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. 36

[Period from 1 to 31 August 2015]

(September 2015)

Verified by: Fredrick Leong

Position: Independent Environmental Checker

Date: 14 September 2015

MTR Corporation Limited

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Mong Kok East to Hung Hom Section

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[Period from 1 to 31 August 2015]

(September 2015)

Certified by: Richard Kwan 

Position: Environmental Team Leader

Date: 14 September 2015

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. 36

[Period from 1 to 31 August 2015]

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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/H) was issued by Director of Environmental Protection (DEP) on 10 September 2014.

1.2 Project Programme

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

Table 1.1 Summary of Awarded Works Contracts

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
1101	Ma On Shan Line Modification Works(1)	December 2012	Sun Fook Kong Joint Venture (SFKJV)	ANewR Consulting Ltd. (ANewR)
1102	Hin Keng Station and Approach Structures	October 2013	Penta-Ocean Construction Co. Ltd.	Cinotech Consultants Ltd. (Cinotech)
1103	Hin Keng to Diamond Hill Tunnels	February 2013	Vinci Construction Grands Projets	Ove Arup & Partners Hong Kong Ltd. (Arup)
1106	Diamond Hill Station	March 2013	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 thirty-sixth 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 August 2015.

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/H. 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/H
1102	Hin Keng Station and Approach Structures	EP-438/2012/H
1103	Hin Keng to Diamond Hill Tunnels	EP-438/2012/H
1106	Diamond Hill Station	EP-438/2012/H
1107	Diamond Hill to Kai Tak Tunnels	EP-438/2012/H
1108	Kai Tak Station and Associated Tunnels	EP-438/2012/H
1108A	Kai Tak Barging Point Facilities	EP-438/2012/H
1109	Stations and Tunnels of Kowloon City Section	EP-438/2012/H
1111	Hung Hom North Approach Tunnels	EP-437/2012 & EP-438/2012/H
1112	Hung Hom Station and Stabling Sidings	EP-437/2012 & EP-438/2012/H

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
1101 (1)	Tai Wai Mei Tin Road	• All construction activities were completed in September 2013.
1102	Hin Keng Station and Approach Structures	• Slope improvement works; • Pumping test; • ELS structure installation and superstructure works at at-grade box; • Pier and pile cap construction of viaduct; • ABWF works at Hin Keng Station; and • Modification of retaining wall and installation of noise barrier.
1103	Diamond Hill Area	• Tunnel Boring Machine (TBM) tunnelling and machinery site assembly
	Hin Keng Area	• Pipe Piling, grouting and tunnel blasting
	Fung Tak Area	• Shaft excavation and ELS and sheet piling for retaining wall
	Ma Chai Hang Area	• Shaft excavation and ELS
1106	Diamond Hill Station Area	• Construction of slabs/beams, columns and walls at SCL-DIH station area, Interchange Adit, West Unpaid Link Adit and Entrance A1; • Concreting works; • Backfilling works; and • Preparation of piling works and pre-drilling works at East MOE.
1107	Tunnel section next to Kai Tak Station	• Tunnel construction at cut and cover tunnels; • Backfilling works at cut and cover tunnels; • TBM excavation; and • Reprovision of box culvert.
1108	Kai Tak Station	• Open Cut Tunnel: base and sump pit cast concrete, staircase corridor backfilling • Cut and Cover Tunnel: defect rectification, temporary drainage system maintenance and monitoring, mass stair formwork erection, patching up and defect rectification of internal structure • Station structure: wall concreting, Adit B top slab concreting,sheetpile extraction at seaside • Launching Shaft: Tunnel mining completed, strut installation, waterproofing installation in mined tunnel • Receiving Shaft: wall and roof cast concrete, wall and roof steel fixing, backfilling
1108A	Kai Tak Barging Point Facilities	• Daily operation and maintenance of the Barging Point Facilities to receive excavated spoil delivered by trucks from Designated and Interfacing Contracts. • Temporary stockpiling of received spoil in the Barging Point Facilities. • Marine transportation of received spoil to receptor sites for beneficial reuse.
1109	Ma Tau Wai (MTW) Works Area	• TKW/MTW Road Garden – Operation of bentonite plant and EEP construction; and • Along Ma Tau Wai Road – Predrilling for D wall, D wall panel construction, trial pits for location of utilities, and station excavation and

Works Contract	Site	Construction Activities
		construction.
	To Kwa Wan (TKW) Works Area	• Olympic Garden – Underpinning works, installation of pipe pile and TTMS preparation; • TKW Station – Pump installation, open cut excavation, and tunnelling works; • Tam Kung Road – Shaft construction; and • Nam Kok Road – Installation of pipe pile.
1111	Mong Kok Freight Terminal (1)	• All construction activities were completed in May 2015.
	Hung Hom Area	• Excavation work, site clearance, slope work, cable detection, excavation lateral support, form work erection, reinforcement fixing, • Construction of drainage and man hole, foul water diversion • Trial pit, trial trench, pre-drilling, pilling works, pre-grouting, grouting, post-grouting, pre-spilt, backfilling, abutment works, • Erection of hoarding, scaffolding platform, erection of utility temporary supports, erection of temporary link walkway, temporary working platform, abandoned utilities, utilities protection, • Tie back installation, lifting works, construction of noise enclosure footing, decking installation, demolition of OB2 abutment, installation of air duct bracket, subway underpinnings, temporary support for subway • Dismantling of scaffolding, pumping test, • Architectural Builders Works and Finishes (ABWF) & Electrical and Mechanical (E&M) works.
1112	Hong Hom (HUH and HHS) Works Area	• Piling for HUH, NAT and SAT • Initial excavation at HUH and HHS • Operation of material receiving hopper at Hung Hom Freight Pier • Underpinning works at HUH • ABWF work at HHS and concourse

Note:
(1) Construction works were completed.

2.1.4 Impact monitoring for air quality and construction noise were conducted in accordance with the EM&A Manual in the reporting period. Under Works Contract 1109, continuous noise monitoring was conducted according to the Continuous Noise Monitoring Plan (CNMP) in the reporting period. The air quality, construction noise and continuous noise monitoring results for this reporting month are summarised in **Tables 2.2** to **2.4**. 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 Water quality monitoring was not carried out during this reporting period since no dredging activity was conducted in the reporting month.

2.1.6 Under Works Contract 1109, exceedances of the Action and Limit Levels of the continuous noise monitoring were recorded at MTW-16-1 on 10 and 11 Aug 2015..

2.1.7 Under Works Contract 1108, one complaint was referred by EPD on 19 Aug 2015 regarding muddy water discharged to Kai Tak Nullah. Investigations had been carried out as per EM&A

programme. Under Works Contract 1109, one public complaint was received on 19 Aug 2015 regarding greenish liquid discharged to public place. Investigations had been carried out as per EM&A programme.

2.1.8 No notification of summons, and successful prosecutions were received in the reporting period. Log for environmental complaints, notification of summons and successful prosecutions are provided in **Table 2.5**.

2.1.9 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	10.2 – 25.5	148.7	260	No
Works Contract 1103					
DMS-2	Price Memorial Catholic Primary School	21.0 – 27.0	167.4	260	No
Works Contracts 1103 and 1106					
DMS-3	Hong Kong S.K.H Nursing Home [1]	20.0 – 29.5	159.1	260	No
Works Contract 1106 and 1107					
DMS-4	Block 1, Rhythm Garden	27.0 – 42.4	160.4	260	No
Works Contract 1108 [5]					
Works Contract 1108A [5]					
Works Contract 1109					
DMS-6	Katherine Building [2]	58 – 74	156.8	260	No
DMS-7	Parc 22 [3]	74 – 85	166.7	260	No[10]
DMS-8	SKH Good Shepherd Primary School	62 – 79	152.2	260	No
DMS-9	No. 12 Pau Chung Street [4][9]	64 – 87	160.9	260	No
DMS-10	Chat Ma Mansion	62 – 71	170.4	260	No
Works Contract 1111					
AM1[6]	No. 234 – 238 Chatham Road North [7]	35.6 – 100.4	183.9	260	No
Works Contract 1112					
AM2	Site Boundary of Finger Pier Adjacent To Harbourfront Horizon [8]	22.7 – 134.3	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 (alternative location of Lucky Building) has been suspended since March 2014 due to denied access by the occupant of the premise. However, No. 12 Pau Chung Street, as an alternative monitoring location, was formally approved by EPD on 19 May 2014. Impact dust monitoring was resumed on 12 June 2014.
(10) 24-hour averaged dust monitoring at DMS-7 Parc-22 had been temporary suspended since July 2015 due to request from the management office. The dust monitoring had been resumed on 12 August 2015.

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	59.7 – 61.0	57.0	56.4 – 58.8	70 (65 during examination period)	No
Works Contract 1103						
NMS-CA-2	Price Memorial Catholic Primary School	65.9 – 67.0	66.0	< Baseline – 60.1	70 (65 during examination period)	No
Works Contracts 1103 and 1106						
NMS-CA-3	Hong Kong S.K.H Nursing Home [1]	70.1 – 71.2	73.0	< Baseline	70	No
Works Contract 1106 and 1107						
NMS-CA-4	Block 1, Rhythm Garden (north-eastern façade)	61.7 – 72.2	71.0	< Baseline – 66.0	75	No
NMS-CA-5	Block 1, Rhythm Garden (northern façade)[2]	63.1 – 72.6	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]	63.1 – 63.6	76.1	< Baseline	75	No
NMS-CA-7	Skytower Tower 2	63.6 – 65.9	70.0	< Baseline	75	No
NMS-CA-8	SKH Good Shepherd Primary School	75.1 – 79.3	75.4	< Baseline - 77.0	70 (65 during examination period) (79 during the period of conducting the continuous noise monitoring) [8]	No
NMS-CA-9	Kong Yiu Mansion [4]	74.4 – 75.7	69.2	72.8 – 74.6	75	No
NMS-CA-10	Chat Ma Mansion	76.0 – 76.4	76.6	< Baseline	75	No
Works Contract 1111						

Monitoring Station ID	Location	Noise Level ($L_{Aeq,30mins}$, dB(A))			Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
		Measured	Baseline	Corrected (7)		
NM1	Carmel Secondary School (South Block)	67.8 – 68.3	68.0	< Baseline – 56.5	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)	69.5 – 73.5	79.0	< Baseline	75 (77) (10)	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 CNMMP and CNMP which were approved by EPD.
(10) Daytime noise Limit Level of 77 dB(A) applies during the continuous noise monitoring period.

Table 2.4 Summary of Continuous Noise Monitoring Results in the Reporting Period

NSR ID	NSR Description	Continuous Noise Monitoring Location	Noise Level ($L_{Aeq,30mins}$, dB(A))			Action/Limit Level [3] dB(A)	Exceedance due to the Project Construction (Yes/No)
			Measured	Baseline	Corrected [2]		
Works Contract 1101 [1]							
Works Contract 1102 [1]							
Works Contract 1103							
TAW-6-7	C.U.H.K.A.A. Thomas Cheung School	TAW-6-7 (C.U.H.K.A.A. Thomas Cheung School)	(4)	(4)	(4)	66 [7]	(4)
Works Contract 1103 & 1106							
DIH-9-1[1]	Shek On Building	N/A	N/A	N/A	N/A	N/A	N/A
DIH-13-1[1]	Canossa Primary School	N/A	N/A	N/A	N/A	N/A	N/A
Works Contract 1106 & 1107							
DIH-14-1[1]	Rhythm Garden Block 2	N/A	N/A	N/A	N/A	N/A	N/A
DIH-14-5[1]	Rhythm Garden Block 1	N/A	N/A	N/A	N/A	N/A	N/A
Works Contract 1103, 1106 & 1107							
DIH-14-4[1]	Canossa Primary School (San Po Kong)	N/A	N/A	N/A	N/A	N/A	N/A
Works Contract 1108 [1]							
Works Contract 1108A [1]							
Works Contract 1109							
TKW-1-1[1]	Parc 22	N/A	N/A	N/A	N/A	N/A	N/A
TKW-2-2[1]	Skytower Tower 2	N/A	N/A	N/A	N/A	N/A	N/A
TKW-3-2	Prosperity House	TKW-3-2(B) (Hing Fu Building)	(4)	(4)	(4)	80	(4)
MTW-12-3	Lucky Mansion	MTW-12-3(A) (SKH Good Shepherd Primary School)	(4)	(4)	(4)	80	(4)
MTW-12-4	352-354 Ma Tau Wai Rd (East Façade)	MTW-12-4(A) (Kong Yiu Mansion)	(4)	(4)	(4)	80	(4)
MTW-12-4-1	352-354 Ma Tau Wai Rd (North Facade)	MTW-12-4-1(A) (59 Maidstone Road)	(4)	(4)	(4)	82	(4)
MTW-12-10	Lucky Building	MTW-12-10 (Lucky Building	(4)	(4)	(4)	84	(4)

NSR ID	NSR Description	Continuous Noise Monitoring Location	Noise Level ($L_{Aeq,30mins}$, dB(A))			Action/Limit Level [3] dB(A)	Exceedance due to the Project Construction (Yes/No)
			Measured	Baseline	Corrected [2]		
	(South Facade)	(South Façade))					
MTW-12-10-1	Lucky Building (East Facade)	MTW-12-10-1 (Lucky Building (East Façade))	(4)	(4)	(4)	80	(4)
MTW-12-11	Jing Ming Building	MTW-12-11(A) (SKH Good Shepherd Primary School)	(4)	(4)	(4)	81	(4)
MTW-16-1	SKH Good Shepherd Primary School	MTW-16-1 (SKH Good Shepherd Primary School)	69.8 – 91	75.4	< Baseline – 90.9	79	Yes
MTW-18-2 [8]	No. 2 Kowloon City Road	N/A	N/A	N/A	N/A	N/A	N/A
HOM-2-1--A [1]	Faerie Court (East Façade)	N/A	N/A	N/A	N/A	N/A	N/A
Works Contract 1111							
OM4a	Carmel Secondary School (South Block)	NM1 (Carmel Secondary School (South Block))	(4)	(4)	(4)	68 [7]	(4)
HH2[6]	Wing Fung Building	NM2 (No. 234-238 Chatham Road North[5])	(4)	(4)	(4)	77	(4)
Works Contract 1112 [1]							

Note:
(1) No continuous noise monitoring is required under this contract.
(2) Measured noise level (above the baseline noise level) was corrected against the corresponding baseline level.
(3) Reference to the predicted maximum noise level as contained in the corresponding CNMMP.
(4) According to the CNMMP and CNMP, continuous noise monitoring is not required during this reporting month.
(5) Alternative monitoring location to Wing Fung Building.
(6) HH2 named as HUH-1-3 in SCL (TAW-HUH) and SCL(HHS) EIA Reports.
(7) Action/Limit level will only be applicable during the examination period.
(8) The building at MTW-18-2 has been demolished. During the period of residual noise impact exceeding criteria predicted in the corresponding CNMMP, there will be no NSR occupied at this location. It is therefore not necessary carry out continuous noise monitoring at this location.
(9) Investigations for some exceedances are being conducted and detail investigation results will be provided in next reporting month.
N/A Not applicable

Table 2.5 Log for Environmental Complaints, Notification of Summons and Successful Prosecutions for the Reporting Month

Works Contract	Environmental Complaints	Notification of Summons	Successful Prosecutions
1101	0	0	0
1102	0	0	0
1103	0	0	0
1106	0	0	0
1107	0	0	0
1108	1	0	0
1108A	0	0	0
1109	1	0	0
1111	0	0	0
1112	0	0	0

3 IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS

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

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

EP Condition (EP-438/2012/H)	Submission	Submission date
Condition 1.12	Notification of Commencement Date of Construction of the Project	1 Aug 2012
Condition 2.3	Notification of Information of Community Liaison Groups	13 Jul 2012 (1st submission) 31 Aug 2012 (2nd submission) 30 Nov 2012 (3rd submission)
Condition 2.7	Management Organisation of Main Construction Companies	27 Jul 2012 (1st submission) 21 Aug 2012 (2nd submission) 19 Dec 2012 (3rd submission) 22 Jan 2013 (4th submission) 30 Apr 2013 (5th submission) 21 May 2013 (6th submission)
Condition 2.8	Construction Programme and EP Submission Schedule	27 Jul 2012
Condition 2.9	Construction Noise Mitigation Measures Plan (CNMMP)	1 Aug 2012 (1st submission) 28 Sep 2012 (2nd submission) 30 Nov 2012 (3rd submission) 11 Jan 2013 (4th submission) 8 Feb 2013 (Approved) 8 Feb 2013 (5th submission) 26 Apr 2013 (6th submission) 11 Jun 2013 (7th submission) 12 July 2013 (Approved) 26 July 2013 (8th submission) 22 Aug 2013 (Approved) 23 Aug 2013 (9th submission) 13 Sept 2013 (Approved) 20 Jan 2014 (10th submission) 26 Feb 2014 (Approved) 31 Mar 2015 (Contract 1106 submission only) 13 Apr 2015 (Contract 1106 submission only) 15 Apr 2015 (Approved)
Condition 2.10	Continuous Noise Monitoring Plan (CNMP)	1 Aug 2012 (1st submission) 28 Sep 2012 (2nd submission) 30 Nov 2012 (3rd submission) 11 Jan 2013 (4th submission) 8 Feb 2013 (Approved) 8 Feb 2013 (5th submission) 26 Apr 2013 (6th submission) 11 Jun 2013 (7th submission) 12 July 2013 (Approved) 26 July 2013 (8th submission) 22 Aug 2013 (Approved) 23 Aug 2013 (9th submission) 13 Sept 2013 (Approved) 20 Jan 2014 (10th submission) 26 Feb 2014 (Approved) 7 Oct 2014 (11th submission) 23 Oct 2014 (Approved)
Condition 2.11	Construction and Demolition Materials Management Plan (C&DMMP)	6 Jul 2012 (1st submission) 12 Sep 2012 (2nd submission) 10 Oct 2012 (Approved)
Condition 2.12	Sediment Management Plan	6 Jul 2012 (1st submission)

EP Condition (EP-438/2012/H)	Submission	Submission date
		12 Sep 2012 (2nd submission) 5 Oct 2012 (3rd submission) 10 Oct 2012 (Approved) 4 Mar 2013 (4th submission) 9 May 2013 (5th submission) 24 July 2013 (6th submission) 26 July 2013 (Approved)
Condition 2.13	Visual, Landscape, Tree Planting & Tree Protection Plan	6 Jul 2012 (1st submission) 30 Aug 2012 (2nd submission) 3 Oct 2012 (3rd submission) 13 Nov 2013 (Approved 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 Reports No. 1 - 34 Monthly EM&A Report No. 35	Reported in previous Monthly EM&A Reports 14 Aug 2015

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

EP Condition (EP-437/2012)	Submission	Submission date
Condition 1.11	Notification of Commencement Date of Construction of the Project	30 Nov 2012
Condition 2.3	Notification of Information of Community Liaison Groups	30 Nov 2012
Condition 2.5	Management Organisation of Main Construction Companies	19 Dec 2012 (1st submission) 30 Apr 2013 (2nd submission)
Condition 2.6	Construction Programme and EP Submission Schedule	19 Dec 2012
Condition 2.7	Construction Noise Mitigation Measures Plan (CNMMP)	30 Nov 2012 (1st submission) 8 Feb 2013 (Approved) 26 Apr 2013 (2nd submission) 11 Jun 2013 (3rd submission) 27 Aug 2013 (Approved) 20 Jan 2014 (4th submission)
Condition 2.8	Continuous Noise Monitoring Plan (CNMP)	30 Nov 2012 (1st submission) 11 Jan 2013 (2nd submission) 8 Feb 2013 (Approved) 20 Jan 2014 (3rd submission)
Condition 2.9	Construction and Demolition Materials Management Plan (C&DMMP)	6 Jul 2012 (1st submission) 12 Sep 2012 (2nd submission) 15 Oct 2012 (Approved)
Condition 2.10	Sediment Management Plan	6 Jul 2012 (1st submission) 12 Sep 2012 (2nd submission) 5 Oct 2012 (3rd submission) 15 Oct 2012 (Approved)
Condition 2.11	Visual, Landscape, Tree Planting & Tree Protection Plan (VLTTP)	14 Nov 2012 (1st submission) 8 Feb 2013 (2nd submission) 4 Feb 2015 (3rd submission) 26 Jun 2015 (4th submission)
Condition 3.3	Baseline Monitoring Report (Works Contracts 1103, 1106 and 1111 – Hin Keng to Diamond Hill Tunnels, Diamond Hill Station, and Hung Hom North Approach Tunnels)	19 Oct 2012
Condition 3.4	Monthly EM&A Reports No. 5 - 34 Monthly EM&A Report No. 35	Reported in previous Monthly EM&A Reports 14 Aug 2015

Appendix A

36th 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.36

[Period from 1 to 31 August 2015]

Works Contract 1108A – Kai Tak Barging Point Facilities

(August 2015)

Certified by: Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 8th September 2015

Concentric – Hong Kong River Joint Venture

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

Monthly Environmental Monitoring and Audit Report for August 2015

(Version 1.0)

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.

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EXECUTIVE SUMMARY

Introduction

1. This is the 36th 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 August 2015.

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 to receive excavated spoil delivered by trucks from Designated and Interfacing Contracts.
- Temporary stockpiling of received spoil in the Barging Point Facilities.
- Marine transportation of received spoil to receptor sites for beneficial reuse.

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 were generated, and 5 m^3 of 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 to receive excavated spoil delivered by trucks from Designated and Interfacing Contracts.
- Temporary stockpiling of received spoil in the Barging Point Facilities.
- Marine transportation of received spoil to receptor sites for beneficial reuse.

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 36th EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1 August to 31 August 2015.

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 Protection Requirements -** 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 to receive excavated spoil delivered by trucks from Designated and Interfacing Contracts.
- Temporary stockpiling of received spoil in the Barging Point Facilities.
- Marine transportation of received spoil to receptor sites for beneficial reuse.

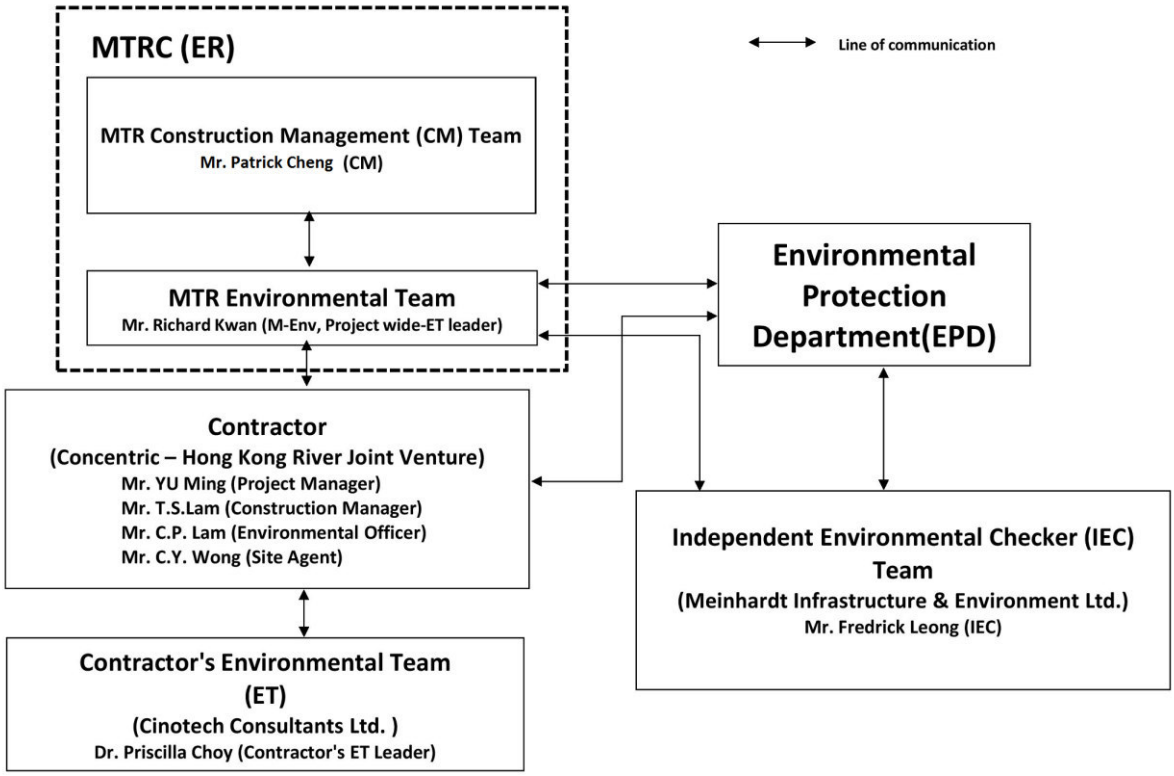
Project Organisation

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. Patrick CHENG	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	
		Mr. C.Y. WONG	Site Agent	9199 3188	

Status of Environmental Licences, Notification and Permits

2.9 The Environmental Permit (EP-438/2012) of SCL (Tai Wai to Hung Hom Section) was first issued on 22 March 2012 and it was updated throughout the Project. The latest Environmental Permit (EP No. EP-438/2012/H) was granted on 10th September 2014.

2.10 The 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	22/3/2012	11/07/2012	Superseded by EP-438/2012/A
EP-438/2012/A	12/07/2012	25/10/2012	Superseded by EP-438/2012/B
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	03/04/2014	Superseded by EP-438/2012/E
EP-438/2012/E	04/04/2014	14/07/2014	Superseded by EP-438/2012/F
EP-438/2012/F	15/07/2014	13/08/2014	Superseded by EP-438/2012/G
EP-438/2012/G	14/08/2014	09/09/2014	Superseded by EP-438/2012/H
EP-438/2012/H	10/09/2014	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	Expired
GW-RE1017-14	29/09/2014	28/03/2015	Expired
GW-RE0246-15	29/03/2015	28/04/2015	Expired
GW-RE0407-15	01/05/2015	31/07/2015	Expired
GW-RE0718-15	01/08/2015	31/10/2015	Valid
Marine Dumping Permits			
EP/MD/13-074	26/10/2012	25/11/2012	Expired
EP/MD/13-075	10/10/2012	09/11/2012	Expired
EP/MD/14-077	27/11/2013	26/05/2014	Expired
EP/MD/14-083	16/12/2013	15/01/2014	Expired
EP/MD/14-117	24/02/2014	23/03/2014	Expired
EP/MD/14-158	25/03/2014	24/04/2014	Expired
EP/MD/14-168	10/04/2014	30/04/2014	Expired

Permit / License No.	Valid Period		Status
	From	To	
EP/MD/15-003	25/04/2014	24/05/2014	Expired
EP/MD/15-021	27/05/2014	26/11/2014	Expired
EP/MD/15-073	14/08/2014	13/09/2014	Expired
EP/MD/15-118	13/10/2014	12/11/2014	Expired
EP/MD/15-144	19/11/2014	18/12/2014	Expired
EP/MD/15-249	30/03/2015	30/06/2015	Expired
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 (July 2015)	Submitted to EPD on 14th August 2015 (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
August 2015	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 August 2015 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 13 August 2015. 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	28 July 2015	Observation: Bunding should be provided to the public channel near the site entrance to control site runoff.	This item was observed improved/rectified by Contractor during the site inspection on 4 August 2015.
Noise	N/A	N/A	N/A
Ecology/ Landscape and Visual	N/A	N/A	N/A
Air Quality	21 and 28 July 2015	Reminder: The sheeting for covering the dusty material near conveyor belt no.1 was broken. Contractor was reminded to repair it.	This item was observed improved/rectified by Contractor during the site inspection on 4 August 2015.
	28 July 2015	Reminder: To provide sufficient water spray on haul road.	This item was observed improved/rectified by Contractor during the site inspection on 4 August 2015.
	21 and 28 July 2015 4 August 2015 13 August 2015	Observation: The dust curtain of tipping hall floating jetty no.3 was loosen. Contractor was reminded to repair it. Reminder: The dust curtain of tipping hall of floating jetty no.3 was loosen. Contractor was reminded to repair it. Reminder:	Preparation work for replacing the tipping hall by a new one was in progress during site inspection on 18 August 2015. Follow up action will be reported in the next reporting

Parameters	Date	Observations and Recommendations	Follow-up
	25 August 2015	Openings of new tipping hall no.3 should be covered and water spraying for the tipping hall no.3 should be provided.	month.
	4 August 2015	Observation: Opening was observed at the enclosure of conveyor belt no.2 while the conveyor belt was in operation. Contractor was reminded to repair it.	This item was observed improved/rectified by Contractor during the site inspection on 13 August 2015.
	18 August 2015	Reminder: The contractor was reminded to remove the accumulated soil on the access road going to the conveyor belt no.1 to prevent dust generation.	This item was observed improved/rectified by Contractor during the site inspection on 25 August 2015.
	18 August 2015 25 August 2015	Observation: Openings were observed at the enclosure of conveyor belt no.2 while the conveyor belt is in operation. Contractor was reminded to repair it. Reminder: Openings were observed at the enclosure of conveyor belt no.2 while the conveyor belt was not in operation. Contractor was reminded to repair it.	Follow up action will be reported in the next reporting month.
	25 August 2015	Reminder: The stockpile stored in the stockpile area should be properly covered to suppress dust generation.	Follow up action will be reported in the next reporting month.
	25 August 2015	Reminder: Clear the sand accumulated on the haul road near the wheel washing bay.	Follow up action will be reported in the next reporting month.
Waste / Chemical Management	4 August 2015	Reminder: Clear the oil stain on the hard paved ground under the excavator near conveyor belt no.1 as chemical waste.	This item was observed improved/rectified by Contractor during the site inspection on 13 August 2015.
	13 August 2015 18 August 2015	Reminder: Clear the oil stain on the hard paved ground of tipping hall no.2 as chemical waste. Reminder: The contractor was reminded to remove the contaminated soil that used to absorb the oil stain on the hard paved ground inside the tipping hall no.2 as chemical waste.	This item was observed improved/rectified by Contractor during the site inspection on 25 August 2015.
	18 August 2015	Reminder: The contractor was reminded to remove the liquid mixture with stagnant water and oil in the drip trays of the chemical storage and the area near the conveyor belt no.1 as chemical waste.	This item was observed improved/rectified by Contractor during the site inspection on 25 August 2015.
Permits / Licenses	N/A	N/A	N/A

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 There was no environmental complaint received in the reporting month. The Complaint Log is presented in **Appendix G**.

Summary of Environmental Summon and Successful Prosecution

7.4 No environmental 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 daily 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, including splashing of spoils into surrounding seawater at the discharge points.
- Potential dust emission and deposition of materials on haul road during delivery of C&D material by Designated and Interfacing Contracts to the Barging Point Facilities.

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 to receive excavated spoil delivered by trucks from Designated and Interfacing Contracts.
- Temporary stockpiling of received spoil in the Barging Point Facilities.
- Marine transportation of received spoil to receptor sites for beneficial reuse.

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 August 2015 to 31 August 2015 in accordance with EM&A Manual and the requirement under EP-438/2012/H.

