworks should be compacted and protected by permanent work.	To minimize water quality impact from excavation activities	Contractor	All excavation works areas	Construction stage	WPCO EIAO-TM	^
S8.63 of Ref. 2	Diaphragm Wall • The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be implemented to control site run-off and drainage as well as any site effluents generated from the works areas, and to prevent run-off and construction wastes from entering nearby water environment. Proper handling of bentonite slurries used in diaphragm wall construction should be adopted.	To minimize water quality impact from diaphragm walling	Contractor	All diaphragm walling works areas	Construction stage	WPCO EIAO-TM	^
S8.60 – 8.61 of Ref. 2; S10.7.1 of Ref. 3	Sewage effluent Portable chemical toilets are recommended for handling the construction sewage generated by the workforce. A licensed contractor will be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	WPCO TM-Water	^
S8.64 of Ref. 2; S10.7.1 of Ref. 3	Groundwater seepage As some proposed works areas at Hung Hom are near Victoria Harbour, high ground water level regime due to both tidal effects and rainwater infiltration is anticipated. Appropriate measures will be deployed to minimise the intrusion of groundwater into excavation works areas. In case seepage of groundwater occurs, groundwater will be pumped out from the works areas and discharged into the storm system via silt	To minimize groundwater quality impact from contaminated area	Contractor	Excavation areas where contamination is found.	Construction stage	WPCO TM-Water EIAO-TM	^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	removal facilities. Groundwater from dewatering process will also be discharged into the storm system via silt traps.						
S10.7.1 of Ref. 1; S8.57 – 8.59 of Ref. 2; S10.7.1 of Ref. 3	<u>Accidental spillage</u> To prevent accidental spillage of chemicals, the following is recommended: • Proper storage and handling facilities will be provided. • All the tanks, containers, storage area will be bunded and the locations will be locked as far as possible from the sensitive watercourse and stormwater drains. • The contractor will register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities will be stored with suitable labels and warnings. • Disposal of chemical wastes will be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	WPCO ProPECC PN1/94 EIAO-TM TM-Water	* ^ ^ ^
S8.72 of Ref.2	Regular site inspections should be undertaken to inspect the construction activities and works areas	To ensure the recommended water quality mitigation measures are properly implemented	Contractor	All construction sites	Construction stage	EIAO-TM WPCO ProPECC PN 1/94 TM-DSS WDO	^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
Waste Management (Construction Phase)							
S11.4.1.1 of Ref. 1; S9.80 – 9.83 of Ref. 2; S11.4.1.1 of Ref.3	Onsite sorting of C&D material Geological assessment will be carried out by competent persons onsite during excavation to identify materials which are not suitable to use as aggregate in structural concrete (eg, volcanic rock, Aplite dyke rock, etc). Volcanic rock and Aplite dyke rock will be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator will also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use. Details regarding control measures at source site and crushing facilities will be submitted by the Contractors for the Engineer to review and agree. In addition, site records will also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) ref: 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc will also be explored.	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	Contractor	All construction sites	Construction stage	DEVB TC(W) ref. 6/2010	^
S11.5.1 of Ref.1; S9.72 – 9.74 of Ref. 2; S11.5.1 of Ref.3	Construction and demolition material • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement. • Carry out onsite sorting. • Make provisions in the Contract documents to allow and promote • The use of recycled aggregates where appropriate. • Adopt 'selective demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible. • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified. • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) ref 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. will be avoided. The contractor will propose the final disposal sites to the Project	Good site practice to minimise the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	Land (Miscellaneous Provisions) Ordinance Waste Disposal Ordinance ETWB TCW Ref 19/2005	^ ^ ^ ^ ^ ^ ^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	Proponent and EPD and get their approval before implementation.						
S11.5.1 of Ref.1; S9.73 of Ref. 2; S11.5.1 of Ref.3	<u>C&D waste</u> • Standard formwork or pre-fabrication will be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works will be considered. Use of wooden hoardings will not be used, as in other projects. Metal hoarding will be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. • The contractor will recycle as much of the C&D materials as possible onsite. Public fill and C&D waste will be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites will be considered for such segregation and storage.	Good site practice to minimise the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	Land (Miscellaneous Provisions) Ordinance Waste Disposal Ordinance ETWB TCW Ref 19/2005	^ ^
S11.5.1 of Ref.1; S9.100-9.102 of Ref.2; S11.5.1 of Ref. 3	<u>General refuse</u> • General refuse generated onsite will be stored in enclosed bins or compaction units separately from construction and chemical wastes. • A reputable waste collector will be employed by the contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimise odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • Aluminium cans will be often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit will be provided if feasible. • Office wastes will be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme will be considered by the contractor.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance	^ ^ ^ ^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
S11.5.1 of Ref.1; S9.84 – 9.93 of Ref. 2	<u>Land-based sediment</u> • The basic requirements and procedures for excavated sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed. • The Project Proponent should agree in advance with MFC of CEDD on the site allocation. Subject to the final decision by MFC, Type 1 sediments are typically disposed to South Cheung Chau and/or East of Ninepin as open sea disposal while Type 2 sediments are disposed to East Sha Chau as confined marine disposal. • Sampling and Testing Plan(s) should be prepared in accordance with ETWB TC(W) No. 34/2002. Site investigation, based on the Sediment Sampling and Testing Plan(s), should be carried out in order to confirm the disposal arrangements for the proposed excavated sediments. A Sediment Quality Report (SQR) should then be submitted to EPD for agreement prior to the tendering of the construction contract, discussing in details the site investigation, testing results as well as the delineation of each of the categories of excavated materials and the corresponding types of disposal. • The excavated sediments is expected to be loaded onto the dumping trucks and transferred to the barging point where the sediments would be transported via barge to the existing designated disposal sites allocated by the MFC. The excavated sediment would be disposed of according to its determined disposal options and ETWB TC(W) No. 34/2002. • Requirements of the Air Pollution Ordinance (Construction Dust) Regulation, where relevant, shall be adhered to during excavation, transportation and disposal of sediments. • Stockpiling of contaminated sediments should be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment should be covered by tarpaulin and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and/or surrounding water bodies. The stockpiling areas should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged	To ensure the sediment is handled and disposed of in a least impacted way and in accordance to the statutory	Contractor	All construction sites	Construction stage	ETWB TC(W) NO. 34/2002 Dumping at Sea Ordinance (DASO) APCO WPCO	N/A N/A N/A N/A N/A N/A

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	according to the Water Pollution Control Ordinance (WPCO). • In order to minimize the potential odour / dust emissions during excavation and transportation of the sediment, the excavated sediments should be wetted during excavation / material handling and should be properly covered when placed on trucks or barges. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. • The barge transporting the sediments to the designated disposal sites should be equipped with tight fitting seals to prevent leakage and should not be filled to a level that would cause overflow of materials or laden water during loading or transportation. • In order to minimize the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site.						^ 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	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
	arranged so that incompatible materials are adequately separated. • 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 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 ^ ^ ^
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)"	^
EM&A Project							
S14.2 – 14.4 of Ref. 1; S13.2 – 13.4	• An Environmental Team needs to be employed as per this EM&A Manual. • Prepare a systematic EMP to ensure effective implementation of the	Perform environmental monitoring & auditing	Contractor	All construction sites	Construction stage	EIAO Guidance Note Ref4/2010	^

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
of Ref. 3 1.	mitigation measures. • An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in this EM&A Manual are fully complied with.					EIAO-TM	

Remark for Status:

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

Notes:

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

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

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

APPENDIX I

Event and Action Plan

Event and Action Plan for Landscape and Visual Impact Monitoring

Event	ET	IEC	ER	Contractor
Action level				
Non-conformity on one occasion	1. Inform the contractor, the IEC and the ER 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.

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

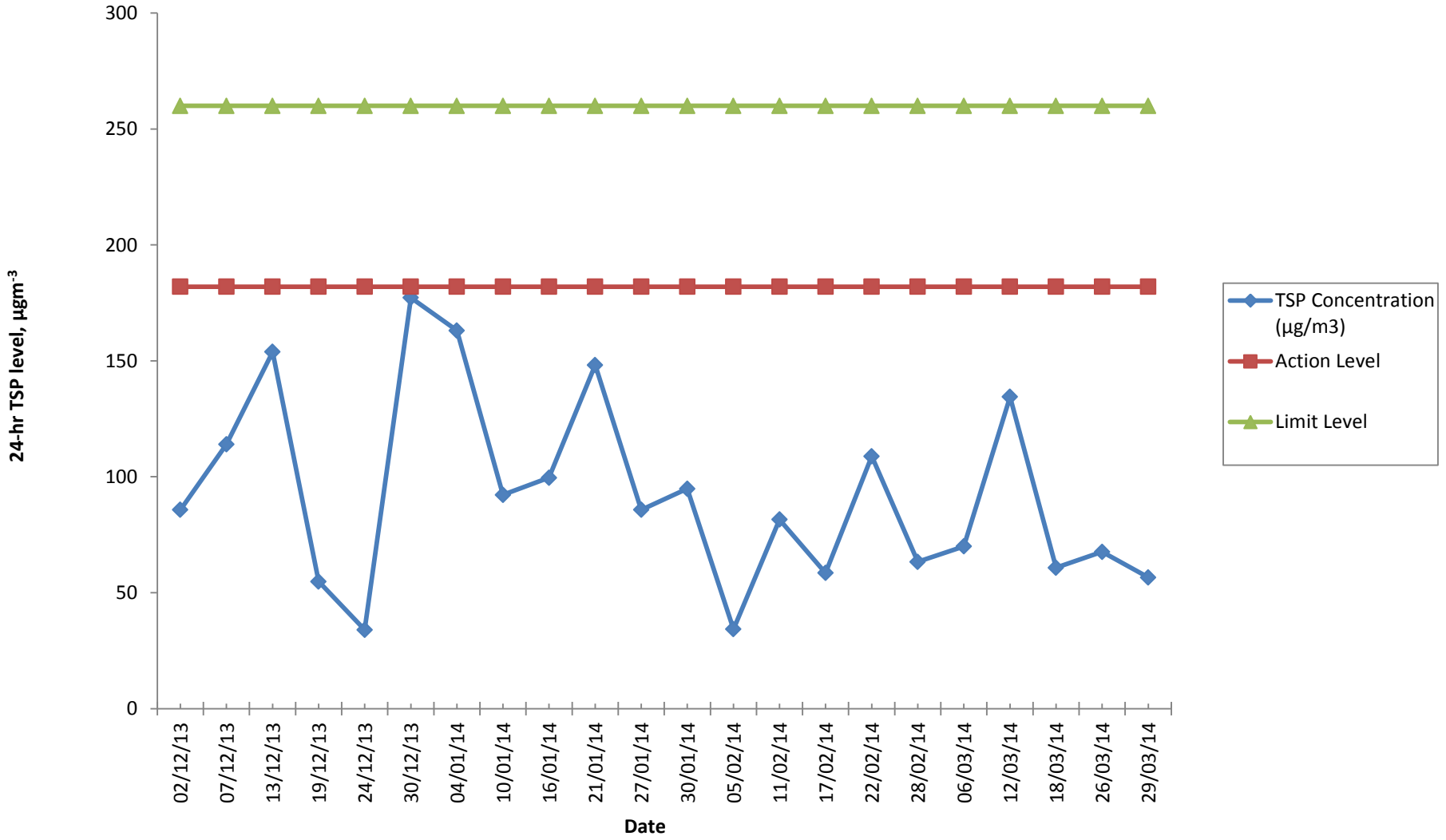
APPENDIX J

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	Reference
	Paper No.	Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate				
06/03/14	205824	2.7078	2.8219	0.1141	10797.06	10821.06	24.00	40	40	40	1631.05	70.0	Cloudy	-
12/03/14	5	2.6806	2.8999	0.2193	10821.06	10845.06	24.00	40	40	40	1631.05	134.5	Cloudy	-
18/03/14	1A	2.7070	2.8061	0.0991	10845.06	10869.06	24.00	40	40	40	1631.05	60.8	Cloudy	-
26/03/14	3A	2.7075	2.8178	0.1103	10887.30	10911.30	24.00	40	40	40	1631.05	67.6	Sunny	-
29/03/14	4A	2.6879	2.7802	0.0923	10911.30	10935.30	24.00	40	40	40	1631.05	56.6	Rainy	-

Construction Dust Monitroing 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	
	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 [Note 2]
Unit	(in '000m^3)	(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 '000Kg)	(in '000Kg)
Jun-13	0	0	0	0	0	0	0	137.3	0	0	0	0	6.55
Jul-13	0.36	0	0	0	0	0	0.36	365.34	0	0	0	0	16.87
Aug-13	1.68	0	0	0	0.05	0	1.63	69.98	0.25	0	0	0	12.67
Sep-13	3.39	0	0	0	0.20	0	3.19	131.18	0.22	0	0.46	0	16.25
Oct-13	4.04	0	0	0	0.78	0	3.26	179.97	0.63	8.28	2.04	0	39.87
Nov-13	6.09	0	0	0	2.09	0.18	3.82	125.70	0.45	160.35	0	0	28.69
Dec-13	5.69	0	0	0	1.74	0.01	3.94	72.15	0.39	4.13	0	0	18.04
Jan-14	4.58	0	0	0	0	0.27	4.31	117.57	0.26	147.67	0.26	0	30.09
Feb-14	3.80	0	0	0.14 [Note3]	0	0.19	3.46	28.32	0.29	414.67	0	0	15.73
Mar-14	10.10	0	0	6.18[Note4]	0	0.29	3.63	44.02	0.25	0	0	0	47.76
TOTAL	**39.73**	**0**	**0**	**6.31**	**4.85**	**0.95**	**27.61**	**1271.52**	**2.74**	**735.10**	**2.76**	**0**	**232.52**

Note:

1. Assume the density of fill is 2 ton/m^3.
2. Refuses disposed of at NENT landfill.
3. 137 m^3 of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904.
4. 267m^3 of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904.
   3998m^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.
   1912m^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.

APPENDIX L

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. received in this month	Total no. recorded since project commencement
Environmental complaints	-	-	-	0	0
Notification of summons	-	-	-	0	0
Successful Prosecution	-	-	-	0	0

Appendix I

10th 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. 10

[Period from 1 to 31 March 2014]

Works Contract 1108 – Kai Tak Station and Associated Tunnels

(April 2014)

Certified by: Goldie Fung

Position: Environmental Team Leader

Date: 10 April 2014

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 2014

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 tenth monthly 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 2014 to 31st March 2014.

Summary of the Construction Works undertaken during the Reporting Month

The major site activities in this reporting period were including:

- Shotcreting on excavated slope
- Excavation ongoing
- Formation of crest U-channel ongoing
- Pumps fitting set up for Stage 2 pumping rest
- Disposal of marine deposit
- Excavation for soil nail platform in progress
- Installation of steel water barrier
- Removal of concrete blocks in side existing Nullah in progress
- Removal of remaining side wall of Nullah

Variation in Construction Method

No variation in construction method from the proposed construction programme was noted in this reporting month.

Environmental Monitoring and Audit Progress

Culture Heritage

As tunneling works have not commenced, no audit for the Lung Tsun Stone Bridge and Former Kowloon City Pier was conducted during the reporting month.

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, 28014 m^3 of type 1, 11886 m^3 type 1 DS and type2 marine mud were generated during this reporting month and were disposed to the receiving facility of Contract 1108A. 45732 m^3 of inert C&D materials were generated and were disposed to the receiving facility of Contract 1108A or Public Fill Reception Facilities of CEDD. 146.11 m^3 of general refuse were generated and disposed at landfill site. 96 kg of paper was sent to recyclers for recycling.

Environmental Site Inspection

Joint weekly inspections were conducted by representatives of the Contractor, Engineer and ET on 4th, 11th, 18th and 25th March 2014. The representative of the IEC jointed the site inspection on 18th March 2014. Details of the audit findings and implementation status are presented in Section 6.

Environmental Exceedance / Non-conformance / Compliant / 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:

- Pumping test on going
- Continue shotcreting for the exposed cut slope
- Continue excavation
- Continue surface trimming
- Station structure
- Complete the removal of concrete blocks in existing nullah
- Complete the removal of remaining side wall

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 tenth monthly EM&A Report which summarises the audit findings for the EM&A programme during the reporting period from 1st March 2014 to 31st March 2014.

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**.

- Shotcreting on excavated slope
- Excavation ongoing
- Formation of crest U-channel ongoing
- Pumps fitting set up for Stage 2 pumping rest
- Disposal of marine deposit
- Excavation for soil nail platform in progress
- Installation of steel water barrier
- Removal of concrete blocks in side existing Nullah in progress
- Removal of remaining side wall of Nullah

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/D	13/09/2013	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				
PP-RE0039-13	02/09/2013	28/02/2014	Expired	/
PP-RE0002-14	01/03/2014	30/08/2014	Valid	Supersede the permit (PP-RE0039-13)
Construction Noise Permit for General Works				
GW-RE0998-13	23/09/2013	15/03/2014	Expired	/
GW-RE1383-13	19/12/2013	12/06/2014	Valid	/
GW-RE0046-14	17/01/2014	14/07/2014	Valid	/
GW-RE0246-14	15/03/2014	14/09/2014	Valid	Supersede the permit (GW-RE0998-13)
GW-RE0308-14	22/03/2014	20/09/2014	Valid	/
Effluent Discharge License				
WT00017341-2013	29/10/2013	31/08/2018	Invalid	/
WT00018268-2014	17/03/2014	31/08/2018	Valid	Supersede the permit (WT00017341-2013)
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	/
Marine Dumping Permit				
EP/MD/14-077	27/11/2013	26/05/2014	Valid	Permit held by C1108A
EP/MD/14-117	24/02/2014	23/03/2014	Expired	Permit held by C1108A
EP/MD/14-158	25/03/2014	24/04/2014	Valid	Permit held by C1108A

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 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 within the horizontal buffer zone.

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	Ninth Monthly EM&A Report	14th March 2014

5 Monitoring Results

5.1 Cultural Heritage

As tunneling works have not been commenced, no audit was conducted during the reporting month.

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. 28014 m^3 of type 1, 11886 m^3 Type 1 DS and Type 2 marine mud was disposed to the Contract 1108A receiving facility in this reporting month. The inert C&D materials were disposed to the Contract 1108A receiving facility or Public Fill Reception Facilities of CEDD. The general refuse was disposed to designated landfill site. Paper was sent to recycler for recycling. No plastics and metals were recycled during this reporting month. No chemical waste was generated in this reporting month. 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 2014	45732 m^3	146.11 m^3	0 kg	96 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.

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 4th, 11th, 18th and 25th March 2014. The representative of the IEC jointed the site inspection on 18th March 2014. The details of observations during site audit can refer to Table 6.1.

EPD conducted a site inspection on 21st March 2014. EPD has reminded the Contractor to enhance construction dust control within the site, which include providing vehicles and wheels washing before the vehicles leaving the site, covering the dusty loads prior to the construction vehicles leaving the site, paving the haul road with concrete, bituminous materials, hardcores or metal plates and keeping clear of dusty material, or spraying the haul road with water to suppress dust.