9.2 No impact monitoring was conducted in the reporting month.

9.3 There was no environmental complaint received in the reporting month.

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:

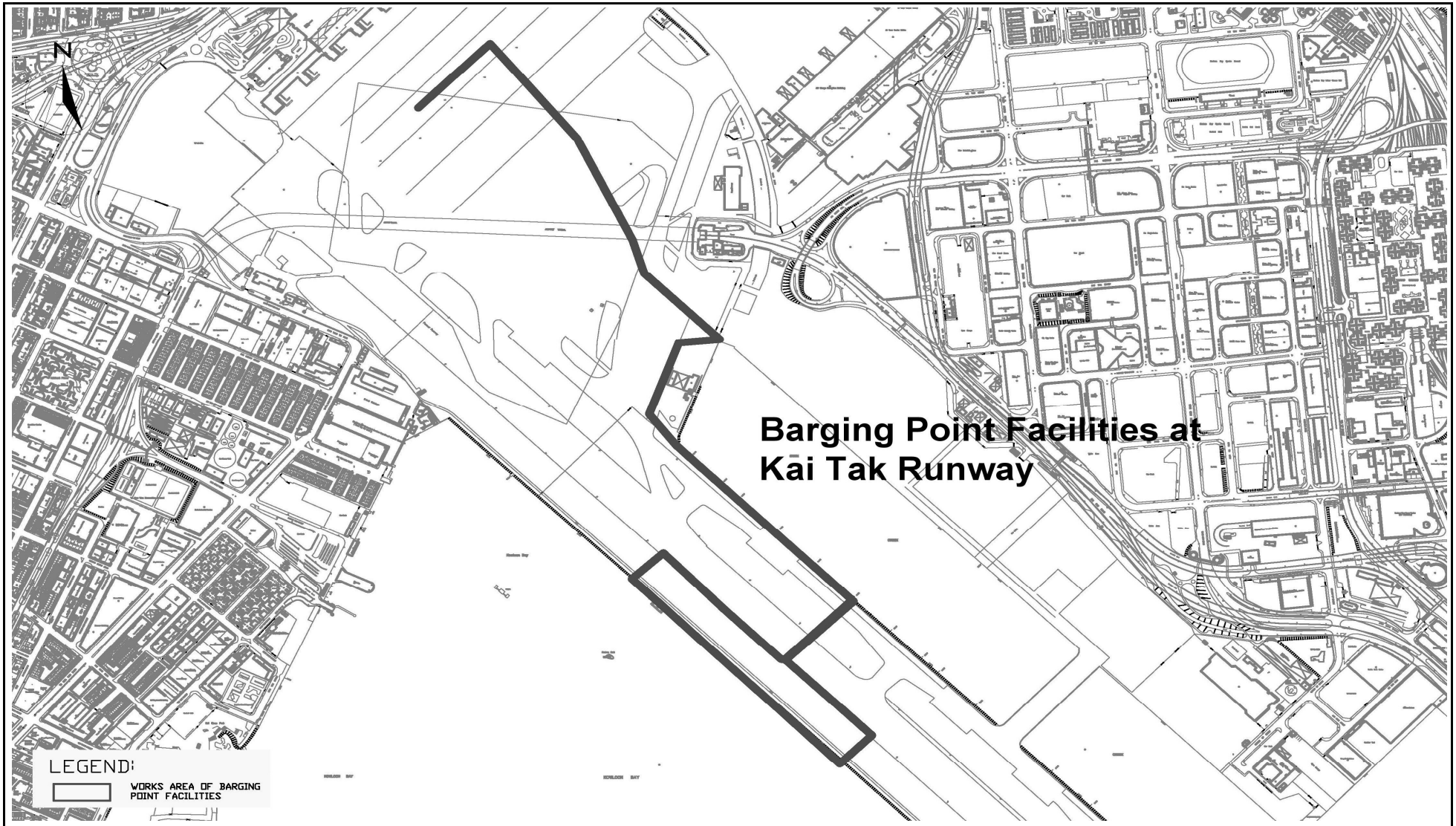
Air Quality

- The dust curtains and tipping hall of floating jetty should be properly maintained.
- Enclosure of conveyor belts should properly maintained for dust suppression.
- Stockpile of dusty materials should be properly covered by the impervious sheeting for dust suppression.
- Water spray should be provide to the discharge point of tipping hall for dust suppression.
- Accumulated sand on the ground within the site area should be cleared to suppress dust generation.

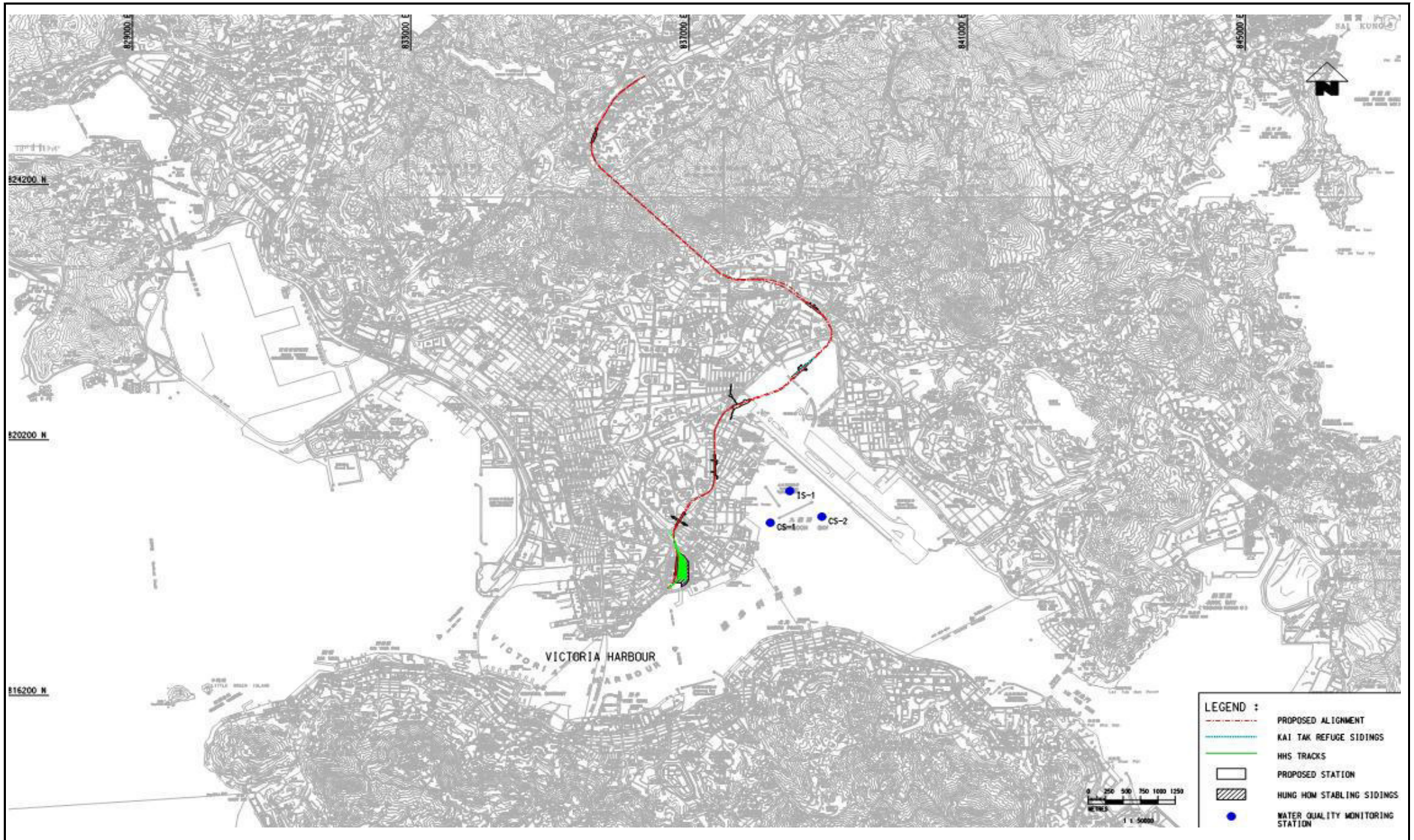
Waste/Chemical Management

- Oil should be removed as chemical waste, and plants and equipment should be properly maintained to prevent oil leakage.
- Drip tray for oil containers should be well maintained to prevent accumulation of stagnant water.

FIGURES



Title: SCL Contract 1108A The Shatin to Central Link - Kai Tak Barging Point Facilities Site Layout Plan	Scale: N.T.S	Project No.: MA12028	CINOTECH
	Date: Apr-14	Figure: 1	



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: August 2015

a) Exceedance Report for Water Quality Monitoring (NIL)

APPENDIX C
SITE AUDIT SUMMARY

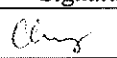
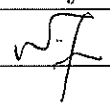
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150804
Date	4 August 2015 (Tuesday)
Time	15:30 – 16:30

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/Others*** • No environmental deficiency was identified during the site inspection. ***Part D – Air Quality***	
150804-O01	• Opening was observed at the enclosure of conveyor belt no.2 while the conveyor belt was in operation. Contractor was reminded to repair it.	D 12
150804-O02	• The dust curtain of tipping hall of floating jetty no.3 was loosen. Contractor was reminded to repair it.	D 18
	Part E – Construction Noise Impact • No environmental deficiency was identified during the site inspection. ***Part F – Waste/Chemical Management***	
150804-R03	• Clear the oil stain on the hard paved ground under the excavator near conveyor belt no.1 as chemical waste.	F 2 ii
	Part G - Permit / Licenses • No environmental deficiency was identified during the site inspection. ***Others*** • Follow-up on previous audit section (Ref. No.:150728), follow-up actions is required for item 150728-O01 which was remarked as 150804-O02.	

	Name	Signature	Date
Recorded by	KC Chung		4 August 2015
Checked by	Dr. Priscilla Choy		4 August 2015

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150813
Date	13 August 2015 (Thursday)
Time	14:30 – 15:30

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/Others*** • No environmental deficiency was identified during the site inspection.	
150813-R01	***Part D – Air Quality*** • The dust curtain of tipping hall of floating jetty no.3 was loosen. Contractor was reminded to repair it.	D 18
	Part E – Construction Noise Impact • No environmental deficiency was identified during the site inspection.	
150813-R02	***Part F – Waste/Chemical Management*** • Clear the oil stain on the hard paved ground of tipping hall no.2 as chemical waste.	F 2 ii
	Part G - Permit / Licenses • No environmental deficiency was identified during the site inspection. ***Others*** • Follow-up on previous audit section (Ref. No.:150804), follow-up actions is required for item 150804-O02 which was remarked as 150813-R01.	

	Name	Signature	Date
Recorded by	KC Chung		13 August 2015
Checked by	Dr. Priscilla Choy		13 August 2015

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150818
Date	18 August 2015 (Tuesday)
Time	15:30 – 16:30

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/Others • No environmental deficiency was identified during the site inspection.	
	Part D – Air Quality	
150818-R02	• The contractor was reminded to remove the accumulated soil on the access road going to the conveyor belt no.1 to prevent dust generation.	D 6
150818-R04	• Openings were observed at the enclosure of conveyor belt no.2 while the conveyor belt is in operation. Contractor was reminded to repair it.	D 12
	Part E – Construction Noise Impact • No environmental deficiency was identified during the site inspection.	
	Part F – Waste/Chemical Management	
150818-R01	• The contractor was reminded to remove the liquid mixture with stagnant water and oil in the drip trays of the chemical storage and the area near the conveyor belt no.1 as chemical waste.	F 9
150818-R03	• The contractor was reminded to remove the contaminated soil that used to absorb the oil stain on the hard paved ground inside the tipping hall no.2 as chemical waste.	F2 ii
	Part G - Permit / Licenses • No environmental deficiency was identified during the site inspection.	
	Others • Follow-up on previous audit section (Ref. No.:150813), follow-up actions is required for item 150813-R01, and 150813-R02 which was remarked as 150818-R03.	

	Name	Signature	Date
Recorded by	Benjamin Wong		18 August 2015
Checked by	Dr. Priscilla Choy		18 August 2015

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150825
Date	25 August 2015 (Tuesday)
Time	14:00 – 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/Others*** • No environmental deficiency was identified during the site inspection. ***Part D – Air Quality***	
150825-R01	• The stockpile stored in the stockpile area should be properly covered to suppress dust generation.	D 7
150825-R02	• Openings were observed at the enclosure of conveyor belt no.2 while the conveyor belt was not in operation. Contractor was reminded to repair it.	D 12
150825-R03	• Openings of new tipping no.3 should be covered and water spraying for the tipping hall no.3 should be provided.	D 18 & D 19
150825-R04	• Clear the sand accumulated on the haul road near the wheel washing bay.	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 sections (Ref. No.: 150813 and 150818), follow-up actions are required for item 150813-R01 and 150818-O04 which were remarked as 150825-R03 and 150825-R02.	

	Name	Signature	Date
Recorded by	KC Chung		25 August 2015
Checked by	Dr. Priscilla Choy		25 August 2015

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 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	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	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	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 2015 (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**
February	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
March	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.005**
April	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
May	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
June	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Sub-total	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.015**
July	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
August	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.005**
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**	**0.020**

APPENDIX G
COMPLAINT LOG

Appendix G - Complaint Log

Contractor Log Ref.	Complaint Location/ Nature	Incoming Complaint Reference no.	Complainant/ Date or Period of Complaint	Date of Complaint received	Details of Complaint	Investigation/ Mitigation Action	Status
6	Barging Point/ Construction Noise	15-05127	--/Night time after 11:00pm	12 March 2015	As per information from EPD, the complainant complained about the construction noise generated from the barge point at night after 11:00pm.	According to the information provided by the Contractor, no construction activity in the site area, including barge operation has been carried out after 11:00 pm since the commencement of the project. All construction works carried out within the validity period of CNP were in compliance with the conditions stated in the valid CNP (Permit No.: GW-RE1017-14). It was observed that the Contractor has implemented appropriate noise mitigation measures to reduce noise nuisance generated from the work site. In addition, according to the EIA report and the EM&A Manual, it is anticipated that construction activities of this project would not cause any significant noise impact to the vicinity of the work site as there are no Noise Sensitive Receivers (NSRs) located within 300m from the barge point. The environmental conditions of the site and effectiveness of the implementation	Closed

						of mitigation measures will be continuously reviewed and monitored by the Resident Site Staff and the Environmental Team.	
7	Barging Point / Dust and Disposal of Construction Waste	15-07297	-- / --	2 April 2015	As per the information from EPD, the complainant complained the dust generated from the discharge point at tipping halls and no water spraying was provided for the stockpile on vessel and land. In addition, the complainant complained that construction waste was disposed everywhere in Kai Tak Area.	According to the information provided by the Contractor, all the construction waste generated from this Contract was disposed to the designated landfill (NENT) and no construction waste was disposed in Kai Tak Area. The construction waste disposal activities in Kai Tak Area outside the site boundary of this Contract were not related to this Contract. It was observed that the Contractor has implemented appropriate dust mitigation measures to reduce dust issue generated from the work site. In addition, according to the EIA Report and the EM&A Manual of the Project, it is anticipated that construction activities of this Contract would not cause any significant dust impact to the vicinity of the work site as there are no Air Sensitive Receivers (ASRs) located within 500m from the barging point. The environmental conditions of the site and effectiveness of the implementation of mitigation measures will be	Closed

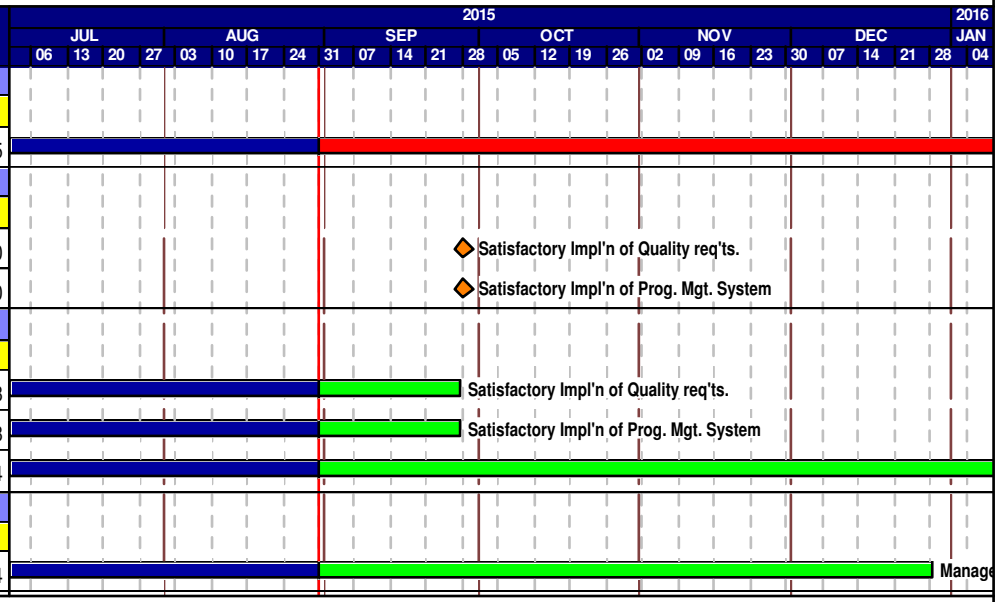
						continuously reviewed and monitored by the Resident Staff and the Environmental Team.	
8	Barging Point / Dust emission	15-10412	-- / --	4 May 2015	The complainant complained the dust generated from the transportation of sand and mud at the barge point and water spray was insufficient. In addition, no impervious sheeting for covering stockpiles was found.	It was observed that the Contractor has implemented appropriate dust mitigation measures to reduce dust issue generated from the work site. In addition, according to the EIA Report and the EM&A Manual of the Project, it is anticipated that construction activities of this Contract would not cause any significant dust impact to the vicinity of the work site as there are no Air Sensitive Receivers (ASRs) located within 500m from the barging point. The environmental conditions of the site and effectiveness of the implementation of mitigation measures will be continuously reviewed and monitored by the Resident Site Staff and the Environmental Team.	Closed

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					
Time for Completion					
1108ADC04C	Completion of The Whole of the Works	1477	13AUG12 A	28AUG16	75
MILESTONES SCHEDULE					
Milestones for Cost Centre A					
1108AMSA81	Satisfactory Impl'n of Quality req'ts.	0		27SEP15	0
1108AMSA82	Satisfactory Impl'n of Prog. Mgt. System	0		27SEP15	0
Cost Centre A					
Preliminaries					
1108AA8010	Satisfactory Impl'n of Quality req'ts.	1145	13AUG12 A	27SEP15	98
1108AA8020	Satisfactory Impl'n of Prog. Mgt. System	1145	13AUG12 A	27SEP15	98
1108AA9010	Satisfactory Impl'n of Safety & Env. req'ts.	1328	13AUG12 A	03APR16	84
Cost Centre B					
Kai Tak BPF - Mgt., Maintenance & Operation					
1108AB8010	Manage, Maintain & Operate the BPF	182	29JUN15 A	28DEC15	34



Start date	10AUG12
Finish date	28AUG16
Data date	31AUG15
Run date	31AUG15
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 point
Finish milestone point

Appendix B

36th 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. 36

[Period from 1 to 31 August 2015]

Works Contract 1109 - Stations and Tunnels of Kowloon City Section

(11 September 2015)

Certified by: Winnie Ko

Position: Environmental Team Leader

Date: 11 September 2015

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.36

August 2015

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

Monthly EM&A Report No.36

August 2015

Reference 0171181

For and on behalf of ERM-Hong Kong, Limited	
Approved by:	Frank Wan
Signed:	
Position:	Partner
Date:	11 September 2015

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 thirty-sixth monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 August 2015 to 31 August 2015 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
• TKW/MTW Road Garden – Operation of bentonite plant and EEP construction; and • Along Ma Tau Wai Road – Predrilling for D wall, D wall panel construction, trial pits for location of utilities, and station excavation and construction.
Works in To Kwa Wan (TKW)
• Olympic Garden – Underpinning works, installation of pipe pile and TTMS preparation; • TKW Station – Pump installation, open cut excavation, and tunnelling works; • Tam Kung Road – Shaft construction; and • Nam Kok Road – Installation of pipe pile.

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* *4 times*
  - *DMS-8* *5 times*
  - *DMS-9* *5 times*
  - *DMS-10* *5 times*

Continuous Noise Monitoring

Continuous noise monitoring is required at MTW-16-1 during this reporting month, according to the schedule presented in the latest approved CNMP.

Cultural Heritage

A License to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance has been obtained from Antiquities and Monuments Office (AMO) on 29 October 2012. The archaeological survey-cum-

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

Vibration monitoring was conducted at Hong Kong Aviation Club and S.K.H. Holy Trinity Church 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 28,330 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. 1,027 kg of plastics was generated and sent to recyclers for recycling during the reporting period. About 244 m^3 of non-recyclable non-inert C&D materials, such as general refuse, were disposed of at NENT Landfill. No metal waste was generated during this reporting month. 77 kg of paper/cardboard packaging was generated and sent to recyclers for recycling during the reporting period. 1,240 kg 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 10 and 24 August 2015. 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 August 2015. The representative of the IEC joined the site inspection on 10 August 2015. 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.

Exceedances of the Action and Limit Levels of the continuous noise monitoring were recorded at MTW-16-1 on 10 and 11 August 2015.

Investigation of exceedances on 10 and 11 August 2015 had been completed and the investigation reports are presented in *Annex L*.

One complaint was received on 19 August 2015. Investigation of the complaint received on 19 August 2015 had been completed and the investigation report is presented in *Annex L*.

No summon or prosecution was received in this reporting period.

Future Key Issues

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

Construction Activities to be undertaken
Work in Ma Tau Wai (MTW)
● TKW/MTW Road Garden – Operation of bentonite plant and EEP construction; and ● Along Ma Tau Wai Road – Predrilling for D wall, D wall panel construction,trial pits for location of utilities, and station excavation and construction.
Work in To Kwa Wan (TKW)
● Olympic Garden – Underpinning works, installation of pipe pile and TTMS preparation; ● Tam Kung Road – Shaft construction; ● TKW Station – Pump installation, open cut excavation, and tunnelling works; and ● Nam Kok Road – Installation of pipe pile.

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 thirty-sixth EM&A report which summarises the monitoring results and audit findings during the reporting period from 1 August to 31 August 2015.

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 EEP construction; and • Along Ma Tau Wai Road – Predrilling for D wall, D wall panel construction, trial pits for location of utilities, and station excavation and construction.
Works in To Kwa Wan (TKW)
• Olympic Garden – Underpinning works, installation of pipe pile and TTMS preparation; • TKW Station – Pump installation, open cut excavation, and tunnelling works; • Tam Kung Road – Shaft construction; and • Nam Kok Road – Installation of pipe pile.

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/H	Throughout the Contract	Permit granted on 10 September 2014
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation (Form NA)	348516	13 August 2012 – 30 April 2017	-
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation (Form NB)	351125	16 October 2012 – 30 April 2017	-
Wastewater Discharge Licence			
Site at TKW	*WT00019555-2014*	*30-September-2017*	-
Site at MTW	*WT00019556-2014*	*30-September-2017*	-
Chemical Waste Producer Registration			
Site at TKW	*5213-286-S3682-01*	*Throughout the Contract*	-
Site at MTW	*5213-242-S3682-02*	*Throughout the Contract*	-
Construction Noise Permit			
- *PME in Pier 15 Works Area and EEP*	*GW-RE0296-15*	*1 April 2015 – 24 September 2015*	-
- *PME on Kowloon City Road*	*GW-RE0377-15*	*20 April 2015 – 5 October 2015*	-
- *PME at SUW works Area 1*	*GW-RE0227-15*	*16 March 2015 - 8 September 2015*	-
- *PME at TKW Garden*	*GW-RE0124-15*	*10 February 2015 - 1 August 2015*	*Superceded by GW-RE0835-15*
- *PME at TKW Garden*	*GW-RE0835-15*	*19 August 2015 - 12 February 2016*	-
- *PME at Kai Tak New Land 2*	*GW-RE0751-15*	*29 July 2015 – 28 January 2016*	-
- *PME at Tam Kung Road*	*GW-RE0142-15*	*14 February 2015 - 8 August 2015*	*Superceded by GW-RE0745-15*
- *PME at Tam Kung Road*	*GW-RE0745-15*	*8 August 2015 - 7 February 2016*	-
- *PME at MTW Road North Bound & E3-E6*	*GW-RE0151-15*	*16 February 2015 - 12 August 2015*	*Superceded by GW-RE0832-15*
- *PME at MTW Road E1-E6*	*GW-RE0832-15*	*19 August 2015 - 12 February 2016*	-

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
- *PME at SUW works Area 2*	*GW-RE0739-15*	*29 July 2015 – 28 August 2015*	*Superceded by GW-RE0880-15*
- *PME at SUW works Area 2*	*GW-RE0880-15*	*28 August 2015 – 27 September 2015*	
- *PME at Olympic Avenue*	*GW-RE0532-15*	*2 Jun 2015 to 20 Nov 2015*	
- *PME at Nam Kok Road*	*GW-RE0529-15*	*1 Jun 2015 to 26 Nov 2015*	
- *PME at Kai Tak New Land 1*	*GW-RE0646-15*	*30 Jun 2015 to 18 Dec 2015*	
- *PME at Olympic Garden*	*GW-RE0302-15*	*2 Apr 2015 to 1 Oct 2015*	
SP-Licence for TBM operation	L-3-249(1)	19 May 2015 – 18 May 2018	-
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	Calibrator: NC 73 (Serial No. 10997142) Sound Level Meter: NL-31 (Serial No. 00320533)
NMS–CA-7, NMS–CA-9 and NMS–CA-10	Calibrator: NC 73 (Serial No. 10997142) Sound Level Meter: NL 18 (Serial No. 00360030)
NMS–CA-8	Calibrator: NC-73 (Serial No. 10997142) Sound Level Meter: NL-31 (Serial No. 00320533)

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

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

3.1.4 Action and Limit Levels

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

Table 3.3 Action and Limit Levels for Noise Monitoring

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

Notes:

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

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

3.2 CONTINUOUS NOISE MONITORING

3.2.1 Monitoring Locations

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

Table 3.4 Proposed Continuous Noise Monitoring Locations

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

Note:

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

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

3.2.2 Monitoring Parameter and Frequency

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

3.2.3 Monitoring Equipment and Methodology

In accordance to the Technical Memorandum (TM) issued under the *Noise Control Ordinance* (NCO), sound level meters in compliance with the *International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1)* specifications will be used for carrying out the noise monitoring. The sound level meter and calibrator used for continuous noise measurement are listed in ***Table 3.5***.

Table 3.5 Continuous Noise Monitoring Equipment

Monitoring Station	Monitoring Equipment (Sound Level Meter and Calibrator)
MTW-16-1	Calibrator: NC-73 (Serial No. 10997142) Sound Level Meter: NL-31 (Serial No. 00320533)

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

3.2.4 Action and Limit Levels

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

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

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

Notes:

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

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

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

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

3.3 CONSTRUCTION DUST MONITORING

3.3.1 Monitoring Location

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

Table 3.7 Construction Dust Monitoring Location

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

Notes:

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

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

3.3.2 Monitoring Parameter and Frequency

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

Table 3.8 Construction Dust Monitoring Parameters and Frequency

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

3.3.3 Monitoring Equipment

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

Table 3.9 Construction Dust Monitoring Equipment

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

Note:

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

3.3.4 Monitoring Methodology

All HVSs were free-standing with no obstruction.

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

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

Preparation of Filter Papers

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

Field Monitoring

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

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

Maintenance and Calibration

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

Wind Data Monitoring

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

3.3.5 Action and Limit Levels

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

Table 3.10 Action and Limit Levels for Dust Monitoring

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

Notes:

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

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

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

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

3.4 CULTURAL HERITAGE

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

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

3.5 LANDSCAPE AND VISUAL MITIGATION MEASURES

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

4 IMPLEMENTATION STATUS OF THE ENVIRONMENTAL PROTECTION REQUIREMENTS

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

Table 4.1 Status of Required Submission under Works Contract 1109

EP Condition	Submission	Submission Date
Condition 3.4	Thirty-fifth Monthly EM&A Report	14 August 2015

5 MONITORING RESULTS

5.1 REGULAR CONSTRUCTION NOISE MONITORING

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

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

5.2 CONTINUOUS NOISE MONITORING

Continuous noise monitoring is required at MTW-16-1 during the reporting month, according to the schedule presented in latest approved CNMP.

Exceedances of the Action and Limit Levels of the continuous noise monitoring were recorded at MTW-16-1 on 10 and 11 August 2015.

Investigation of exceedances on 10 and 11 August 2015 had been completed and the investigation reports are presented in *Annex L*.

The monitoring results are presented in ***Annex I-2***.

5.3 CONSTRUCTION DUST MONITORING

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

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

Monitoring Station	24-hour TSP Monitoring Results measured, μgm^{-3} [a]		Action Level, μgm^{-3}	Limit Level, μgm^{-3}
	Average	Range		
DMS-6	67	58 – 74	156.8	260
DMS-7 [b]	78	74 – 85	166.7	260
DMS-8	71	62 – 79	152.2	260
DMS-9 [a]	72	64 – 87	160.9	260
DMS-10	67	62 – 71	170.4	260

Monitoring Station	24-hour TSP Monitoring Results measured, μgm^{-3} (a)		Action Level, μgm^{-3}	Limit Level, μgm^{-3}
	Average	Range		

Note:

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

(b) 24-hour averaged dust monitoring at DMS-7 Parc-22 was temporary suspended since July 2015 due to request from the Management Office. Dust monitoring resumed on 12 August 2015.

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

5.4 CULTURAL HERITAGE

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

Vibration monitoring was conducted at Hong Kong Aviation Club and S.K.H. Holy Trinity Church 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 [c]	Non-inert C&D Materials			
			General Refuse/Vegetative Waste	Recycled materials		
				Paper/card board	Plastics	Metals
August 2015	28,330 m^3	1,240 kg	244 m^3	77 kg	1,027 kg	0 kg

Notes:

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

(b) About 28,330 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 10 and 24 August 2015. Most of the mitigation measures given in ***Annex H*** have been implemented. Required Actions that were found are listed below:

10 August 2015

- No observation was reported during the site inspection.

24 August 2015

- 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 August 2015. The representative of the IEC joined the site inspection on 10 August 2015. No non-compliance was recorded during the site inspections.

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

3 August 2015

- The Contractor was reminded to provide sufficient drip trays for the chemical containers at TKW works area.

10 August 2015

- There was no major observation during the site inspection.

17 August 2015

- There was no major observation during the site inspection.

24 August 2015

- The Contractor was reminded to check the exhaust filter of the generators and drilling rig at Kiang Su Street, Lok Shan Road and TKW works area.

31 August 2015

- There was no major observation during the site inspection.

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

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 SUMMARY OF MONITORING EXCEEDANCE

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

Exceedances of the Action and Limit Levels of the continuous noise monitoring were recorded at MTW-16-1 on 10 and 11 August 2015.

Investigation of exceedances on 10 and 11 August 2015 had been completed and the investigation reports are presented in *Annex L*.

7.2 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

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

7.3 SUMMARY OF ENVIRONMENTAL COMPLAINT

One complaint was received on 19 August 2015. Investigation of the complaint received on 19 August 2015 had been completed and the investigation report is presented in *Annex L*. The cumulative environmental complaint log is shown in ***Annex M***.

7.4 SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION

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

8 FUTURE KEY ISSUES

8.1 KEY ISSUES FOR THE COMING MONTH

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

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

Construction Activities to be undertaken
Work in Ma Tau Wai (MTW)
● TKW/MTW Road Garden – Operation of bentonite plant and EEP construction; and ● Along Ma Tau Wai Road – Predrilling for D wall, D wall panel construction,trial pits for location of utilities, and station excavation and construction.
Work in To Kwa Wan (TKW)
● Olympic Garden – Underpinning works, installation of pipe pile and TTMS preparation; ● Tam Kung Road – Shaft construction; ● TKW Station – Pump installation, open cut excavation, and tunnelling works; and ● Nam Kok Road – Installation of pipe pile.

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 36th monthly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 August 2015 to 31 August 2015 in accordance with the EM&A Manual and the requirement under EP-438/2012/H.

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.

Exceedances of the Action and Limit Levels of the continuous noise monitoring were recorded at MTW-16-1 on 10 and 11 August 2015.

Investigation of exceedances on 10 and 11 August 2015 had been completed and the investigation reports are presented in *Annex L*.

One complaint was received on 19 August 2015. Investigation of the complaint received on 19 August 2015 had been completed and the investigation report is presented in *Annex L*.

No summon or prosecution was received during the reporting period.

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

Annex A

The Alignment and Works Area for Works Contract

TKW

MTW

N

Meters

0 100 200

Key

Proposed Alignment

Works Area

Proposed Station

Annex A

Alignment, Stations and Works Area of SCL Works Contract 1109

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

Environmental Resources Management

ERM

Annex B

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

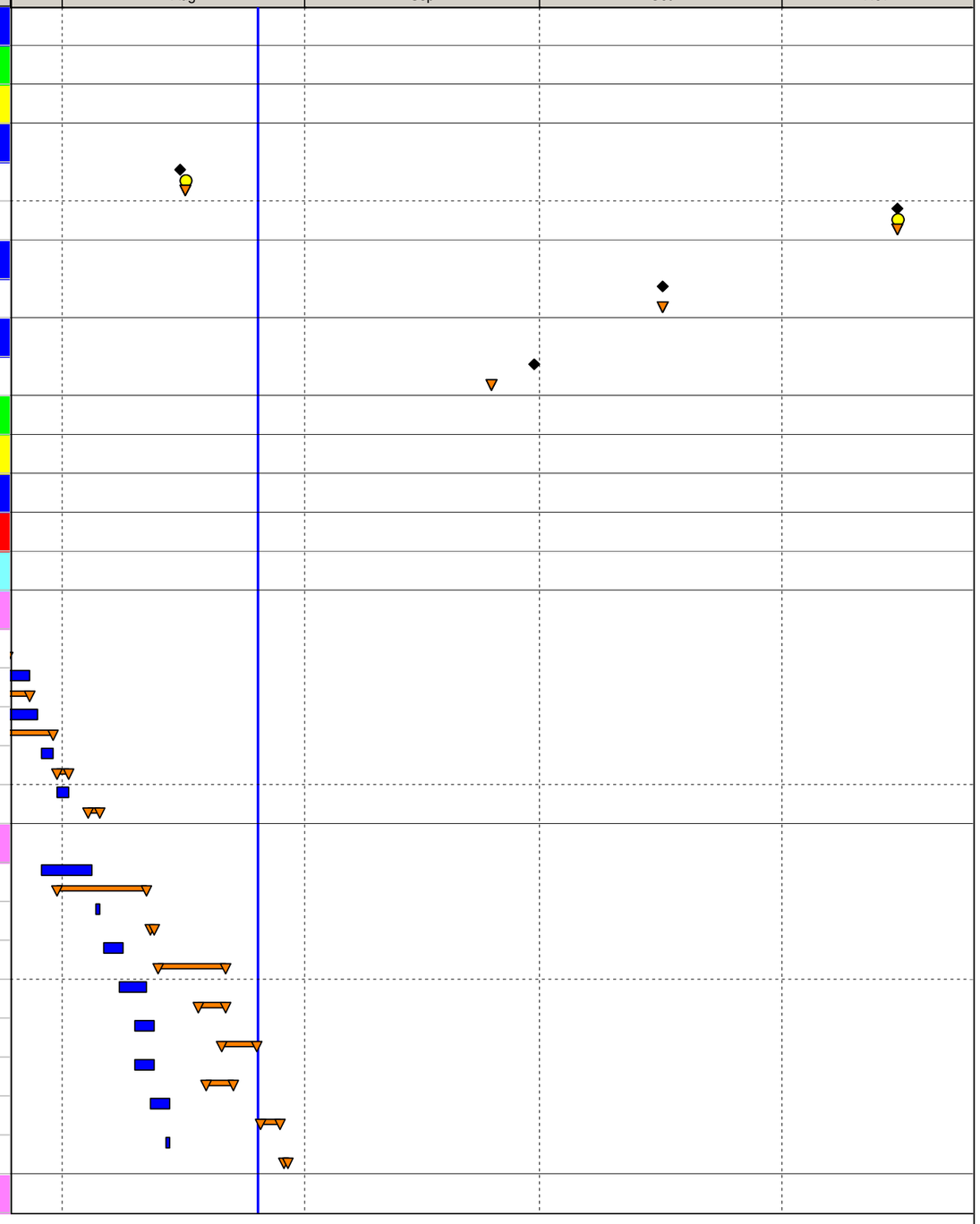
(1) Sung Wong Toi and To Kwa Wan Stations in the programme mean To Kwa Wan and Ma Tau Wai Stations in the Monthly EM&A Report respectively.

Data Date: 25-Aug-15

SAMSUNG - HSIN CHONG JOINT VENTURE

THREE MONTH ROLLING PROGRAMME - AUGUST 2015

Activity ID	Activity Name	Physical % Complete	Start	Finish
1109 - SUW & TKW Stations and Tunnels August 2015 (UWP R5)				
PROJECT DATES				
Specified Milestone Dates				
CC-A Milestones				
01109.MSA12	A12 - Engr's confirmation of satisfac implementation of safety & environ.reqmts as per approved spec. (Wk33/15;16Aug15)	100%		16-Aug-15 A
01109.MSA13	A13 - Engr's confirmation of satisfactory implementation of Programming Management System (1).(Wk46/15;15Nov15)	0%		15-Nov-15*
CC-C Milestones				
01109.MSC13ii	C13(ii)-All permanent diaphragm wall complete & pumping test for Top Down Excav to CCL results accepted by the Engineer	0%		16-Oct-15*
CC-D Milestones				
01109.MSD08b	D8(b)-Assembly, testing & commissioning of the second TBM complete & ready for tunnel driving.	0%		30-Sep-15*
CC-B - SUW STATION, ENTRANCES AND ADITS				
SUW Station Construction Works				
Station - Excavation and Foundation				
Earthworks				
Tie Back Anchor				
Row A				
01109.PDBA1230A	Insert rebar	100%	18-Jul-15 A	25-Jul-15 A
01109.PDBA1250A	Grouting	100%	20-Jul-15 A	27-Jul-15 A
01109.PDBA1260A	Install waling & anchor head	100%	23-Jul-15 A	28-Jul-15 A
01109.PDBA1270A	TDR test & welding test	100%	29-Jul-15 A	30-Jul-15 A
01109.PDBA1280A	Shotcrete	100%	31-Jul-15 A	01-Aug-15 A
Row B-1				
01109.PDBA1290A	Excavation to -3mPD at G/L 7.5-10.5 (900m3 including rock/corestone)	100%	29-Jul-15 A	04-Aug-15 A
01109.PDBA1300A	Setting up platform for drilling rig	100%	05-Aug-15 A	05-Aug-15 A
01109.PDBA1310A	Drilling of tie back anchor, 16nos. (2 rigs)	100%	06-Aug-15 A	08-Aug-15 A
01109.PDBA1320A	Insert rebar	100%	08-Aug-15 A	11-Aug-15 A
01109.PDBA1340A	Install waling & anchor head	100%	10-Aug-15 A	12-Aug-15 A
01109.PDBA1330A	Grouting	100%	10-Aug-15 A	12-Aug-15 A
01109.PDBA1350A	TDR test & welding test	100%	12-Aug-15 A	14-Aug-15 A
01109.PDBA1360A	Shotcrete (14 Aug 2015)	100%	14-Aug-15 A	14-Aug-15 A
Row B-2				



SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

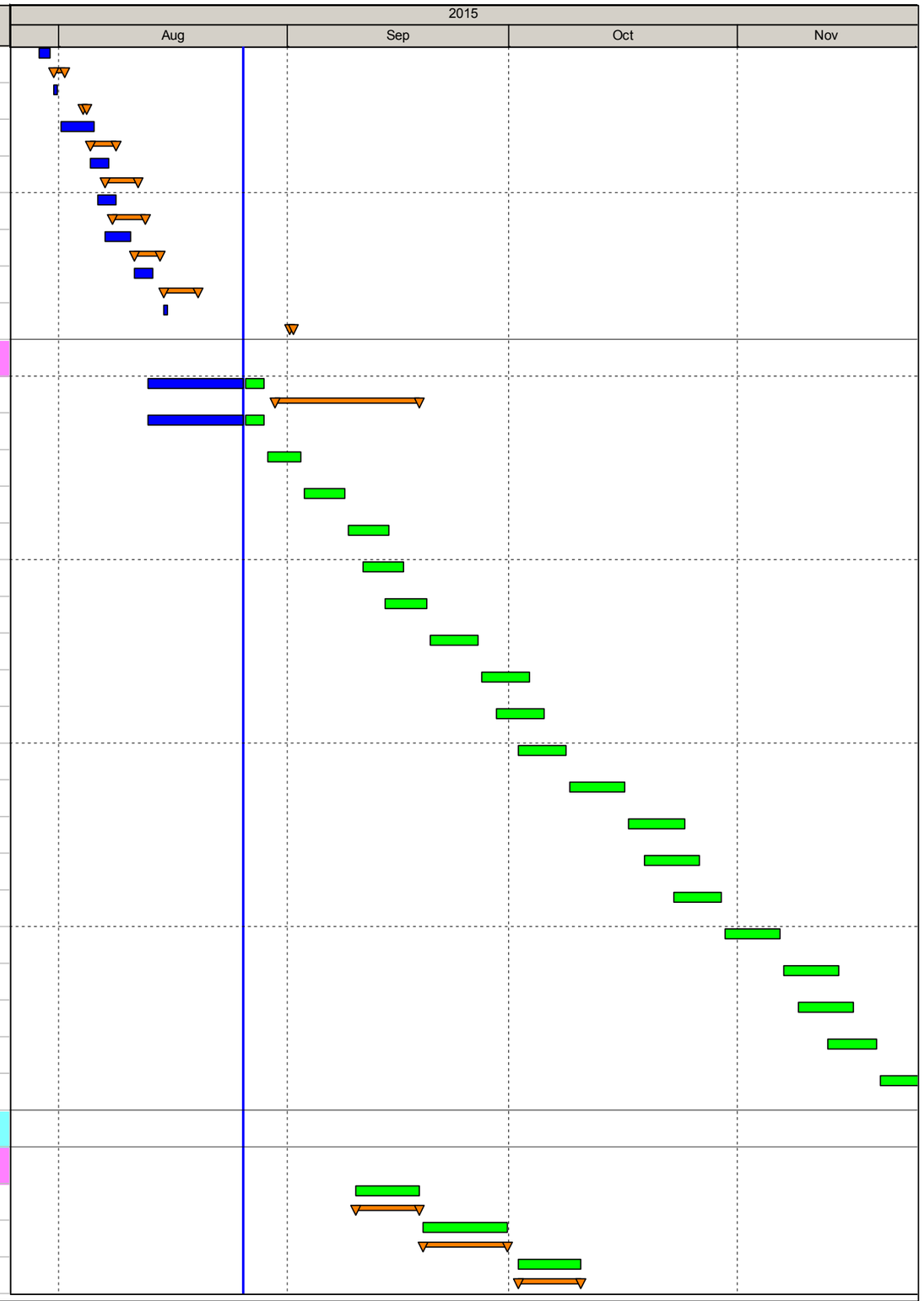
Shatin to Central Link Contract 1109

THREE MONTH ROLLING PROGRAMME - Aug 15 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP.

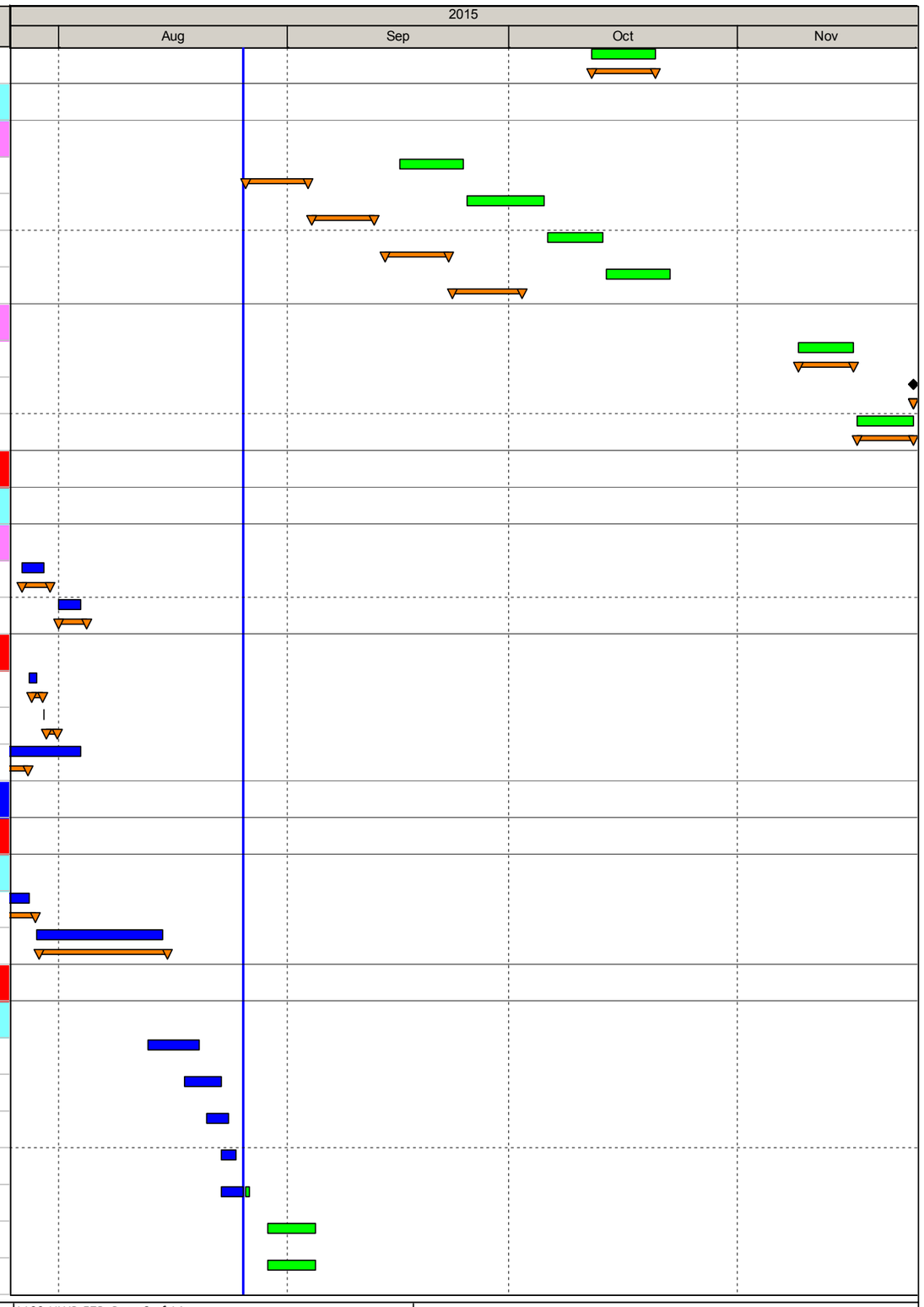
Printed:07-Sep-15

Actual Work
Remaining Work
Master Programme Rev.1
Last Month Update (July 2015)
Milestone
MP Rev.1 Milestone
July 2015 Milestone

Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDBA1370A	Excavation to -3mPD at G/L 10.5-14 (550m3 soil)	100%	29-Jul-15 A	30-Jul-15 A
01109.PDBA1380A	Setting up platform for drilling rig	100%	31-Jul-15 A	31-Jul-15 A
01109.PDBA1390A	Drilling of tie back anchor, 8nos. (1 rig)	100%	01-Aug-15 A	05-Aug-15 A
01109.PDBA1400A	Insert rebar	100%	05-Aug-15 A	07-Aug-15 A
01109.PDBA1410A	Grouting	100%	06-Aug-15 A	08-Aug-15 A
01109.PDBA1420A	Install waling & anchor head	100%	07-Aug-15 A	10-Aug-15 A
01109.PDBA1430A	TDR test & welding test	100%	11-Aug-15 A	13-Aug-15 A
01109.PDBA1440A	Shotcrete (14 Aug 2015)	100%	15-Aug-15 A	15-Aug-15 A
Row C and Below				
01109.PDBA1450A	Excavation for Tie Back Anchor for 4th Layer	80%	13-Aug-15 A	28-Aug-15
01109.PDBA1451A	Tie Back Anchor for 4th Layer	80%	13-Aug-15 A	28-Aug-15
01109.PDBA1461A	Excavation for Tie Back Anchor for 5th Layer	0%	29-Aug-15	02-Sep-15
01109.PDBA1462A	Tie Back Anchor for 5th Layer, Part 1 of 2	0%	03-Sep-15	08-Sep-15
01109.PDBA1463A	Tie Back Anchor for 5th Layer, Part 2 of 2	0%	09-Sep-15	14-Sep-15
01109.PDBA1464A	Insert rebar, Grouting and Testing for Tie Back Anchor for 5th Layer	0%	11-Sep-15	16-Sep-15
01109.PDBA1471A	Excavation for Tie Back Anchor for 6th Layer	0%	14-Sep-15	19-Sep-15
01109.PDBA1472A	Tie Back Anchor for 6th Layer, Part 1 of 2	0%	20-Sep-15	26-Sep-15
01109.PDBA1473A	Tie Back Anchor for 6th Layer, Part 2 of 2	0%	27-Sep-15	03-Oct-15
01109.PDBA1474A	Insert rebar, Grouting and Testing for Tie Back Anchor for 6th Layer	0%	29-Sep-15	05-Oct-15
01109.PDBA1481A	Excavation for Tie Back Anchor for 7th Layer	0%	02-Oct-15	08-Oct-15
01109.PDBA1482A	Tie Back Anchor for 7th Layer, Part 1 of 2	0%	09-Oct-15	16-Oct-15
01109.PDBA1483A	Tie Back Anchor for 7th Layer, Part 2 of 2	0%	17-Oct-15	24-Oct-15
01109.PDBA1484A	Insert rebar, Grouting and Testing for Tie Back Anchor for 7th Layer	0%	19-Oct-15	26-Oct-15
01109.PDBA1491A	Excavation for Tie Back Anchor for 8th Layer	0%	23-Oct-15	29-Oct-15
01109.PDBA1492A	Tie Back Anchor for 8th Layer, Part 1 of 2	0%	30-Oct-15	06-Nov-15
01109.PDBA1493A	Tie Back Anchor for 8th Layer, Part 2 of 2	0%	07-Nov-15	14-Nov-15
01109.PDBA1494A	Insert rebar, Grouting and Testing for Tie Back Anchor for 8th Layer	0%	09-Nov-15	16-Nov-15
01109.PDBA1501A	Excavation for Tie Back Anchor for 9th Layer	0%	13-Nov-15	19-Nov-15
01109.PDBA1502A	Tie Back Anchor for 9th Layer, Part 1 of 2	0%	20-Nov-15	27-Nov-15
Stage 2 Excavation +1.0 to -6.0mPD & form 1.5m berm				
Stage 2 Excavation, Zone 2				
01109.PDB4660	Stg 2 - Excavation; Part 2- GL 8 to 9	0%	10-Sep-15	18-Sep-15
01109.PDB4630	Stg 2 - Excavation; Part 2- GL 7 to 8	0%	19-Sep-15	30-Sep-15
01109.PDB4590	Stg 2 - Excavation; Part 2- GL 6 to 7	0%	02-Oct-15	10-Oct-15



Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDB4550	Stg 2 - Excavation; Part 2- GL 5 to 6	0%	12-Oct-15	20-Oct-15
Stage 3 Excavation +-6.0 to -13.5mPD				
Stage 3 Excavation, Zone 1				
01109.PDB5280	Stg 3 - Excavation; Part 3- GL 15 to 16	0%	16-Sep-15	24-Sep-15
01109.PDB5260	Stg 3 - Excavation; Part 3- GL 14 to 15	0%	25-Sep-15	05-Oct-15
01109.PDB5230	Stg 3 - Excavation; Part 3- GL 13 to 14	0%	06-Oct-15	13-Oct-15
01109.PDB5190	Stg 3 - Excavation; Part 3- GL 12 to 13	0%	14-Oct-15	22-Oct-15
Stage 3 Excavation, Zone 2				
01109.PDB5100	Stg 3 - Excavation; Part 3- GL 10 to 11	0%	09-Nov-15	16-Nov-15
01109.PDB5310	Stg 3 - Excavation Stage 3 Complete	0%		24-Nov-15
01109.PDB5270	Stg 3 - Excavation; Part 2- GL 9 to 10	0%	17-Nov-15	24-Nov-15
Pile Load Tests				
Part 3				
(W61HP01)				
01109.PDB2500-24A	W61HP01 loading test	100%	27-Jul-15 A	30-Jul-15 A
01109.PDB2500-25A	W61HP01 Dismantle work	100%	01-Aug-15 A	04-Aug-15 A
Earthing Mat and Waterproofing works				
01109.PDB5360-06A	Earthing Mat installation (C.L 21 To G.L 24, C to F), Laying Copper tape	100%	28-Jul-15 A	29-Jul-15 A
01109.PDB5360-07A	Earthing Mat installation (C.L 21 To G.L 24, C to F), Casting the Blinding Layer	100%	30-Jul-15 A	30-Jul-15 A
01109.PDB5360-09A	Assess for pile loading test	100%	17-Jul-15 A	04-Aug-15 A
Station - C&S Works (Patform Level)				
Tower Cranes: Erection, Testing and Commissioning				
TC1				
01109.PDB5400-5A	TC1 - Site clearance for Construction of pile cap	100%	22-Jul-15 A	28-Jul-15 A
01109.PDB5400-4A	TC1 - Construction of pile cap	100%	29-Jul-15 A	15-Aug-15 A
Sump Pits & Base Slabs				
Part 3				
01109.PDBA1702A	Base Slab; Part 4- GL 20 to 23/A Ground Beam, Construct vertical blindling wall along GL A	100%	13-Aug-15 A	20-Aug-15 A
01109.PDBA1703A	Base Slab; Part 4- GL 20 to 23/A Ground Beam, Fabrication of side formwork along GL A	100%	18-Aug-15 A	23-Aug-15 A
01109.PDBA1704A	Base Slab; Part 4- GL 20 to 23/A Ground Beam, Backfilling up to 1m base slab formation and cast blinding	100%	21-Aug-15 A	24-Aug-15 A
01109.PDBA1705A	Base Slab; Part 4- GL 20 to 23/A Ground Beam, Steel fixing	100%	23-Aug-15 A	25-Aug-15 A
01109.PDBA1706A	Base Slab; Part 4- GL 20 to 23/A Ground Beam, Laying of waterproof membrane	50%	23-Aug-15 A	26-Aug-15
01109.PDBA1707A	Base Slab; Part 4- GL 20 to 23/A Ground Beam, Fabrication of the stop end formwork	0%	29-Aug-15	04-Sep-15
01109.PDBA1708A	Base Slab; Part 4- Slab G.L 23 to G.L 20.5 , A - C, BAY 1, Site formation work, Part 1	0%	29-Aug-15	04-Sep-15



SAMSUNG

SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

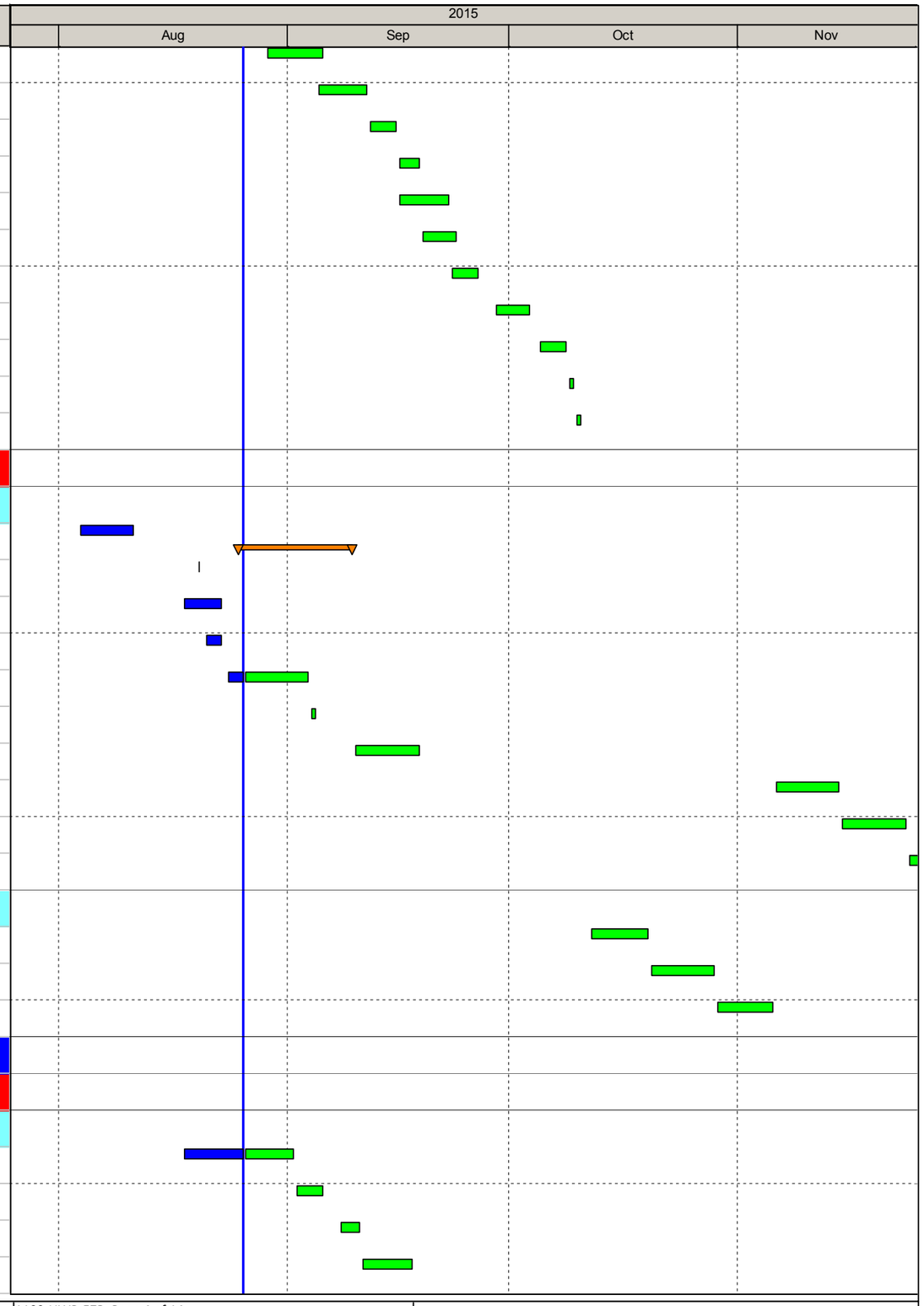
Shatin to Central Link Contract 1109

THREE MONTH ROLLING PROGRAMME - Aug 15 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP.