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 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 Quality	25 Feb 14	Dust prevention measure for the cement production at Area 2 was missing.	Contractor was advised to enclose the area three sides and on top with impervious material for dust screening.	Shelter was erected for the cement production work for dust screening after previous site inspection on 25 Feb 14.	4 Mar 14	/

Parameters	Date	Findings	Advice from ET	Action taken	Closing date	Remarks
				No cement production work was observed at the concerned area during the site inspection on 4 Mar 14.		
	25 Feb 14	A portion of tarpaulins used for covering of the earthy stockpile at Area 2 were broken, leading to exposure of dusty surface.	Contractor was reminded to cover the stockpile entirely with tarpaulin for proper dust prevention.	The exposed surface of the earthy stockpile at Area 2 was entirely covered by tarpaulins.	4 Mar 14	/
	4 Mar 14	Dust prevention measure for the cement production work at Area 3 was missing.	Contractor was advised to enclose the area three sides and on top with impervious material for dust screening.	Shelter was erected for the cement production work for dust screening after the site inspection on 4 Mar 14. No cement production work was observed at the concerned area during the site inspection on 11 Mar 14.	11 Mar 14	/
	11 Mar 14	Enclosure for the cement production work at Area 3 was missing.	Contractor was advised to sheltered the area three sides and on top with impervious material for dust screening.	The cement mixing area at Area 3 was sheltered three sides and on top with impervious material by Contractor on 12 Mar 14.	12 Mar 14	/
	11 Mar 14	Dust was observed during transfer of broken concrete and soil at Area 3.	Contractor was advised to provide water spraying prior transfer of dry material to maintain the surface wet.	Water spraying was provided prior transfer of dry material at Area 3 to maintain the surface wet.	18 Mar 14	/
	11 Mar 14	A portion of haul road at Area 2 was dry.	Contractor was reminded to provide adequate water spraying to avoid dust generation. Contractor was suggested to regularly review the route plan of watering trucks in order to cover all exposed area.	Water spraying for the haul road at Area 2 was conducted by watering truck for dust suppression	18 Mar 14	/
	18 Mar 14	Improper enclosures for the cement mixing work at Area 1 & Area 3 were observed.	Contractor was advised to properly enclose the working area for dust screening.	The entire cement mixing area at Area 3 was sheltered by impervious material three sides and on top for dust screening. No cement mixing work was observed at Area 1 during the inspection.	25 Mar 14	/
	18 Mar 14	The exposed area at Area 2 was dry.	Contractor was reminded to provide adequate water spraying to suppress dust.	Enhanced water spraying was provided at Area 2 for dust suppression.	25 Mar 14	/
	25 Mar 14	The earthy stockpile at Area 2 was dry and exposed	Contractor was reminded to provide adequate water spraying to suppress dust.	Follow up actions will be reported in next month.	N/A	/
Water Quality	11 Mar 14	The drip trays at Area 2 and 3 were found to be unplugged.	Contractor was reminded to plug the outlet of the drip trays for proper containment of leaked oil.	The outlets of drip trays at Area 2 and 3 were plugged.	18 Mar 14	/
Waste / Chemical Management	N/A	N/A	N/A	N/A	N/A	/
Cultural Heritage	N/A	N/A	N/A	N/A	N/A	/
Landscape and Visual	N/A	N/A	N/A	N/A	N/A	/
Permits/ Licenses	N/A	N/A	N/A	N/A	N/A	/

7 Environmental Non-Conformance

7.1 Summary of Environmental Exceedances

No breaches of Action and Limit levels was 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

There was no successful environmental prosecution or notification of summons received since the Project commencement.

The Cumulative Log for environmental exceedance, non-compliance, complaint and summon and successful prosecution since the commencement of the Project is presented in **Appendix H**.

8 Future Key Issues

The major construction activities in the coming month will include:

- Pumping test on going
- Continue shotcreting for the exposed cut slope
- Continue excavation
- Continue Surface trimming
- Station structure
- Complete the removal of concrete blocks in existing nullah
- Complete the removal of remaining side wall

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 tenth monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works undertaken during 1st March 2014 to 31st March 2014 in accordance with the EM&A Manual and the requirement under EP-438/2012/D.

4 nos. of environmental site inspections were carried out in this reporting month. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.

No exceedances, non-compliance event, complaint and summons/prosecution was 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:

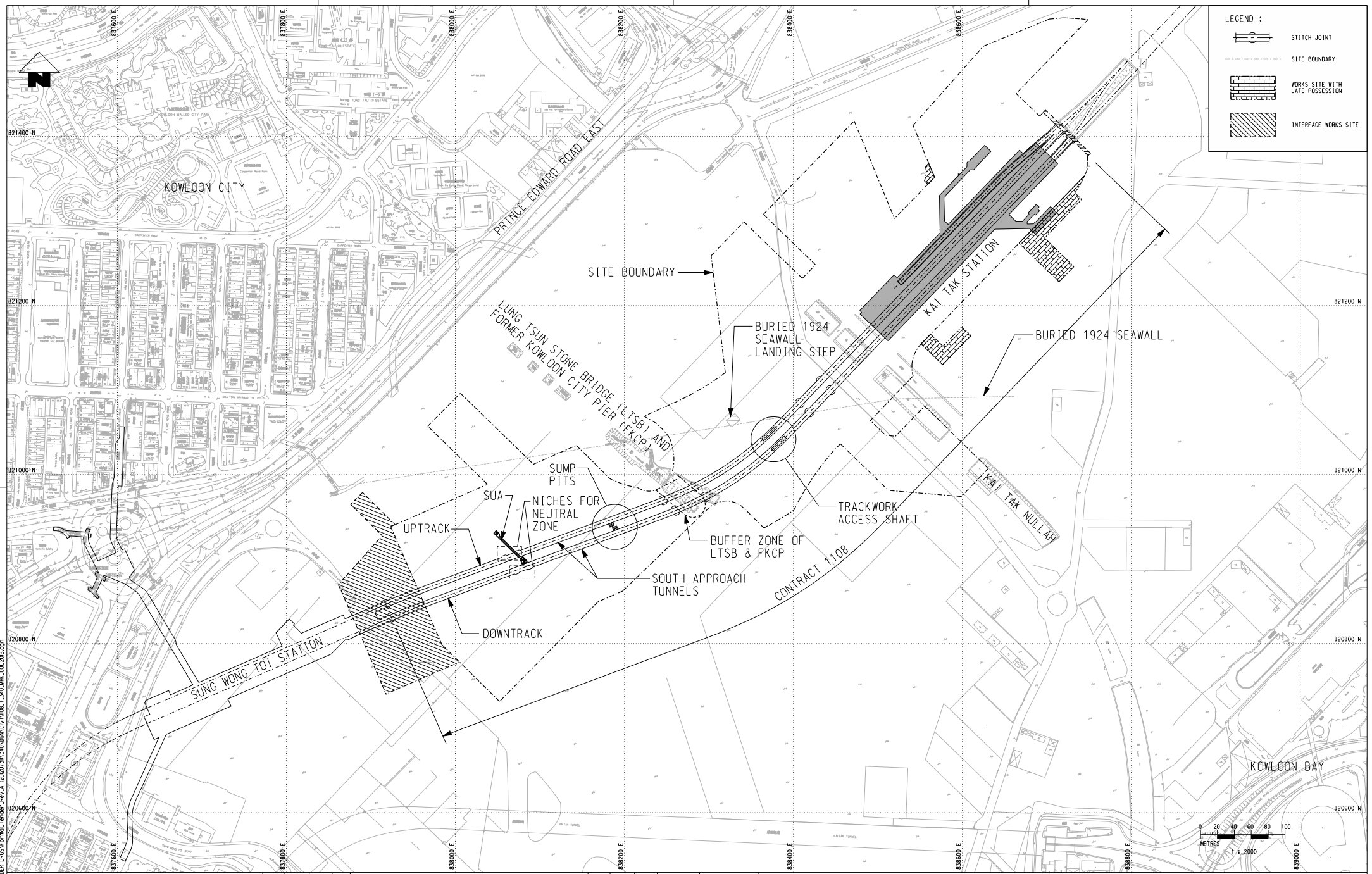
Dust Impact

- Enhance regular water spraying of the site to reduce the dust impact
- Cover dusty stockpiles entirely with impervious material or spray with water to avoid dust generation
- Provide proper enclosure for the cement production area with sheltered 3sides and on top
- Provide water spraying prior to transfer of dusty material

Water Quality Impact

- Check and plug the outlets of drip trays to avoid chemical leakage

Appendix A – Site Location Plan



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A	ISSUE FOR TENDER	CC	31JAN12	FK

DRAWN	TWY
DESIGNED	CC
CHECKED	NN
APPROVED	FK
DATE	31JAN12

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR

MEINHARDT
Meinhardt (Hong Kong) Ltd. Consulting Engineers
邁進(香港)工程顧問有限公司

in association with
Aedas, Mott MacDonald, MVA, DLS, Wilkinson Murry, Evans & Peck, AA

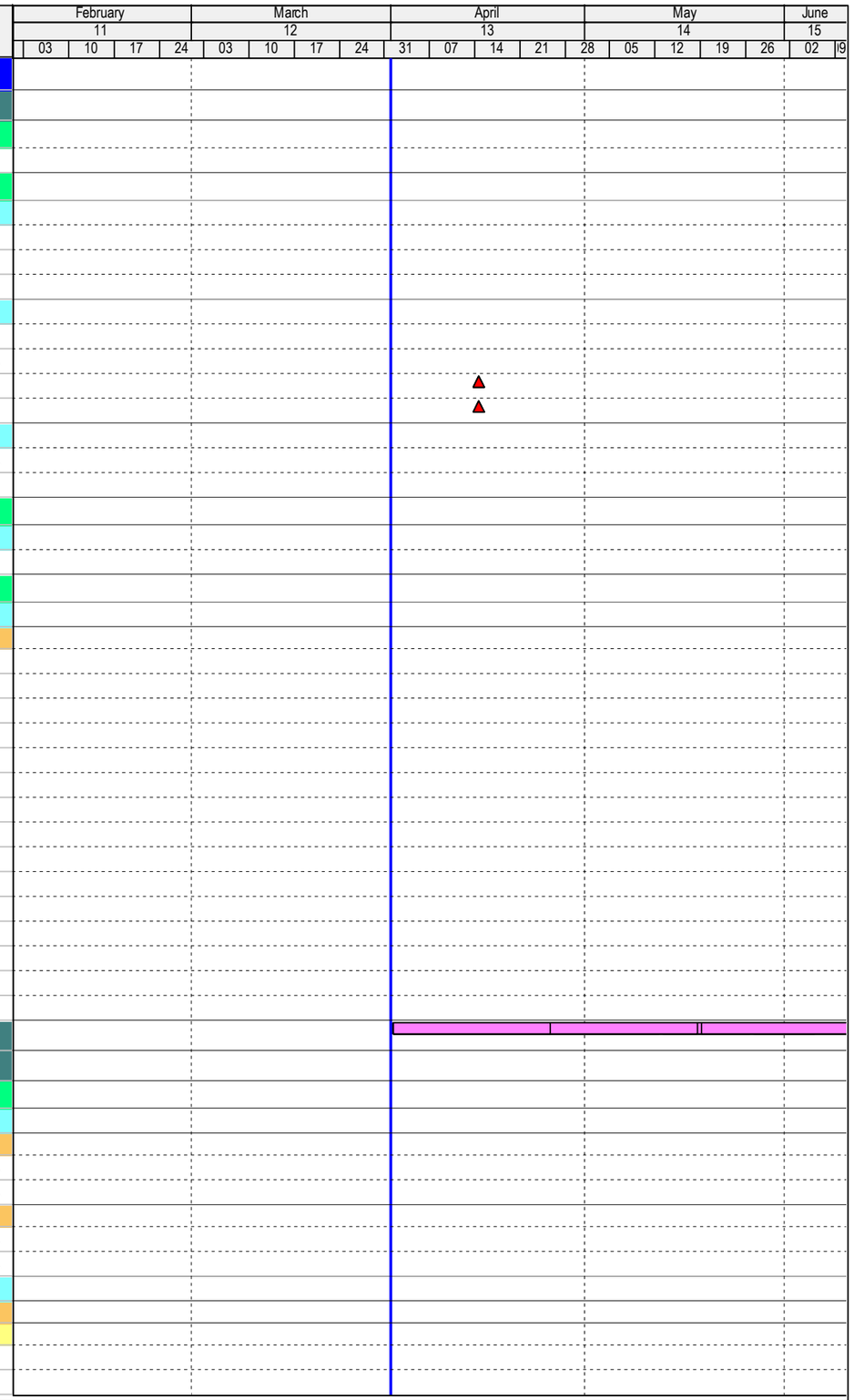
CADD REF.
1108_T_340_MHK_C01_201B.dgn

TITLE
CONTRACT 1108
KAI TAK STATION AND ASSOCIATED TUNNELS
GENERAL CIVIL WORKS
LOACTION PLAN

SCALE	DRAWING NO.	REV.
1:2000 @ A1	1108/T/340/MHK/C01/201	B

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				
Contractual Dates				
01108.CD1-COMM	Date for Commencement (25-Apr-13)	100%	25-Apr-13 A	
IPS Milestone Dates				
Cost Centre A - Preliminaries				
01108.MSA01	A1 - Complete haul/access road, Acces for Interface/Designated/CEDD Contractor to KTBarging Facility (WN.22/13,02-Jun	100%		02-Jun-13 A
01108.MSA02	A2-Approval of Submissions:EMP(G5.1.10),QP(G9.2.1), MC(G12.1.1),SS(G12.11.1),SARMP(P25.3.1),DSCP(AppQ) WN28/13,	100%		14-Jul-13 A
01108.MSA03	A3 - Approval of Preliminary Master Progaramme, Time Chainage Programme, Health & Safety Plan, (Wk.No.37/13, 15-Se	100%		17-Oct-13 A
Cost Centre B - Kai Tak Station, Entrances and Adits				
01108.MSB01	B1 - Pump test completed, accepted by Engineer & ready for open cut excavation of KAT station (Week No.36/13, 8-Sep-13	100%		22-Oct-13 A
01108.MSB02	B2 - Complete 30% of open cut excavation of KAT station (Week No. 45/13, 10-Nov-13)	100%		13-Dec-13 A
01108.MSB04	B4 - Complete excavation down to station formation level (Week No. 48/14, 30-Nov-14)	0%		14-Apr-14
01108.MSB03	B3 - Complete 50% of open cut excavation of KAT station (Week No. 11/14, 16-Mar-14)	0%		14-Apr-14
Cost Centre C - South Approach Tunnel				
01108.MSC01	C1 - Pump test completed, accepted by Engineer & ready for open cut excavation (Week No. 38/13, 22-Sep-13)	100%		11-Mar-14 A
01108.MSC03a	C3 - Complete 50% excavation by volume to tunnel formation levels (Week No. 15/14, 13-Apr-14)	0%		23-Jun-14
Programme Data				
Interface with Contract 1107				
01108.PD4-IF1107.1	Contract 1107 Provide access to Contract 1108 at interface area for ELS Works (Week No. 52/13, 29-Dec-13)	100%	27-Dec-13 A	
Schedule of Access & Vacate Dates for Works Areas				
Possession Dates				
Works Areas				
01108.ACW02	Works Area 1108.W2 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACW07	Works Area 1108.W7 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACW08	Works Area 1108.W8 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACW09	Works Area 1108.W9 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACW11	Works Area 1108.W11 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACW12	Works Area 1108.W12 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACW13	Works Area 1108.W13 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACWA1	Works Area 1108.A1 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACWA3	Works Area 1108.A3 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACWA4	Works Area 1108.A4 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACWA2	Works Area 1108.A2 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACW01	Works Area 1108.W1 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACW10	Works Area 1108.W10 (Within 3 weeks from commencement of works)	100%	29-Apr-13 A	
01108.ACW04	Works Area 1108.W4 (04-Jan-16)	100%	15-Jul-13 A	
01108.ACW01a	Works Area 1108.W1a (Week No. 52/13)	100%	27-Dec-13 A	
A - Preliminaries				
B - Kai Tal Station, Entrances and Adits				
B1 KAT Station				
Preliminaries				
General Items				
01108.STN.HR0010	Erection of hoarding and haul road	100%	15-Jun-13 A	30-Aug-13 A
01108.STN.HR0100	Demoliation of existing abandoned nullah, No. 1, ~120m L at GL 1/2~4/5 running northwards	100%	01-Aug-13 A	30-Aug-13 A
Ground Investigation, Instrumentation & Monitoring				
01108.STN.IM0000	Instrumentation - Install & monitor, GS markers 7+6+9nr, 7hr on utilities & 3 nr on structure; VM, 2 nr; PZ, 4 nr; etc.	100%	02-Jul-13 A	30-Aug-13 A
01108.STN.GI13-17	Ground investigation - Boreholes BH13 to BH17, 5 nr.	100%	02-Jul-13 A	30-Aug-13 A
B1.2 Station - Excavation				
B1.2.2 Temporary Works				
Temporary Works Design, Review & Approval				
01108.STN.DN09.2.1	Advance Open Excavation - Design, ICE & Submit to MTRC for review	100%	07-Jun-13 A	16-Sep-13 A
01108.STN.DN09.1.1	Hydraulic Cut Off - Design, ICE & Submit to MTRC for review	100%	21-Jun-13 A	30-Jul-13 A



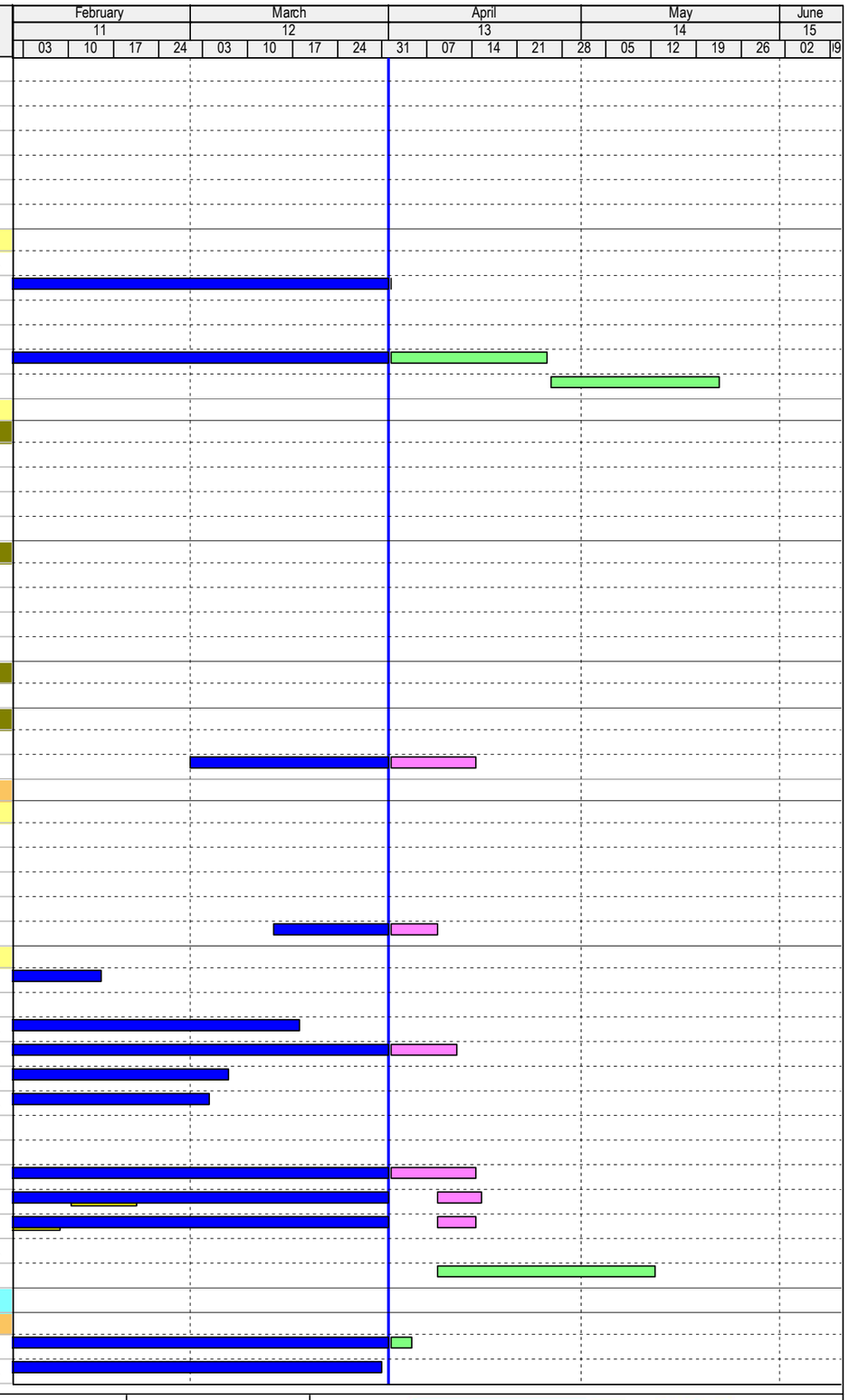
Milestone
Critical Milestone
Critical Remaining Work
Remaining Work
Remaining Level of Effort
Primary Baseline
Actual Work

Contract 1108
Kai Tak Station and Associated Tunnels

3-months Rolling Programme (March 2014)

Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.STN.DN09.1.2	Hydraulic Cut Off - Revision, if required, & Submit to RDO/ BD/ GEO	100%	15-Jul-13 A	20-Jul-13 A
01108.STN.DN09.1.3	Hydraulic Cut Off - No-adverse-comment by RDO/ BD/ GEO	100%	19-Jul-13 A	16-Sep-13 A
01108.STN.DN09.2.2	Advance Open Excavation - Revision, if required, & Submit to RDO/ BD/ GEO	100%	08-Aug-13 A	21-Aug-13 A
01108.STN.DN09.2.3	Advance Open Excavation - No-adverse-comment by RDO/ BD/ GEO	100%	08-Aug-13 A	26-Sep-13 A
01108.STN.DN04.1.1	Open Cut Design, ICE & Submit to MTRC for review	100%	22-Aug-13 A	08-Oct-13 A
01108.STN.DN04.1.2	Open Cut Design - Revision, if required, & Submit to RDO/ BD/ GEO	100%	22-Aug-13 A	17-Sep-13 A
01108.STN.DN04.1.3	Open Cut Design - No-adverse-comment by RDO/ BD/ GEO	100%	09-Sep-13 A	04-Oct-13 A
Dewatering Wells & Observation Wells				
01108.STN.DW10-19	Stage 1 Dewatering wells, 32 nr PW115~PW146; Observation wells, 7 nr OW31~OW37; Piezometers, 2 nr PZ2&PZ18 (4 Rigs	100%	24-Jul-13 A	31-Aug-13 A
01108.STN.DW19-24	Stage 2 Dewatering wells, 15 nr PW147~PW161; Observation wells, 2 nr OW38~OW39; Piezometers, 1 nr PZ19 (2 Rigs)	100%	19-Aug-13 A	01-Apr-14
01108.STN.DW10-19t	Stage 1 Pumping tests	100%	04-Oct-13 A	18-Oct-13 A
01108.STN.DW19-24t	Stage 2 Pumping tests	100%	19-Nov-13 A	15-Jan-14 A
01108.STN.DWAN-10	Adj.Nul~GL03 Dewatering wells, 35 nr PW80~PW114; Observation wells, 6 nr OW25~OW30; Piezometers 2 nr PZ3&PZ17 (2	10%	10-Dec-13 A	25-Apr-14
01108.STN.DWAN-10t	GL 00~03 Pumping tests	0%	26-Apr-14	22-May-14
Sheet Piles				
Cut-off Wall at NW Side				
01108.STN.SP10-19w	GL 10~19 Sheet piling, 304 nr x 18.5m (5624m, 372t, total) (2 Rigs)	100%	11-Jul-13 A	12-Sep-13 A
01108.STN.SP19-22w	GL 07~10 & GL 19~22 Sheet piling, 191 nr - 15 x 12.5m, 25 x 15.5m, 151 x 18.5m (3369m, 223t, total) (2 Rigs)	100%	15-Jul-13 A	12-Sep-13 A
01108.STN.SPAN-10w	GL 01~10 Sheet piling, 223 nr - 50 x 12.5m, 25 x 15.5m, 43 x 18.5m, 70 x 21.5m, 35 x 23.5m (4136m, 274t, total)	100%	15-Jul-13 A	12-Sep-13 A
01108.STN.SP22-STw	GL 22~Stub Tunnel Area - Sheet piling, 137 nr - 95 x 18.5m, 42 x 20.5m (2619m, 173t, total)	100%	22-Jul-13 A	10-Sep-13 A
Cut-off Wall at SE Side				
01108.STN.SP19-22e	GL 07~10 & GL 19~22 Sheet piling, 190nr x 23.5m (4465m, 295t, total) (2 Rigs)	100%	22-Jul-13 A	05-Sep-13 A
01108.STN.SP10-19e	GL 10~19 Sheet piling, 295 nr x 23.5m (6933m, 459t, total) (2 Rigs)	100%	22-Jul-13 A	05-Sep-13 A
01108.STN.SP00-10e	GL 00~10 Sheet piling, 223 nr - 16 x 23.5m, 25 x 26.5m, 182 x 28.5m (6226m, 412t, total)	100%	22-Jul-13 A	27-Sep-13 A
01108.STN.SP22-STe	GL 22~Stub Tunnel Area - Sheet piling, 176 nr x 23.5m (4664m, 308t, total)	100%	23-Jul-13 A	17-Sep-13 A
Cut-off Wall - Enclosure at Nullah Area				
01108.STN.SP00-00	Enclosure adj. Nullah Area - Sheet piling, 232 nr - 38 x 26.5m, 194 x 28.5m (6536m, 432t, total)	100%	01-Sep-13 A	28-Sep-13 A
Sum Pit at GL 24				
01108.STN.SP24P	Sum Pit at GL 24/B-C - Sheet piling, Type A8: 103 nr x 8.475m (873m, 58t, total)	100%	29-Aug-13 A	30-Sep-13 A
01108.STN.EX19-21	GL 19~21 Excavation, 36895 m3	50%	01-Mar-14 A	14-Apr-14
B1.2.3 Earthworks				
General Site Clearance & Trim to +3.5mPD				
01108.STN.EX10-19	GL 10~19 General clearance & trim existing ground to +3.5mPD, 20381 m3	100%	31-Jul-13 A	04-Oct-13 A
01108.STN.EX0000	Construct station drainge protection system	100%	31-Jul-13 A	31-Jan-14 A
01108.STN.EX19-24	GL 19~24 General clearance & trim existing ground to +3.5mPD, 11469 m3	100%	31-Jul-13 A	04-Oct-13 A
01108.STN.EX06-10	GL 06~10 General clearance & trim existing ground to +3.5mPD, 8614 m3	100%	31-Jul-13 A	04-Oct-13 A
01108.STN.EX00-06	Adj to Nullah to GL06 General clearance & trim existing ground to +3.5mPD, 11906 m3	60%	14-Mar-14 A	08-Apr-14
Excavation to Formation Level				
01108.STN.EX14-16	GL 14~16 Excavation, 38998 m3	100%	18-Oct-13 A	15-Feb-14 A
01108.STN.EX12-14	GL 12~14 Excavation, 31199 m3	100%	18-Oct-13 A	30-Jan-14 A
01108.STN.EX16-19	GL 16~19 Excavation, 38998 m3	100%	18-Oct-13 A	18-Mar-14 A
01108.STN.EX06-08	GL 06~08 Excavation, 31442 m3 (3 nr. backhoe)	55%	05-Dec-13 A	11-Apr-14
01108.STN.EX08-10	GL 08~10 Excavation, 31442 m3	100%	05-Dec-13 A	07-Mar-14 A
01108.STN.EX10-12	GL 10~12 Excavation, 31294 m3	100%	05-Dec-13 A	04-Mar-14 A
01108.MSB02P	KTS Milestone B2 - 30% Excavation - Programmed	100%		13-Dec-13 A
01108.MSB01P	Commencement of excavation after pumping test for area from GL 10~19	100%		15-Jan-14 A
01108.STN.EX21-24	GL 21~24 Excavation, 38731 m3 (5 nr. backhoe)	50%	15-Jan-14 A	14-Apr-14
01108.STN.EX02-04	GL 03~04 Excavation, 15755 m3	50%	15-Jan-14 A	15-Apr-14
01108.STN.EX04-06	GL 04~06 Excavation, 31510 m3	80%	15-Jan-14 A	14-Apr-14
01108.MSB03P	KTS Milestone B3 - 50% Excavation - Programmed	100%		24-Mar-14 A
01108.STN.EX00-02	Adj. to Nullah to GL 03 Open Cut Excavation, 41522 m3	0%	08-Apr-14	12-May-14
B1.3 Station - U/G C&S Works (Below Concourse Level Soffit)				
Temporary Foundation for Lifting Crane Tower				
01108.STN.BL001	Temporary foundation for lifting crane tower, 3 nr., Approved	90%	25-Oct-13 A	04-Apr-14
01108.STN.BL000	Design, ICE & submission of temporary foundation for lifting crane tower, 3 nr at GL 11-12, GL 19-20, GL 4-5	100%	25-Oct-13 A	31-Mar-14 A



Milestone
Critical Milestone
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Remaining Work
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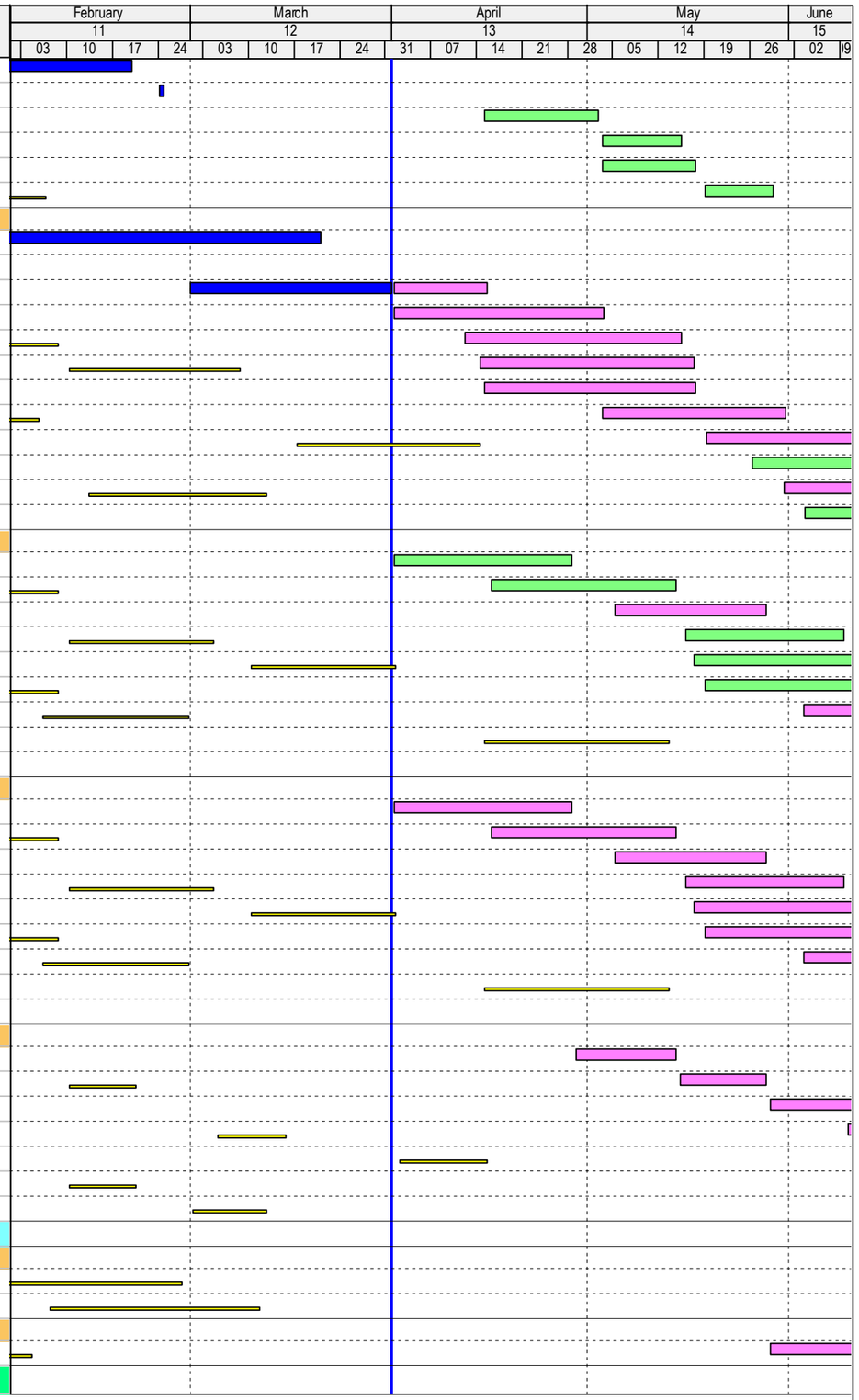
Primary Baseline
Actual Work

Contract 1108
Kai Tak Station and Associated Tunnels

3-months Rolling Programme (March 2014)

Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.STN.BL11-12	Temporary foundation for lifting crane tower at GL 11~12	100%	27-Jan-14 A	20-Feb-14 A
01108.STN.BL11-12i	Installation and testing of lifting crane tower at GL 11~12	100%	24-Feb-14 A	25-Feb-14 A
01108.STN.BL19-20	Temporary foundation for lifting crane tower at GL 19~20	0%	15-Apr-14	02-May-14
01108.STN.BL19-20i	Installation and testing of lifting crane tower at GL 19~20	0%	03-May-14	15-May-14
01108.STN.BL04-05	Temporary foundation for lifting crane tower at GL 04~05	0%	03-May-14	17-May-14
01108.STN.BL04-05i	Installation and testing of lifting crane tower at GL 04~05	0%	19-May-14	29-May-14
Base Slab				
01108.STN.BS12-14	GL 12~14 Base slab, 24mL (Team 2)	100%	27-Jan-14 A	21-Mar-14 A
01108.STN.BS0	Commencement of Structure after excavation & test completed to GL 10~19	100%		13-Feb-14 A
01108.STN.BS10-12	GL 10~12 Base slab, 24mL (Team 2)	50%	01-Mar-14 A	15-Apr-14
01108.STN.BS14-16	GL 14~16 Base slab, 30mL (Team 1)	0%	01-Apr-14	03-May-14
01108.STN.BS08-10	GL 08~10 Base slab, 24mL (Team 2)	0%	12-Apr-14	15-May-14
01108.STN.BS06-08	GL 06~08 Base slab, 24mL (Team 2)	0%	14-Apr-14	17-May-14
01108.STN.BS16-19	GL 16~19 Base slab, 30mL (Team 1)	0%	15-Apr-14	17-May-14
01108.STN.BS19-21	GL 19~21 Base slab, 30mL (Team 1)	0%	03-May-14	31-May-14
01108.STN.BS04-06	GL 04~06 Base slab, 24mL	0%	19-May-14	17-Jun-14
01108.STN.BS02-04	GL 02~04 Base slab, 24mL	0%	26-May-14	23-Jun-14
01108.STN.BS21-24	GL 21~24 Base slab, 34mL (Team 1)	0%	31-May-14	28-Jun-14
01108.STN.BS00-02	GL 00~02 Base slab, 19.6mL	0%	03-Jun-14	30-Jun-14
External Wall to Concourse				
01108.STN.EC12-14	GL 12~14 External wall (2 teams, 8 cycles)	0%	01-Apr-14	28-Apr-14
01108.STN.EC10-12	GL 10~12 External wall (2 teams, 8 cycles)	0%	16-Apr-14	14-May-14
01108.STN.EC14-16	GL 14~16 External wall (2 teams, 10cycles)	0%	05-May-14	28-May-14
01108.STN.EC08-10	GL 08~10 External wall (2 teams, 8 cycles)	0%	16-May-14	09-Jun-14
01108.STN.EC06-08	GL 06~08 External wall (2 teams, 8 cycles)	0%	17-May-14	11-Jun-14
01108.STN.EC16-19	GL 16~19 External wall (2 teams, 10cycels)	0%	19-May-14	11-Jun-14
01108.STN.EC19-21	GL 19~21 External wall (2 teams, 10cycles)	0%	03-Jun-14	25-Jun-14
01108.STN.EC04-06	GL 04~06 External wall (2 teams, 8 cycles)	0%	17-Jun-14	11-Jul-14
01108.STN.EC02-04	GL 02~04 External wall (2 teams, 8 cycles)	0%	23-Jun-14	12-Jul-14
Internal Wall & Column to Concourse				
01108.STN.IC12-14	GL 12~14 Internal wall & column (168m with 6 teams in 10m panel)	0%	01-Apr-14	28-Apr-14
01108.STN.IC10-12	GL 10~12 Internal wall & column (138m with 6 teams in 10m panel)	0%	16-Apr-14	14-May-14
01108.STN.IC14-16	GL 14~16 Internal wall & column (224m with 8 teams in 10m panel)	0%	05-May-14	28-May-14
01108.STN.IC08-10	GL 08~10 Internal wall & column (168m with 6 teams in 10m panel)	0%	16-May-14	09-Jun-14
01108.STN.IC06-08	GL 06~08 Internal wall & column (168m with 6 teams in 12m panel)	0%	17-May-14	11-Jun-14
01108.STN.IC16-19	GL 16~19 Internal wall & column (196m wiht 6 teams in 10m panel)	0%	19-May-14	11-Jun-14
01108.STN.IC19-21	GL 19~21 Internal wall & column (224m with 8 teams in 10m panel)	0%	03-Jun-14	25-Jun-14
01108.STN.IC04-06	GL 04~06 Internal wall & column (168m with 6 teams in 10m panel)	0%	17-Jun-14	11-Jul-14
01108.STN.IC02-04	GL 02~04 Internal wall & column (168m with 6 teams in 10m panel)	0%	23-Jun-14	17-Jul-14
Compacted Soil Backfill between Up Track and Refuge Track				
01108.STN.BF12-14	GL 12~14 Backfill and compaction, 1366 m3	0%	29-Apr-14	14-May-14
01108.STN.BF10-12	GL 10~12 Backfill and compaction, 1093 m3	0%	15-May-14	28-May-14
01108.STN.BF14-16	GL 14~16 Backfill and compaction, 1366 m3	0%	29-May-14	12-Jun-14
01108.STN.BF08-10	GL 08~10 Backfill and compaction, 1093 m3	0%	10-Jun-14	23-Jun-14
01108.STN.BF06-08	GL 06~08 Backfill and compaction, 1093 m3	0%	11-Jun-14	25-Jun-14
01108.STN.BF16-19	GL 16~19 Backfill and compaction, 1366 m3	0%	12-Jun-14	25-Jun-14
01108.STN.BF19-21	GL 19~21 Backfill and compaction, 1366 m3	0%	26-Jun-14	10-Jul-14
B1.4 Station U/G C&S Works (Concourse Level and Above)				
Concourse Level				
01108.STN.CS14-16	GL 14~16 Concourse slab	0%	13-Jun-14	16-Jul-14
01108.STN.CS12-14	GL 12~14 Concourse slab	0%	25-Jun-14	28-Jul-14
External Wall to Lower Ground				
01108.STN.EG0	External wall hanging platform	0%	29-May-14	19-Jun-14
B2 Entrance A, Adit & SEE				