Printed:07-Sep-15

Actual Work
Remaining Work
Master Programme Rev.1
Last Month Update (July 2015)
Milestone
MP Rev.1 Milestone
July 2015 Milestone

Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDBA1709A	Base Slab; Part 4- GL 20 to 23/A Ground Beam, Cleaning & concrete casting (1st portion casting)	0%	29-Aug-15	05-Sep-15
01109.PDBA1710A	Base Slab; Part 4- Slab G.L 23 to G.L 20.5 , A - C, BAY 1, Site formation work and blinding layer, Remaining	0%	05-Sep-15	11-Sep-15
01109.PDBA1711A	Base Slab; Part 4- Slab G.L 23 to G.L 20.5 , A - C, BAY 1, Laying of waterproof membrane	0%	12-Sep-15	15-Sep-15
01109.PDBA1712A	Base Slab; Part 4- GL 20 to 23/A Ground Beam, Cleaning & concrete casting (2nd portion casting)	0%	16-Sep-15	18-Sep-15
01109.PDBA1713A	Base Slab; Part 4- Slab G.L 23 to G.L 20.5 , A - C, BAY 1, Steel fixing (Track Slab Bottom layer)	0%	16-Sep-15	22-Sep-15
01109.PDBA1714A	Base Slab; Part 4- GL 20 to 23/A Ground Beam, Verticle CJ at -12.41 mpd preparartion work	0%	19-Sep-15	23-Sep-15
01109.PDBA1715A	Base Slab; Part 4- Slab G.L 23 to G.L 20.5 , A - C, BAY 1, Cast-in items installation (drainage & cross track duct)	0%	23-Sep-15	26-Sep-15
01109.PDBA1716A	Base Slab; Part 4- Slab G.L 23 to G.L 20.5 , A - C, BAY 1, Steel fixing (Track Slab Top Layer & Catch pit, Gully)	0%	29-Sep-15	03-Oct-15
01109.PDBA1717A	Base Slab; Part 4- Slab G.L 23 to G.L 20.5 , A - C, BAY 1, Erection the stop end formwork at CJ	0%	05-Oct-15	08-Oct-15
01109.PDBA1718A	Base Slab; Part 4- Slab G.L 23 to G.L 20.5 , A - C, BAY 1, cleaning work before concrete	0%	09-Oct-15	09-Oct-15
01109.PDBA1719A	Base Slab; Part 4- Slab G.L 23 to G.L 20.5 , A - C, BAY 1, concrete casting	0%	10-Oct-15	10-Oct-15
External Walls & Columns; From Base to Concourse Slab; (B/S-C/S)				
Part 4				
01109.PDB5910-1A	Wall SUW - Stud Tunnel U4	100%	04-Aug-15 A	11-Aug-15 A
01109.PDBA1720A	Wall SUW - Stud Tunnel U3, Wall Concrete Casting	100%	20-Aug-15 A	20-Aug-15 A
01109.PDBA1721A	Wall SUW - Stud Tunnel U5, Steel Fixing for wall	100%	18-Aug-15 A	23-Aug-15 A
01109.PDBA1722A	Wall SUW - Stud Tunnel U3, Dismantle of fromwork and C.J tratment work	100%	21-Aug-15 A	23-Aug-15 A
01109.PDBA1723A	Wall SUW - Stud Tunnel U5, Fabrication of external formwork	50%	24-Aug-15 A	03-Sep-15
01109.PDBA1727A	Wall SUW - Stud Tunnel U5, Clearing and Wall concrete casting (31 Aug 2015)	0%	04-Sep-15	04-Sep-15
01109.PDB5940-16A	Wall SUW - Stud Tunnel D2	0%	10-Sep-15	18-Sep-15
01109.PDBA1724A	Wall SUW - Stud Tunnel D3	0%	06-Nov-15	14-Nov-15
01109.PDBA1725A	Wall SUW - Stud Tunnel D4	0%	15-Nov-15	23-Nov-15
01109.PDBA1726A	Wall SUW - Stud Tunnel D5	0%	24-Nov-15	02-Dec-15
Part 3				
01109.PDBA1728A	External Wall at G.L 23 to G.L 20.5 , A - C, BAY 1, Wall, 1st 25m	0%	12-Oct-15	19-Oct-15
01109.PDBA1729A	External Wall at G.L 23 to G.L 20.5 , A - C, BAY 1, Wall, 2nd 25m	0%	20-Oct-15	28-Oct-15
01109.PDBA1730A	External Wall at G.L 23 to G.L 20.5 , A - C, BAY 1, Wall, 3rd 25m	0%	29-Oct-15	05-Nov-15
Station - C&S Works (Concourse Level and Above)				
Concourse Slab				
Part 4				
01109.PDBA1731A	Roof Slab SUW - Stud Tunnel U4, Lay Soffit formwork at BAY U4	60%	18-Aug-15 A	01-Sep-15
01109.PDBA1732A	Roof Slab SUW - Stud Tunnel U3, Erection of false-work and lay soffit formwork at BAY U3	0%	02-Sep-15	05-Sep-15
01109.PDBA1733A	Roof Slab SUW - Stud Tunnel U5, Erection of false-work and lay soffit formwork at BAY U5	0%	08-Sep-15	10-Sep-15
01109.PDBA1734A	Roof Slab SUW - Stud Tunnel U3, Steel fixing for roof slab BAY U3, U4, U5	0%	11-Sep-15	17-Sep-15



SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

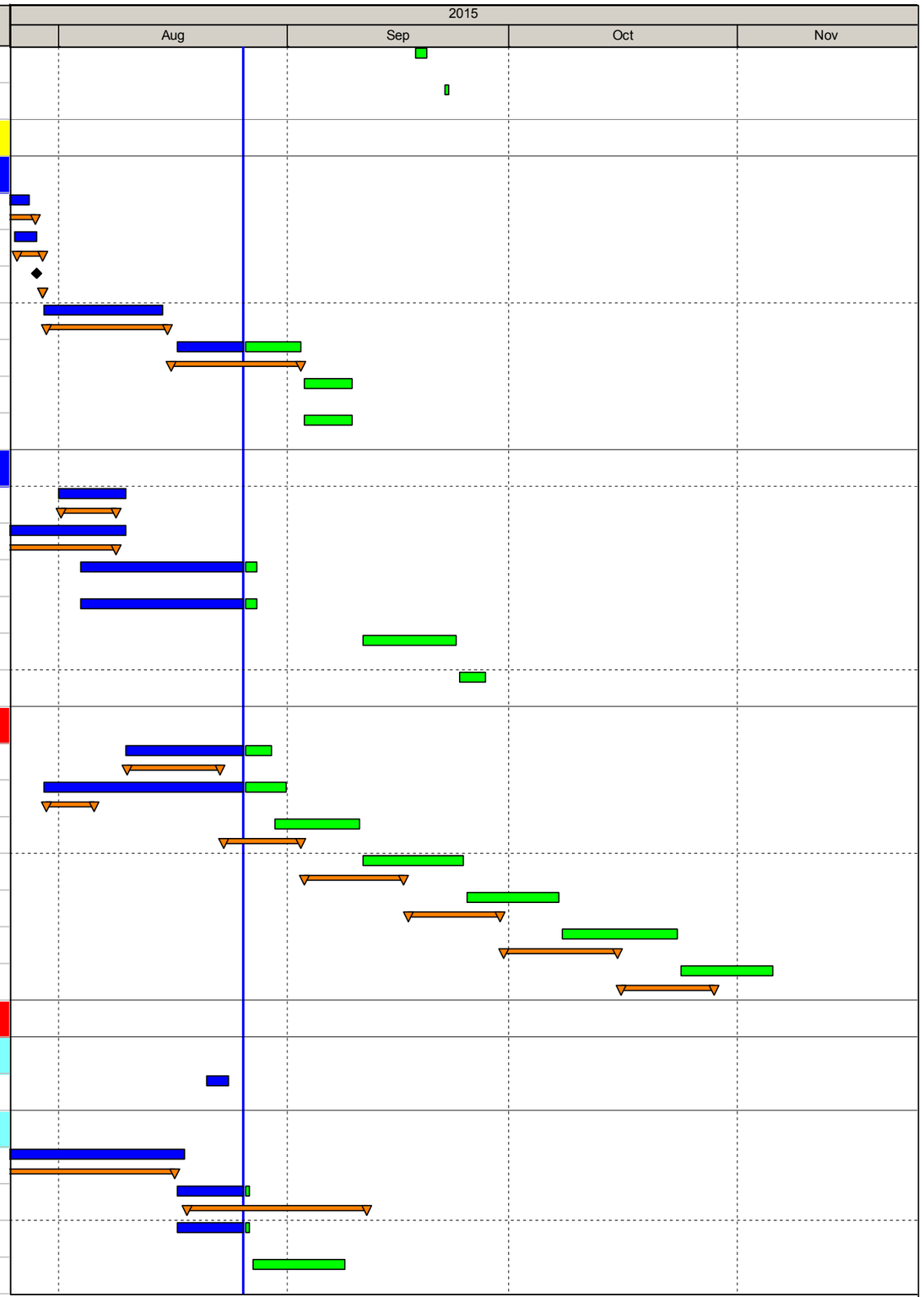
Shatin to Central Link Contract 1109

THREE MONTH ROLLING PROGRAMME - Aug 15 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP.

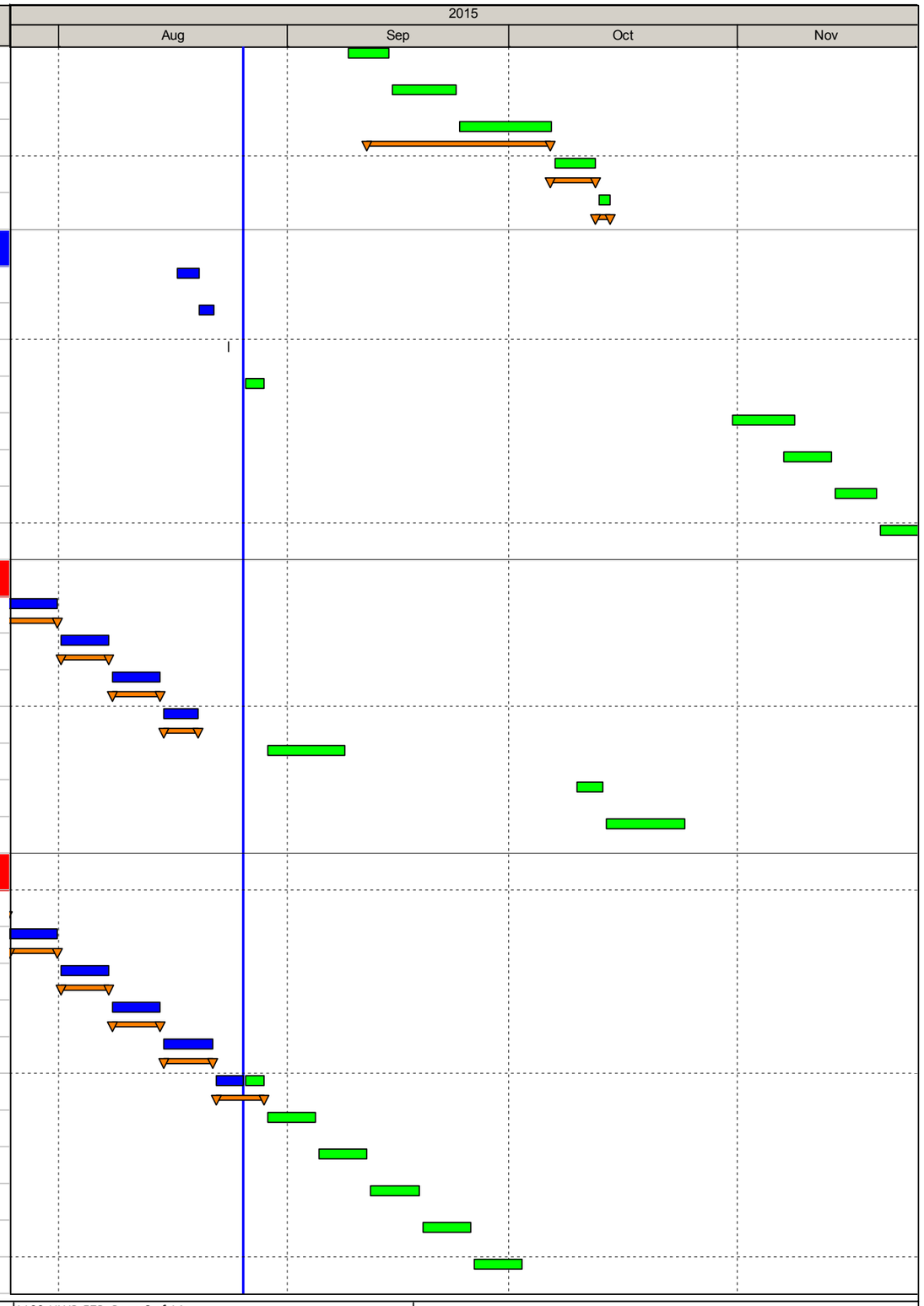
Printed:07-Sep-15

Actual Work
Remaining Work
Master Programme Rev.1
Last Month Update (July 2015)
Milestone
MP Rev.1 Milestone
July 2015 Milestone

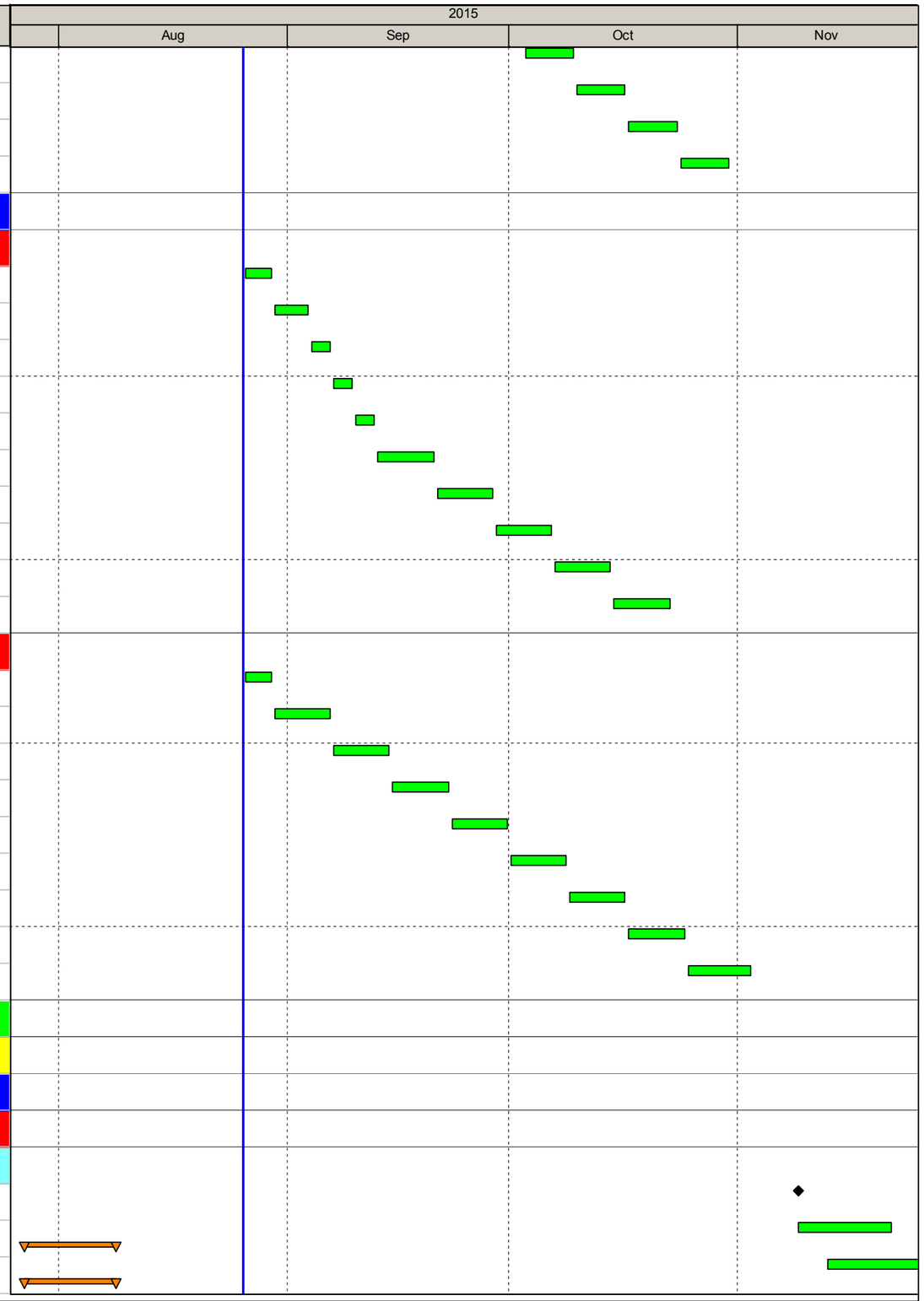
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDBA1735A	Roof Slab SUW - Stud Tunnel U3, Erection the upper external formwork from BAY U3, U4, U5	0%	18-Sep-15	19-Sep-15
01109.PDBA1736A	Roof Slab SUW - Stud Tunnel U3, Roof concrete pouring BAY U3, U4, U5	0%	22-Sep-15	22-Sep-15
Entrance B and Associated Adits				
Entrance B - Olympic Avenue and SUW playground Works (GL B5 to B11)				
01109.PDB-X0350A	Olympic Avenue (Adit B1, GL B4.5-B6.5) -Road furniture & temp. road reinstatment	100%	06-Jul-15 A	28-Jul-15 A
01109.PDB-X0340A	Olympic Avenue (Adit B1, GL B4.5-B6.5) -Traffic decking (Final)	100%	26-Jul-15 A	29-Jul-15 A
01109.PDB-X0360A	Olympic Avenue (Adit B1, GL B4.5-B6.5) -Traffic diversion	100%		29-Jul-15 A
01109.PDB-X0370A	Olympis Avenue (Adit B1, GL B6.5 - 8.5) -Trial pit excavation & UUs identification	100%	30-Jul-15 A	15-Aug-15 A
01109.PDB-X0380A	Olympis Avenue (Adit B1, GL B6.5 - 8.5) -UUs protection / abandon	50%	17-Aug-15 A	02-Sep-15
01109.PDBA1737A	Olympis Avenue (Adit B1, GL B6.5 - 8.5), Water main diversion	0%	03-Sep-15	09-Sep-15
01109.PDBA1738A	Olympis Avenue (Adit B1, GL B6.5 - 8.5), Gas main diversion	0%	03-Sep-15	09-Sep-15
Entrance B - Kowloon City Interchange (GL B11 to B22))				
01109.PDB-X11610-1A	Olympic Garden -Pumping test for Zone 2 - Area 2 punping test awaiting MTRC confirm	100%	01-Aug-15 A	10-Aug-15 A
01109.PDB-X11610A	Olympic Garden -Pumping test for Zone 2	100%	15-Jul-15 A	10-Aug-15 A
01109.PDBA1739A	Olympic Garden, Area 2 punping test awaiting MTRC confirm	90%	04-Aug-15 A	27-Aug-15
01109.PDBA1740A	Olympic Garden, Area 4, Drilling the PW, OW & RW at Area 4	90%	04-Aug-15 A	27-Aug-15
01109.PDBA1741A	Olympic Garden, Area 4 pumping test	0%	11-Sep-15	23-Sep-15
01109.PDBA1742A	Bulk excavation G/L to +5.5mPD on Area 4	0%	24-Sep-15	27-Sep-15
Excavation and ELS for Area 1 & 2				
01109.PDB-X12030A	Bulk excavation G/L to +5.5mPD on Area 2 (2288m3)	80%	10-Aug-15 A	29-Aug-15
01109.PDB-X12021A	Rock excavation and Breaking on Area 1	80%	30-Jul-15 A	31-Aug-15
01109.PDB-X12031A	Install 1st wailing & strut on Area 2	0%	30-Aug-15	10-Sep-15
01109.PDB-X12032A	Bulk excavation +5.5mPD to S2 on Area 2	0%	11-Sep-15	24-Sep-15
01109.PDB-X12033A	Install 2nd wailing & strut on Area 2	0%	25-Sep-15	07-Oct-15
01109.PDB-X12034A	Bulk excavation S2 to S3 on Area 2	0%	08-Oct-15	23-Oct-15
01109.PDB-X12035A	Install 3rd wailing & strut on Area 2	0%	24-Oct-15	05-Nov-15
Entrance B - Underpinning of KNEC Piers				
Pier P76				
01109.PDB13250A	Dismantle temporary steel frame	100%	21-Aug-15 A	24-Aug-15 A
Pier P46				
01109.PDB-X11219A	Olympic Garden - Construction pilecap at Pier 46 (Suspend by MTRC on 13 May 2015)	100%	15-May-15 A	18-Aug-15 A
01109.PDB-X11220A	Olympic Garden - Construction pilecap at Pier 46, A1	85%	17-Aug-15 A	26-Aug-15
01109.PDBA1743A	Olympic Garden - Construction pilecap at Pier 46, Removal of A2 pilecap at Pier 46	85%	17-Aug-15 A	26-Aug-15
01109.PDBA1744A	Olympic Garden - Construction pilecap at Pier 46, Re-construction of A2 pilecap at Pier 46	0%	27-Aug-15	08-Sep-15



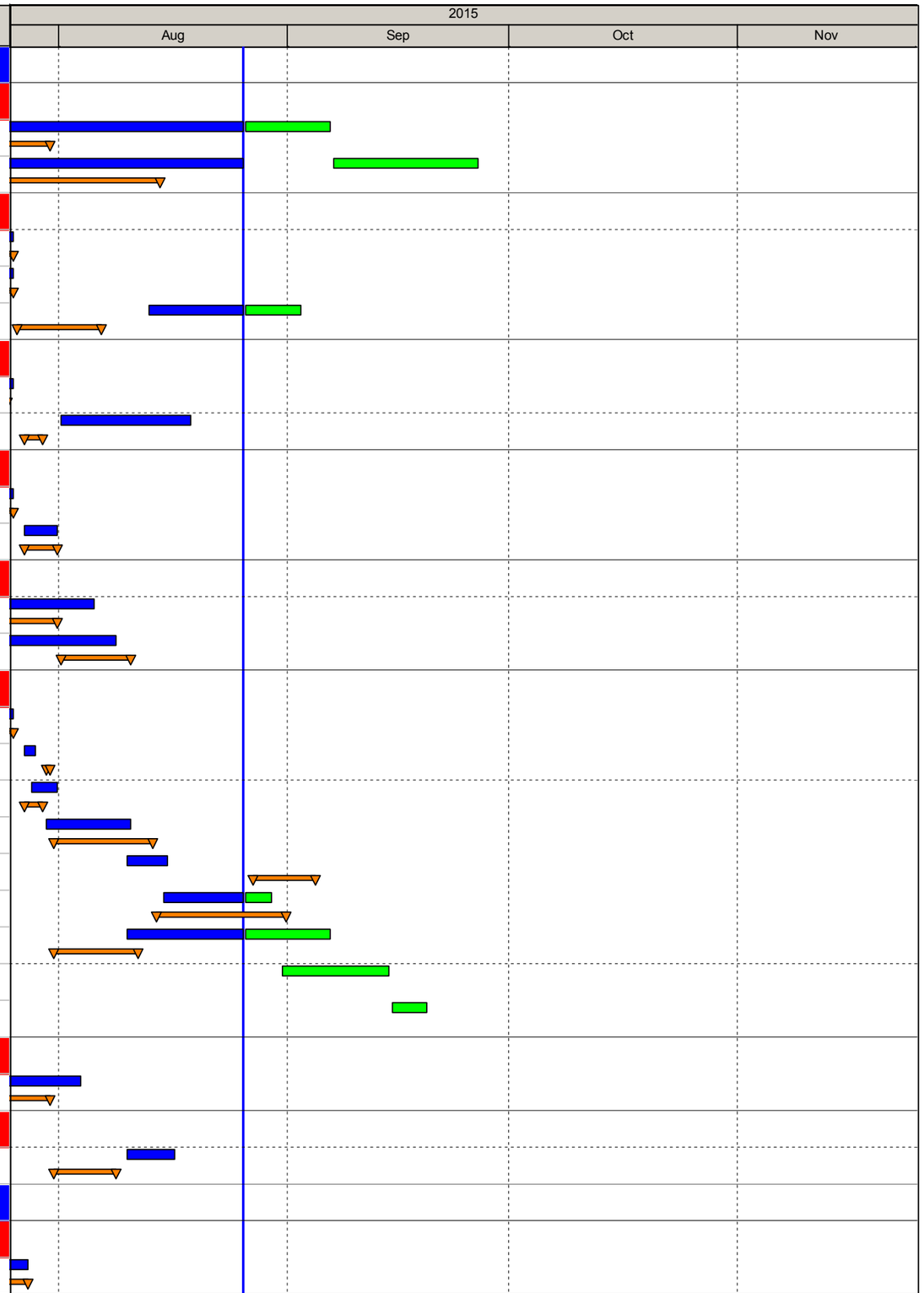
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDBA1745A	Olympic Garden - Pier 46 - Formation for Installation of Temporary Supporting Frame	0%	09-Sep-15	14-Sep-15
01109.PDBA1746A	Olympic Garden - Pier 46 - Installation of Temporary Supporting Frame (Part 1)	0%	15-Sep-15	23-Sep-15
01109.PDB-X11230A	Olympic Garden - Pier 46 - Installation of Temporary Supporting Frame (Remaining)	0%	24-Sep-15	06-Oct-15
01109.PDB-X11240A	Olympic Garden - Pier 46 - Jack system installation	0%	07-Oct-15	12-Oct-15
01109.PDB-X11250A	Olympic Garden - Pier 46 - Load Transfer Pier 46	0%	13-Oct-15	14-Oct-15
Enrtance B - Nam Kok Road Works - (GL B22 to B30)				
01109.PDBA1750A	Nam Kok Road (Zone 1), GL B19-B23, Soil backfilling	100%	17-Aug-15 A	20-Aug-15 A
01109.PDBA1751A	Nam Kok Road (Zone 1), GL B19-B23, Road reinstatement	100%	20-Aug-15 A	22-Aug-15 A
01109.PDBA1752A	Nam Kok Road (Zone 1), GL B19-B23, TTMS implementation	100%	24-Aug-15 A	24-Aug-15 A
01109.PDBA1753A	Nam Kok Road (Zone 1), GL B19-B23, Trial pit excavation & UUs identification	0%	26-Aug-15	28-Aug-15
01109.PDBA1754A	Remaining Grouting after Pipe Piling	0%	31-Oct-15	08-Nov-15
01109.PDBA1755A	Remaining OW/DW after Pipe Piling	0%	07-Nov-15	13-Nov-15
01109.PDBA1756A	Pumping Test to steady state	0%	14-Nov-15	19-Nov-15
01109.PDBA1757A	Completion of Pumping Test after steady state	0%	20-Nov-15	25-Nov-15
Enrtance B - Nam Kok Road Works - (GL B19 to B23)				
01109.PDB-X11811A	GL B19-B23 (PER) - Pipe piling (Low headrooom drilling rig), Week 1 of Aug	100%	24-Jul-15 A	31-Jul-15 A
01109.PDB-X11812A	GL B19-B23 (PER) - Pipe piling (Low headrooom drilling rig), Week 2 of Aug	100%	01-Aug-15 A	07-Aug-15 A
01109.PDB-X11813A	GL B19-B23 (PER) - Pipe piling (Low headrooom drilling rig), Week 3 of Aug	100%	08-Aug-15 A	14-Aug-15 A
01109.PDB-X11814A	GL B19-B23 (PER) - Pipe piling (Low headrooom drilling rig), Week 4 of Aug	100%	15-Aug-15 A	19-Aug-15 A
01109.PDBA1759A	GL B19-B23 (PER) - Pipe piling (Low headrooom drilling rig), 012 to 004 (9 nos)	0%	29-Aug-15	08-Sep-15
01109.PDBA1760A	TTMS for remaining Pipe Piling	0%	10-Oct-15	13-Oct-15
01109.PDBA1761A	GL B19-B23 (PER) - Pipe piling (Low headrooom drilling rig), 393 to 401 (9 nos)	0%	14-Oct-15	24-Oct-15
Enrtance B - Nam Kok Road Works - (GL B22 to B30), Pipe Piling				
01109.PDB-X11704A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 4 of Jul	100%	18-Jul-15 A	25-Jul-15 A
01109.PDB-X11705A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 1 of Aug	100%	25-Jul-15 A	31-Jul-15 A
01109.PDB-X11706A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 2 of Aug	100%	01-Aug-15 A	07-Aug-15 A
01109.PDB-X11707A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 3 of Aug	100%	08-Aug-15 A	14-Aug-15 A
01109.PDB-X11708A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 4 of Aug	100%	15-Aug-15 A	21-Aug-15 A
01109.PDB-X11709A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 1 of Sep	50%	22-Aug-15 A	28-Aug-15
01109.PDBA1762A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 2 of Sep	0%	29-Aug-15	04-Sep-15
01109.PDBA1763A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 3 of Sep	0%	05-Sep-15	11-Sep-15
01109.PDBA1764A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 4 of Sep	0%	12-Sep-15	18-Sep-15
01109.PDBA1765A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 5 of Sep	0%	19-Sep-15	25-Sep-15
01109.PDBA1766A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 1 of Oct	0%	26-Sep-15	02-Oct-15



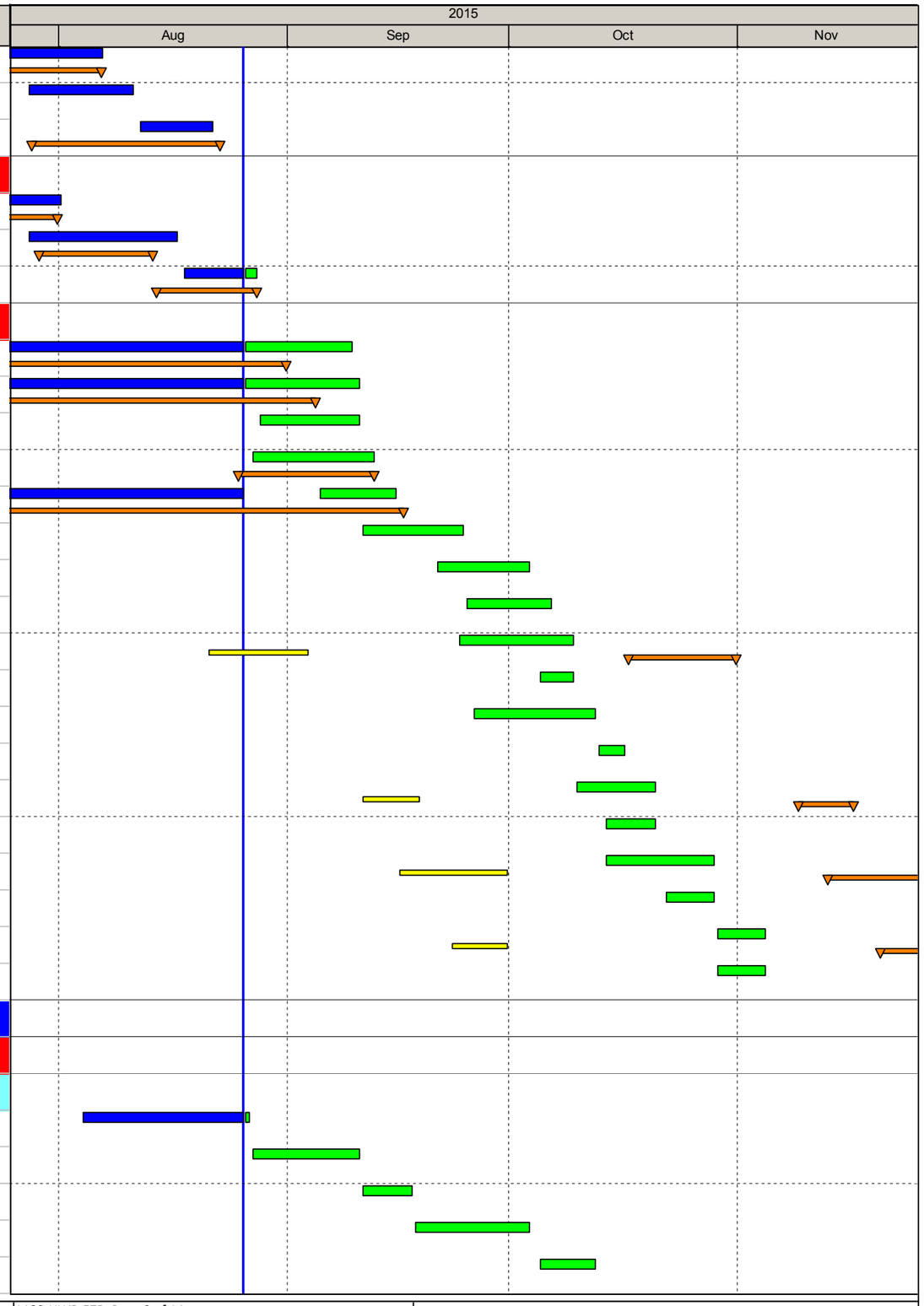
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDBA1767A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 2 of Oct	0%	03-Oct-15	09-Oct-15
01109.PDBA1768A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 3 of Oct	0%	10-Oct-15	16-Oct-15
01109.PDBA1769A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 4 of Oct	0%	17-Oct-15	23-Oct-15
01109.PDBA1770A	Pipe pile construction (GL 23-27) - 79 nos, Soldier pile cnstruction (GL 23-27) - 16 nos, 4 nos per week, Week 5 of Oct	0%	24-Oct-15	30-Oct-15
KS33 & KS34				
KS33				
01109.PDBA1771A	Blinding construction (up to +2.1mPD)	0%	26-Aug-15	29-Aug-15
01109.PDBA1772A	Waterproofing (Sump pit & base slab)	0%	30-Aug-15	03-Sep-15
01109.PDBA1773A	Rebar fixing (Sump pit & base slab)	0%	04-Sep-15	06-Sep-15
01109.PDBA1774A	Formwork (Sump pit & base slab)	0%	07-Sep-15	09-Sep-15
01109.PDBA1775A	Final Inspectin and Concrete casting (Sump pit & base slab)	0%	10-Sep-15	12-Sep-15
01109.PDBA1776A	1st Wall construction, formwork and rebar	0%	13-Sep-15	20-Sep-15
01109.PDBA1778A	1st Wall construction, final inspection and casting	0%	21-Sep-15	28-Sep-15
01109.PDBA1779A	2nd vertical blinding construction	0%	29-Sep-15	06-Oct-15
01109.PDBA1780A	2nd wall construction, formwork and rebar	0%	07-Oct-15	14-Oct-15
01109.PDBA1781A	2nd wall construction, final inspection and casting	0%	15-Oct-15	22-Oct-15
KS34				
01109.PDBA1782A	Pipe Piling (Remaining 4nos), total 54 nos	0%	26-Aug-15	29-Aug-15
01109.PDBA1783A	Grout hole driling, Remaining after Pipe Piling (Part 1)	0%	30-Aug-15	06-Sep-15
01109.PDBA1784A	Grout hole driling, Remaining after Pipe Piling (Part 2)	0%	07-Sep-15	14-Sep-15
01109.PDBA1785A	Grout hole driling, Remaining after Pipe Piling (Part 3)	0%	15-Sep-15	22-Sep-15
01109.PDBA1786A	Grout hole driling, Remaining after Pipe Piling (Part 4)	0%	23-Sep-15	30-Sep-15
01109.PDBA1787A	Grout hole driling, Remaining after Pipe Piling (Part 5)	0%	01-Oct-15	08-Oct-15
01109.PDBA1788A	Grout hole driling, Remaining after Pipe Piling (Part 6)	0%	09-Oct-15	16-Oct-15
01109.PDBA1789A	Grout hole driling, Remaining after Pipe Piling (Part 7)	0%	17-Oct-15	24-Oct-15
01109.PDBA1790A	Grout hole driling, Remaining after Pipe Piling (Part 8)	0%	25-Oct-15	02-Nov-15
CC-C - TKW STATION, ENTRANCES AND ADITS				
TKW Station				
Diaphragm Wall STAGE 2 Phase 2 (West Side + Ent D) TTMS				
Area W6				
Area W6 - Post Concrete Works				
01109.PDC16662A	Implement LSR Full Closure	0%	09-Nov-15*	
01109.PDC23261A	W6 - Toe Grouting (P57-P60)	0%	09-Nov-15	21-Nov-15
01109.PDC23270-2A	W6 - DWall Shear Pin Installation (P68-P74) Part 2 - remaining	0%	13-Nov-15	26-Nov-15