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

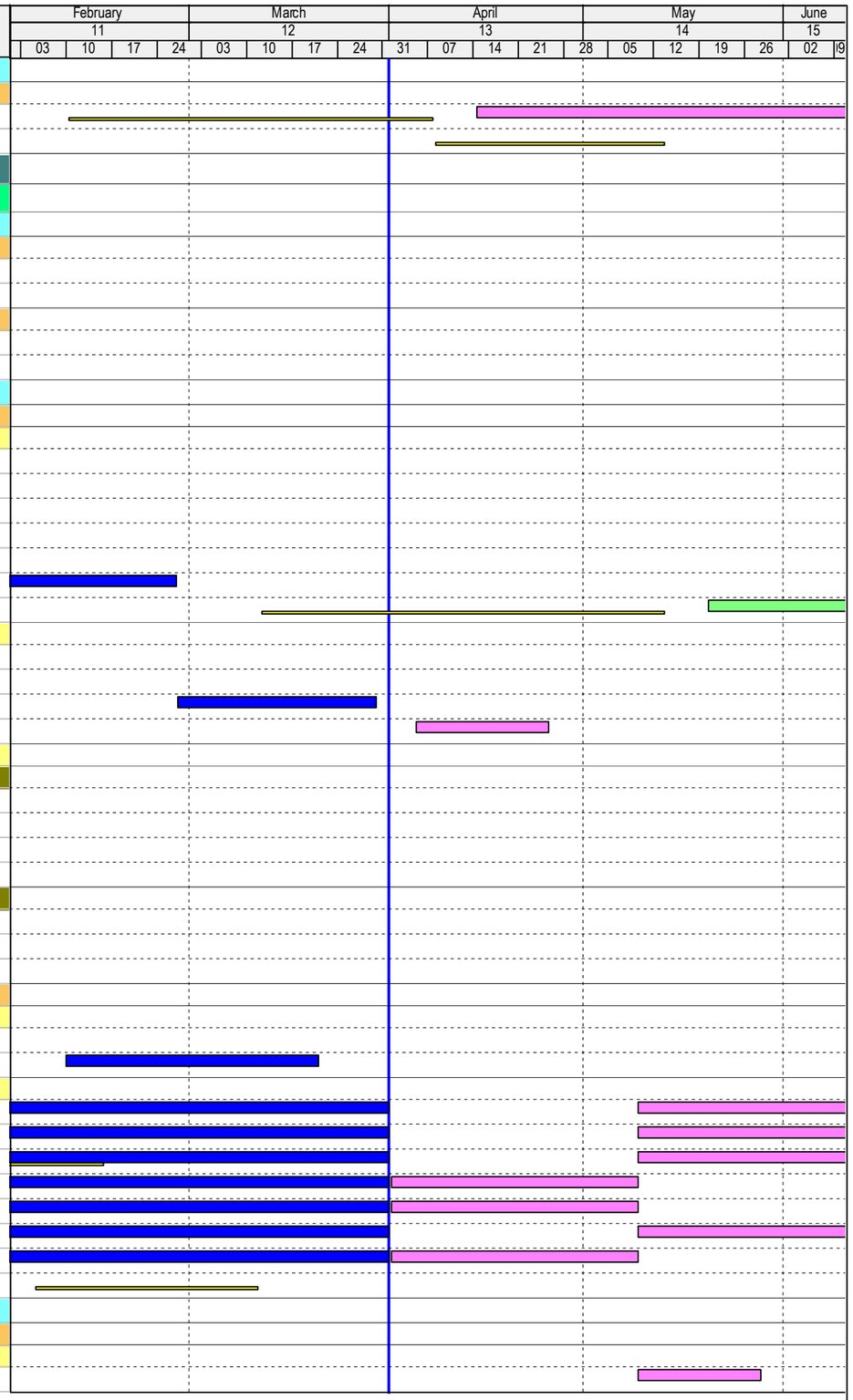
Contract 1108

Kai Tak Station and Associated Tunnels

3-months Rolling Programme (March 2014)

Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
B2.1 Entrance A, Adit & SEE - Excavation				
Temporary Works				
01108.STN.DN04.3.1	Entrance A & SEE - ELS Design, ICE & Submit to MTRC for review	0%	14-Apr-14	16-Jun-14
01108.STN.DN04.3.2	Entrance A & SEE - Design Revision, if required, & Submit to RDO/ BD/ GEO	0%	16-Jun-14	17-Jul-14
C - South Approach Tunnel				
C1 Open Cut Tunnels (U=341m; D=340m)				
Preliminaries				
General Items				
01108.OCT.HR0100	Diversion of ex. AP2- DN1200/ DN1800 drain, ~ 170mL crossing at ~CH U99187 (near SUA) SE direction	100%	30-Apr-13 A	30-Aug-13 A
01108.OCT.HR0020	Haul road, condition survery, incl. utility survey	100%	02-Jul-13 A	30-Aug-13 A
Ground Investigation, Instrumentation & Monitoring				
01108.OCT.G08-0010	Ground investigation - Boreholes BH1 to BH7, 7 nr.	100%	01-Aug-13 A	30-Aug-13 A
01108.OCT.IM00000	Instrumentation - Install & monitor, GS markers 8+12+8nr & 4 nr on utilities; PZ, 8 nr; etc	100%	01-Aug-13 A	30-Aug-13 A
C1.2 Excavation				
C1.2.2 Temporary Works				
Temporary Works Design & Approval				
01108.OCT.DN06.1.1	Open Cut (CH 98976 to 99222) - Design, ICE & Submit to MTRC for review	100%	21-Jun-13 A	16-Sep-13 A
01108.OCT.DN09.1.1	Hydraulic Cut Off - Design, ICE & Submit to MTRC for review	100%	21-Jun-13 A	24-Jun-13 A
01108.OCT.DN09.1.2	Hydraulic Cut Off - Revision, if required, & Submit to RDO/ BD/ GEO	100%	21-Jun-13 A	22-Aug-13 A
01108.OCT.DN09.1.3	Hydraulic Cut Off - No-adverse-comment by RDO/ BD/ GEO	100%	22-Aug-13 A	19-Sep-13 A
01108.OCT.DN06.1.2	Open Cut (CH 98976 to 99222) - Design Revision, if required, & Submit to RDO/ BD/ GEO	100%	16-Sep-13 A	16-Sep-13 A
01108.OCT.DN06.1.3	Open Cut (CH 98976 to 99222) - Design - No-adverse-comment by RDO/ BD/ GEO	100%	16-Sep-13 A	27-Feb-14 A
01108.OCT.DN06.2.1	Open Cut (CH 99222 to 99257, Interface with C1109) - Design, ICE & Submit to MTRC for review	0%	20-May-14	17-Jul-14
Dewatering and Observation Wells				
01108.OCT.DW9080	To Ch 99080 Dewatering, 22 nr PW40~61; Recharge 10 nr RW1~10; Observation, 8 nr OW11~18; Piezometer, 5 nr (3 Rigs)	100%	18-Sep-13 A	18-Dec-13 A
01108.OCT.DW9185	Ch 99080~99185 Dewatering wells, 21 nr PW19~PW39; Observation wells, 6 nr OW5~OW10	100%	08-Nov-13 A	18-Dec-13 A
01108.OCT.DW9080t	Ch 98926~99080 Pumping tests	100%	27-Feb-14 A	30-Mar-14 A
01108.OCT.DW9185t	Ch 99080~99217 Pumping tests	0%	05-Apr-14	25-Apr-14
Sheet Piles				
Water Cut-off Wall at NW Side				
01108.OCT.SP9080w	Point G to Ch 99080 Sheet piling, 192 nr x 21.5m (4128m, 273t, total)	100%	23-Aug-13 A	27-Dec-13 A
01108.OCT.SP9258w	Ch 99185~99258 Sheet piling, 382nr - 340 x 12.5m, 42 x 15m (4880m, 323t, total)	100%	12-Sep-13 A	15-Nov-13 A
01108.OCT.SP9185w	Ch 99080~99185 Sheet piling, 238 nr - 120 x 18.5m, 25 x 20m, 93 x 21.5m (4720m, 312t, total)	100%	12-Sep-13 A	15-Nov-13 A
01108.OCT.SP9081w	Point J to Point D Sheet piling, 136 nr x 21.5m (2924m, 193t, total)	100%	12-Sep-13 A	21-Dec-13 A
Water Cut-off Wall at SE Side				
01108.OCT.SP9080e	To Ch 99080 Sheet piling, 316 nr - 215 x 12.5, 37 x 15m, 64 x 18.5m (4427m, 293t, total)	100%	16-Aug-13 A	03-Sep-13 A
01108.OCT.SP9185e	Ch 99080~99185 Sheet piling, 238 nr x 12.5m (2975m, 197t, total)	100%	11-Sep-13 A	24-Sep-13 A
01108.OCT.SP9258e	Ch 99185~99258 Sheet piling, 188 nr x 12.5m (2350m, 155t, total)	100%	11-Sep-13 A	24-Sep-13 A
C1.2.3 Excavation CH 98975 to CH 99217				
General Site Clearance				
01108.OCT.EX0015	General clearance & trim existing ground by +3.5mPD	100%	05-Aug-13 A	03-Sep-13 A
01108.OCT.EX0010	Construct drainage protection system	100%	10-Feb-14 A	21-Mar-14 A
From Exisitng Ground Level to Formation Level				
01108.OCT.EX9080	CH 99059~99080 Excavation	0%	28-Sep-13 A	23-Jun-14
01108.OCT.EX9101	CH 99080~99101 Excavation	0%	28-Sep-13 A	23-Jun-14
01108.OCT.EX9122	CH 99101~99122 Excavation	0%	28-Sep-13 A	23-Jun-14
01108.OCT.EX8996	CH 98975~98996 Excavation	18%	28-Sep-13 A	09-May-14
01108.OCT.EX9038	CH 99017~99038 Excavation	18%	28-Sep-13 A	09-May-14
01108.OCT.EX9059	CH 99038~99059 Excavation	18%	28-Sep-13 A	16-Jun-14
01108.OCT.EX9017	CH 98996~99017 Excavation	18%	30-Sep-13 A	09-May-14
01108.OCT.EX9143	CH 99122~99143 Excavation	0%	23-Jun-14	05-Aug-14
C1.3 C&S Works				
Tunnel Construction CH 98975 to CH99217				
Base Slabs				
01108.OCT.TS8996	CH 98975~98996 Base slabs, 2 x 2 x 10.5mL	0%	09-May-14	28-May-14



Milestone
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Contract 1108
Kai Tak Station and Associated Tunnels

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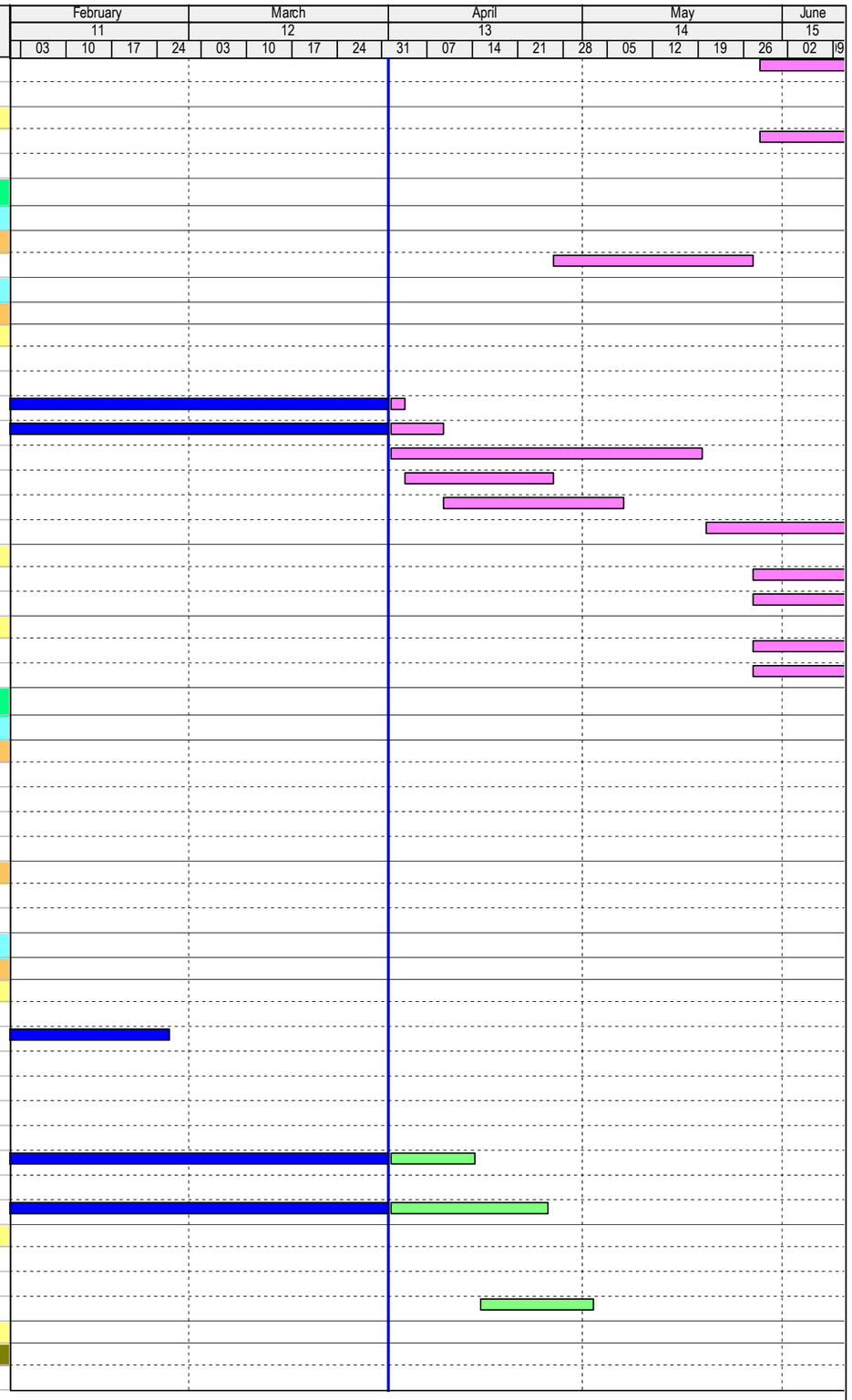
Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.OCT.TS9017	CH 98996~99017 Base slabs, 2 x 2 x 10.5mL	0%	28-May-14	17-Jun-14
01108.OCT.TS9038	CH 99017~99038 Base slabs, 2 x 2 x 10.5mL	0%	17-Jun-14	07-Jul-14
Walls & Top Slabs				
01108.OCT.TR8966	CH 98975~98996 Wall & top slabs, 2 x 2x 10.5mL	0%	28-May-14	21-Jun-14
01108.OCT.TR9017	CH 98996~99017 Wall & top slabs, 2 x 2x 10.5mL	0%	21-Jun-14	16-Jul-14
C2 Mined Tunnels (U=41m; D=39m)				
Preliminaries				
Ground Inverstigation, Instrumantation & Monitoring				
01108.MT.IM00000	Instrumentation - Install & monitor, GS markers 5 nr; VM, 2 nr; HIN, 2 nr; etc	0%	26-Apr-14	27-May-14
C2.1 Excavation				
C2.1.2 Temporary Works and ELS				
Design, Temporary Works Design, Approval, Fabrication & Installation of Tunnel Formwork				
01108.MIT.DN07.2.1	MIT Temporary Support - Design & Method statement, ICE & Submit to MTRC for review	100%	01-Aug-13 A	04-Oct-13 A
01108.MIT.DN07.1.1	MIT Shaft ELS - Design, ICE & Submit to MTRC for review	100%	15-Aug-13 A	17-Sep-13 A
01108.MIT.DN07.1.2	MIT Shaft ELS - Revision, if required, & Submit to RDO/ BD/ GEO	80%	17-Sep-13 A	03-Apr-14
01108.MIT.DN07.2.2	MIT Temporary Support - Revision, if required, & Submit to RDO/ BD/ GEO	60%	04-Oct-13 A	09-Apr-14
01108.MIT.DN07.3.1	Tunnel formwork design - Design, ICE and submission	0%	01-Apr-14	19-May-14
01108.MIT.DN07.1.3	MIT Shaft ELS - Design - No-adverse-comment by RDO/ BD/ GEO	0%	03-Apr-14	26-Apr-14
01108.MIT.DN07.2.3	MIT Temporary Support - No-adverse-comment by RDO/ BD/ GEO	0%	09-Apr-14	07-May-14
01108.MIT.DN07.3.3	Tunnel formwork design - No adverse comment	0%	20-May-14	02-Jul-14
Temporary Works and ELS from Eastside (2 Workfronts, each 20mL)				
01108.MIT.TW005e	U/T CH98866 Buffer zone of LTSB & FKCP: Grouted soil blocks (from ground level)	0%	27-May-14	24-Jun-14
01108.MIT.TW205e	D/T CH98866 Buffer zone of LTSB & FKCP: Grouted soil blocks (from ground level)	0%	27-May-14	24-Jun-14
Temporary Works and ELS from Westside (2 Workfronts, each 20mL)				
01108.MIT.TW008w	U/T CH98907 Buffer zone of LTSB & FKCP: Grouted soil blocks (from ground level)	0%	27-May-14	24-Jun-14
01108.MIT.TW200w	D/T CH98907 Buffer zone of LTSB & FKCP: Grouted soil blocks (from ground level)	0%	27-May-14	24-Jun-14
C3 Cut and Cover Tunnels (U=297m; D=307m)				
Preliminaries				
General Items				
01108.CCT.HR0010	Erection of hoarding and haul road	100%	01-Jul-13 A	30-Jul-13 A
01108.CCT.HR0020	Condition survery, incl. utility survey	100%	01-Jul-13 A	30-Aug-13 A
01108.CCT.HR0030	Relocate existing haul road	100%	01-Aug-13 A	30-Aug-13 A
01108.CCT.HR0040	Trail trench for existing seawall	100%	01-Aug-13 A	30-Aug-13 A
Ground Investigation, Instrumentation & Monitoring				
01108.CCT.IM0000	Instrumentation - Install & monitor, GS markers 8+11nr & 3 nr on structure; VM, 3 nr; PZ, 8 nr	100%	02-Jul-13 A	30-Aug-13 A
01108.CCT.G08-00	Ground investigation - Boreholes BH8, 9, 10, 10a, 10b, 11 & 12, 7 nr.	100%	01-Aug-13 A	30-Aug-13 A
C3.2 Excavation CH 98650 to CH 98866 and CH 98907 to CH 98975				
C3.2.2 Temporary Works and ELS				
Temporary Works Design & Approval				
01108.CCT.DN05.2.1	CCT ELS (CH 98750 to 98976) - Design, ICE & Submit to MTRC for review	100%	25-Jul-13 A	06-Dec-13 A
01108.CCT.DN05.1a.3	CCT Cofferdam (CH 98650 to 98750) for KTND - No-adverse-comment by RDO/ BD/ GEO	100%	30-Jul-13 A	26-Feb-14 A
01108.CCT.DN05.1b.1	CCT ELS/ Hydraulic (CH 98650 to 98750) - Design, ICE & Submit to MTRC for review	100%	30-Jul-13 A	30-Jul-13 A
01108.CCT.DN05.1b.2	CCT ELS/ Hydraulic (CH 98650 to 98750) - Revision, if required, & Submit to RDO/ BD/ GEO	100%	30-Jul-13 A	20-Aug-13 A
01108.CCT.DN05.1a.1	CCT Cofferdam (CH 98650 to 98750) for KTND - Design, ICE & Submit to MTRC for review	100%	30-Jul-13 A	30-Jul-13 A
01108.CCT.DN05.1a.2	CCT Cofferdam (CH 98650 to 98750) for KTND - Revision, if required, & Submit to RDO/ BD/ GEO	100%	30-Jul-13 A	30-Jul-13 A
01108.CCT.DN05.1b.3	CCT ELS/ Hydraulic (CH 98650 to 98750) - No-adverse-comment by RDO/ BD/ GEO	70%	20-Aug-13 A	14-Apr-14
01108.CCT.DN05.2.2	CCT ELS (CH 98750 to 98976) - Design Revision, if required, & Submit to RDO/ BD/ GEO	100%	06-Dec-13 A	23-Dec-13 A
01108.CCT.DN05.2.3	CCT ELS (CH 98750 to 98976) - Design No-adverse-comment by RDO/ BD/ GEO	10%	23-Dec-13 A	25-Apr-14
Dewatering and Observation Wells				
01108.CCT.DW0030	Install dewatering wells, 51 nos. and observation wells, 10nr (4 Rigs) (CH 98636 to 98846)	100%	29-Aug-13 A	16-Sep-13 A
01108.CCT.DW0040	Pumping tests (CH 98650 to 98750)	100%	17-Oct-13 A	24-Oct-13 A
01108.CCT.DW40	Pumping tests (CH 98750 to 98846)	0%	15-Apr-14*	02-May-14
Sheet Piles				
Partial Open Cut				
01108.CCT.SP0010a	Pre-bored existing seawall for sheet piling, 2 x ~30m horizontal run	100%	02-Jul-13 A	30-Aug-13 A



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Contract 1108
Kai Tak Station and Associated Tunnels

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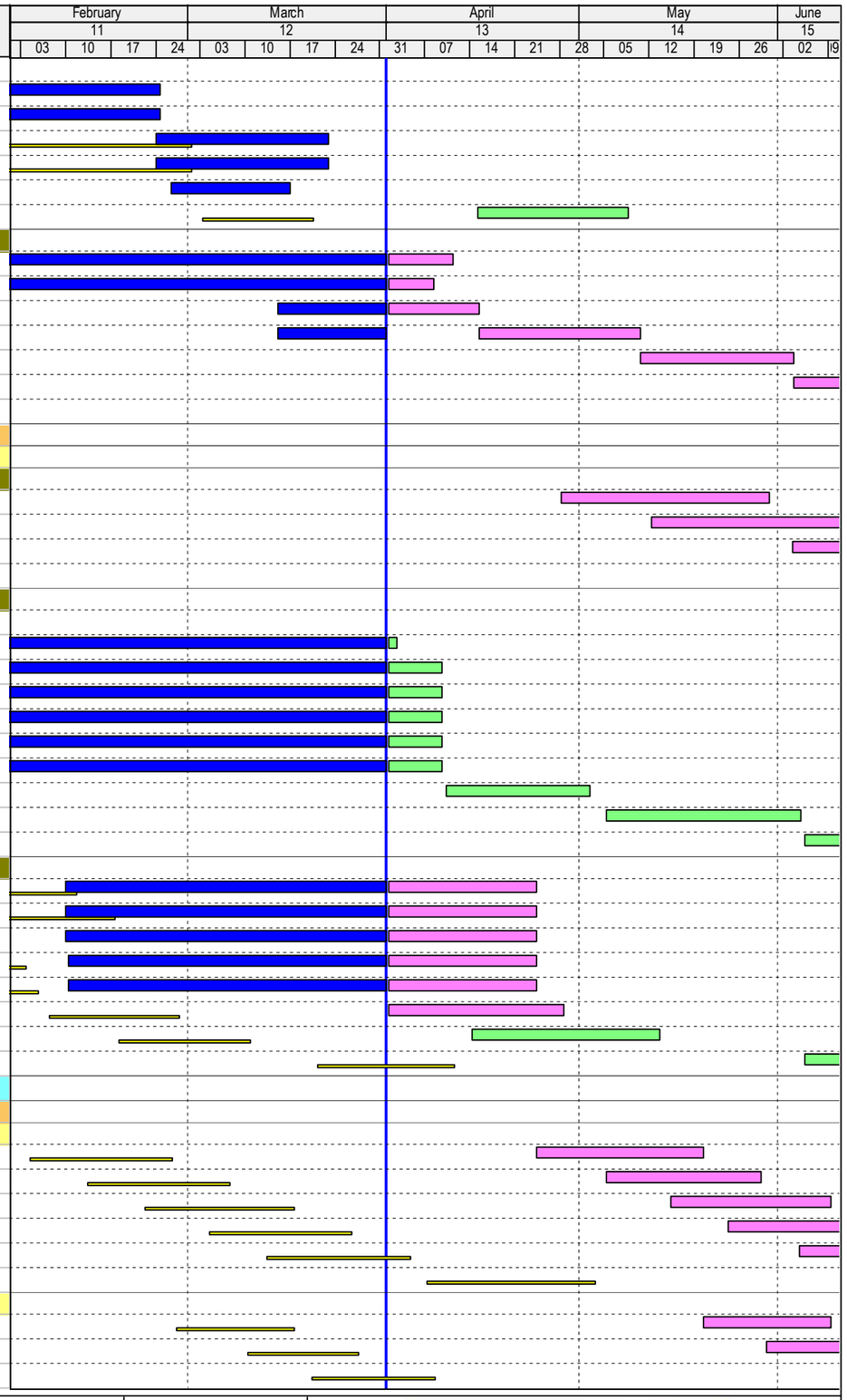
Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.CCT.SP0020	Sheet piling as cut-off walls, 2 x 525nr x 12m L, 2 x 6300m total (2 rigs)	100%	30-Jul-13 A	28-Sep-13 A
01108.CCT.SP8650	NW - CH 98650~98750 Sheet piling FSP IV : 293nr x 23m-to-32.2mL, 7148m total , (2 rigs)	100%	21-Dec-13 A	24-Feb-14 A
01108.CCT.SP8650e	SE - CH 98650~98750 Sheet piling FSP IV : 293nr x 23m-to-32.2mL, 7148m total , (2 rigs)	100%	21-Dec-13 A	24-Feb-14 A
01108.CCT.SP8770	NW - CH 98750~98840 Sheet piling FSP IV : 152nr x 22m-to-23mL, 3391m total	100%	24-Feb-14 A	23-Mar-14 A
01108.CCT.SP8770e	SE - CH 98750~98840 Sheet piling FSP IV : 152nr x 22m-to-23mL, 3391m total	100%	24-Feb-14 A	23-Mar-14 A
01108.CCT.SP8650pt	Pumping Tests (Cofferdam Excavation) Stage 1	100%	26-Feb-14 A	17-Mar-14 A
01108.CCT.SP8650pt1	Pumping Tests (Cofferdam Excavation) Stage 2	0%	15-Apr-14	08-May-14
Full Height Cofferdam				
01108.CCT.SP020	N.of FKCP-Sht.piling, M3~G3~F3a, FSP V Type C1- 68nr x 34.2mL (2334m total) & FSP VI Type B- 29nr x 34.2mL (1003m total	54%	20-Jan-14 A	11-Apr-14
01108.CCT.SP010	N.of FKCP-Sht.piling, M3~Q3~Q3a, FSP V Type C1- 51nr x 34.2mL (1733m total) & FSP VI Type B- 42nr x 34.2mL(1434m total	54%	20-Jan-14 A	08-Apr-14
01108.CCT.SP110	S.of FKCP-Sht. piling, H4~F4~D4', FSP V Type C2- 36nr x 33.2m (1191m total) & FSP IV Type D1- 68nr x 33.2m (2241m total)	4%	15-Mar-14 A	15-Apr-14
01108.CCT.SP120	S.of FKCP-Sht. piling, H4~K4~L4', FSP V Type C2: 39nr x 33.2m (1279m total) & FSP IV Type D1- 93nr x 33.2m (3071m total)	4%	15-Mar-14 A	10-May-14
01108.CCT.SP130	Sheet piling, D4'~A4, FSP IV Type D2, D1: 108nr x 27.2~33.2m, 3456m total	0%	10-May-14	03-Jun-14
01108.CCT.SP140	Sheet piling, L4'~R4, FSP IV Type D2, D1: 199nr x 33.2 to 27.2m, 3381m total	0%	03-Jun-14	25-Jun-14
01108.CCT.SP310	Prebored H-piles (King post), 16nr x 37.5m L	0%	25-Jun-14	07-Jul-14
C3.2.3 Earthworks				
Partial Open Cut				
Full Height Cofferdam Adjacent Mined Tunnel				
01108.CCT.EX8866	Pump test (East Shaft)	0%	28-Apr-14	30-May-14
01108.CCT.EX8928	Pump test (West Shaft)	0%	12-May-14	12-Jun-14
01108.CCT.EX8985	CH 98840~98866 Excavation & struts, 2 x 10.5+ 5mL (East Shaft)	0%	03-Jun-14	09-Jul-14
01108.CCT.EX8995	CH 98906~98928 Excavation & struts, 2 x 10.5mL (West Shaft)	0%	13-Jun-14	11-Jul-14
Open Cut from Existing Ground Level to -3.5mPD				
01108.CCT.EX8636	CH 98650~98866 Clearance & trim ground level to +3.5mPD, 18480 m3	100%	30-Oct-13 A	14-Nov-13 A
01108.CCT.EX8657c	CH 98650~98671 Excavation to -3.5mPD, 5586 m3	80%	06-Jan-14 A	02-Apr-14
01108.CCT.EX8678c	CH 98671~98692 Excavation to -3.5mPD, 5166 m3 + 420 m3 seawall	30%	06-Jan-14 A	09-Apr-14
01108.CCT.EX8699c	CH 98692~98713 Excavation to -3.5mPD, 3381 m3 + 2205 m3 seawall	30%	06-Jan-14 A	09-Apr-14
01108.CCT.EX8720c	CH 98713~98734 Excavation to -3.5mPD, 3381 m3 + 2205 m3 seawall	30%	06-Jan-14 A	09-Apr-14
01108.CCT.EX8741c	CH 98734~98755 Excavation to -3.5mPD, 3381 m3 + 2205 m3 seawall	30%	06-Jan-14 A	09-Apr-14
01108.CCT.EX8762c	CH 98755~98776 Excavation to -3.5mPD, 3906 m3 + 1680 m3 seawall	30%	06-Jan-14 A	09-Apr-14
01108.CCT.EX8783c	CH 98776~98797 Excavation to -3.5mPD, 4746 m3 + 840 m3 seawall	0%	10-Apr-14	02-May-14
01108.CCT.EX8804c	CH 98797~98818 Excavation to -3.5mPD, 6384 m3	0%	05-May-14	04-Jun-14
01108.CCT.EX8825c	CH 98818~98840 Excavation to -3.5mPD, 6688 m3	0%	05-Jun-14	04-Jul-14
Cofferdam below -3.5mPD				
01108.CCT.EX8720s	CH 98713~98734 Excavation & struts, 5141 m3	15%	10-Feb-14 A	24-Apr-14
01108.CCT.EX8741s	CH 98734~98755 Excavation & struts, 5348 m3	15%	10-Feb-14 A	24-Apr-14
01108.CCT.EX8657s	CH 98650~98671 Excavation & struts, 4726 m3	15%	10-Feb-14 A	24-Apr-14
01108.CCT.EX8678s	CH 98671~98692 Excavation & struts, 4864 m3	15%	10-Feb-14 A	24-Apr-14
01108.CCT.EX8699s	CH 98692~98713 Excavation & struts, 5002 m3	15%	10-Feb-14 A	24-Apr-14
01108.CCT.EX8762s	CH 98755~98776 Excavation & struts, 5556 m3	0%	01-Apr-14	28-Apr-14
01108.CCT.EX8783s	CH 98776~98797 Excavation & struts, 5684 m3	0%	14-Apr-14	13-May-14
01108.CCT.EX8804s	CH 98797~98818 Excavation & struts, 5811 m3	0%	05-Jun-14	30-Jun-14
C3.3 C&S Works				
Tunnel Construction CH 98650 to CH 98840				
Base Slabs				
01108.CCT.TB8657	CH98650~98671 Base slabs, 2 x 2 x 10.5mL	0%	24-Apr-14	20-May-14
01108.CCT.TB8678	CH98671~98692 Base slabs, 2 x 2 x 10.5mL	0%	05-May-14	29-May-14
01108.CCT.TB8699	CH98692~98713 Base slabs, 2 x 2 x 10.5mL	0%	15-May-14	09-Jun-14
01108.CCT.TB8720	CH98713~98734 Base slabs, 2 x 2 x 10.5mL	0%	24-May-14	18-Jun-14
01108.CCT.TB8741	CH98734~98755 Base slabs, 2 x 2 x 10.5mL	0%	04-Jun-14	27-Jun-14
01108.CCT.TB8762	CH98755~98776 Base slabs, 2 x 2 x 10.5mL	0%	27-Jun-14	22-Jul-14
External Walls				
01108.CCT.TW8657	CH98650~98671 Walls, 2 x 2 x 10.5mL	0%	20-May-14	09-Jun-14
01108.CCT.TW8678	CH98671~98692 Walls, 2 x 2 x 10.5mL	0%	30-May-14	19-Jun-14
01108.CCT.TW8699	CH98692~98713 Walls, 2 x 2 x 10.5mL	0%	11-Jun-14	30-Jun-14



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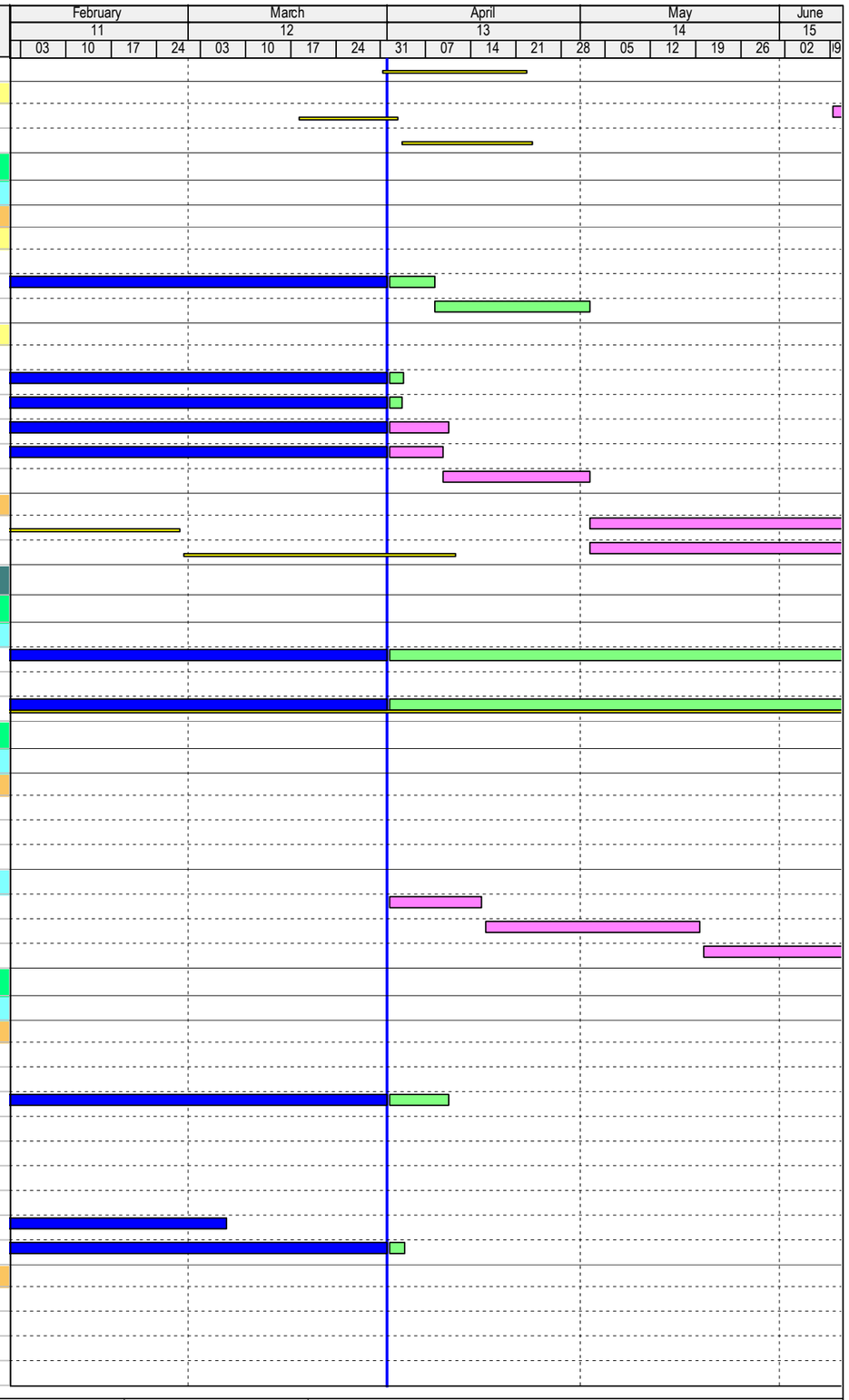
Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.CCT.TW8720	CH98713~98734 Walls, 2 x 2 x 10.5mL	0%	21-Jun-14	11-Jul-14
Top Slabs				
01108.CCT.TR8657	CH98650~98671 Top slabs, 2 x 2 x 10.5mL	0%	09-Jun-14	25-Jun-14
01108.CCT.TR8678	CH98671~98692 Top slabs, 2 x 2 x 10.5mL	0%	25-Jun-14	12-Jul-14
C4 Stub Tunnels (U=32m; D=32m; R=33m)				
C4.1 Excavation CH 98255 to CH 98290				
Temporary Works				
Temporary Works Design, Review & Approval				
01108.STT.DN04.2.1	Stub Tunnel Interface with C1107 - Design, ICE & Submit to MTRC for review	100%	12-Sep-13 A	24-Dec-13 A
01108.STT.DN04.2.2	Stub Tunnel Interface with C1107 - Design Revision, if required, & Submit to RDO/ BD/ GEO	50%	24-Dec-13 A	08-Apr-14
01108.STT.DN04.2.3	Stub Tunnel Interface with C1107 - Design No-adverse-comment by RDO/ BD/ GEO	0%	08-Apr-14	02-May-14
Temporay Works - Sheet Pile & ELS				
01108.IF1107.1P	Contract 1107 provide access to Contract 1108 at interface area for ELS works	100%	27-Dec-13 A	
01108.STT.SP050	Sheet piling, C1'~D1, FSP III Type A1: 31nr, 843m (31nr x 27.2m)	47%	08-Jan-14 A	03-Apr-14
01108.STT.SP060	Sheet piling, E1'~E1, FSP III Type A1: 25nr, 680m (25nr x 27.2m)	46.99%	08-Jan-14 A	03-Apr-14
01108.STT.SP010	Sheet piling, C1'~A1, FSP III Type A1, A2: 102nr, 2587m (77nr x 27.2m & 25nr x 19.7m)	47%	08-Jan-14 A	10-Apr-14
01108.STT.SP020	Sheet piling, E1'~J1, FSP III Type A1, A2: 139nr, 2299m (78nr x 27.2m & 61nr x 19.7m)	46.99%	08-Jan-14 A	09-Apr-14
01108.STT.SP170	Pump Test	0%	09-Apr-14	02-May-14
Earthworks				
01108.STT.EX8290	CH98273~98290 Excavation & struts, 10930 m3	0%	02-May-14	27-Aug-14
01108.STT.EX8273	CH98255~98273 Excavation & struts, 10930 m3	0%	02-May-14	27-Aug-14
D - Associated Works				
D3 Instrumentation and Monitoring				
Instrumentation Installation and Monitoring				
01108.AWM.0010	Installation of piezometers, inclinometers, ground/ bldg/ utility settlement markers	0%	02-Jul-13 A	17-Jun-14
01108.AWM.0020	Baseline Reading	100%	01-Aug-13 A	30-Aug-13 A
01108.AWM.0030	Regular Monitorings and Submit Monitoring Reports (weekly for 50 months)	50%	01-Aug-13 A	13-Mar-16
D4 Landscape				
Soft Landscape				
Tree Felling Permit & Tree Felling				
01108.AWL.2035	Tree felling, 4 nr. at Proposed Station open cut slope, tree survey nr. T0028, T0029, T0031 & T0032.	100%	01-Aug-13 A	30-Aug-13 A
01108.AWL.2000	Tree felling permit, ref. P10.21 & P46.1, no longer than 60 days	100%	01-Aug-13 A	30-Aug-13 A
01108.AWL.2039	Tree felling, Girth, rest 32 nr. (with majority at Works Area 1108.A2)	100%	01-Aug-13 A	30-Aug-13 A
Site Formation Works for Engineers's Accommodation				
01108.AWS.0010	Site formation for Engineer's accommodation - Design, ICE and submission	0%	01-Apr-14	15-Apr-14
01108.AWS.0020	Site formation for Engineer's accommodation - Approval	0%	16-Apr-14	19-May-14
01108.AWS.0030	Filling to formation l evel for Engineer's accommodation, imported natural material, 3544 m3	0%	20-May-14	13-Jun-14
D5 Utilities Diversion				
Diversion of Existing Nullah				
Temporary Works & Hydraulic Assessment				
01108.AWD.DNA1.1	KTND Hydraulic Assessment, incl. pre-construction CCTV, as-built survey - Design, ICE & TW & Submit to MTRC for reviev	100%	11-Jul-13 A	28-Nov-13 A
01108.AWD.DNA1.2	KTND Hydraulic Assessment - Revision, if required, & Submit to DSD	100%	24-Jul-13 A	28-Nov-13 A
01108.AWD.DNA1.3	KTND Hydraulic Assessment - No-adverse-comment by DSD	80%	08-Aug-13 A	10-Apr-14
01108.AWD.DN09.5.1	KTND Temporary Channel - Design, ICE & TW & Submit to MTRC for review	100%	15-Aug-13 A	16-Dec-13 A
01108.AWD.DN09.6.1	KTND Temp. Suppport for Demolishing Ex. KTN Decking - Design, ICE & TW & Submit to MTRC for review	100%	15-Aug-13 A	04-Sep-13 A
01108.AWD.DN09.6.2	KTND Temp. Suppport for Demolishing Ex. KTN Decking - Design Revision, if required, & Submit to DSD & RDO/BD/ GEO	100%	04-Sep-13 A	26-Sep-13 A
01108.AWD.DN09.6.3	KTND Temp. Suppport for Demolishing Ex. KTN Decking - Design - No-adverse-comment by DSD & RDO/ BD/ GEO	100%	26-Sep-13 A	26-Sep-13 A
01108.AWD.DN09.5.2	KTND Temporary Channel - Design Revision, if required, & Submit to DSD & RDO/ BD/ GEO	100%	28-Nov-13 A	07-Mar-14 A
01108.AWD.DN09.5.3	KTND Temporary Channel - Design - No-adverse-comment by DSD & RDO/ BD/ GEO	90%	16-Jan-14 A	03-Apr-14
North Section				
01108.AWD.0120	Connection section: North/ upstream - Remove concrete surface	100%	01-Aug-13 A	30-Aug-13 A
01108.AWD.0122	Connection section: North/ upstream - Saw-cut precast slab and beam, 140 pieces	100%	29-Aug-13 A	10-Oct-13 A
01108.AWD.0124	Connection section: North/ upstream - Remove saw-cut precast slab and beam, 140 pieces	100%	29-Aug-13 A	10-Oct-13 A
01108.AWD.0130	Connection section: North/ upstream - Demolish and remove partition wall	100%	02-Nov-13 A	16-Nov-13 A