Activity ID	Activity Name	Physical % Complete	Start	Finish
Top Slab, Utility, & Backfill EAST side				
Area E1-1 - GL 1 to 5.5				
01109.PDC29255A	E1-1 - Toe Grouting (remaining)	85%	23-Apr-15 A	06-Sep-15
01109.PDC29255-1A	P133 remedial grouting	59%	23-Jun-15 A	26-Sep-15
Area E2-1 - GL 5.5 to 10				
01109.PDC8360	E2-1 - Earthwork; Backfill	100%	14-Jul-15 A	25-Jul-15 A
01109.PDC8370	E2-1 - Pavement for next TTM	100%	15-Jul-15 A	25-Jul-15 A
01109.PDC29237A	E2-1 - Toe Grouting (remaining)	33%	13-Aug-15 A	02-Sep-15
Area E2-3 - GL 12.5 to 15				
01109.PDC8930	E2-3 - Pavement for next TTM	100%	23-Jul-15 A	25-Jul-15 A
01109.PDC29374-3A	EI No. 121 - (BMW FG) Drilling and grouting - 3 holes	100%	01-Aug-15 A	18-Aug-15 A
Area E3-1 - GL 15 to 17				
01109.PDC5990	E3-1 - Earthwork; Backfill for road reinstatement	100%	20-Jul-15 A	25-Jul-15 A
01109.PDC6000	E3-1 - Pavement for next TTM	100%	27-Jul-15 A	31-Jul-15 A
Area E3-2 - GL 17 to 19.5				
01109.PDC6730	E3-2 - Earthwork; Backfill for road reinstatement	100%	15-Jul-15 A	05-Aug-15 A
01109.PDC6740	E3-2 - Pavement for next TTM	100%	24-Jul-15 A	08-Aug-15 A
Area E3-3 - GL 19.5 to 21.5				
01109.PDC8140	E3-3 - Structure; Roof slab r-c works	100%	22-Jun-15 A	25-Jul-15 A
01109.PDC1922A	E3-3 - Structure; Remove strut & walers	100%	27-Jul-15 A	28-Jul-15 A
01109.PDC8150	E3-3 - Structure; Waterproofing of roof slab	100%	28-Jul-15 A	31-Jul-15 A
01109.PDC8170	E3-3 - Earthwork; Backfill for road reinstatement	100%	30-Jul-15 A	10-Aug-15 A
01109.PDC8180	E3-3 - Pavement for next TTM	100%	10-Aug-15 A	15-Aug-15 A
01109.PDC29195A	E3-3 - Shear Pin	73%	15-Aug-15 A	29-Aug-15
01109.PDC29241-1A	E3-3 - Remedial Works P94 (remaining)	50%	10-Aug-15 A	06-Sep-15
01109.PDC8140-1A	E3-3 - Construct Remaining Roof (P88,P89,P90) -1	0%	31-Aug-15	14-Sep-15
01109.PDC8140-2A	E3-3 - Construct Remaining Roof (P88,P89,P90) -2	0%	15-Sep-15	19-Sep-15
Area E6-1 - GL 21.5 to 25				
01109.PDC29196A	E6-1 - Shear Pin	100%	10-Jul-15 A	04-Aug-15 A
Area E6-2 - GL 25 to 28				
01109.PDC16231A	Bus Stop Shifting from E3 to E6	100%	10-Aug-15 A	16-Aug-15 A
Entrance D Diaphragm Wall during EAST side Top Slab				
BC Cutter 1				
01109.PDC23930-1A	E1 (Ent D) - Dwall works P9 (under TKW Flyover) - excav, rebar and backfill	100%	14-Jul-15 A	27-Jul-15 A



Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDC23890	E1 (Ent D) - Dwall works P135 (under TKW Flyover)	100%	20-Jul-15 A	07-Aug-15 A
01109.PDC23930-3A	E1 (Ent D) - Dwall works P9 (under TKW Flyover) - excav, rebar and backfill	100%	28-Jul-15 A	11-Aug-15 A
01109.PDC23930-2A	E1 (Ent D) - Dwall works P9 (under TKW Flyover) - curtain grouting, re-excav, rebar and conc	100%	12-Aug-15 A	21-Aug-15 A
BC Cutter 4				
01109.PDC26770	Stg 3 Ent D - Dwall works - P4	100%	21-Jul-15 A	01-Aug-15 A
01109.PDC26730	Stg 3 Ent D - Dwall works - P156	100%	28-Jul-15 A	17-Aug-15 A
01109.PDC26780	Stg 3 Ent D - Dwall works - P155	85%	18-Aug-15 A	27-Aug-15
Area E1 (Ent D) - Post Concrete Works				
01109.PDC3960	E1 (Ent D) - Dwall testing (under Flyover)	27%	13-Jun-15 A	09-Sep-15
01109.PDC18020	Stg 2 Ent D - Dwall testing	56%	29-Apr-15 A	10-Sep-15
01109.PDC19090-1A	Installation of wells for pumping test -1	0%	28-Aug-15	10-Sep-15
01109.PDC3950	E1 (Ent D) - Dwall Toe grouting (under Flyover)	0%	27-Aug-15	12-Sep-15
01109.PDC18530	Stg 2 Ent D - Toe Grouting	28%	09-Jun-14 A	15-Sep-15
01109.PDC19090-2A	Installation of wells for pumping test -2	0%	11-Sep-15	24-Sep-15
01109.PDC19110-1A	Earthwork; Excavation (A2-1, A2-3, A3)	0%	21-Sep-15	03-Oct-15
01109.PDC19090-3A	Pump Test (Stage 3 & 4)	0%	25-Sep-15	06-Oct-15
01109.PDC19120	Steelwork; Installation of struts and walers	0%	24-Sep-15	09-Oct-15
01109.PDC19110-2A	Earthwork; Excavation (A2-2, A1)	0%	05-Oct-15	09-Oct-15
01109.PDC19130-1A	Structure; Roof slab -1	0%	26-Sep-15	12-Oct-15
01109.PDC19130-2A	Structure; Roof slab -2	0%	13-Oct-15	16-Oct-15
01109.PDC19140	Structure; Waterproofing for the roof slab	0%	10-Oct-15	20-Oct-15
01109.PDC19160-1A	Earthwork; Backfill -1	0%	14-Oct-15	20-Oct-15
01109.PDC19150	Utility Reinstatement	0%	14-Oct-15	28-Oct-15
01109.PDC19160-2A	Earthwork; Backfill -2	0%	22-Oct-15	28-Oct-15
01109.PDC19170	Pavement	0%	29-Oct-15	04-Nov-15
01109.PDC19160-3A	Earthwork; Backfill -3	0%	29-Oct-15	04-Nov-15
Station - C&S Works (Concourse Level and above)				
Concourse Slab Works (new)				
Span 1				
01109.PDC19260-2A	Span 1 - Excavation to S2	90%	04-Aug-15 A	26-Aug-15
01109.PDC19260-3A	Span 1 - Install S2	0%	27-Aug-15	10-Sep-15
01109.PDC19260-4A	Span 1 - Excavation from S2 to C/S soffits	0%	11-Sep-15	17-Sep-15
01109.PDC19280-1A	Span 1 - Concourse Concrete Slab -1	0%	18-Sep-15	03-Oct-15
01109.PDC19280-2A	Span 1 - Concourse Concrete Slab -2	0%	05-Oct-15	12-Oct-15



SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

Shatin to Central Link Contract 1109

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Printed:07-Sep-15

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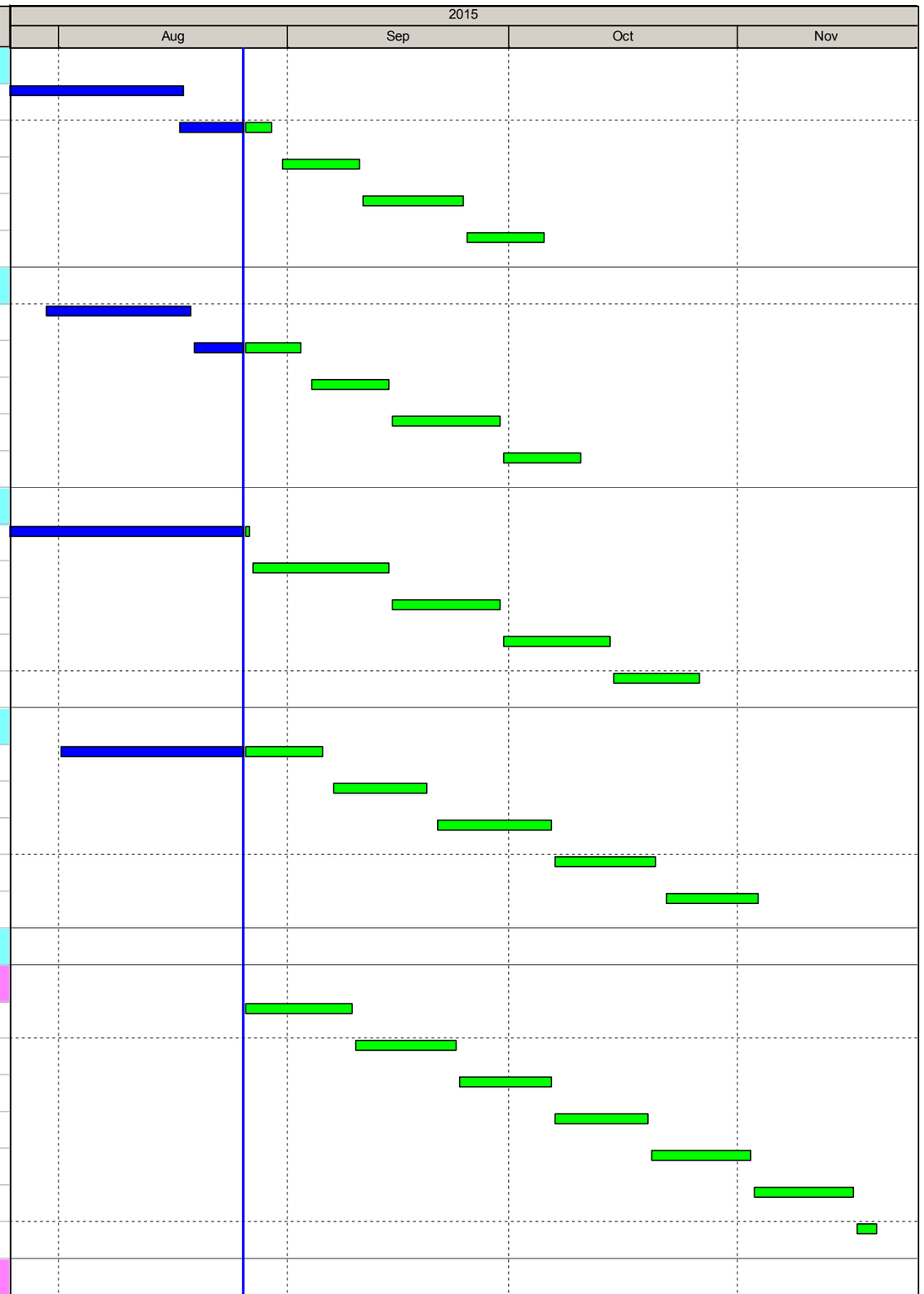
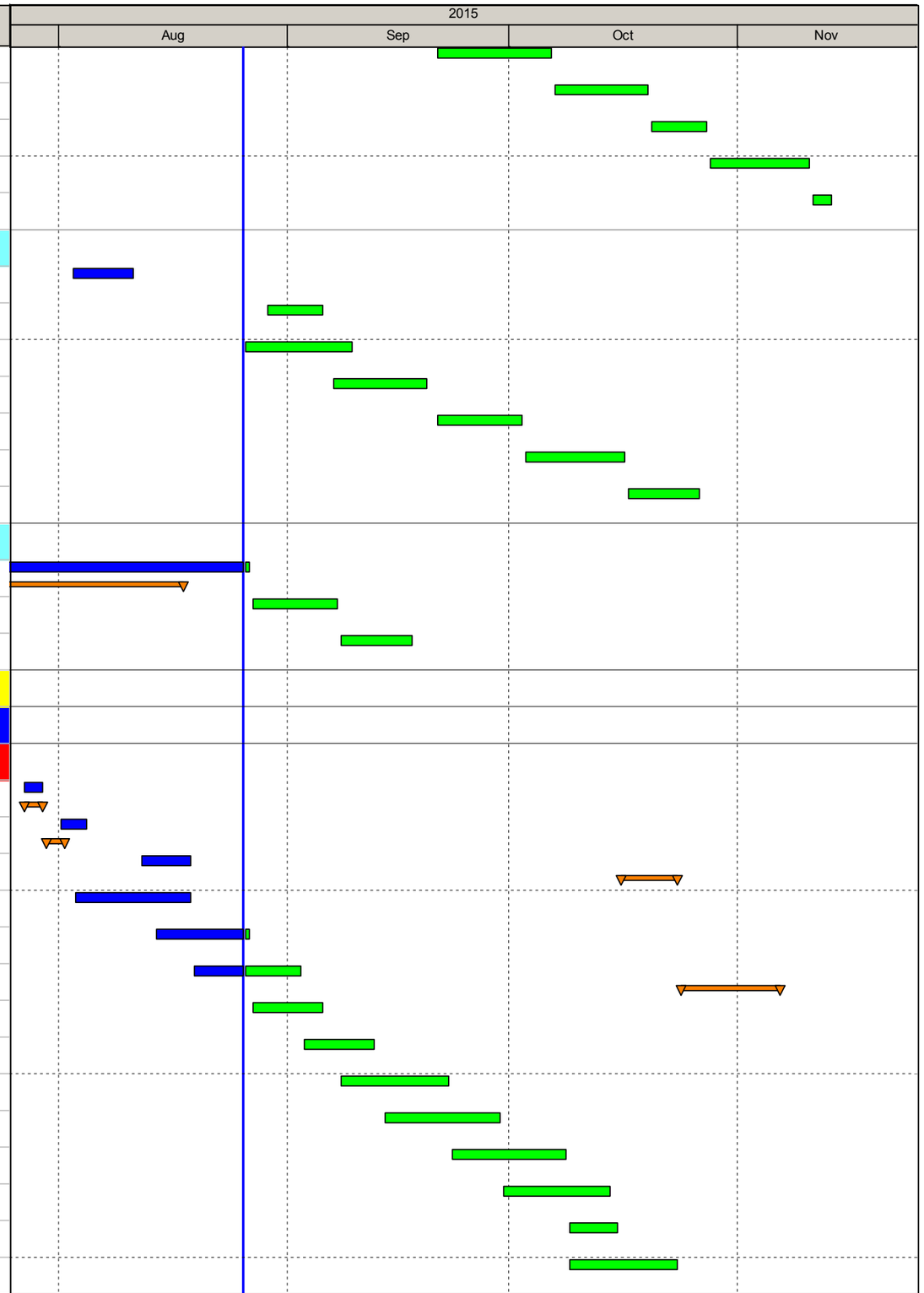
Activity ID	Activity Name	Physical % Complete	Start	Finish
Span 2				
01109.PDC19290-1A	Span 2 - Excavation to S2	100%	29-Jun-15 A	17-Aug-15 A
01109.PDC19290-2A	Span 2 - Install S2	78%	17-Aug-15 A	29-Aug-15
01109.PDC19290-3A	Span 2 - Excavation from S2 to C/S soffits	0%	31-Aug-15	10-Sep-15
01109.PDC19310-1A	Span 2 - Concourse Concrete Slab -1	0%	11-Sep-15	24-Sep-15
01109.PDC19310-2A	Span 2 - Concourse Concrete Slab -2	0%	25-Sep-15	05-Oct-15
Span 3				
01109.PDC19350-1A	Span 3 - Excavation to S2	100%	30-Jul-15 A	18-Aug-15 A
01109.PDC19350-2A	Span 3 - Install S2	61%	19-Aug-15 A	02-Sep-15
01109.PDC19350-3A	Span 3 - Excavation from S2 to C/S soffits	0%	04-Sep-15	14-Sep-15
01109.PDC19370-1A	Span 3 - Concourse Concrete Slab -1	0%	15-Sep-15	29-Sep-15
01109.PDC19370-2A	Span 3 - Concourse Concrete Slab -2	0%	30-Sep-15	10-Oct-15
Span 4				
01109.PDC19410-1A	Span 4 - Excavation to S2	95%	16-Jul-15 A	26-Aug-15
01109.PDC19410-2A	Span 4 - Install S2	0%	27-Aug-15	14-Sep-15
01109.PDC19410-3A	Span 4 - Excavation from S2 to C/S soffits	0%	15-Sep-15	29-Sep-15
01109.PDC19430-1A	Span 4 - Concourse Concrete Slab -1	0%	30-Sep-15	14-Oct-15
01109.PDC19430-2A	Span 4 - Concourse Concrete Slab -2	0%	15-Oct-15	26-Oct-15
Span 5				
01109.PDC19470-1A	Span 5 - Excavation to S2	86%	01-Aug-15 A	05-Sep-15
01109.PDC19470-2A	Span 5 - Install S2	0%	07-Sep-15	19-Sep-15
01109.PDC19470-3A	Span 5 - Excavation from S2 to C/S soffits	0%	21-Sep-15	06-Oct-15
01109.PDC19490-1A	Span 5 - Concourse Concrete Slab -1	0%	07-Oct-15	20-Oct-15
01109.PDC19490-2A	Span 5 - Concourse Concrete Slab -2	0%	22-Oct-15	03-Nov-15
Span 6				
Span 6A				
01109.PDC19530-1A	Span 6A - Excavation to S2-1	0%	26-Aug-15	09-Sep-15
01109.PDC19530-2A	Span 6A - Excavation to S2-2	0%	10-Sep-15	23-Sep-15
01109.PDC19530-3A	Span 6A - Excavation to S2-3	0%	24-Sep-15	06-Oct-15
01109.PDC19530-4A	Span 6A - Install S2	0%	07-Oct-15	19-Oct-15
01109.PDC19530-5A	Span 6A - Excavation from S2 to C/S soffits	0%	20-Oct-15	02-Nov-15
01109.PDC19550-1A	Span 6A - Concourse Concrete Slab -1	0%	03-Nov-15	16-Nov-15
01109.PDC19550-2A	Span 6A - Concourse Concrete Slab -2	0%	17-Nov-15	19-Nov-15
Span 6B				



Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDC19530-6A	Span 6B - Excavation to S2-1	0%	21-Sep-15	06-Oct-15
01109.PDC19530-7A	Span 6B - Install S2	0%	07-Oct-15	19-Oct-15
01109.PDC19530-8A	Span 6B - Excavation from S2 to C/S soffits	0%	20-Oct-15	27-Oct-15
01109.PDC19550-3A	Span 6B - Concourse Concrete Slab -1	0%	28-Oct-15	10-Nov-15
01109.PDC19550-4A	Span 6B - Concourse Concrete Slab -2	0%	11-Nov-15	13-Nov-15
Span 7				
01109.PDC19590-1A	Span 7 - Excavation to S2 (from opening 8)	100%	03-Aug-15 A	11-Aug-15 A
01109.PDC19590-5A	Span 7 - Excavation to S2 -3	0%	29-Aug-15	05-Sep-15
01109.PDC19590-2A	Span 7 - Excavation to S2 -2	0%	26-Aug-15	09-Sep-15
01109.PDC19590-3A	Span 7 - Install S2	0%	07-Sep-15	19-Sep-15
01109.PDC19590-4A	Span 7 - Excavation from S2 to C/S soffits	0%	21-Sep-15	02-Oct-15
01109.PDC19610-1A	Span 7 - Concourse Concrete Slab -1	0%	03-Oct-15	16-Oct-15
01109.PDC19610-2A	Span 7 - Concourse Concrete Slab -2	0%	17-Oct-15	26-Oct-15
Span 8				
01109.PDC19620A	Span 8 - Excavation in soil/Install struts & walers R/S to C/S soffits	97%	27-Jun-15 A	26-Aug-15
01109.PDC19640-1A	Span 8 - Concourse Concrete Slab -1	0%	27-Aug-15	07-Sep-15
01109.PDC19640-2A	Span 8 - Concourse Concrete Slab -2	0%	08-Sep-15	17-Sep-15
Entrance A & Vent Shaft A				
Vent Shaft A				
Foundation				
01109.PDC27330A	VSA Part B - Trial trench (P1 to P30)	100%	27-Jul-15 A	29-Jul-15 A
01109.PDC27331A	VSA Part A - Trial trench (P70 to P84)	100%	01-Aug-15 A	04-Aug-15 A
01109.PDC27327A	VSA Part C - Trial trench (P30 to P52)	100%	12-Aug-15 A	18-Aug-15 A
01109.PDC27332-1A	VSA Part B - Pipe Pile (P1 to P30) (2/30 nos)	100%	03-Aug-15 A	18-Aug-15 A
01109.PDC27340-1A	VSA Part A - Pipe Pile (P53 to P60) (4/8 nos)	75%	14-Aug-15 A	26-Aug-15
01109.PDC27337A	VSA Part C - Pipe Pile (P30 to P52) 6 nos	50%	19-Aug-15 A	02-Sep-15
01109.PDC27340-2A	VSA Part A - Pipe Pile (P53 to P60) (8/8 nos)	0%	27-Aug-15	05-Sep-15
01109.PDC27332-6A	VSA Part B - Pipe Pile (P1 to P30) (6/30 nos)	0%	03-Sep-15	12-Sep-15
01109.PDC27333-1A	VSA Part A - Pipe Pile (P70 to P84) (6/15 nos)	0%	08-Sep-15	22-Sep-15
01109.PDC27332-2A	VSA Part B - Pipe Pile (P1 to P30) (12/30 nos)	0%	14-Sep-15	29-Sep-15
01109.PDC27333-2A	VSA Part A - Pipe Pile (P70 to P84) (12/15 nos)	0%	23-Sep-15	08-Oct-15
01109.PDC27332-3A	VSA Part B - Pipe Pile (P1 to P30) (18/30 nos)	0%	30-Sep-15	14-Oct-15
01109.PDC27333-3A	VSA Part A - Pipe Pile (P70 to P84) (15/15 nos)	0%	09-Oct-15	15-Oct-15
01109.PDC27330-1A	Vent Shaft A - Curtain Grouting to outside of pipepiles (12/84 nos)	0%	09-Oct-15	23-Oct-15



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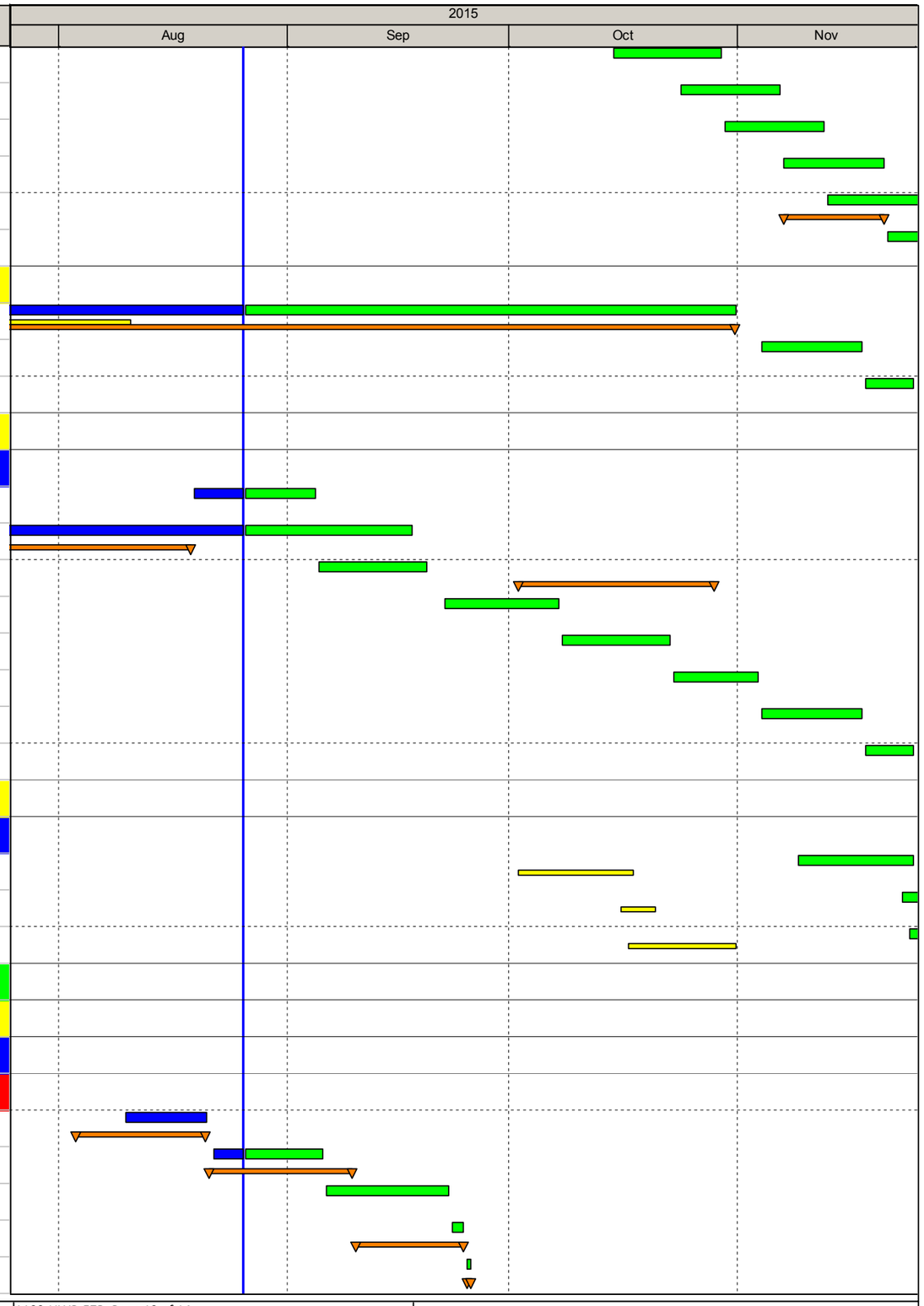
Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDC27332-4A	VSA Part B - Pipe Pile (P1 to P30) (24/30 nos)	0%	15-Oct-15	29-Oct-15
01109.PDC27330-2A	Vent Shaft A - Curtain Grouting to outside of pipepiles (24/84 nos)	0%	24-Oct-15	06-Nov-15
01109.PDC27332-5A	VSA Part B - Pipe Pile (P1 to P30) (30/30 nos)	0%	30-Oct-15	12-Nov-15
01109.PDC27330-3A	Vent Shaft A - Curtain Grouting to outside of pipepiles (36/84 nos)	0%	07-Nov-15	20-Nov-15
01109.PDC27338A	VSA Part C - Pipe Pile (P30 to P52) 6 nos	0%	13-Nov-15	26-Nov-15
01109.PDC27330-4A	Vent Shaft A - Curtain Grouting to outside of pipepiles (48/84 nos)	0%	21-Nov-15	04-Dec-15
Entrance B				
01109.PDC22710	Ent B - Installation sheetpile (including Pumping Test) - Part 1	79%	28-May-15 A	31-Oct-15
01109.PDC22720-1A	Ent B - Excavation (including struts and walers) -1	0%	04-Nov-15	17-Nov-15
01109.PDC22720-2A	Ent B - Excavation (including struts and walers) -2	0%	18-Nov-15	24-Nov-15
Entrance C				
Entrance C				
01109.PDC22790-6A	Ent C - Installation_sheetpile (part 1-2)	100%	19-Aug-15 A	04-Sep-15
01109.PDC22790-2A	Ent C - Watermain diversion works	45%	08-Jul-15 A	17-Sep-15
01109.PDC22790-4A	Ent C - Installation_sheetpile (part 1-3)	0%	05-Sep-15	19-Sep-15
01109.PDC22790-9A	Ent C - Installation_sheetpile (part 1-4)	0%	22-Sep-15	07-Oct-15
01109.PDC22790-7A	Ent C - Pump test (Installation of wells)	0%	08-Oct-15	22-Oct-15
01109.PDC22790-8A	Ent C - Pump test	0%	23-Oct-15	03-Nov-15
01109.PDC22800-1A	Ent C - Excavation (including struts and walers) -1	0%	04-Nov-15	17-Nov-15
01109.PDC22800-2A	Ent C - Excavation (including struts and walers) -2	0%	18-Nov-15	24-Nov-15
Entrance D & Vent Shaft				
Entrance D				
01109.PDC22870	Ent D - Excavation Concourse Topdown	0%	09-Nov-15	24-Nov-15
01109.PDC22880	Ent D - Lean Conc Concourse Topdown	0%	23-Nov-15	26-Nov-15
01109.PDC22890	Ent D - Slab Concrete Concourse Topdown	0%	24-Nov-15	07-Dec-15
CC-D - BORED TUNNELS FROM SUW STATION TO HOM STATION				
Specialised Construction Machinery Site Assembly and Related Establishment				
Specialised Construction Machinery Site Assembly and Related Establishment				
TBM Up track SUW to HOM - Assembly & Testing on site				
01109.PDD1120-04A	Lower and install entrance ring pieces (4 no.) - only	100%	10-Aug-15 A	21-Aug-15 A
01109.PDD1120-05A	TBM Welding Works	25%	22-Aug-15 A	05-Sep-15
01109.PDD1120-09A	Run slurry pipes to rear of TBM	0%	06-Sep-15	22-Sep-15
01109.PDD1120-06A	Connection and Commissioning (31 Aug to 23 Sep)	0%	23-Sep-15	24-Sep-15
01109.PDD1120-07A	Advance to Face and Ccommence excavation	0%	25-Sep-15	25-Sep-15