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

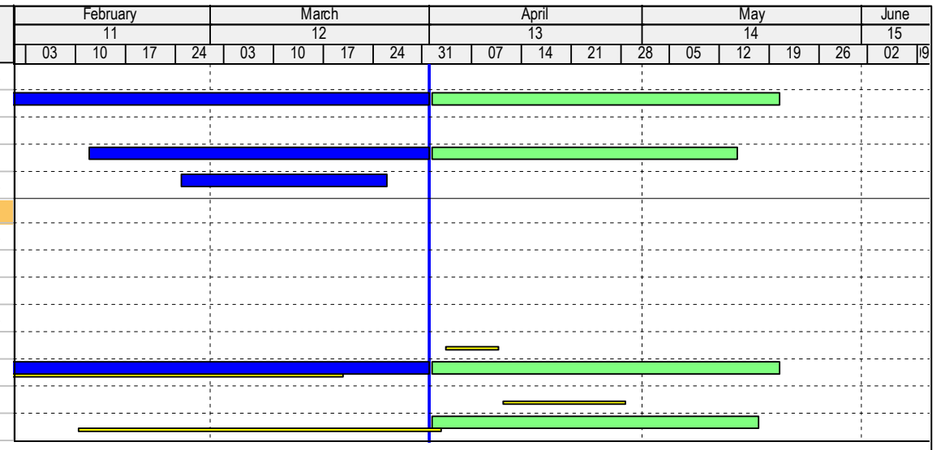
Contract 1108

Kai Tak Station and Associated Tunnels

3-months Rolling Programme (March 2014)

Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.AWD.0170	Connection section: North - Place concrete blocks & sealing before demolish nullah wall	100%	05-Dec-13 A	24-Dec-13 A
01108.AWD.0100	North section: Open cut excavation, 205mL x 36.4mW x ~4mD, 25750 m3	30%	06-Jan-14 A	20-May-14
01108.AWD.0180	Connection section: North - Demolish and remove nullah wall	100%	14-Jan-14 A	21-Jan-14 A
01108.AWD.0150	North section: Concrete lining, 205mL x 39.4mW x 0.3mT	30%	12-Feb-14 A	14-May-14
01108.AWD.0110	North section across haul road : Concrete lining with concrete pipes & shotcrete surfaces, 24mL x 36.4mW x 0.4mT	100%	25-Feb-14 A	26-Mar-14 A
South Section				
01108.AWD.0220	Connection section: South/ downstream - Remove concrete surface	100%	01-Aug-13 A	30-Aug-13 A
01108.AWD.0222	Connection section: South/ downstream - Saw-cut precast slab and beam, 84 pieces	100%	14-Sep-13 A	30-Oct-13 A
01108.AWD.0224	Connection section: South/ downstream - Remove saw-cut precast slab and beam, 84 pieces	100%	14-Sep-13 A	30-Oct-13 A
01108.AWD.0230	Connection section: South/ downstream - Demolish and remove partition wall	100%	22-Nov-13 A	03-Dec-13 A
01108.AWD.0270	Connection section: South - Place concrete blocks & sealing before demolish nullah wall	100%	26-Dec-13 A	09-Jan-14 A
01108.AWD.0240	South section: Open cut excavation, 205mL x 36.4mW x ~4mD, 25750 m3	30%	09-Jan-14 A	20-May-14
01108.AWD.0280	Connection section: South - Demolish and remove nullah wall	100%	22-Jan-14 A	23-Jan-14 A
01108.AWD.0250	South section: Concrete lining, 205mL x 39.4mW x 0.3mT	22.6%	16-Apr-14 A	17-May-14



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

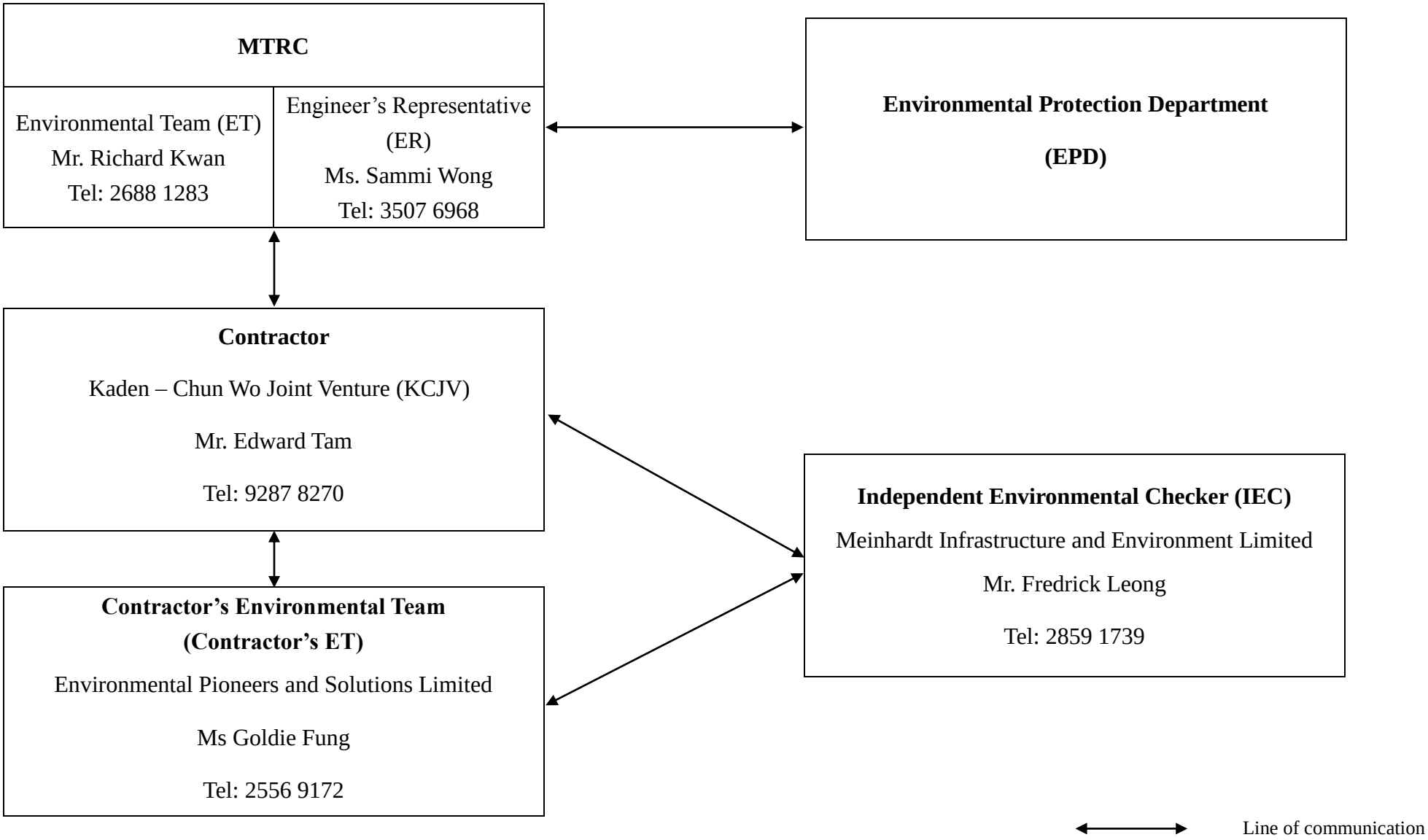
Contract 1108

Kai Tak Station and Associated Tunnels

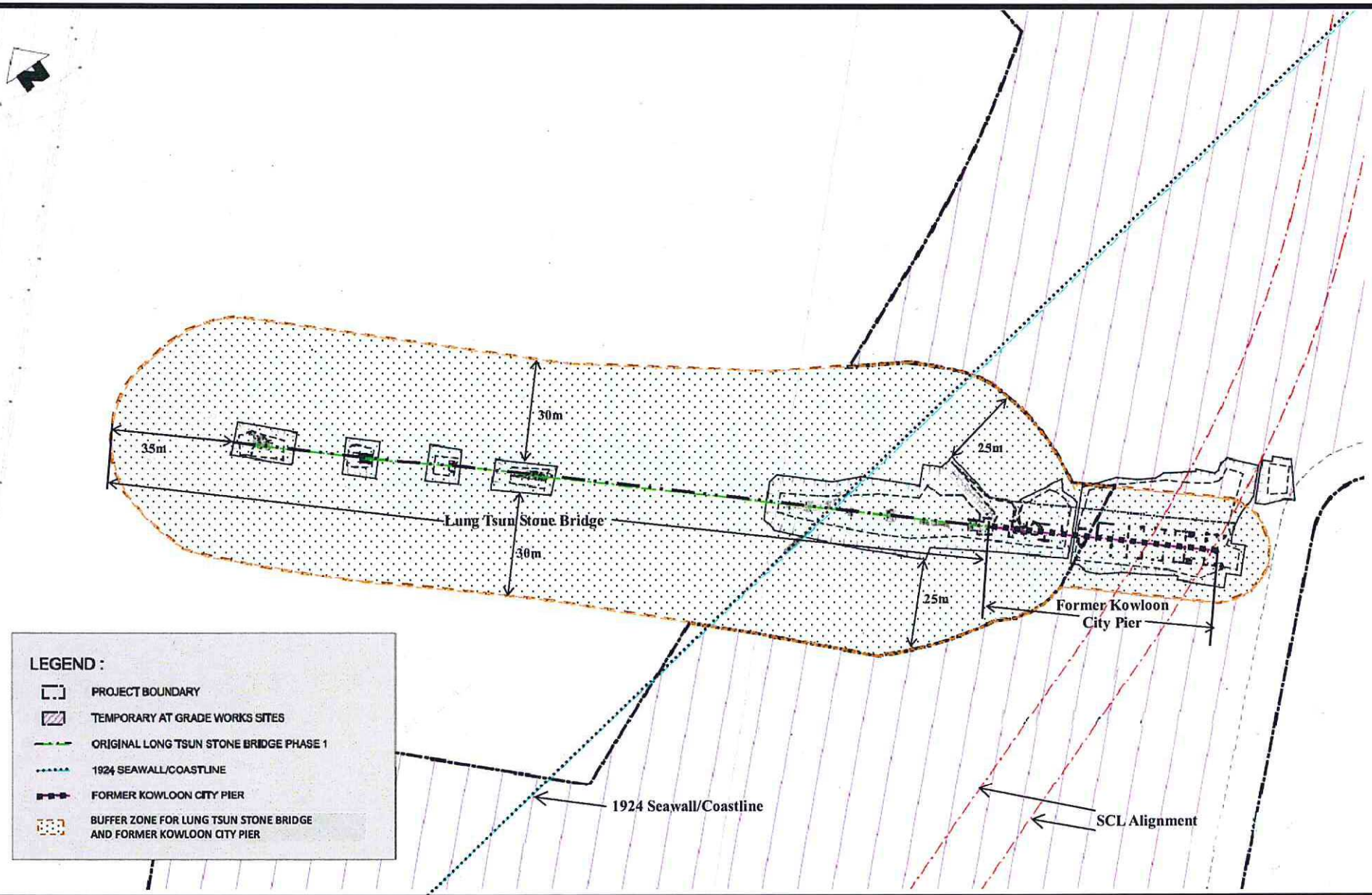
3-months Rolling Programme (March 2014)

Kaden – Chun Wo Joint Venture

Appendix C –Project Organization Chart & Contact Details


MTRC
Environmental Team (ET)
Mr. Richard Kwan
Tel: 2688 1283
Engineer's Representative (ER)
Ms. Sammi Wong
Tel: 3507 6968
Environmental Protection Department
(EPD)
Contractor
Kaden – Chun Wo Joint Venture (KCJV)
Mr. Edward Tam
Tel: 9287 8270
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/D 環境許可證編號：EP-438/2012/D
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 Figure 4.3 of the SCL(TAW-HUH) EIA Report (No.: AEIAR-167/2012)] [本圖是根據沙田至中環綫-大圍至紅磡段環境影響評估報告(編號: AEIAR-167/2012)中圖 4.3 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 _2014__ (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated	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 '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	74.526	0	0	0	72.007	2.519	32.340	0.110	0	0	0.059
Feb	57.988	0	0	0	55.963	2.025	0	0.160	0.007	0.640	0.123
Mar	45.732	0	0	0	41.405	4.327	0	0.096	0	0	0.146
Apr	--	--	--	--	--	--	--	--	--	--	--
May	--	--	--	--	--	--	--	--	--	--	--
June	--	--	--	--	--	--	--	--	--	--	--
Sub-total	178.246	0	0	0	169.375	8.871	32.340	0.339	0.007	0.640	0.328
July	--	--	--	--	--	--	--	--	--	--	--
Aug	--	--	--	--	--	--	--	--	--	--	--
Sept	--	--	--	--	--	--	--	--	--	--	--
Oct	--	--	--	--	--	--	--	--	--	--	--
Nov	--	--	--	--	--	--	--	--	--	--	--
Dec	--	--	--	--	--	--	--	--	--	--	--
Total	178.246	0	0	0	178.246		32.340	0.339	0.007	0.640	0.328
Year 2013	144.512	0	0	0	144.512		93.330	0.030	0	0.480	2.568
Grand Total	322.758	0	0	0	322.758		125.670	0.369	0.007	1.120	2.896

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	✔
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	✔

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
		No-intrusion Zone • 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. Protection of Retained Trees • 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,					
S6.12	LV2	Decorative Hoarding Erection of decorative screen during construction stage to screen	Minimize visual & landscape impact	Contractor	Within Project Site	Detailed design 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
		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.				construction stage	
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	Reduce air pollution emission from construction vehicles and plants	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
		powered by ultra low sulphur diesel fuel (ULSD).					
/	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 extend beyond the	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
		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 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 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
		• 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 • Exposed earth should be properly treated by compaction, turfing,					

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
		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.					
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	✔
S8.3.6	N2	Install temporary hoarding located on the site boundaries between noisy	Reduce the construction noise	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
		construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	levels at low-level zone of NSRs through partial screening.			stage	
S8.3.6	N3	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressor, generators and saw.	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction stage	✔
S8.3.6	N4	Use "Quiet plants"	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	✔
S8.3.6	N5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	✔
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	✔

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 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 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
		• 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.					

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
		• 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 the					

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
		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.					

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
		• Adopt best management practices					
S10.7.1	W2	<u>Tunnelling Works</u> • Cut-&-cover/ open cut tunnelling work should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable. • Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge • The wastewater with a high concentration of SS should be treated (e.g. by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater. • Direct discharge of the bentonite slurry (as a result of D-wall and 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	N/A
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 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
		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.					
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	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
		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 licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.					

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
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	*
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	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
		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; • Implement a trip-ticket system for each works contract to ensure	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	✔

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
		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. • 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	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	✔

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
		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 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	✔
S11.5.1	WM6	<u>Land-based and Marine-based Sediment</u>	To control pollution due to	Contractor	Within Project Site	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
		• 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.	marine sediment		Area	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
		• 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 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	Control the chemical waste and ensure proper storage,	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
		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	handling and disposal.				

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
		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 2014	0	0	0	0
February 2014	0	0	0	0
March 2014	0	0	0	0
Total	0	0	0	0
Year 2013	0	0	0	0
Grand Total	0	0	0	0

Appendix J

6th 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. 6

[Period from 1 to 31 March 2014]

Works Contract 1102 –

Hin Keng Station and Approach Structures

(April 2014)

Certified by: Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 11th April 2014

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 2014

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 6th 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 2014.

Summary of Construction Works undertaken during the Reporting Month

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

- Slope improvement works;
- Bored piling;
- Pre-bored H-pile;
- King Post Piling;
- Tree transplanting; and
- Modification of hoarding.

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 2,753.8 m^3 of inert C&D materials were generated from the Project and were sent to Contract 1108A Kai Tak Barging Point and Tseung Kwan O Area 137 Fill Bank during the reporting month. No non-recyclable non-inert C&D materials and 47.9 m^3 general refuse were disposed of at NENT Landfill. No chemical wastes, steel material, plastics and paper/cardboard packaging was generated and collected by the recycler during this reporting month.

Landscape and Visual

5. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 11 and 25 March 2014. 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 4, 11, 20 and 25 March 2014.The representative of the IEC joined the site inspection on 20 March 2014. Details of the audit findings and implementation status are presented in **Section 6**.

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

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

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

9. No reporting change was recorded during the reporting period.

10. No Project related environmental complaint and notification of summons/ successful prosecutions were received in this reporting period.

Future Key Issues

11. Major site activities for the coming reporting month will include:

- Slope improvement works;
- Demolition of retaining wall;
- Bored piling;
- Pre-bored H-pile;
- King Post Piling; and
- Modification of hoarding.

1 INTRODUCTION

1.1 Cinotech Consultants Limited (Cinotech) was appointed by Penta-Ocean Construction Co.Ltd. (POC) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the MTR Shatin to Central Link (SCL)Works Contract 1102 – Hin Keng Station and Approach Structures (hereafter referred to as the Project).

Purpose of the Report

1.2 This is the 6th 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 2014.

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**.

- Slope improvement works;
- Bored piling;
- Pre-bored H-pile;
- King Post Piling;
- Tree transplanting; and
- Modification of hoarding.

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/D	13/9/2013	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	3/9/2013	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00016803-2013	4/9/2013	30/9/2018	Valid
Construction Noise Permit (CNP)			
GW-RN0811-13	15/1/2014	14/6/2014	Valid

Summary of EM&A Requirements

2.7 The EM&A programme under Works Contract 1102 require regular dust and noise monitoring as well as environmental site audits. The EM&A requirements are described in the following sections, including:

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

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

2.9 This report presents the monitoring results, observations, locations of the required monitoring parameters, namely construction noise & dust monitoring as well as audit works for the Project in the reporting month.

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Regular Construction Noise Monitoring

3.1 In accordance with the EM&A Manual, monitoring of construction noise impact should be conducted at the designated monitoring station. The construction noise monitoring location is listed in **Table 3.1** and shown in **Figure 3**.

Table 3.1 Regular Construction Noise Monitoring Station

Regular Construction Noise Monitoring Location	Description	Type of Measurement
NMS-CA-1(1)	C.U.H.K.A.A Thomas Cheung School	Façade

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

Monitoring Parameter and Frequency

3.2 Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual by the Contractor Environmental Team of Works Contract SCL 1103. If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed. The monitoring schedule for this reporting period could be referred to Appendix K of SCL 1103 monthly EM&A report. The construction noise was monitored at the frequency and duration stated in **Table 3.2**.

Table 3.2 Construction Noise Monitoring Parameters and Frequency

Monitoring Period	Duration	Parameter	Frequency
Impact Monitoring	Throughout the construction period	L_{eq} (30min)	Once per week

3.3 The construction noise levels were measured in terms of the A-weighted equivalent continuous sound pressure level (L_{Aeq}) in decibels dB(A). L_{Aeq} (30min) was used as the monitoring metric for the time period between 0700 – 1900 hours on normal weekdays while L_{10} and L_{90} were also recorded as supplementary reference information for data auditing.

Monitoring Equipment, Maintenance, Calibration and Procedures

3.4 The detailed information of monitoring equipment, maintenance, calibration and procedures could be referred to Section 4.2 of SCL 1103 monthly EM&A report.

Action & Limit Level for Construction Noise Monitoring

3.5 The Action and Limit Levels are presented in **Appendix B** and the Event / Action Plan (EAP) for noise monitoring is presented in **Appendix F.**

Continuous Noise Monitoring

3.6 With reference to the latest Continuous Noise Monitoring Plan (CNMP) and Construction Noise Mitigation Measures Plan (CNMMP) prepared and submitted under EP Condition 2.10, it is predicted that no residual air-borne construction noise impacts exceeding the relevant noise criteria will be anticipated. Therefore, no continuous noise monitoring is required during the construction of the SCL (TAW-HUH) under Works Contract 1102.

Regular Construction Dust Monitoring

3.7 The proposed dust monitoring station for the construction phase of the Project, as recommended in the approved EM&A Manual, is listed in **Table 3.3** and shown in **Figure 4**.

Table 3.3 Dust Monitoring Station

Regular Dust Monitoring Location	Description
DMS-1 (1)	C.U.H.K.A.A. Thomas Cheung School

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

Monitoring Parameter and Frequency

3.8 The dust monitoring (in terms of Total Suspended Particulates (TSP)) was conducted at the designated monitoring station in accordance with the requirements stipulated in the EM&A Manual. The monitoring schedule for this reporting period could be referred to Appendix K of SCL 1103 monthly EM&A report. The 24-hour TSP levels were monitored at the frequency and duration stated in **Table 3.4**.

Table 3.4 Dust Monitoring Parameters and Frequency

Monitoring Period	Duration	Parameter	Frequency
Impact Monitoring (1)	Throughout the construction period	24-hour TSP (2)	Once per 6 days

Note:
(1) 1- hour TSP shall be conducted when one documented valid complaint is received.
(2) 24-hour TSP will be conducted when project-related construction activities are being undertaken within a radius of 500m from monitoring stations.

Monitoring Equipment, Maintenance, Calibration and Procedures

3.9 The detailed information of monitoring equipment, maintenance, calibration and procedures could be referred to Section 3.2 of SCL 1103 monthly EM&A report.

Action and Limit Levels for Dust Monitoring

3.10 The Action and Limit levels have been established and are presented in **Appendix B** and the Event / Action Plan (EAP) for dust monitoring is presented in **Appendix F.**

Landscape and Visual

3.11 In accordance with the EM&A Manual, the landscape and visual mitigation measures shall be implemented and a site inspection shall be conducted once every two weeks throughout the construction period. The implementation status is given in **Appendix E**. The Event / Action Plan (EAP) for landscape and visual are presented in **Appendix F.**

4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

4.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status of the environmental mitigation measures of the reporting period is summarized in **Appendix E**. Status of required submissions under the Environmental Permit (EP) of the reporting period is presented in **Table 4.1**.

Table 4.1 Status of Required Submissions under EP

EP Condition	Submission	Submission Date
3.4	Monthly Environmental Monitoring & Audit Report (February 2014)	14 March 2014

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	58.4	59.5	When one documented complaint is received	70/65(1)

Remarks:
(1) For normal day-time working hours, the noise criteria is 70dB(A) and 65 dB(A) for normal teaching period and examination periods respectively..

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	27.7	71.0	49.2	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][b]	C&D Materials (non-inert) [c]				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
March 2014[d]	2,753.8 m^3	47.9 m^3	0 kg	0 kg	0 kg	0 kg

Notes:
(a) Inert C&D materials include excavated soil and rock, which were delivered to Tseung Kwan O Area 137 Fill Bank during the reporting month.
(b) In 2,753.8 m^3 inert C&D materials, 354.3 m^3 of excavated soil was delivered to Contract 1108A Kai Tak Barging Point and would be reused in other project.
(c) 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.
(d) The cut-off date of the waste flow data in reporting month was 28 March 2014.

Landscape and Visual

5.10 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 11 and 25 March 2014. 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 4, 11, 20 and 25 March 2014 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 20 March 2014. 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	25 Feb 2014 and 4 Mar 2014	Gullies should be properly covered and sealed to prevent water from entering. The Contractor was reminded to prevent site runoff entering gullies.	The gullies near site entranced were covered on 11 Mar 2014.
	4 Mar 2014	Reminder: To bund the exposed area near site entrance to prevent site runoff discharging out of the site.	Crushed stone was provided to the exposed area near site entrance on 11 Mar 2014.
	4 Mar 2014	Reminder: To cover exposed slope to avoid runoff.	The exposed slope was covered by tarpaulin on 11 Mar 2014.
	11 Mar 2014	Reminder: Runoff retaining facility at Slope FR326 should be properly improved to avoid leakage.	The runoff retaining facility was provided with tarpaulin at bottom on 20 Mar 2014.
	20 Mar 2014	Reminder: Sediment in U-channel should be regularly removed.	The sediment in U-channel was removed on 25 Mar 2014.
	25 Mar 2014	Reminder: Sand bags should be provided more under hoarding near swimming pool to reduce runoff discharging out of site.	Follow up actions will be reported in the next month.
	25 Mar 2014	Reminder: Mud and sediment in runoff retaining facility at Slope FR326 should be regularly removed.	Follow up actions will be reported in the next month.
Noise	25 Feb 2014	Reminder: Noise mitigation measure should be enhanced for piling works.	Piling activity in identified area was not observed during site inspection on 4 Mar 2014.

Parameters	Date	Observations and Recommendations	Follow-up
	4 Mar 2014	Noise mitigation measures for wall breaking works should be enhanced to reduce noise impact.	Wall breaking work was not observed during the site inspection on 11 Mar 2014.
	11 Mar 2014 and 20 Mar 2014	Noise mitigation measure should be enhanced for bored piling machine.	Tarpaulin covering was provided to operating bored piling machine.
	25 Mar 2014	Sheet piling work near site boundary was observed. The Contractor was reminded to provide noise mitigation measure to reduce noise impact.	Follow up actions will be reported in the next month.
	25 Mar 2014	Reminder: Noise mitigation measures for breaker should be enhanced.	Follow up actions will be reported in the next month.
	25 Mar 2014	Reminder: Noise mitigation measure for air compressor near site entrance should be provided properly.	Follow up actions will be reported in the next month.
Landscape and Visual	N/A	There was no observation in the reporting period.	N/A
Air Quality	21 Feb 2014 and 25 Feb 2014	Proper cover should be provided to cement mixing facility to suppress dust emission.	The cement mixing facility was covered with tarpaulin on 4 Mar 2014.
	25 Feb 2014	Reminder: Water spraying should be provided on haul road to reduce dust.	The haul road was wet during site inspection on 4 Mar 2014.
	4 Mar 2014	Reminder: Water should be sprayed more frequently on unpaved area near tennis court and tail track area.	The identified areas were observed wet during the site inspection on 11 Mar 2014.
	11 Mar 2014	Stockpile of dusty material should be properly covered to reduce dust emission at EVA.	The stockpile of dusty material was removed on 20 Mar 2014.
	20 Mar 2014	Water spraying should be provided to breaking works to reduce dust emission.	Breaking work was not observed and water jet was provided nearby on 25 Mar 2014.
	20 Mar 2014	Reminder: Regular maintenance should be provided to air compressor near site entrance to prevent smoke emission.	Smoke emission from identified air compressor was not observed during site inspection on 25 Mar 2014.
Waste / Chemical Management	20 Mar 2014	Oil stain on the ground near tail track area should be properly removed.	The oil stain on the ground near tail track area was removed on 25 Mar 2014.
	25 Mar 2014	Reminder: Drip tray should be provided to generator before operation.	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 Cumulative Complaint Log 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 Cumulative Log for environmental summon and successful prosecution 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:

- Slope Improvement works;
- Demolition of retaining wall;
- Bored piling;
- Pre-bored H-pile;
- King Post Piling; and
- Modification of hoarding.

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; 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 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 2014 in accordance with EM&A Manual and the requirement under EP.

9.2 No exceedance of the Action and Limit Levels of regular construction noise and 24-hour TSP monitoring was recorded at the designated monitoring stations during the reporting month.

9.3 4 times of joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET and 2 times of bi-weekly inspection of the implementation of landscape and visual mitigation measures were conducted during the reporting period.

9.4 There was no Project related environmental complaint, successful prosecution or notification of summons received during the reporting month.

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

Recommendations

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

Water Quality

- 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
- Sand bags should be provided and to surround the gullies to prevent the silty water from getting into them.
- Exposed slope should be properly covered to reduce runoff during rainy season.
- Proper bunding and embankment of earthwork should be provided to prevent site runoff from out of site before treatment.

Construction Noise

- Regular review on the noise mitigation measures and the conditions of the implemented noise mitigation measures shall be properly maintained.

Air Quality

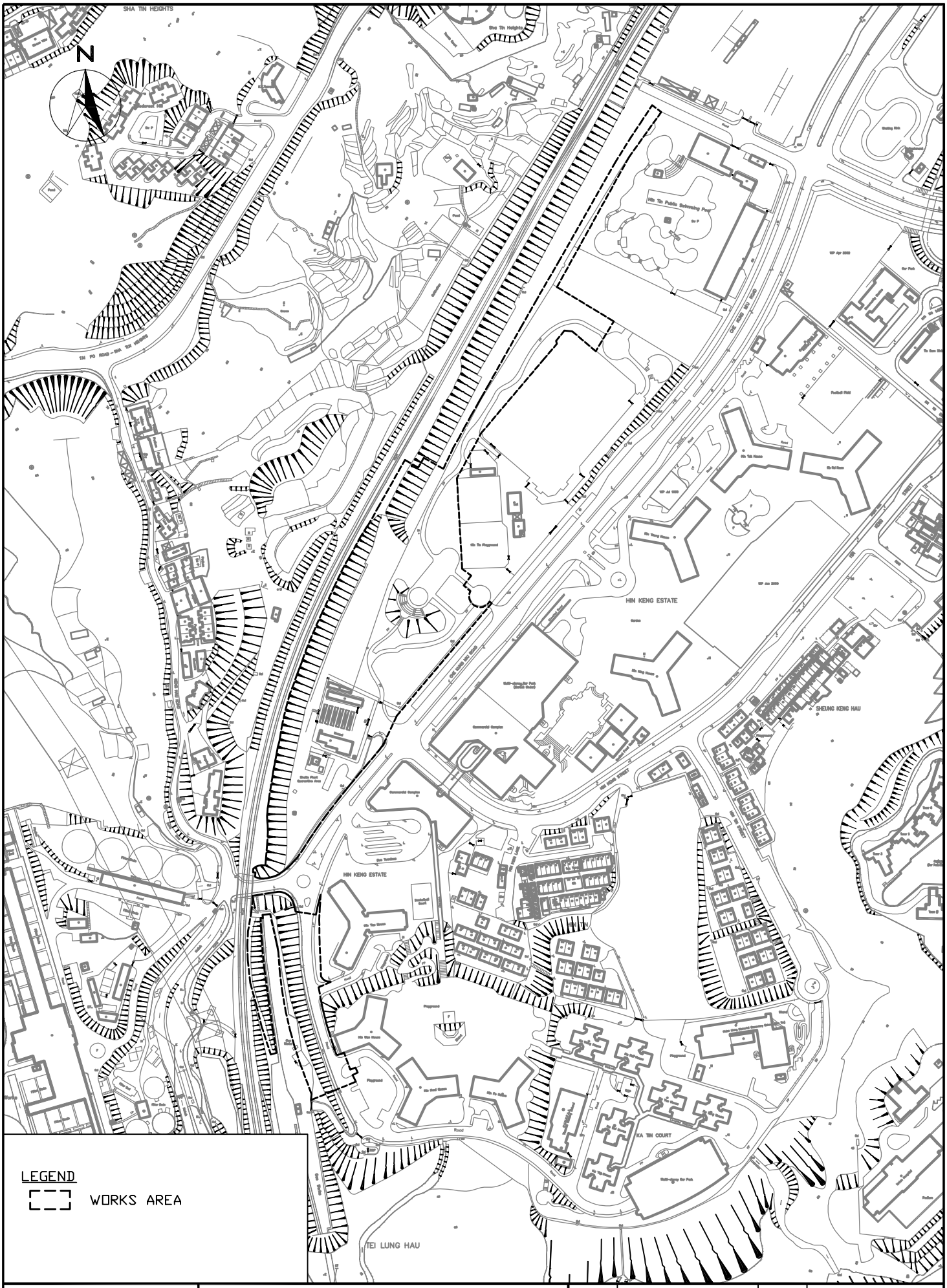
- Regular water spraying on site is reminded to be implemented as per EP requirement;
- Regular inspection and maintenance should be provided to plants and machines to avoid black smoke emission;
- Stockpiles of materials should be properly covered by impervious sheets to suppress dust emission; and
- Water spraying should be provided to demolition and breaking works to suppress dust emission.

Waste/Chemical Management

- Good site practice of providing drip trays for temporary use of chemicals shall be

sustained. Drip trays should be properly maintained;
- Regularly maintenance should be provided to equipment to avoid oil leakage; and
- Provision and enhancement of the preventive mitigation measures to avoid oil leakage during oil filling works. Oil stain on ground should be properly removed.

FIGURES



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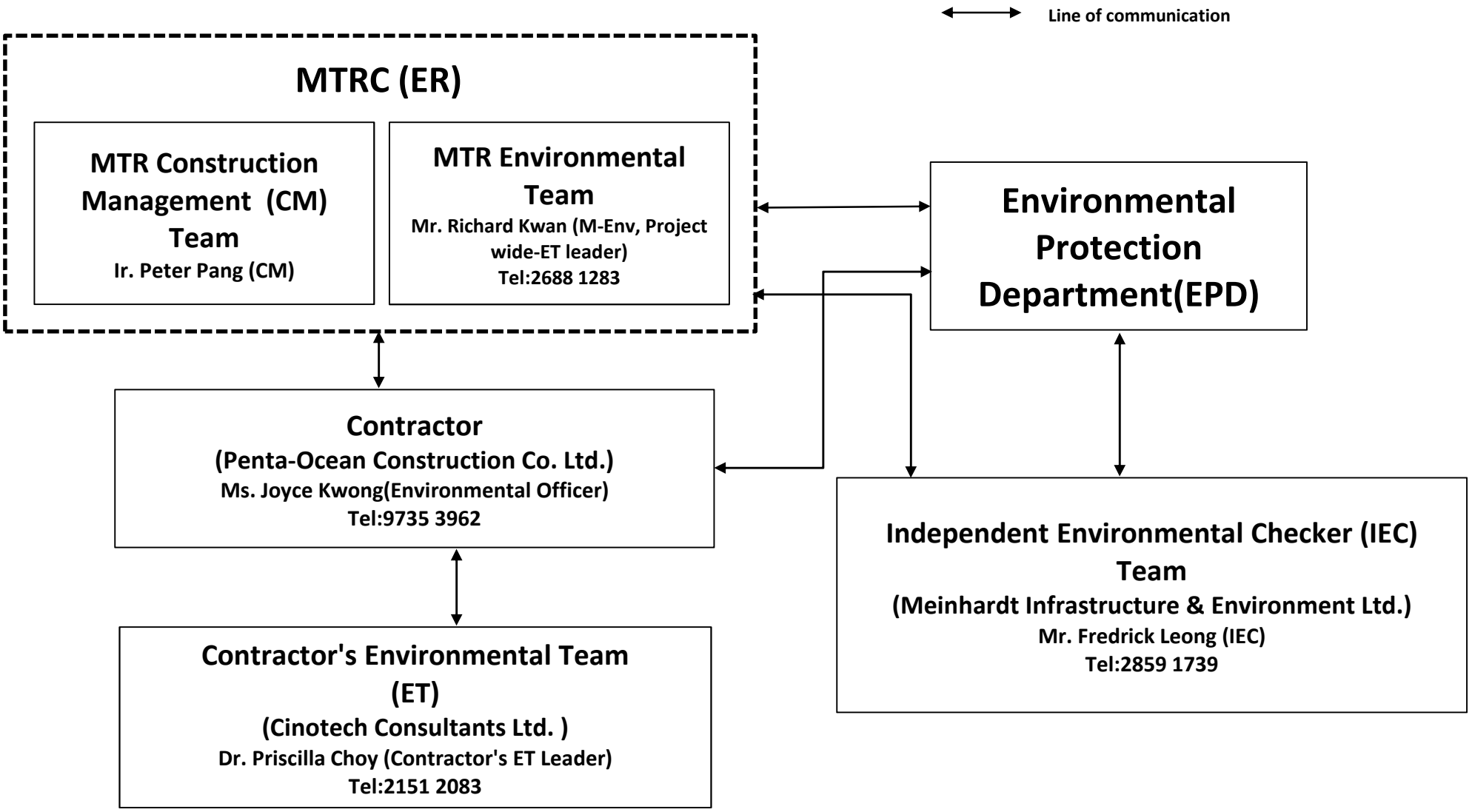
SCL CONTRACT 1102
THE SHATIN TO CENTRAL LINK –
HIN KENG STATION AND APPROACH STRUCTURES

SITE LAYOUT PLAN OF
WORKS CONTRACT 1102

SCALE	1:10000@A4	DATE	NOV 2013
CHECK	GL	DRAWN	JW
JOB No.	MA13040	FIGURE NO.	FIG 1
		REV	–



Title	SCL Contract 1102 The Shatin to Central Link - Hin Keng Station and Approach Structures Organization Chart and Key Contact of the Project	Scale N.T.S Date Oct-13	Project No. MA13040 Figure 2

CINOTECH

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SCL CONTRACT 1102
THE SHATIN TO CENTRAL LINK -
HIN KENG STATION AND APPROACH STRUCTURES

LOCATION OF NOISE MONITORING STATION

SCALE	1:10000@A4	DATE	OCT 2013
CHECK	GL	DRAWN	JW
JOB No.	MA13040	FIGURE NO.	FIG 3
		REV	-

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SCL CONTRACT 1102
THE SHATIN TO CENTRAL LINK –
HIN KENG STATION AND APPROACH STRUCTURES