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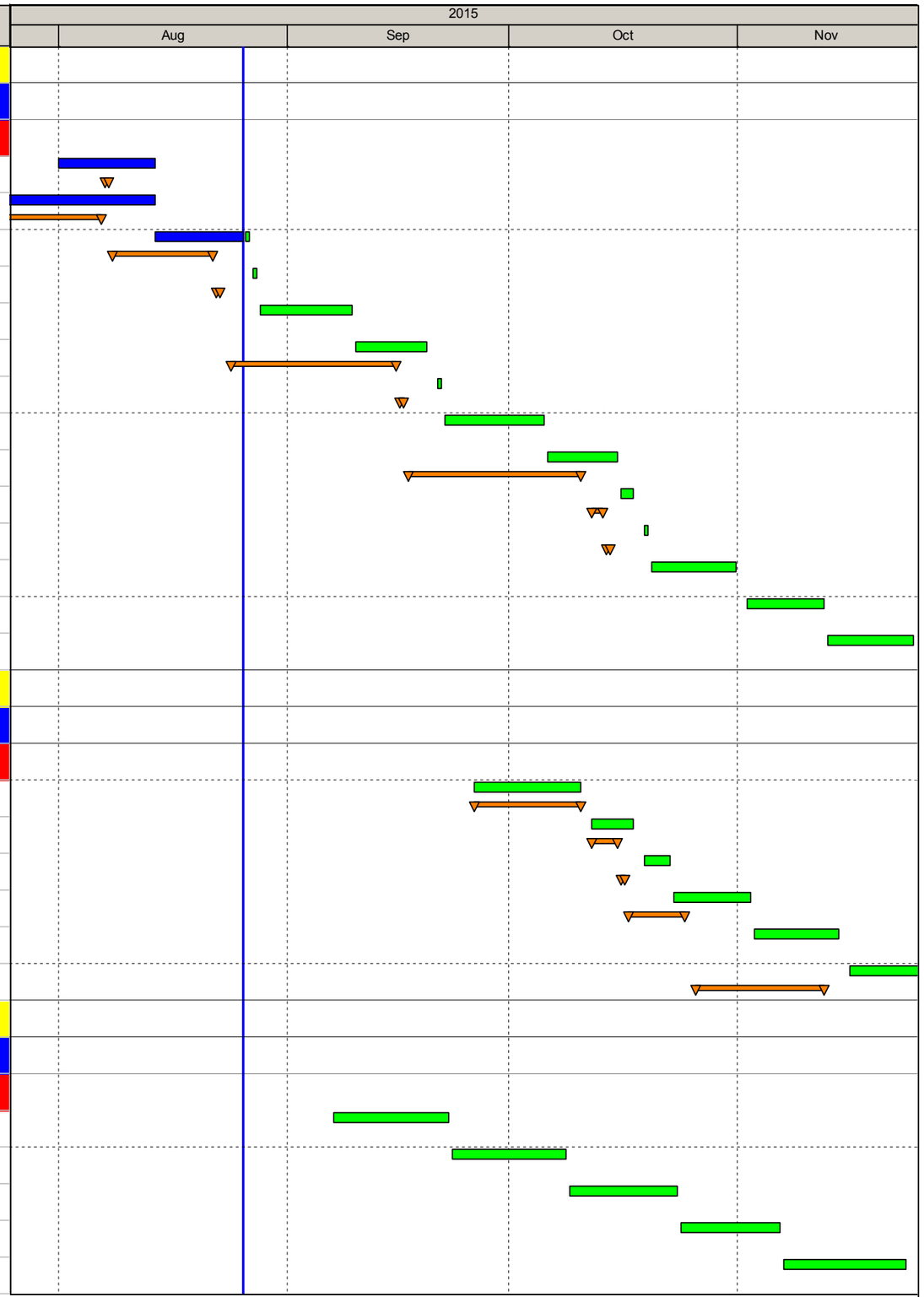
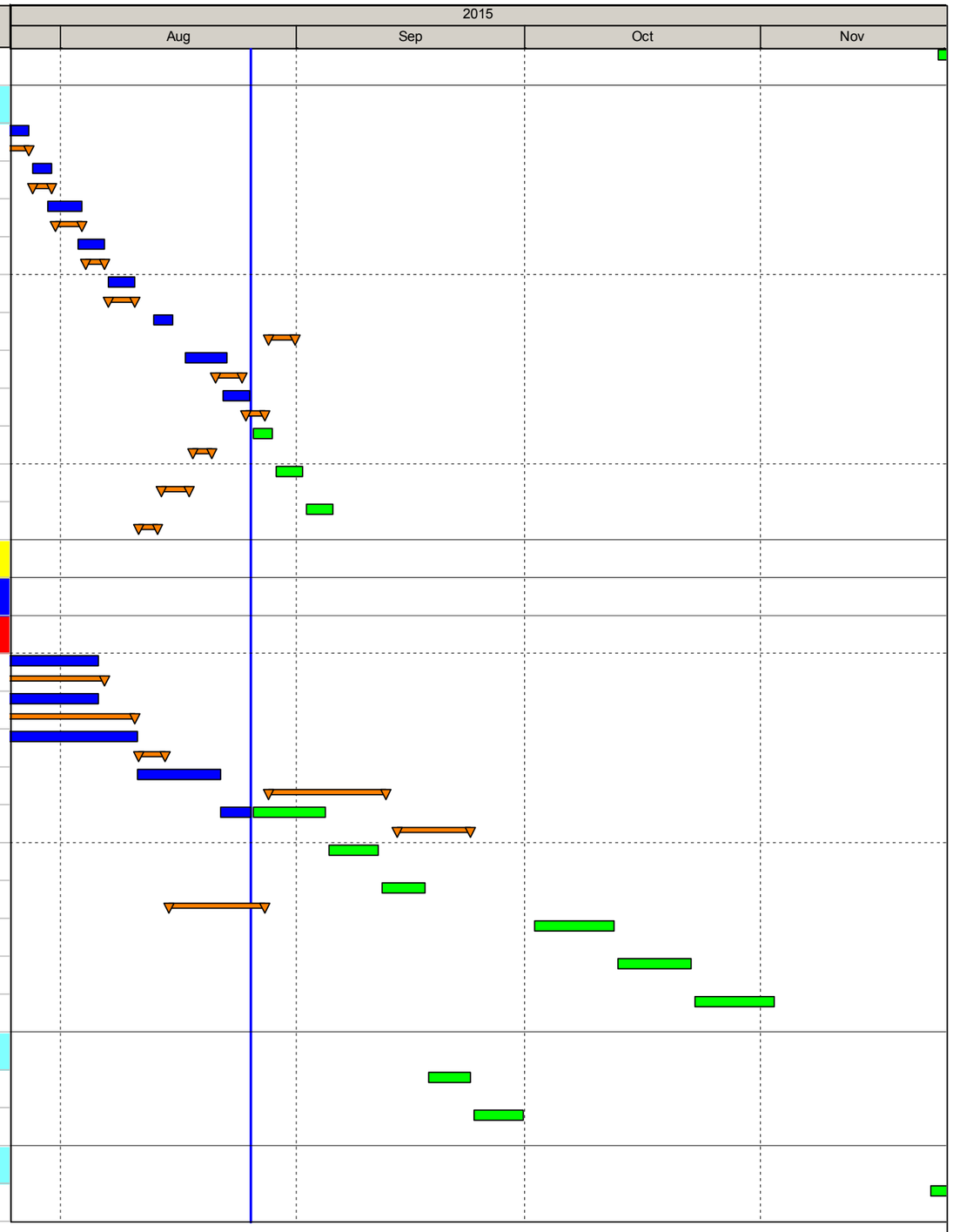
Bored Tunnel Down Track (D99+583 to D101+514)				
Tunnel from SUW to TKW (D99+583 to D100+432)				
TBM				
01109.PDD1190	Ch D100+040 - Cutter maintenance 1 (after Ring 294)	100%	01-Aug-15 A	14-Aug-15 A
01109.PDD1180	Ch D99+761 to 100+040 - Tunnel excavation & segmental lining 279m @ 6.4 m/shift	100%	29-Jun-15 A	14-Aug-15 A
01109.PDD1200	Ch D100+040 to +083 - Tunnel excavation & segmental lining (Mixed Ground) 43m @1.7 m/shift	95%	14-Aug-15 A	26-Aug-15
01109.PDD1210	Ch D100+083 - Cutter maintenance 2 (after Ring 321)	0%	27-Aug-15	27-Aug-15
01109.PDD1221A	Ch D100+083 to 100+224 - Tunnel excavation & segmental lining (Rock) 141m @3.3 m/shift, first 70m	0%	28-Aug-15	09-Sep-15
01109.PDD1220	Ch D100+083 to 100+224 - Tunnel excavation & segmental lining (Rock) 141m @3.3 m/shift, remaining	0%	10-Sep-15	19-Sep-15
01109.PDD1230	Ch D100+224 - Cutter maintenance 3 (after Ring 401)	0%	21-Sep-15	21-Sep-15
01109.PDD1241A	Ch D100+224 to 100+287 - Tunnel excavation & segmental lining (Mixed Ground) 63m @1.7 m/shift, first 32m	0%	22-Sep-15	05-Oct-15
01109.PDD1240	Ch D100+224 to 100+287 - Tunnel excavation & segmental lining (Mixed Ground) 63m @1.7 m/shift, remaining	0%	06-Oct-15	15-Oct-15
01109.PDD1250	Ch D100+287 to 100+300 - Tunnel excavation & segmental lining (Rock) 13m @6.4 m/shift	0%	16-Oct-15	17-Oct-15
01109.PDD1260	Ch D100+300 - Cutter maintenance 4 (after Ring 481)	0%	19-Oct-15	19-Oct-15
01109.PDD1271A	Ch D100+300 to 100+432 - Tunnel excavation & segmental lining (Mixed Ground) 132m @1.7 m/shift, first 40m	0%	20-Oct-15	31-Oct-15
01109.PDD1272A	Ch D100+300 to 100+432 - Tunnel excavation & segmental lining (Mixed Ground) 132m @1.7 m/shift, 2nd 40m	0%	02-Nov-15	12-Nov-15
01109.PDD1273A	Ch D100+300 to 100+432 - Tunnel excavation & segmental lining (Mixed Ground) 132m @1.7 m/shift, 3rd 40	0%	13-Nov-15	24-Nov-15
Bored Tunnel Up Track (U99+565 to U101+490)				
Tunnel from SUW to TKW (U99+565 to U100+421)				
TBM - Initial Drive Stage				
01109.PDD1120-08A	Initial Drive Stage 1 T4-T10	0%	26-Sep-15	10-Oct-15
01109.PDD1750-1A	Initial Drive Stage 2 R1-12	0%	12-Oct-15	17-Oct-15
01109.PDD1750-2A	Reset Slurry pipes	0%	19-Oct-15	22-Oct-15
01109.PDD1750-3A	Initial Drive Stage 3 R13-R60	0%	23-Oct-15	02-Nov-15
01109.PDD1750-5A	Platt Resetting, 1st half	0%	03-Nov-15	14-Nov-15
01109.PDD1750-4A	Platt Resetting, remaining	0%	16-Nov-15	26-Nov-15
Chatham Road North				
EEP (EI No.52)				
EI 52 - Preparation Works				
01109.PDDEI52004-1A	EI 52 - Grout Curtain to shaft (12/48 nos)	0%	07-Sep-15	22-Sep-15
01109.PDDEI52004-2A	EI 52 - Grout Curtain to shaft (24/48 nos)	0%	23-Sep-15	08-Oct-15
01109.PDDEI52004-3A	EI 52 - Grout Curtain to shaft (36/48 nos)	0%	09-Oct-15	23-Oct-15
01109.PDDEI52004-4A	EI 52 - Grout Curtain to shaft (48/48 nos)	0%	24-Oct-15	06-Nov-15
01109.PDDEI52044-1A	EI 52 -Mobilization and installation of wells (5 nos) and piezometer	0%	07-Nov-15	23-Nov-15



Activity ID	Activity Name	Physical % Complete	Start	Finish
01109.PDDEI52044-2A	EI 52 - Install wells (2 nos) and pumping test	0%	24-Nov-15	09-Dec-15
Pipe Pile (remaining - Rig No.1)				
01109.PDDEI52040A	EI 52 - Pipe Piling Works P44 (drilling)	100%	24-Jul-15 A	27-Jul-15 A
01109.PDDEI52340A	EI 52 - Pipe Piling Works P43 (drilling)	100%	28-Jul-15 A	30-Jul-15 A
01109.PDDEI52060A	EI 52 - Pipe Piling Works P42 (drilling)	100%	30-Jul-15 A	03-Aug-15 A
01109.PDDEI52071A	EI 52 - Pipe Piling Works P41 (drilling)	100%	03-Aug-15 A	06-Aug-15 A
01109.PDDEI52070A	EI 52 - Pipe Piling Works P40 (drilling)	100%	07-Aug-15 A	10-Aug-15 A
01109.PDDEI52170A	EI 52 - Pipe Piling Works P15 (drilling)	100%	13-Aug-15 A	15-Aug-15 A
01109.PDDEI52210A	EI 52 - Pipe Piling Works P17 (drilling)	100%	17-Aug-15 A	22-Aug-15 A
01109.PDDEI52190A	EI 52 - Pipe Piling Works P16 (drilling)	100%	22-Aug-15 A	25-Aug-15 A
01109.PDDEI52093A	EI 52 - Pipe Piling Works P37 (drilling)	0%	26-Aug-15	28-Aug-15
01109.PDDEI52080A	EI 52 - Pipe Piling Works P38 (drilling)	0%	29-Aug-15	01-Sep-15
01109.PDDEI52320A	EI 52 - Pipe Piling Works P39 (drilling)	0%	02-Sep-15	05-Sep-15
To Kwa Wan Ancillary Building				
Excavation and Foundation				
Stage 5				
01109.PDD4020	Canopy Tube Installation for Upper Adit 12 out of 22	100%	23-Jul-15 A	06-Aug-15 A
01109.PDD3192A	Excavate shaft rock to -12.8mPD	100%	17-Jul-15 A	06-Aug-15 A
01109.PDD3194A	Excavate shaft rock to -13.25mPD	100%	06-Jul-15 A	11-Aug-15 A
01109.PDD3200A	Excavate shaft rock to -14.5mPD	100%	11-Aug-15 A	22-Aug-15 A
01109.PDD3201A	Excavate shaft rock to -15.46mPD	20%	22-Aug-15 A	04-Sep-15
01109.PDD4350-1A	Canopy Tube Installation for Upper Adit remaining 13th to 18th	0%	05-Sep-15	11-Sep-15
01109.PDD4350	Canopy Tube Installation for Upper Adit remaining 19th to 22th	0%	12-Sep-15	17-Sep-15
01109.PDD3210-1A	Excavate shaft rock from -15.46 to -16.4mPD	0%	02-Oct-15	12-Oct-15
01109.PDD3210-2A	Excavate shaft rock from -1.4 to -17.4mPD	0%	13-Oct-15	22-Oct-15
01109.PDD3210-3A	Excavate shaft rock fromo -17.4 to -18.4mPD	0%	23-Oct-15	02-Nov-15
Excavate for (Initial Upper adit excavation)				
01109.PDD3290-2A	Upper adit excavation & initial ground support 0 to 2m	0%	18-Sep-15	23-Sep-15
01109.PDD3290-3A	Upper adit excavation & initial ground support 3 to 5m	0%	24-Sep-15	30-Sep-15
Excavate for (-15.46 to -26.91mPD)				
01109.PDD4351-2A	Excavate shaft rock from 18.4 to -19.4mPD - (EI 105 & 106)	0%	23-Nov-15	02-Dec-15



SAMSUNG-HSIN CHONG JOINT VENTURE

MTR Corporation Limited

Shatin to Central Link Contract 1109

THREE MONTH ROLLING PROGRAMME - Aug 15 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP.

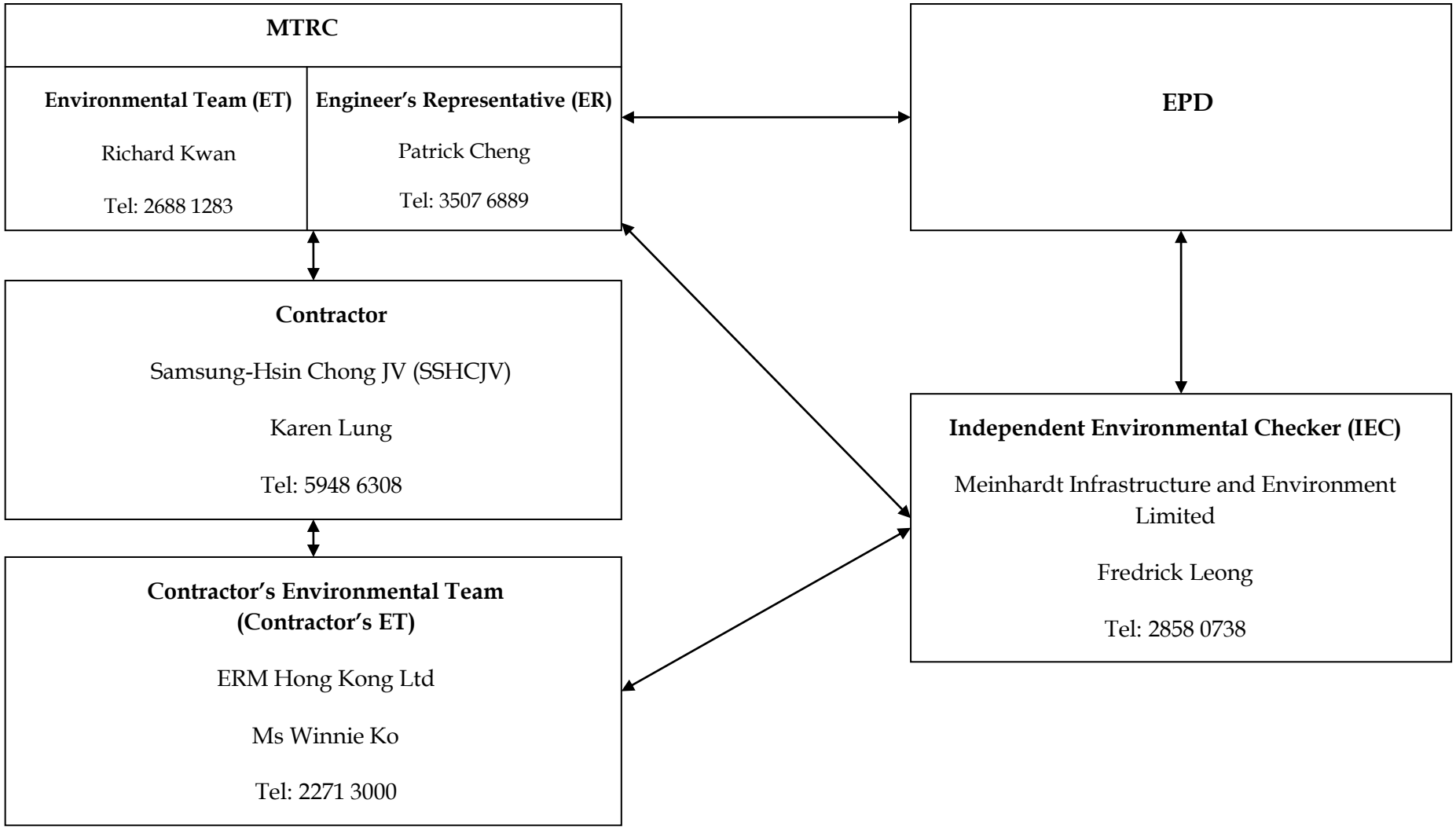
Printed:07-Sep-15

Actual Work
Remaining Work
Master Programme Rev.1
Last Month Update (July 2015)
Milestone
MP Rev.1 Milestone
July 2015 Milestone

Annex C

Project Organization Chart and Contact Detail

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



Annex D

Locations of Noise and Dust Monitoring Stations

NMS-CA-6

TKW

NMS-CA-7

NMS-CA-8

MTW

NMS-CA-9

NMS-CA-10

N

Meters

0 100 200

Key

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

Annex D1

Location of Regular Construction Noise Monitoring Stations

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

Environmental Resources Management

ERM

DMS-6

TKW

DMS-7

DMS-8

DMS-9

MTW

DMS-10

N

Meters

0 100 200

Key

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

Annex D2

Location of Dust Monitoring Stations

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

Environmental Resources Management

ERM

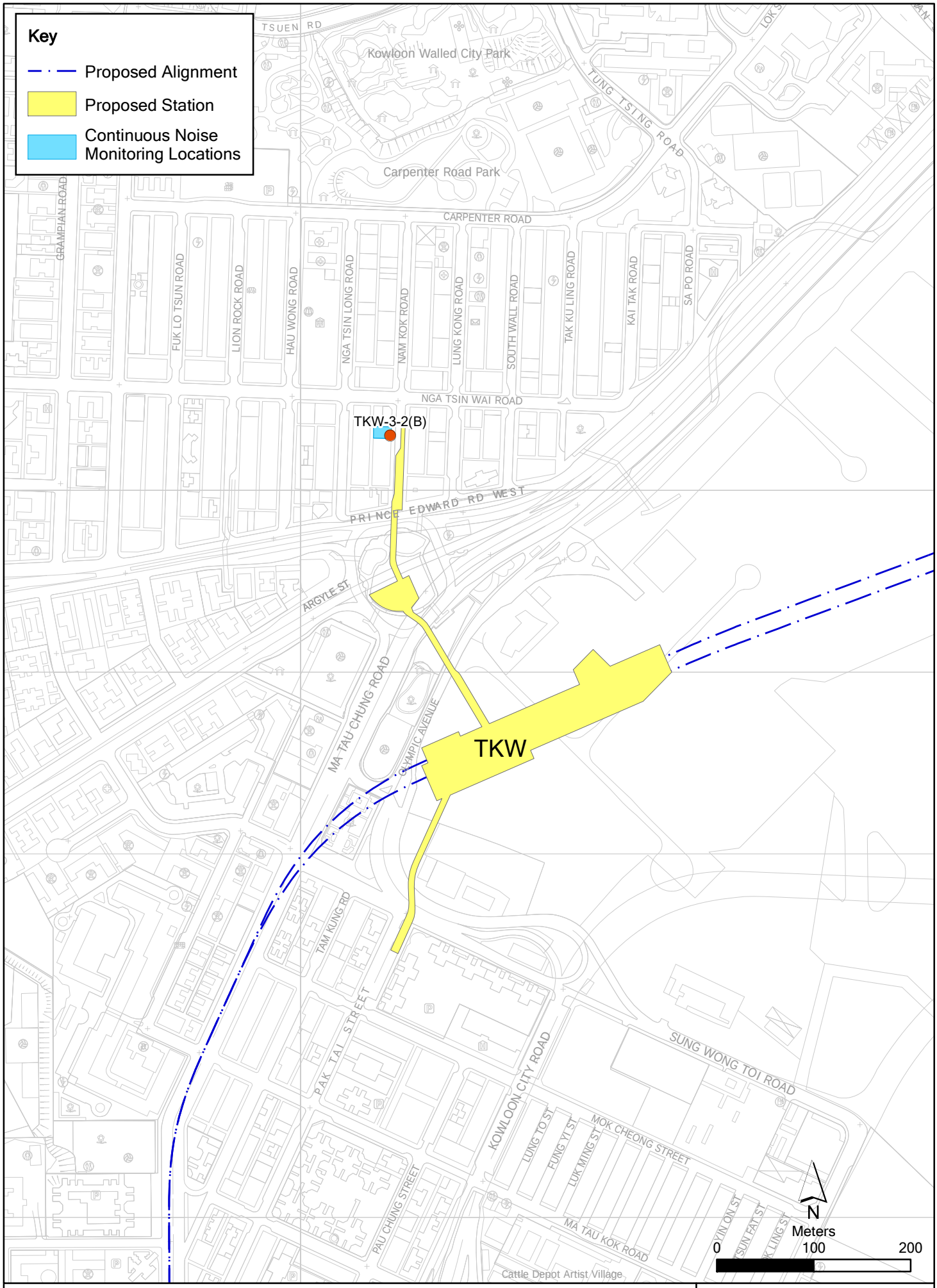


Figure 2.2a

Continuous Noise Monitoring Locations

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

Environmental Resources Management

ERM

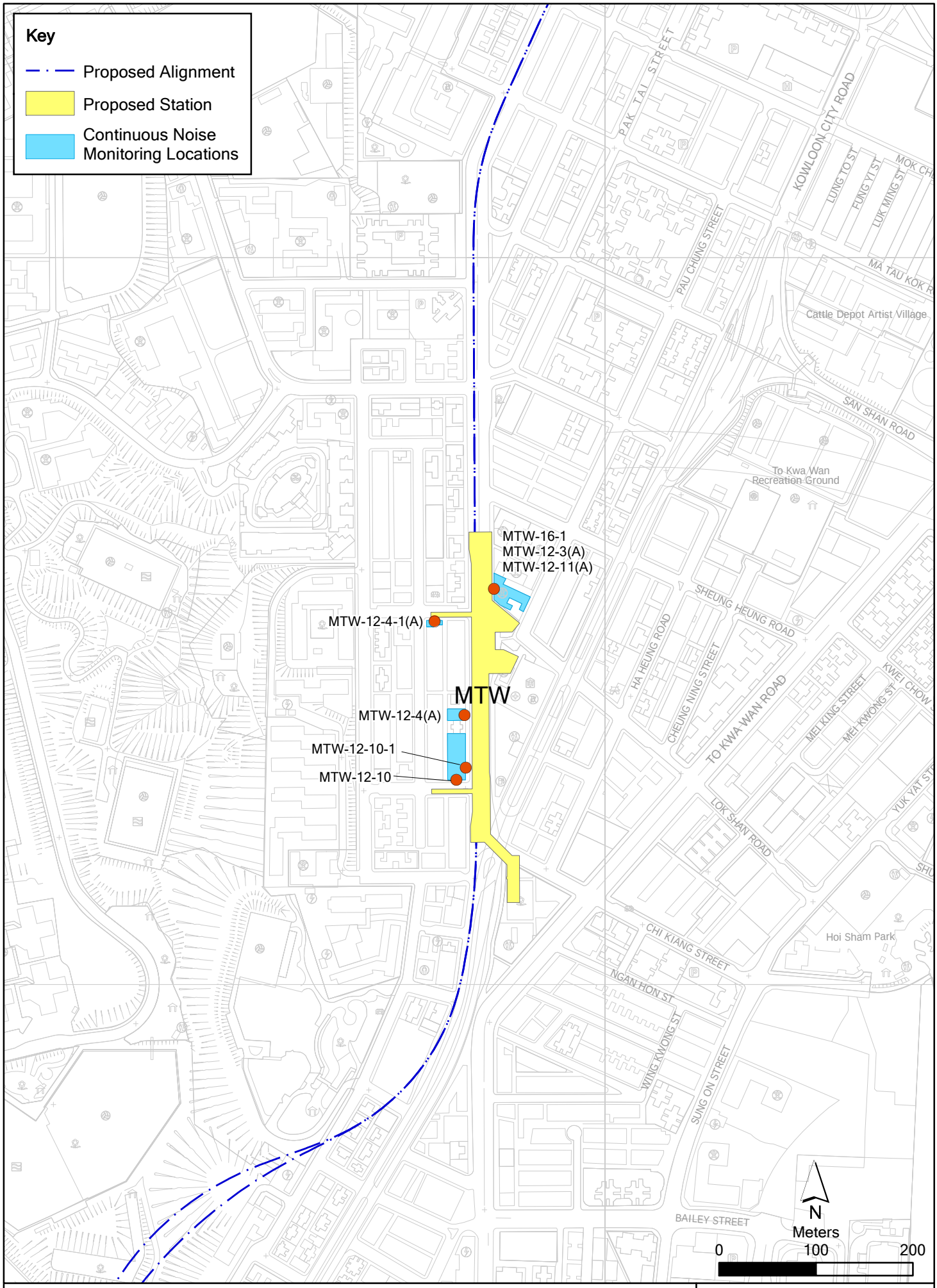


Figure 2.2b

Continuous Noise Monitoring Locations

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

Environmental Resources Management

ERM

Annex E

Monitoring Schedule of the Reporting Period and the Next Month

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

24-hr TSP Monitoring Stations:
DMS-6, DMS-7, DMS-8, DMS-9 and DMS-10
Monitoring Month: August 2015

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

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

24-hr TSP Monitoring Stations:
DMS-6, DMS-7, DMS-8, DMS-9 and DMS-10
Monitoring Month: September 2015

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

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

Noise Monitoring Stations:
NMS-CA-6, NMS-CA-7, NMS-CA-8, NMS-CA-9 and NMS-CA-10
Monitoring Month : August 2015

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

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

Noise Monitoring Stations:
NMS-CA-6, NMS-CA-7, NMS-CA-8, NMS-CA-9 and NMS-CA-10
Monitoring Month : September 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Sep	02-Sep	03-Sep	04-Sep	05-Sep
			Noise Monitoring			
06-Sep	07-Sep	08-Sep	09-Sep	10-Sep	11-Sep	12-Sep
		Noise Monitoring				
13-Sep	14-Sep	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep
	Noise Monitoring					
20-Sep	21-Sep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep
				Noise Monitoring		
27-Sep	28-Sep	29-Sep	30-Sep			
			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. 2454)	5 March 2015	5 September 2015
DMS-7	Parc 22	TE-5170 (S/N 3574)	CM-AIR-43 (Orifice I.D. 2454)	5 March 2015	5 September 2015
DMS-8	SHK Good Shepherd Primary School	TE-5170 (S/N 3572)	CM-AIR-43 (Orifice I.D. 2454)	5 March 2015	5 September 2015
DMS-9	No. 12 Pau Chung Street	TE-5170 (S/N 0814)	CM-AIR-43 (Orifice I.D. 2454)	5 March 2015	5 September 2015
DMS-10	Chat Ma Mansion	TE-5170 (S/N 3573)	CM-AIR-43 (Orifice I.D. 2454)	5 March 2015	5 September 2015

Noise Monitoring Equipment

Monitoring Station ID	Monitoring Equipment	Model & Serial No.	Last Calibration Date	Next Calibration Date
NMS-CA-7, NMS-CA-9 and NMS-CA-10	Calibrator	Rion NC-73 (S/N 10997142)	14 June 2015	14 June 2016
	Sound Level Meter	Rion NL-18 (S/N 00360030)	20 July 2015	20 July 2016
NMS-CA-6	Calibrator	Rion NC-73 (S/N 10997142)	14 June 2015	14 June 2016
	Sound Level Meter	Rion NL-31 (S/N 00320533)	14 June 2015	14 June 2016
NMS-CA-8, and MTW-16-1	Calibrator	Rion NC-73 (S/N 10997142)	14 June 2015	14 June 2016
	Sound Level Meter	Rion NL-31 (S/N 00320533)	14 June 2015	14 June 2016

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

Location : DMS-6(Katherine Building)
Calibrated by : K.T.Ho
Date : 05/03/2015

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

Calibration Orfice and Standard Calibration Relationship
Serial Number : 2454
Service Date : 24 Mar 2014
Slope (m) : 2.07593
Intercept (b) : -0.00102
Correlation Coefficient(r) : 0.99996

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

Calibration Condition
Pa (hpa) : 1014
Ta(K) : 293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.6	3.582	1.726	54	54.49
2	13 holes	9.6	3.126	1.506	46	46.41
3	10 holes	7.2	2.707	1.305	38	38.35
4	7 holes	4.4	2.116	1.020	28	28.25
5	5 holes	2.6	1.627	0.784	20	20.18

Sampler Calibration Relationship (Linear Regression)