LOCATION OF DUST MONITORING STATION

SCALE	1:10000@A4	DATE	OCT 2013
CHECK	GL	DRAWN	JW
JOB No.	MA13040	FIGURE NO.	FIG 4
		REV	–

APPENDIX A
TENTATIVE CONSTRUCTION PROGRAMME

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish
PROJECT DATES		259	0	15-Jul-13 A	31-Mar-14
Contract Commencement		0	0	15-Jul-13 A	15-Jul-13 A
Completion		0	0	27-Oct-13 A	27-Oct-13 A
Access Date		259	0	15-Jul-13 A	31-Mar-14
AT-GRADE BOX		237	91	26-Sep-13 A	23-Jul-14
Initial Works		34	0	26-Sep-13 A	05-Nov-13 A
Haul Road Construction		30	30	07-Apr-14	16-May-14
Temporary Piling Platform		135	91	26-Feb-14 A	23-Jul-14
FR63 SLOPE		199	73	17-Oct-13 A	02-Jul-14
Initial Works		28	0	17-Oct-13 A	28-Oct-13 A
Pit-by-Pit Construction		73	73	15-Feb-14 A	02-Jul-14
Row 1		63	63	15-Feb-14 A	19-Jun-14
Row 2		10	10	19-Jun-14	02-Jul-14
FR320 SLOPE		25	0	12-Oct-13 A	16-Nov-13 A
Initial Works		25	0	12-Oct-13 A	16-Nov-13 A
HIN KENG VIADUCT		278	122	13-Sep-13 A	28-Aug-14
Initial Works		278	122	13-Sep-13 A	28-Aug-14
		278	122	13-Sep-13 A	28-Aug-14
Temporary Traffic Management		191	74	01-Nov-13 A	03-Jul-14
Sub-Structure		208	81	21-Oct-13 A	11-Jul-14
Pre-drilling		186	79	21-Oct-13 A	09-Jul-14
Bored Pile Construction		144	80	23-Dec-13 A	10-Jul-14
Pile Cap Construction		24	24	13-Jun-14	11-Jul-14
FR65 SLOPE		308	162	24-Sep-13 A	17-Oct-14
Initial Works		87	0	24-Sep-13 A	28-Jan-14 A
		87	0	24-Sep-13 A	28-Jan-14 A
Pit-by-Pit Construction		224	162	22-Jan-14 A	17-Oct-14
Zone 1		174	162	22-Jan-14 A	17-Oct-14
Zone 4		160	160	31-Mar-14	15-Oct-14
NTSAMC & SPOS		162	14	24-Oct-13 A	20-May-14
Initial Works		130	0	24-Oct-13 A	27-Jan-14 A
		130	0	24-Oct-13 A	27-Jan-14 A
Demolition		107	14	05-Dec-13 A	20-May-14
		107	14	05-Dec-13 A	20-May-14
HIN KENG STATION		229	70	13-Jan-13 A	27-Jun-14
Initial Works		102	0	26-Aug-13 A	27-Dec-13 A
		102	0	26-Aug-13 A	27-Dec-13 A
Temporary EVA Construction		35	24	05-Dec-13 A	02-May-14
		35	24	05-Dec-13 A	02-May-14
Site Formation		21	21	08-Apr-14	07-May-14
		21	21	08-Apr-14	07-May-14
Sub-Structure		177	70	13-Jan-13 A	27-Jun-14
Pre-drilling		137	0	13-Jan-13 A	28-Jan-14 A
ELS		30	30	09-May-14	12-Jun-14
Pre-bored H-Pile Construction		84	70	02-Jan-14 A	27-Jun-14
MA ON SHAN LINE & TAIL TRACK		288	138	21-Sep-13 A	17-Sep-14
Temporary Overhead Line Mast		98	0	26-Sep-13 A	29-Jan-14 A
		98	0	26-Sep-13 A	29-Jan-14 A
R.C. Platform		76	76	31-Mar-14	05-Jul-14
Pre-drilling		32	32	28-May-14	05-Jul-14
Initial Works		60	60	31-Mar-14	16-Jun-14
Retaining Wall RW7		288	138	21-Sep-13 A	17-Sep-14
Initial Works		88	88	31-Mar-14	19-Jul-14
Plate Load Test		22	0	21-Sep-13 A	15-Oct-13 A
Structural Works		84	84	10-Jun-14	17-Sep-14
Noise Barrier Minipile		251	125	21-Oct-13 A	01-Sep-14
Initial Works		251	125	21-Oct-13 A	01-Sep-14
Noise Barrier Construction		75	75	17-Apr-14	04-Sep-14
		75	75	17-Apr-14	04-Sep-14
Miscellaneous Item in Operation Area		54	54	12-May-14	15-Aug-14
Elevated Evacuation Walkway		54	54	12-May-14	15-Aug-14

Actual Work
Remaining Work
Critical Remaining Work
Milestone
% Complete
Summary

MTRC SCL Project Contract 1102

Hin Keng Station and Approach Structure

Page 1 of 1

3 Months Rolling Programme

Period (Mar 2014 - Jun 2014)

Date	Revision	Checked	Approved
01-Apr-13	0		

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 2014

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	140304
Date	4 March 2014 (Tuesday)
Time	09:00 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B – Water Quality	
140304-R03	• To bund the exposed area near site entrance to prevent site runoff discharging out of the site.	B 20
140304-R04	• To cover exposed slope to avoid runoff.	B 9
	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	
140304-R02	• Water should be sprayed more frequently on unpaved area near tennis court and tail track area.	E 5
	Part F – Construction Noise Impact	
140304-O01	• Noise mitigation measures for wall breaking works should be enhanced to reduce noise impact.	F 7
	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	
140304-F05	• To properly cover and seal gullies near site entrance to prevent water from entering.	B 11

	Name	Signature	Date
Recorded by	Jason Lai		4 March 2014
Checked by	Dr. Priscilla Choy		4 March 2014

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140311
Date	11 March 2014 (Tuesday)
Time	09:00 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
140311-R03	***Part B – Water Quality*** • Runoff retaining facility at Slope FR326 should be properly improved to avoid leakage.	B 15i
	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.	
140311-O01	***Part E – Air Quality*** • Stockpile of dusty material should be properly covered to reduce dust emission at EVA.	E 6
140311-O02	***Part F – Construction Noise Impact*** • Noise mitigation measure should be enhanced for bored pilling machine.	F 5
	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	Jason Lai		11 March 2014
Checked by	Dr. Priscilla Choy		11 March 2014

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140320
Date	20 March 2014 (Thursday)
Time	09:30 – 11:30

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B – Water Quality	
140320-R04	• Sediment in U-channel should be regularly removed.	B 7
	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	
140320-O02	• Water spraying should be provided to breaking works to reduce dust emission.	E 11
140320-R03	• Regular maintenance should be provided to air compressor near site entrance to prevent smoke emission.	E 15
	Part F – Construction Noise Impact	
	• No environmental deficiency was identified during the site inspection.	
	Part G – Waste/Chemical Management	
140320-O01	• Oil stain on the ground near tail track area should be properly removed.	G 8
	Part H – Permits/Licenses	
	• No environmental deficiency was identified during the site inspection.	
	Part I – Others	
140320-F05	• Noise mitigation measure should be enhanced for bored piling machine.	F 5

	Name	Signature	Date
Recorded by	Jason Lai		20 March 2014
Checked by	Dr. Priscilla Choy		20 March 2014

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	140325
Date	25 March 2014 (Tuesday)
Time	09:00 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B – Water Quality	
140325-R03	• Sand bags should be provided more under hoarding near swimming pool to reduce runoff discharging out of site.	B 15i
140325-R06	• Mud and sediment in runoff retaining facility at Slope FR326 should be regularly removed.	B 15i
	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	
140325-O01	• Sheet piling work near site boundary is observed. The Contractor is reminded to provide noise mitigation measure to reduce noise impact.	F 7
140325-R02	• Noise mitigation measures for breaker should be enhanced.	F 5
140325-R04	• Noise mitigation measure for air compressor near site entrance should be provided properly.	F 7
	Part G – Waste/Chemical Management	
140325-R05	• Drip tray should be provided to generator before operation.	G 10
	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	Jason Lai		25 March 2014
Checked by	Dr. Priscilla Choy		25 March 2014

APPENDIX E
UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
Ecology (Construction Phase)								
S5.4	E1	Engineering works should not encroach into country park boundary, Tei Lung Hau Stream and secondary woodland near the portal at Hin Keng	Minimise ecological impacts	Contractor	Lion Rock Country Park, Tei Lung Hau Stream	Detailed design and construction stage	• AFCD's requirements • EIAO • Country Parks Ordinance	^
S5.7	E5	<u>Good Site Practices</u> Impact to any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, the containment of contaminated soils for removal from the site, appropriate storage of chemicals and chemical waste away from sites of ecological value and the provision of sanitary facilities for on-site workers. Adoption of such measures should permit waste to be suitably contained within the site for subsequent removal and appropriate disposal. The following good site practices should also be implemented: • Erection of temporary geotextile silt or sediment fences/oil traps around any earth-moving works to trap any sediments and prevent them from entering watercourses in particular the Tei Lung Hau stream; • Avoidance of soil storage against trees or close to	Minimise ecological impacts	Contractor	All construction sites	During construction	• ProPECC PN 1/94	^ ^ N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		waterbodies in particular the Tei Lung Hau stream; • Delineation of works site by erecting hoardings to prevent encroachment onto adjacent habitats and fence off areas which have some ecological value e.g. Tei Lung Hau Stream and the adjoining secondary woodland, tunnel on hill at top of slope stabilisation works; • No on-site burning of waste; • Waste and refuse in appropriate receptacles.						N/A ^ ^
S5.7	E7	<u>Water Quality and Hydrology</u> • Implement water control measures (ETWB TCW No. 5/2005, Protection of natural streams/ rivers from adverse impacts arising from construction works to avoid direct or indirect impacts on theTei Lung Hau Stream) and good site practices.	• Avoid indirect water impact to any wetland habitats or wetland fauna • Minimize the drawdown of water table	Contractor	Works area in Hin Keng	Construction stage	• TCW No. 5/2005	^
Landscape & Visual (Construction Phase)								
S6.9.3	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u> • For soil conservation, existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	TM-EIAO	^

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

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		including trees in contractor's works sites.						
S6.12	LV2	• Decorative Hoarding Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas. Hoarding should be designed to be compatible with the existing urban context. • Management of facilities on work sites To provide proper management of the facilities on the sites, give control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs. • Tree Transplanting Trees of high to medium survival rate would be affected by the works shall be transplanted where possible and practicable. Tree transplanting proposal including final location for transplanted trees shall be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006.	Minimize visual & landscape impact	Contractor	Within Project Site	Detailed design and Construction stage	EIAO – TM ETWB TCW 2/2004 ETWB TCW 3/2006	^ ^ ^

SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
Air Quality (Construction Phase)								
/	A1	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^ * ^
/	A2	Open burning shall be prohibited	Reduce air pollution emission from work site	Contractor	All construction sites	Construction stage	• APCO	^
Construction Dust Impact								
S7.6.5	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	^
S7.6.5	D2	• Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road in the Kowloon area and once per 1.5hour at those in the Tai Wai area should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	*

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.8 L/m2 to achieve the dust removal efficiency						
S7.6.5	D3	• Proper watering of exposed spoil should be undertaken throughout the construction phase: • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	^ * ^ ^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		point should be paved with concrete, bituminous materials or hardcores; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided and properly maintained as far as practicable along the site boundary with provision for public crossing; Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building						^ ^ ^ * ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl,bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the						^ ^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		construction site or part of the construction site where the exposed earth lies.						
S7.6.5	D6	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected representative dust monitoring station	Construction stage	• TM-EIA	^
Construction Noise (Airborne)								
S8.3.6	N1	Implement the following good site practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site office and other	Control construction airborne noise	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIA	^ ^ ^ ^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.						
S8.3.6	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIA	^
S8.3.6	N3	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure,screen the noisy plants including air compressor, generators and saw.	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	*
S8.3.6	N4	Use “Quiet plants”	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	^
S8.3.6	N5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	^
S8.3.6	N6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected	Contractor	Selected representative	Construction stage	• TM-EIA	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
			representative locations		noise monitoring station			
Water Quality (Construction Phase)								
S10.7.1	W1	In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department,1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>Construction Runoff and Site Drainage</u> • At the start of site establishment (including the barging facilities),perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earthbunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction. • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	^ *

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		in the permanent drainage channels to enhance deposition rates. • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m3/s a sedimentation basin of 30m3 would be required and for a flow rate of 0.5 m3/s the basin would be 150 m3. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction. • All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces should be covered by tarpaulin or other means. • The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all traffic areas and access roads protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows.						^ * ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas. • Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.						* ^ ^ *

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes. • All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. • Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after						^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain. • Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts. • All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby. • All the earth works involving should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable. • Adopt best management practices						^ ^ ^ ^
S10.7.1	W3	<u>Sewage Effluent</u> • Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • TM-water	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S10.7.1	W7	In order to prevent accidental spillage of chemicals, the following is recommended: • All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains. • The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings. • Disposal of chemical wastes should be conducted in compliancewith the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	* ^ ^
Waste Management (Construction Waste)								
S11.4.1.1	WM1	<u>On-site sorting of C&D material</u> • Geological assessment should be carried out by competent persons on site during excavation to identify materials which are not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc). Volcanic rock and Aplite dyke rock should be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	Contractor	All construction sites	Construction stage	• DEVB TC(W) No. 6/2010	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		operator should also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use. Details regarding control measures at source site and crushing facilities should be submitted by the Contractors for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc should also be explored.						
S11.5.1	WM2	Construction and Demolition Material • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promotethe 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 SupplementaryRAP (if contamination is confirmed) shall be prepared and submitted to EPD for agreement. • Supplementary Remediation Report (RR) shall also be prepared and submitted to EPD for endorsement prior to the commencement of any construction/ development works at Site L1 (NT South Animal Centre)	To analyse cyanide (free) at Site L1 (NT South Animal Centre)	Contractor	Site L1 (NT South Animal Centre)	After the site is resumed and handed over to the Project Proponent	• Practice Guide (PG) forInvestigation and Remediation of ContaminatedLand • GN/GM for land contamination • Risk-Based Remediation Goals	^ ^ ^
Hazard to Life								
Chapter 13.13	A13C.8	Installation of on-site gas monitors in all relevant SCL construction/operation areas;	To reduce the risks to the SCL staff, construction workers and passengers	MTRC/ Contractor	-	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
						phases		
Chapter 13.13	A13C.8	Establishment of emergency response and evacuation plans (cooperation of various parties/departments required. For theoperational phase the emergency plan should also include adequate procedures for controlling the tunnel ventilation system and stopping of the SCL train traffic in order to prevent the trains moving into the affected areas.)	To reduce the risks to the SCL staff, constructionworkers and passengers	MTRC/ Contractor	-	Construction and operation phases		^
Chapter 13.13	A13C.8	Safety/emergency response/evacuation training and drills for all personnel	To reduce the risks to the SCL staff, constructionworkers and passengers	MTRC/ Contractor	-	Construction and operation phases		^
EM&A Project								

SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S 14.2	EM1	• An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	MTR Corporation	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO	^
S 14.2 – 14.4	EM2	• An Environmental Team needs to be employed as per the EM&A Manual • Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. • An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	MTR Corporation/ Contractor	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO	^ ^ ^

Remarks: ^ Compliance of mitigation measure X Non-compliance of mitigation measure

• Non-compliance but rectified by the contractor

* Recommendation was made during site audit but improved/rectified by the contractor.

N/ANot Applicable

APPENDIX F
EVENT AND ACTION PLANS

Appendix F - Event and Action Plan for Air Quality Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1102 ET	**IEC**	**ER**	**CONTRACTOR**
ACTION LEVEL				
1. Exceedance for one sample	1. Inform the IEC, Contractor and ER; 2. Discuss with the Contractor, IEC and ER on the remedial measures required; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing;	1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; 3. Amend working methods agreed with the ER as appropriate.
2.Exceedance for two or more consecutive samples	1. Inform the IEC, Contractor and ER; 2. Discuss with the ER, IEC and Contractor on the remedial measures required; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. If exceedance continues, arrange meeting with the IEC, ER and Contractor; 6. If exceedance stops, cease addtional monitoring	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify the Contractor, IEC and ET; 3. Review and agree on the remedial measures proposed by the Contractor; 4. Supervise Implementation of remedial measures.	1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal as appropriate.

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

Event and Action Plan for Noise Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1102 ET	**IEC**	**ER**	**CONTRACTOR**
Action Level	1. Notify the IEC, Contractor and ER 2. Discuss with the ER, IEC and Contractor on the remedial measures required 3. Increase monitoring frequency to check mitigation effectiveness	1. Review the investigation results submitted by the contractor; 2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor. .	1. Confirm receipt of notification of complaint in writing 2. Notify the Contractor, IEC and ET 3. Review and agree on the remedial measures proposed by the Contractor; 4. Supervise implementation of remedial measures	1. Investigate the complaint and propose remedial measures 2. Report the results of investigation to the IEC, ET and ER 3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification. 4. Implement noise mitigation proposals
Limit Level	1. Notify the IEC, Contractor and EPD 2. Repeat measurement to confirm findings 3. Increase monitoring frequency 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances 7. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET and Contractor on the potential remedial measures 4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of exceedance in writing 2. Notify the Contractor, IEC and ET 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 4. Supervise the implementation of remedial measures 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Identify source and investigate the causes of exceedance 2. Take immediate action to avoid further exceedance 3. Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification. 4. Implement the agreed proposals 5. Revise and resubmit proposals if problem still not under control 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Event and Action Plan for Landscape and Visual during Construction Phase

Action Level	Works Contract 1102 ET	IEC	ER	Contractor
Non-conformity on one occasion	1. Inform the Contractor, the IEC and the ER 2. Discuss remedial actions with the IEC, the ER and the Contractor 3. Monitor remedial actions until rectification has been completed	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET, ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures.	1. Confirm receipt of notification of non-conformity in writing 2. Review and agree on the remedial measures proposed by the Contractor 3. Supervise implementation of remedial measures	1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source 2. Inform the Contractor, the IEC and the ER 3. Increase inspection frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If non-conformity stops, cease additional monitoring	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 3. Supervise implementation of remedial measures.	1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.

APPENDIX G
WASTE GENERATION IN THE REPORTING MONTH

Name of Contractor: Penta-Ocean Construction Co. Ltd.
Waste Flow Table for Year 2014

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects (See Note 2)	Disposed as Public Fill (See Note 1)	Disposed as Sorting Facility	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Year 2013	4.2424	0.0803	0	0.2980	3.8011	0.0631	0	0	0	0	0.1227
Jan-14	1.3004	0	0	0.1714	1.1265	0.0025	0	0	0	0	0.0442
Feb-14	0.1766	0	0	0.1483	0.0044	0.0238	0	0	0	0	0.0069
Mar-14 (See Note 3)	2.7538	0	0	0.3543	2.3748	0.0248	0	0	0	0	0.0479
Apr-14											
May-14											
Jun-14											
Sub-total	8.4732	0.0803	0	0.972	7.3068	0.1142	0	0	0	0	0.2217
Jul-14											
Aug-14											
Sep-14											
Oct-14											
Nov-14											
Dec-14											
Total	**8.4732**	**0.0803**	**0**	**0.972**	**7.3068**	**0.1142**	**0**	**0**	**0**	**0**	**0.2217**

Note: (1) Inert C&D materials include excavated soil and rock, which were delivered to Tseung Kwan O Area 137 Fill Bank during the reporting month.
Note: (2) Excavated soil was disposed of at Contract 1108A Kai Tak Barging Point and would be reused in other Project.
Note: (3) The cut-off date of waste flow data in reporting month was 28 March 2014.

APPENDIX H
CUMULATIVE LOG FOR COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

Appendix H - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Complaint Log

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	File Closed
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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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