Slope(m):36.578 Intercept(b): -8.855 Correlation Coefficient(r): 0.9996

Checked by: Magnum Fan Date: 08/03/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-7(Parc 22)
Calibrated by	:	K.T.Ho
Date	:	05/03/2015

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1014
Ta(K)	:	293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.6	3.582	1.726	66	66.59
2	13 holes	9.6	3.126	1.506	58	58.52
3	10 holes	7.4	2.745	1.323	52	52.47
4	7 holes	4.8	2.2116	1.065	43	43.39
5	5 holes	3.0	1.748	0.842	36	36.32

Sampler Calibration Relationship (Linear Regression)

Slope(m):34.270 Intercept(b):7.165 Correlation Coefficient(r): 0.9997

Checked by: Magnum Fan Date: 08/03/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-8(SHK Good Shepherd Primary School)
Calibrated by	:	K.T.Ho
Date	:	05/03/2015

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1014
Ta(K)	:	293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.6	3.582	1.726	62	62.56
2	13 holes	9.8	3.159	1.522	56	56.50
3	10 holes	7.8	2.818	1.358	50	50.45
4	7 holes	5.0	2.256	1.087	40	40.36
5	5 holes	2.8	1.688	0.814	30	30.27

Sampler Calibration Relationship (Linear Regression)

Slope(m):35.832 Intercept(b): 1.397 Correlation Coefficient(r): 0.9993

Checked by: Magnum Fan Date: 08/03/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-9(No. 12 Pau Chung Street)
Calibrated by	:	K.T.Ho
Date	:	05/03/2015

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1014
Ta(K)	:	293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.8	3.610	1.739	70	70.63
2	13 holes	10.0	3.191	1.537	60	60.54
3	10 holes	7.8	2.818	1.358	53	53.48
4	7 holes	5.0	2.256	1.087	42	42.38
5	5 holes	2.8	1.688	0.814	30	30.27

Sampler Calibration Relationship (Linear Regression)

Slope(m):42.925 Intercept(b): -4.652 Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan Date: 08/03/2015

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	DMS-10(Chat Ma Mansion)
Calibrated by	:	K.T.Ho
Date	:	05/03/2015

Sampler

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

Calibration Orfice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	24 Mar 2014
Slope (m)	:	2.07593
Intercept (b)	:	-0.00102
Correlation Coefficient(r)	:	0.99996

Standard Condition

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

Calibration Condition

Pa (hpa)	:	1014
Ta(K)	:	293

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.0	3.495	1.684	62	62.56
2	13 holes	9.8	3.159	1.522	57	57.51
3	10 holes	7.2	2.707	1.305	50	50.45
4	7 holes	4.6	2.164	1.043	43	43.39
5	5 holes	2.2	1.497	0.721	32	32.29

Sampler Calibration Relationship (Linear Regression)

Slope(m):31.092 Intercept(b): 10.217 Correlation Coefficient(r): 0.9993

Checked by: Magnum Fan Date: 08/03/2015

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 24, 2014 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 2454 Pa (mm) - 758.19

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	1.4740	3.2	2.00
2	NA	NA	1.00	1.0340	6.4	4.00
3	NA	NA	1.00	0.9240	7.9	5.00
4	NA	NA	1.00	0.8820	8.8	5.50
5	NA	NA	1.00	0.7270	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
1.0103	0.6854	1.4245
1.0061	0.9730	2.0146
1.0040	1.0866	2.2524
1.0028	1.1370	2.3623
0.9976	1.3722	2.8491

Qstd slope (m) = 2.07593
intercept (b) = -0.00102
coefficient (r) = 0.99996

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

Va	(x axis) Qa	(y axis)
0.9958	0.6755	0.8791
0.9916	0.9590	1.2433
0.9895	1.0709	1.3900
0.9884	1.1206	1.4579
0.9832	1.3524	1.7583

Qa slope (m) = 1.29991
intercept (b) = -0.00063
coefficient (r) = 0.99996

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. : C153241
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-1330) Date of Receipt / 收件日期 : 10 June 2015

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 : 14 June 2015

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

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : H C Chan, Engineer

Date of Issue 簽發日期 : 16 June 2015

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. : C153241
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	C143868
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

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	0.986	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. : C153930
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-1508) Date of Receipt / 收件日期 : 6 July 2015

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 check

DATE OF TEST / 測試日期 : 20 July 2015

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

Tested By 測試 : H T Wong
Assistant Technical Officer

Certified By 核證 : K C Lee
Project Engineer

Date of Issue 簽發日期 : 22 July 2015

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. : C153930
證書編號

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

2. Self-calibration was performed before the test.

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

4. Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C150014
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	A	Fast	94.00	1	93.6	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
60 - 120	LA	A	Fast	94.00	1	93.6 (Ref.)
				104.00		103.6
				114.00		113.6

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

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 110	LA	A	Fast	94.00	1	93.6	Ref.
			Slow			93.6	± 0.1

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6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
50 -110	LA	A	Fast	106.00	Continuous	106.0	Ref.
	LAmx				200 ms	105.0	-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	53.9	-39.4 ± 1.5
					63 Hz	67.2	-26.2 ± 1.5
					125 Hz	77.2	-16.1 ± 1.0
					250 Hz	84.8	-8.6 ± 1.0
					500 Hz	90.3	-3.2 ± 1.0
					1 kHz	93.6	Ref.
					2 kHz	94.9	+1.2 ± 1.0
					4 kHz	94.7	+1.0 ± 1.0
					8 kHz	92.5	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.3	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 110	LC	C	Fast	94.00	31.5 Hz	90.5	-3.0 ± 1.5
					63 Hz	92.8	-0.8 ± 1.5
					125 Hz	93.5	-0.2 ± 1.0
					250 Hz	93.6	0.0 ± 1.0
					500 Hz	93.6	0.0 ± 1.0
					1 kHz	93.6	Ref.
					2 kHz	93.5	-0.2 ± 1.0
					4 kHz	92.8	-0.8 ± 1.0
					8 kHz	90.6	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.3	-6.2 (+3.0 ; -6.0)

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6.4 Time Averaging

UUT Setting				Applied Value					UUT	IEC 60804
Range (dB)	Mode	Frequency Weighting	Integrating Time	Freq. (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)	Reading (dB)	Type 1 Spec. (dB)
50 - 110	LAeq	A	10 sec.	4	1	1/10	110	100	100.1	± 0.5
						$1/10^2$		90	90.1	± 0.5
			60 sec.			$1/10^3$		80	79.6	± 1.0
			5 min.			$1/10^4$		70	69.8	± 1.0

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

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

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

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

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

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Sun Creation Engineering Limited
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ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-1330) Date of Receipt / 收件日期 : 10 June 2015

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-31
Serial No. / 編號	:	00320533
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 : 14 June 2015

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

Tested By 測試 : K C Lee, Project Engineer

Certified By 核證 : H C Chan, Engineer

Date of Issue 簽發日期 : 16 June 2015

Sun Creation Engineering Limited – Calibration & Testing Laboratory
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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 form 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	C150014
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)		
30 - 120	L_A	A	Fast	94.00	1	93.4	± 0.7

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)		
30 - 120	L_A	A	Fast	94.00	1	94.0	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 120	L_A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

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)		
30 - 120	L_A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 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		
20 -110	L_A	A	Fast	106.00	Continuous	106.0	Ref.
	$L_A$max				200 ms	105.0	-1.0 ± 1.0
	L_A		Slow		Continuous	106.0	Ref.
	$L_A$max				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)	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 120	L_A	A	Fast	94.00	31.5 Hz	54.3	-39.4 ± 1.5
					63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.0	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	90.1	-4.3 (+3.0; -6.0)

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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.		
30 - 120	L_C	C	Fast	94.00	31.5 Hz	90.6	-3.0 ± 1.5
					63 Hz	93.0	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.9	-0.2 ± 1.0
					4 kHz	93.4	-0.8 ± 1.0
					8 kHz	91.1	-3.0 (+1.5; -3.0)
					12.5 kHz	88.2	-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)		
20 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
						$1/10^2$		90	90.0	± 0.5
			60 sec.			$1/10^3$		80	80.0	± 1.0
			5 min.			$1/10^4$		70	70.0	± 1.0

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 320128

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

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

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

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

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Annex G

Summary of Event/ Action Plans

Annex G1 Event and Action Plan for Regular Construction Noise Monitoring

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

Annex G2 Event and Action Plan for Continuous Noise Monitoring

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

Annex G3 Event and Action Plan for Construction Dust Monitoring

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

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

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

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

Annex H

Summary of Implementation Status of Environmental Mitigation

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

Note:

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

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

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

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		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;				

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		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					

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		coarse stone ballast. An additional advantage from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows. • 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					

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		ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. • 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					

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		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.					

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

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		All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains. • 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	√

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		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	√

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		• 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
06-Aug-15	10:40	11:10	Sunny	63.6	76.1	-(b)	-	Traffic noise	30	0.5	NL-18 00360030	NC-73 10997142
12-Aug-15	11:05	11:35	Fine	63.1	76.1	-(b)	-	Traffic noise	28	0.5	NL-18 00360030	NC-73 10786708
18-Aug-15	10:55	11:25	Sunny	63.4	76.1	-(b)	-	Traffic noise	29	0.5	NL-18 00360030	NC-73 10786708
24-Aug-15	10:47	11:17	Fine	63.3	76.1	-(b)	-	Traffic noise	30	0.5	NL-18 00360030	NC-73 10786708

Station NMS-CA-7 Skytower Tower 2

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L_{Aeq}(30 min)	Baseline (dB(A)), L_{Aeq}(30 min)	Corrected LAeq(dBA) [(a)]	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
06-Aug-15	9:40	10:10	Sunny	64.5	70.0	-(b)	-	Traffic noise	30	0.5	NL-18 00360030	NC-73 10997142
12-Aug-15	9:53	10:23	Fine	65.6	70.0	-(b)	-	Traffic noise	28	0.5	NL-18 00360030	NC-73 10997142
18-Aug-15	9:55	10:25	Sunny	65.9	70.0	-(b)	-	Traffic noise	29	0.5	NL-18 00360030	NC-73 10997142
24-Aug-15	9:52	10:22	Fine	63.6	70.0	-(b)	-	Traffic noise	30	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
06-Aug-15	15:04	15:34	Sunny	76.2	75.4	68.5	-	Traffic noise	30	0.5	NL-31 00320533	NC-73 10997142
12-Aug-15	15:12	15:42	Fine	75.1	75.4	-(b)	-	Traffic noise	28	0.5	NL-31 00320533	NC-73 10997142
18-Aug-15	14:48	15:18	Sunny	79.3	75.4	77.0	-	Traffic noise	29	0.5	NL-31 00320533	NC-73 10997142
24-Aug-15	14:38	15:08	Fine	75.6	75.4	62.6	-	Traffic noise	30	0.5	NL-31 00320533	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
06-Aug-15	8:00	8:30	Sunny	74.4	69.2	72.8	Backhoe	Traffic noise	30	0.5	NL-18 00360030	NC-73 10997142
12-Aug-15	8:00	8:30	Fine	74.7	69.2	73.3	Backhoe	Traffic noise	28	0.5	NL-18 00360030	NC-73 10997142
18-Aug-15	8:00	8:30	Sunny	75.7	69.2	74.6	Backhoe	Traffic noise	29	0.5	NL-18 00360030	NC-73 10997142
24-Aug-15	8:00	8:30	Fine	75.2	69.2	73.9	Backhoe	Traffic noise	30	0.5	NL-18 00360030	NC-73 10997142

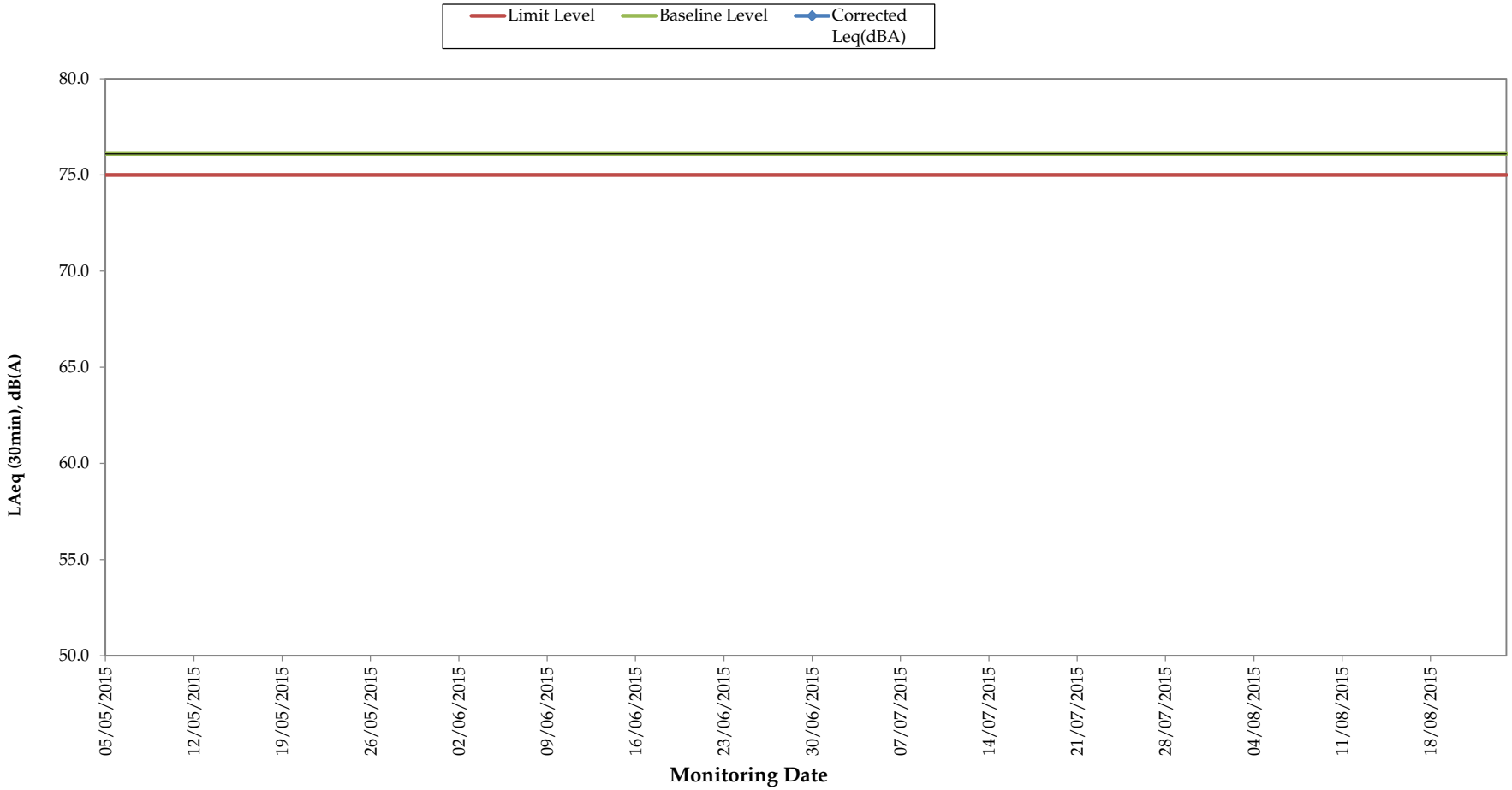
Station NMS-CA-10 Chat Ma Mansion

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
06-Aug-15	8:40	9:10	Sunny	76.1	76.6	-(b)	Backhoe	Traffic noise	30	0.5	NL-18 00360030	NC-73 10997142
12-Aug-15	8:40	9:10	Fine	76.0	76.6	-(b)	Backhoe	Traffic noise	28	0.5	NL-18 00360030	NC-73 10997142
18-Aug-15	8:40	9:10	Sunny	76.2	76.6	-(b)	Backhoe	Traffic noise	29	0.5	NL-18 00360030	NC-73 10997142
24-Aug-15	8:40	9:10	Fine	76.4	76.6	-(b)	Backhoe	Traffic noise	30	0.5	NL-18 00360030	NC-73 10997142

Remarks:

(a) The Measured LAeq is corrected against the corresponding Baseline Level.
(b) No correction was made as the measured noise levels were equal to or below the baseline noise levels.
(c) The noise monitoring results carried out at NMS-CA-9 on 18 August 2015 and at NMS-CA-10 on 6, 12, 18 and 24 August 2015 are higher than the daytime construction noise criterion. However, those results are not considered as exceedances as they are below the limit level after deducting the baseline noise level.

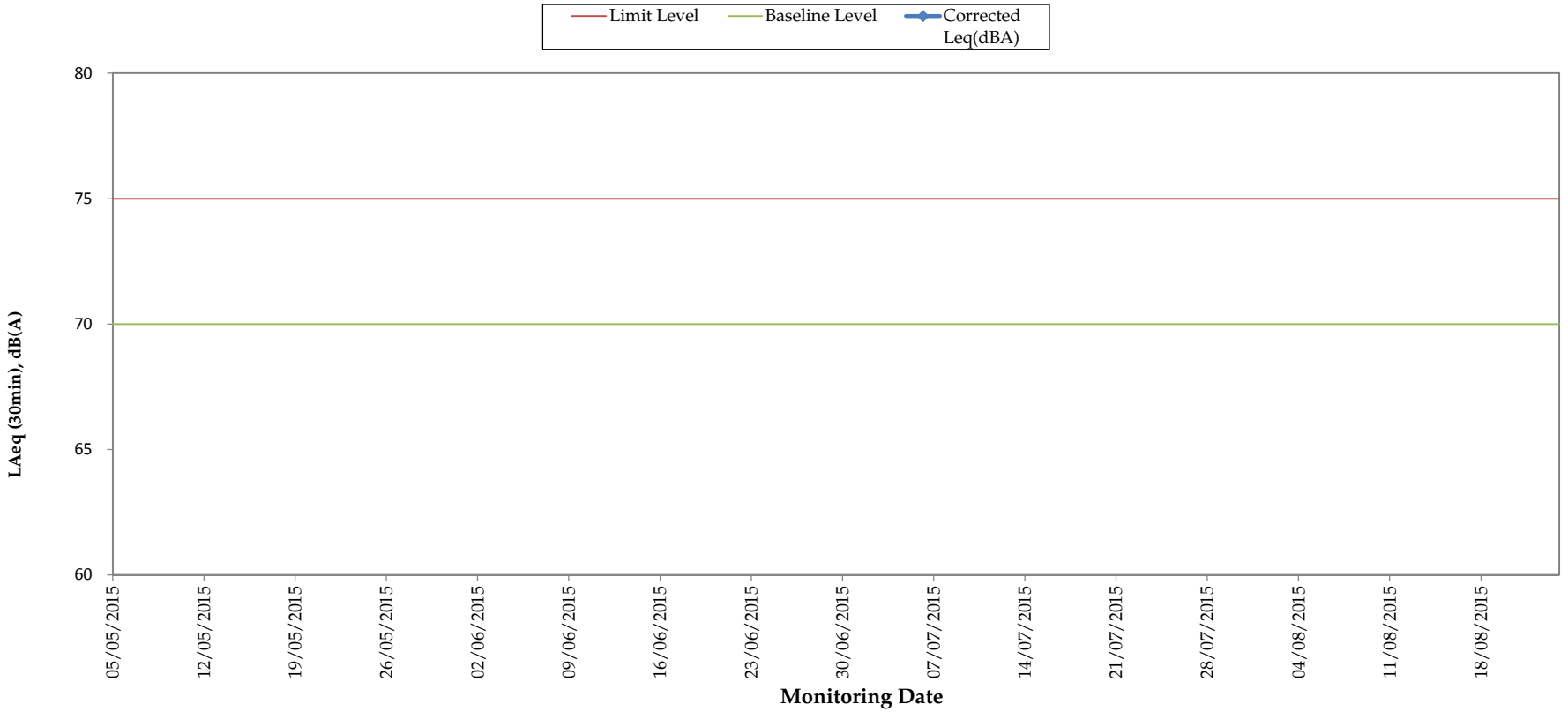
Regular Noise Monitoring Results at NMS-CA-6 (No. 16-23 Nam Kok Road) (LAeq, 30min) for the Past 4 Months



Remarks:

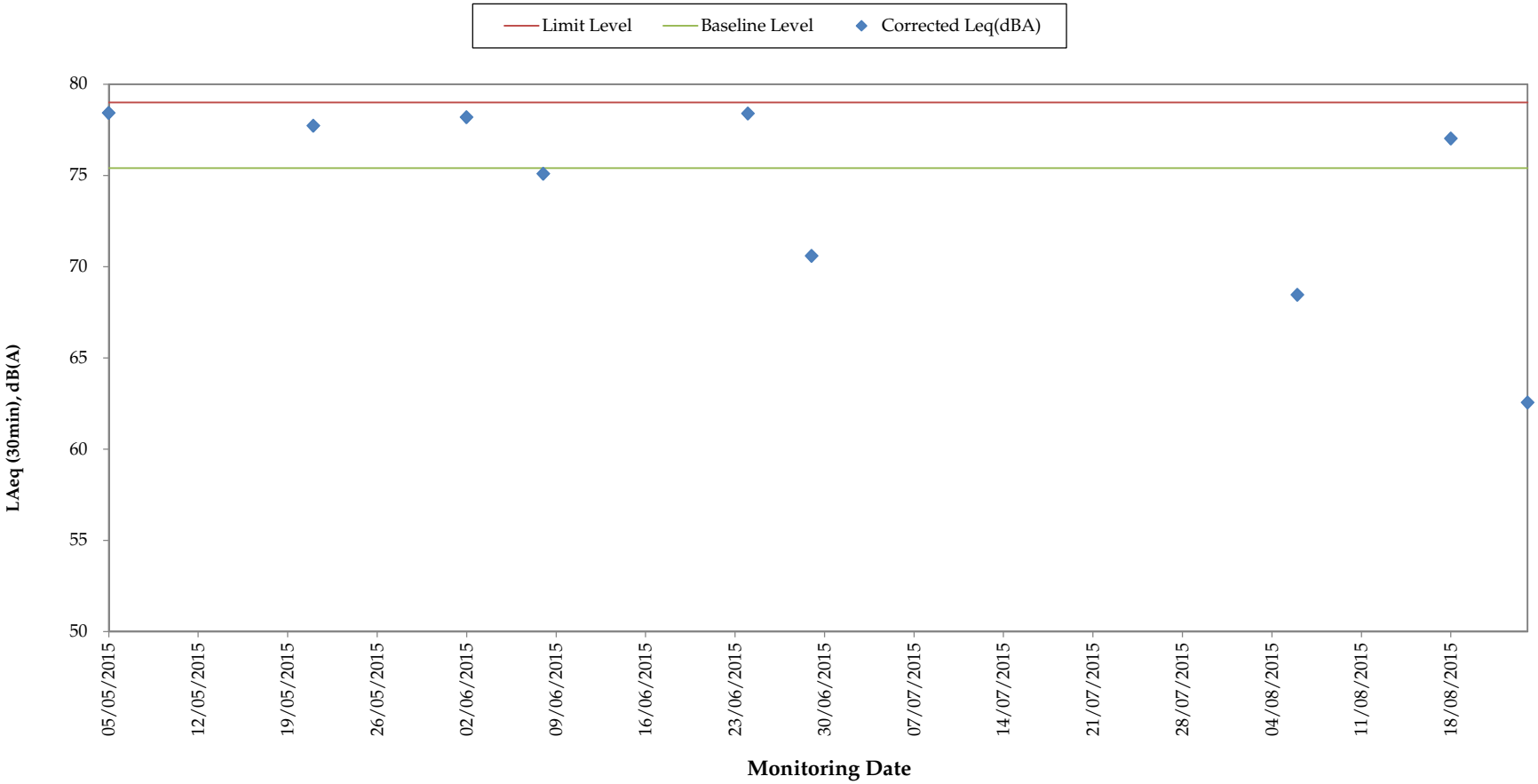
- For those corrected noise levels that are not shown in this graph, the measured noise level s are below baseline level.

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.

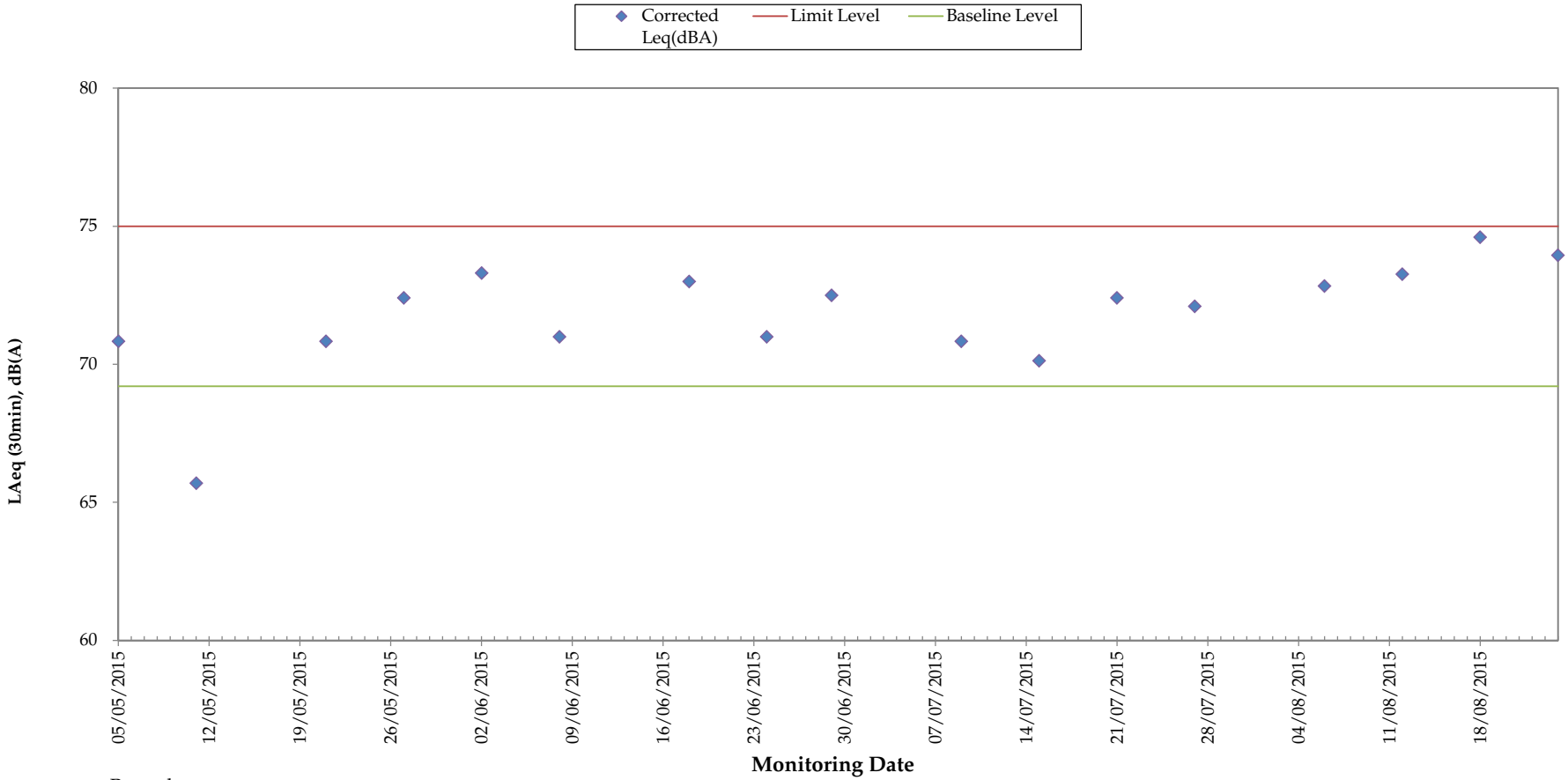
Regular Noise Monitoring Results at NMS-CA- 8 (SKH Good Shepherd Primary School) (LAeq, 30min) for the Past 4 Months



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.

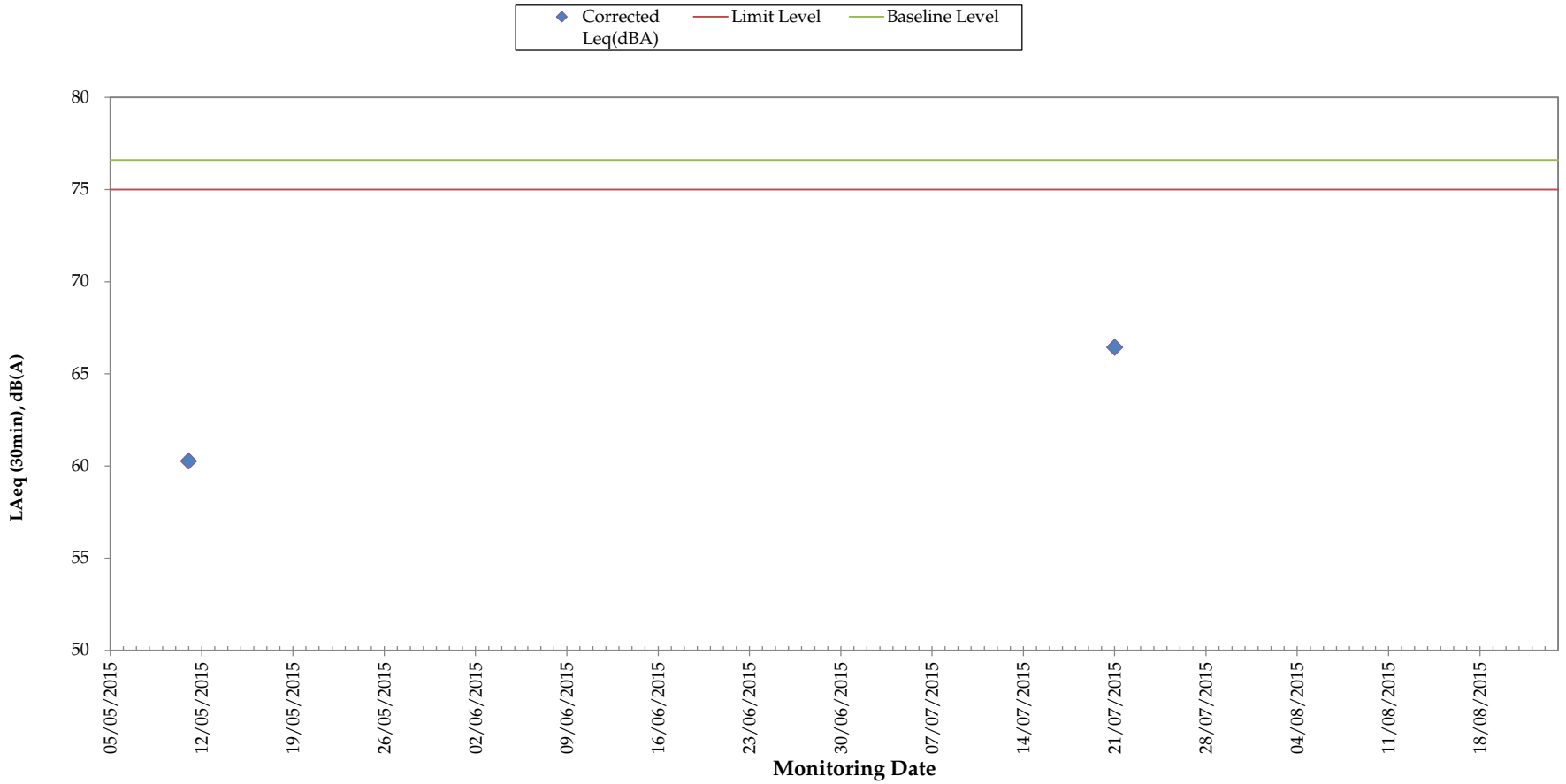
Regular Noise Monitoring Results at NMS-CA-9 (Kong Yiu Mansion) (LAeq, 30min)) for the Past 4 Months



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 I - 2

Continuous Noise Monitoring Results

Location ID	Name	Date			Hour (HH)	Minutes(MM)	Measured LAeq,30mins	Baseline Level (LAeq, 30mins)	Corrected Results (dB(A)) (LAeq, 30mins)	Action/Limit Level (as in CNMP)	Exceedance
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	6	34	70.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	7	4	72.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	7	34	73.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	8	4	75.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	8	34	77.7	75.4	73.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	9	4	76.6	75.4	70.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	9	34	75.8	75.4	65.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	10	4	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	10	34	76.4	75.4	69.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	11	4	76.4	75.4	69.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	11	34	75.6	75.4	62.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	12	4	73.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	12	34	74.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	13	4	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	13	34	74.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	14	4	74.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	14	34	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	15	4	73.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	15	34	73.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	16	4	73.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	16	34	74.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	17	4	73.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	17	34	72.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	18	4	71.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	1	18	34	70.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	6	34	69.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	7	4	71.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	7	34	73.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	8	4	76.2	75.4	68.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	8	34	76.6	75.4	70.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	9	4	76.5	75.4	70.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	9	34	77.2	75.4	72.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	10	4	75.8	75.4	64.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	10	34	75.5	75.4	60	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	11	4	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	11	34	73.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	12	4	73.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	12	34	74.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	13	4	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	13	43	76.4	75.4	69.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	14	13	75.8	75.4	65.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	14	43	75.5	75.4	59.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	15	13	76.2	75.4	68.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	15	43	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	16	13	73.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	16	43	73.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	17	13	71.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	17	43	71.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	18	13	70.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	3	18	43	70.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	6	43	70.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	7	13	71.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	7	43	74.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	8	13	74.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	8	43	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	9	13	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	9	43	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	10	13	78.2	75.4	75	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	10	43	77.6	75.4	73.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	11	13	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	11	43	72.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	12	13	72.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	12	43	73.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	13	13	75.9	75.4	66.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	13	43	74.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	14	13	74.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	14	43	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	15	13	74.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	15	43	74.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	16	13	74.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	16	43	73.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	17	13	72.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	17	43	71.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	18	13	71.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	4	18	43	70.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	6	43	70.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	7	13	71.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	7	43	74.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	8	13	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	8	43	74.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	9	13	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	9	43	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	10	13	74.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	10	43	76.1	75.4	67.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	11	13	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	11	43	74.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	12	13	73.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	12	43	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	13	13	76.0	75.4	67.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	13	43	76.0	75.4	66.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	14	13	76.0	75.4	67.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	14	43	77.2	75.4	72.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	15	13	75.8	75.4	65.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	15	43	76.1	75.4	67.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	16	13	76.6	75.4	70.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	16	43	75.6	75.4	63.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	17	13	75.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	17	43	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	18	13	72.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	5	18	43	70.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	6	43	70.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	7	13	73.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	7	43	75.7	75.4	64.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	8	13	76.6	75.4	70.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	8	43	76.9	75.4	71.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	9	13	76.5	75.4	70.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	9	43	76.8	75.4	71.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	10	34	76.9	75.4	71.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	11	4	76.5	75.4	70.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	11	34	75.7	75.4	64.1	79	N

Location ID	Name	Date			Hour (HH)	Minutes(MM)	Measured LAeq,30mins	Baseline Level (LAeq, 30mins)	Corrected Results (dB(A)) (LAeq, 30mins)	Action/Limit Level (as in CNMP)	Exceedance
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	12	4	75.6	75.4	62.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	12	34	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	13	4	76.2	75.4	68.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	13	34	76.0	75.4	66.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	14	4	75.7	75.4	63.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	14	34	75.6	75.4	62.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	15	4	76.2	75.4	68.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	15	34	76.3	75.4	69.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	16	4	75.8	75.4	65.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	16	34	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	17	4	74.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	17	34	73.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	18	4	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	6	18	34	76.8	75.4	71	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	6	34	70.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	7	4	72.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	7	34	73.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	8	4	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	8	34	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	9	4	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	9	34	75.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	10	4	75.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	10	34	76.0	75.4	66.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	11	4	76.5	75.4	69.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	11	34	74.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	12	4	73.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	12	34	74.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	13	4	75.5	75.4	57.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	13	34	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	14	4	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	14	34	75.6	75.4	62.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	15	4	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	15	34	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	16	4	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	16	34	76.2	75.4	68.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	17	4	75.8	75.4	65.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	17	34	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	18	4	71.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	7	18	34	70.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	6	34	69.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	7	4	71.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	7	34	72.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	8	4	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	8	34	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	9	4	75.7	75.4	64.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	9	34	77.9	75.4	74.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	10	4	77.6	75.4	73.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	10	34	79.0	75.4	76.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	11	4	76.2	75.4	68.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	11	34	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	12	4	73.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	12	34	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	13	4	78.8	75.4	76.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	13	34	77.6	75.4	73.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	14	4	77.3	75.4	72.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	14	34	78.7	75.4	75.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	15	4	75.9	75.4	66.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	15	34	77.3	75.4	72.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	16	4	76.6	75.4	70.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	16	34	75.5	75.4	57.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	17	4	75.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	17	34	73.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	18	4	71.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	8	18	34	70.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	6	34	70.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	7	4	71.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	7	34	72.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	8	4	80.1	75.4	78.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	8	34	79.5	75.4	77.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	9	4	77.1	75.4	72.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	9	34	90.9	75.4	90.8	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	10	4	91.0	75.4	90.9	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	10	34	89.9	75.4	89.8	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	11	4	85.4	75.4	84.9	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	11	34	73.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	12	4	72.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	13	12	89.0	75.4	88.8	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	13	42	81.3	75.4	80	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	14	12	75.9	75.4	66.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	14	42	83.1	75.4	82.3	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	15	12	79.8	75.4	77.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	15	42	76.4	75.4	69.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	16	12	79.0	75.4	76.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	16	42	82.5	75.4	81.5	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	17	12	77.1	75.4	72.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	17	42	73.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	18	12	72.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	10	18	42	70.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	6	42	70.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	7	12	72.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	7	42	73.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	8	12	79.2	75.4	76.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	8	42	80.5	75.4	78.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	9	12	84.1	75.4	83.5	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	9	42	82.6	75.4	81.7	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	10	12	81.6	75.4	80.5	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	10	42	81.7	75.4	80.5	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	11	12	84.1	75.4	83.5	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	11	42	73.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	12	12	73.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	12	42	79.0	75.4	76.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	13	12	84.0	75.4	83.4	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	13	42	84.7	75.4	84.1	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	14	12	81.6	75.4	80.4	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	14	42	78.4	75.4	75.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	15	12	83.4	75.4	82.7	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	15	42	80.1	75.4	78.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	16	12	77.2	75.4	72.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	16	42	78.7	75.4	76	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	17	12	74.2	75.4	<Baseline Level	79	N

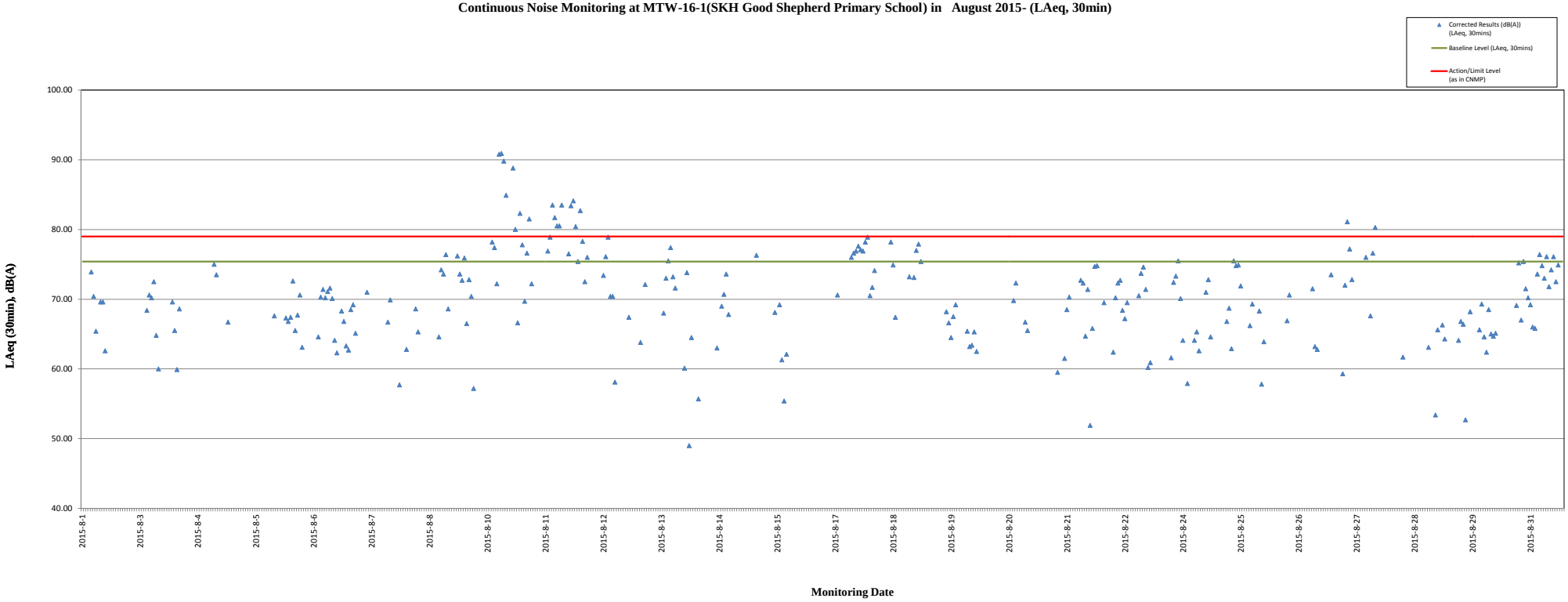
Location ID	Name	Date			Hour (HH)	Minutes(MM)	Measured LAeq,30mins	Baseline Level (LAeq, 30mins)	Corrected Results (dB(A)) (LAeq, 30mins)	Action/Limit Level (as in CNMP)	Exceedance
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	17	42	72.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	18	12	70.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	11	18	42	70.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	6	42	70.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	7	12	72.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	7	42	77.5	75.4	73.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	8	12	78.8	75.4	76.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	8	42	80.5	75.4	78.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	9	12	76.6	75.4	70.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	9	42	76.6	75.4	70.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	10	12	75.5	75.4	58.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	10	42	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	11	12	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	11	42	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	12	12	73.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	12	42	75.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	13	12	76.0	75.4	67.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	13	42	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	14	12	74.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	14	42	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	15	12	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	15	42	75.7	75.4	63.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	16	12	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	16	42	77.1	75.4	72.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	17	12	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	17	42	73.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	18	12	71.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	12	18	42	71.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	6	42	70.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	7	12	72.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	7	42	75.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	8	12	76.1	75.4	68	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	8	42	77.4	75.4	73	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	9	12	78.4	75.4	75.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	9	42	79.5	75.4	77.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	10	12	77.4	75.4	73.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	10	42	76.9	75.4	71.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	11	12	75.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	11	42	73.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	12	12	73.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	13	0	75.5	75.4	60.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	13	30	77.7	75.4	73.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	14	0	75.4	75.4	49	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	14	30	75.7	75.4	64.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	15	0	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	15	30	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	16	0	75.4	75.4	55.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	16	30	74.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	17	0	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	17	30	72.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	18	0	71.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	13	18	30	71.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	7	0	72.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	7	30	73.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	8	0	75.6	75.4	63	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	8	30	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	9	0	76.3	75.4	69	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	9	30	76.7	75.4	70.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	10	0	77.6	75.4	73.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	10	30	76.1	75.4	67.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	11	0	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	11	30	73.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	12	0	72.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	12	30	73.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	13	0	74.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	13	30	74.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	14	0	75.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	14	30	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	15	0	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	15	30	75.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	16	0	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	16	30	78.9	75.4	76.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	17	0	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	17	30	73.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	18	0	71.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	14	18	30	71.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	7	0	73.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	7	30	73.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	8	0	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	8	30	76.1	75.4	68.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	9	0	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	9	30	76.3	75.4	69.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	10	0	75.6	75.4	61.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	10	30	75.4	75.4	55.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	11	0	75.6	75.4	62.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	11	30	75.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	12	0	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	12	30	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	13	0	74.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	13	30	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	14	0	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	14	30	74.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	15	0	74.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	15	30	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	16	0	73.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	16	30	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	17	0	73.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	17	30	73.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	18	0	73.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	15	18	30	72.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	7	0	71.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	7	30	72.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	8	0	74.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	8	30	73.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	9	0	73.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	9	30	74.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	10	0	76.6	75.4	70.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	10	30	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	11	0	74.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	11	30	72.8	75.4	<Baseline Level	79	N

Location ID	Name	Date			Hour (HH)	Minutes(MM)	Measured LAeq,30mins	Baseline Level (LAeq, 30mins)	Corrected Results (dB(A)) (LAeq, 30mins)	Action/Limit Level (as in CNMP)	Exceedance
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	12	0	72.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	12	30	72.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	13	0	78.7	75.4	76	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	13	30	79.0	75.4	76.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	14	0	79.2	75.4	76.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	14	30	79.7	75.4	77.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	15	0	79.4	75.4	77.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	15	30	79.2	75.4	76.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	16	18	80.0	75.4	78.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	16	48	80.5	75.4	78.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	17	18	76.6	75.4	70.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	17	48	76.9	75.4	71.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	18	18	77.8	75.4	74.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	17	18	48	71.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	6	48	71.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	7	18	72.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	7	48	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	8	18	74.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	8	48	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	9	18	80.0	75.4	78.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	9	48	78.2	75.4	74.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	10	18	76.0	75.4	67.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	10	48	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	11	18	73.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	11	48	72.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	12	18	72.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	12	48	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	13	18	77.4	75.4	73.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	13	48	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	14	18	77.4	75.4	73.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	14	48	79.3	75.4	77	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	15	18	79.8	75.4	77.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	15	48	78.4	75.4	75.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	16	18	74.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	16	48	74.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	17	18	73.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	17	48	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	18	18	73.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	18	18	48	71.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	6	48	71.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	7	18	73.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	7	48	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	8	18	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	8	48	76.2	75.4	68.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	9	18	75.9	75.4	66.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	9	48	75.7	75.4	64.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	10	18	76.1	75.4	67.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	10	48	76.3	75.4	69.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	11	18	75.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	11	48	72.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	12	18	73.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	12	48	75.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	13	18	75.8	75.4	65.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	13	48	75.7	75.4	63.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	14	18	75.7	75.4	63.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	14	48	75.8	75.4	65.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	15	18	75.6	75.4	62.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	15	48	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	16	18	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	16	48	75.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	17	18	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	17	48	74.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	18	18	72.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	19	18	48	71.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	6	48	71.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	7	18	73.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	7	48	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	8	18	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	8	48	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	9	18	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	9	48	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	10	18	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	10	48	76.5	75.4	69.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	11	18	77.1	75.4	72.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	11	48	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	12	18	73.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	12	48	74.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	13	18	76.0	75.4	66.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	13	48	75.8	75.4	65.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	14	18	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	14	48	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	15	18	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	15	48	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	16	44	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	17	14	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	17	44	75.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	18	14	73.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	20	18	44	71.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	6	44	71.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	7	14	73.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	7	44	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	8	14	75.5	75.4	59.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	8	44	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	9	14	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	9	44	75.6	75.4	61.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	10	14	76.2	75.4	68.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	10	44	76.6	75.4	70.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	11	14	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	11	44	73.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	12	14	73.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	12	44	74.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	13	14	77.3	75.4	72.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	13	44	77.1	75.4	72.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	14	14	75.8	75.4	64.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	14	44	76.9	75.4	71.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	15	14	75.4	75.4	51.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	15	44	75.8	75.4	65.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	16	14	78.1	75.4	74.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	16	44	78.1	75.4	74.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	17	14	75.0	75.4	<Baseline Level	79	N

Location ID	Name	Date			Hour (HH)	Minutes(MM)	Measured LAeq,30mins	Baseline Level (LAeq, 30mins)	Corrected Results (dB(A)) (LAeq, 30mins)	Action/Limit Level (as in CNMP)	Exceedance
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	17	44	75.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	18	14	76.4	75.4	69.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	21	18	44	71.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	6	44	70.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	7	14	73.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	7	44	75.6	75.4	62.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	8	14	76.5	75.4	70.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	8	44	77.1	75.4	72.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	9	14	77.3	75.4	72.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	9	44	76.2	75.4	68.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	10	14	76.0	75.4	67.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	10	44	76.4	75.4	69.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	11	14	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	11	44	73.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	12	14	72.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	12	44	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	13	14	76.6	75.4	70.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	13	44	77.6	75.4	73.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	14	14	78.0	75.4	74.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	14	44	76.9	75.4	71.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	15	14	75.5	75.4	60.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	15	44	75.6	75.4	60.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	16	14	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	16	44	74.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	17	14	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	17	44	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	18	14	72.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	22	18	44	71.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	6	44	72.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	7	14	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	7	44	75.6	75.4	61.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	8	14	77.2	75.4	72.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	8	44	77.5	75.4	73.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	9	14	78.5	75.4	75.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	9	44	76.5	75.4	70.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	10	14	75.7	75.4	64.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	10	44	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	11	14	75.5	75.4	57.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	11	44	72.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	12	14	72.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	13	38	75.7	75.4	64.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	14	8	75.8	75.4	65.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	14	38	75.6	75.4	62.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	15	8	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	15	38	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	16	8	76.7	75.4	71	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	16	38	77.3	75.4	72.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	17	8	75.7	75.4	64.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	17	38	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	18	8	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	24	18	38	72.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	6	38	71.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	7	8	72.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	7	38	73.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	8	8	76.0	75.4	66.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	8	38	76.2	75.4	68.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	9	8	75.6	75.4	62.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	9	38	78.5	75.4	75.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	10	8	78.1	75.4	74.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	10	38	78.2	75.4	74.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	11	8	77.0	75.4	71.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	11	38	73.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	12	8	72.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	12	38	73.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	13	8	75.9	75.4	66.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	13	38	76.4	75.4	69.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	14	8	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	14	38	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	15	8	76.2	75.4	68.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	15	38	75.5	75.4	57.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	16	8	75.7	75.4	63.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	16	38	74.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	17	8	73.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	17	38	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	18	8	73.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	25	18	38	71.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	6	38	73.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	7	8	73.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	7	38	73.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	8	8	74.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	8	38	76.0	75.4	66.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	9	8	76.7	75.4	70.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	9	38	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	10	8	75.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	10	38	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	11	8	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	11	38	73.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	12	8	73.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	12	38	73.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	13	8	73.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	13	38	73.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	14	8	76.9	75.4	71.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	14	38	75.7	75.4	63.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	15	8	75.6	75.4	62.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	15	38	75.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	16	8	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	16	38	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	17	8	74.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	17	38	75.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	18	8	77.6	75.4	73.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	26	18	38	72.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	6	38	71.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	7	8	74.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	7	38	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	8	8	75.5	75.4	59.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	8	38	77.0	75.4	72	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	9	8	82.2	75.4	81.1	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	9	38	79.4	75.4	77.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	10	8	77.3	75.4	72.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	10	38	74.5	75.4	<Baseline Level	79	N

Location ID	Name	Date			Hour (HH)	Minutes(MM)	Measured LAeq,30mins	Baseline Level (LAeq, 30mins)	Corrected Results (dB(A)) (LAeq, 30mins)	Action/Limit Level (as in CNMP)	Exceedance
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	11	8	74.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	11	38	73.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	12	8	72.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	12	38	73.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	13	8	78.7	75.4	76	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	13	38	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	14	22	76.1	75.4	67.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	14	52	79.0	75.4	76.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	15	22	81.5	75.4	80.3	79	Y
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	15	52	73.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	16	22	74.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	16	52	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	17	22	74.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	17	52	73.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	18	22	72.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	27	18	52	71.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	6	52	71.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	7	22	74.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	7	52	75.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	8	22	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	8	52	75.6	75.4	61.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	9	22	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	9	52	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	10	22	74.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	10	52	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	11	22	73.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	11	52	73.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	12	22	73.2	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	12	52	73.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	13	22	74.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	13	52	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	14	22	75.6	75.4	63.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	14	52	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	15	22	75.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	15	52	75.4	75.4	53.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	16	22	75.8	75.4	65.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	16	52	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	17	22	75.9	75.4	66.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	17	52	75.7	75.4	64.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	18	22	71.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	28	18	52	71.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	6	52	71.7	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	7	22	74.8	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	7	52	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	8	22	75.7	75.4	64.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	8	52	76.0	75.4	66.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	9	22	75.9	75.4	66.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	9	52	75.4	75.4	52.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	10	22	74.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	10	52	76.2	75.4	68.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	11	22	73.6	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	11	52	72.9	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	12	22	75.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	12	52	75.8	75.4	65.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	13	22	76.3	75.4	69.3	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	13	52	75.7	75.4	64.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	14	22	75.6	75.4	62.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	14	52	76.2	75.4	68.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	15	22	75.8	75.4	65	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	15	52	75.8	75.4	64.7	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	16	22	75.8	75.4	65.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	16	52	74.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	17	22	73.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	17	52	73.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	18	22	72.5	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	29	18	52	70.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	6	52	72.1	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	7	22	74.0	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	7	52	74.4	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	8	22	76.3	75.4	69.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	8	52	78.3	75.4	75.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	9	22	76.0	75.4	67	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	9	52	78.4	75.4	75.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	10	22	76.9	75.4	71.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	10	52	76.5	75.4	70.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	11	22	76.3	75.4	69.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	11	52	75.9	75.4	66	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	12	22	75.9	75.4	65.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	12	52	77.6	75.4	73.6	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	13	22	79.0	75.4	76.4	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	13	52	78.1	75.4	74.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	14	22	77.4	75.4	73	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	15	14	78.8	75.4	76.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	15	44	77.0	75.4	71.8	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	16	14	77.8	75.4	74.2	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	16	44	78.8	75.4	76.1	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	17	14	77.2	75.4	72.5	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	17	44	78.2	75.4	74.9	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	18	14	73.3	75.4	<Baseline Level	79	N
MTW-16-1	SKH Good Shepherd Primary School	2015	8	31	18	44	71.3	75.4	<Baseline Level	79	N

Continuous Noise Monitoring at MTW-16-1(SKH Good Shepherd Primary School) in August 2015- (LAeq, 30min)



Remarks:
- For those corrected noise levels that are not shown the in this graph, the measured noise levels 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	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
06-Aug-15	10:25	07-Aug-15	10:25	Sunny	2.8727	2.9909	14600.30	14624.30	24.00	1.26	1.26	1.26	65	156.8	260	-	0107	6760
12-Aug-15	10:38	13-Aug-15	10:38	Fine	2.8977	3.0022	14624.30	14648.30	24.00	1.26	1.26	1.26	58	156.8	260	-	0107	6766
18-Aug-15	10:38	19-Aug-15	10:38	Sunny	2.8806	3.0059	14648.30	14672.30	24.00	1.26	1.26	1.26	69	156.8	260	-	0107	6772
24-Aug-15	10:32	25-Aug-15	10:32	Fine	2.8629	2.9979	14672.30	14696.30	24.00	1.26	1.26	1.26	74	156.8	260	-	0107	6740
28-Aug-15	8:40	29-Aug-15	8:40	Cloudy	2.9009	3.0217	14696.30	14720.30	24.00	1.26	1.26	1.26	67	156.8	260	-	0107	6748
												Minimum	58					
												Average	67					
												Maximum	74					

Station DMS-7 Parc 22

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
06-Aug-15	-	07-Aug-15	-	-	-	-	-	-	-	-	-	-	-	166.7	260	-	3574	-
12-Aug-15	9:43	13-Aug-15	9:43	Fine	2.8912	3.0297	4640.17	4664.17	24.00	1.23	1.23	1.23	78	166.7	260	-	3574	6558
18-Aug-15	9:45	19-Aug-15	9:45	Sunny	2.8806	3.0109	4664.17	4688.17	24.00	1.23	1.23	1.23	74	166.7	260	-	3574	6733
24-Aug-15	9:42	25-Aug-15	9:42	Fine	2.8749	3.0110	4688.17	4712.17	24.00	1.23	1.23	1.23	77	166.7	260	-	3574	6739
28-Aug-15	8:25	29-Aug-15	8:25	Cloudy	2.9002	3.0511	4712.17	4736.17	24.00	1.23	1.23	1.23	85	166.7	260	-	3574	6747
												Minimum	74					
												Average	78					
												Maximum	85					

Remark: 24-hour averaged dust monitoring at DMS-7 (Parc-22) was temporary suspended since July 2015 due to request from the Management Office. Dust monitoring resumed on 12 August 2015.

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
06-Aug-15	9:28	07-Aug-15	9:28	Sunny	2.8861	2.9977	4733.11	4757.11	24.00	1.25	1.25	1.25	62	152.2	260	-	3572	6759
12-Aug-15	9:28	13-Aug-15	9:28	Fine	2.8936	3.0102	4757.11	4781.11	24.00	1.25	1.25	1.25	65	152.2	260	-	3572	6765
18-Aug-15	9:30	19-Aug-15	9:30	Sunny	2.8975	3.0291	4781.11	4805.11	24.00	1.25	1.25	1.25	73	152.2	260	-	3572	6771
24-Aug-15	9:28	25-Aug-15	9:28	Fine	2.8800	3.0221	4805.11	4829.11	24.00	1.25	1.25	1.25	79	152.2	260	-	3572	6738
28-Aug-15	8:18	29-Aug-15	8:18	Cloudy	2.8938	3.0321	4829.11	4853.11	24.00	1.25	1.25	1.25	77	152.2	260	-	3572	6746
												Minimum	62					
												Average	71					
												Maximum	79					

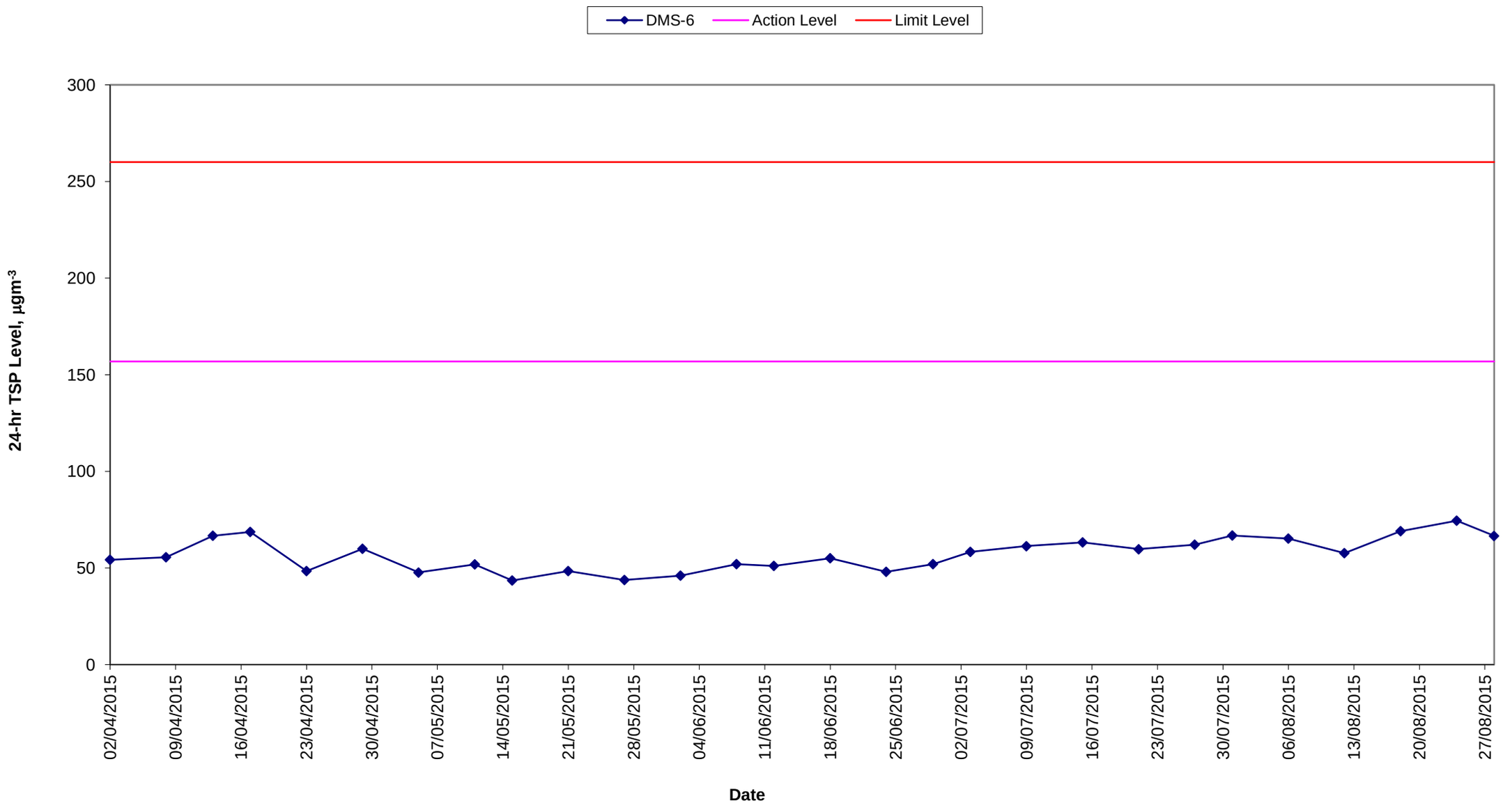
Station DMS-9 No. 12 Pau Chung Street

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time	Flow Rate (m^3/min)			TSP Conc.	Action Level	Limit Level	Observations / Remarks	Sampler	Filter
Date	Time	Date	Time		Initial	Final	Initial	Final	(hrs)	Initial	Final	Average	(μg/m^3)	(μg/m^3)	(μg/m^3)		ID	ID
06-Aug-15	9:20	07-Aug-15	9:20	Sunny	2.8971	3.0114	15033.40	15057.40	24.00	1.23	1.23	1.23	65	160.9	260	-	0814	6758
12-Aug-15	9:20	13-Aug-15	9:20	Fine	2.8903	3.0029	15057.40	15081.40	24.00	1.23	1.23	1.23	64	160.9	260	-	0814	6764
18-Aug-15	9:20	19-Aug-15	9:20	Sunny	2.8935	3.0098	15081.40	15105.40	24.00	1.23	1.23	1.23	66	160.9	260	-	0814	6770
24-Aug-15	9:20	25-Aug-15	9:20	Fine	2.8727	3.0119	15105.40	15129.40	24.00	1.23	1.23	1.23	79	160.9	260	-	0814	6737
28-Aug-15	8:10	29-Aug-15	8:10	Cloudy	2.8903	3.0442	15129.40	15153.40	24.00	1.23	1.23	1.23	87	160.9	260	-	0814	6745
												Minimum	64					
												Average	72					
												Maximum	87					

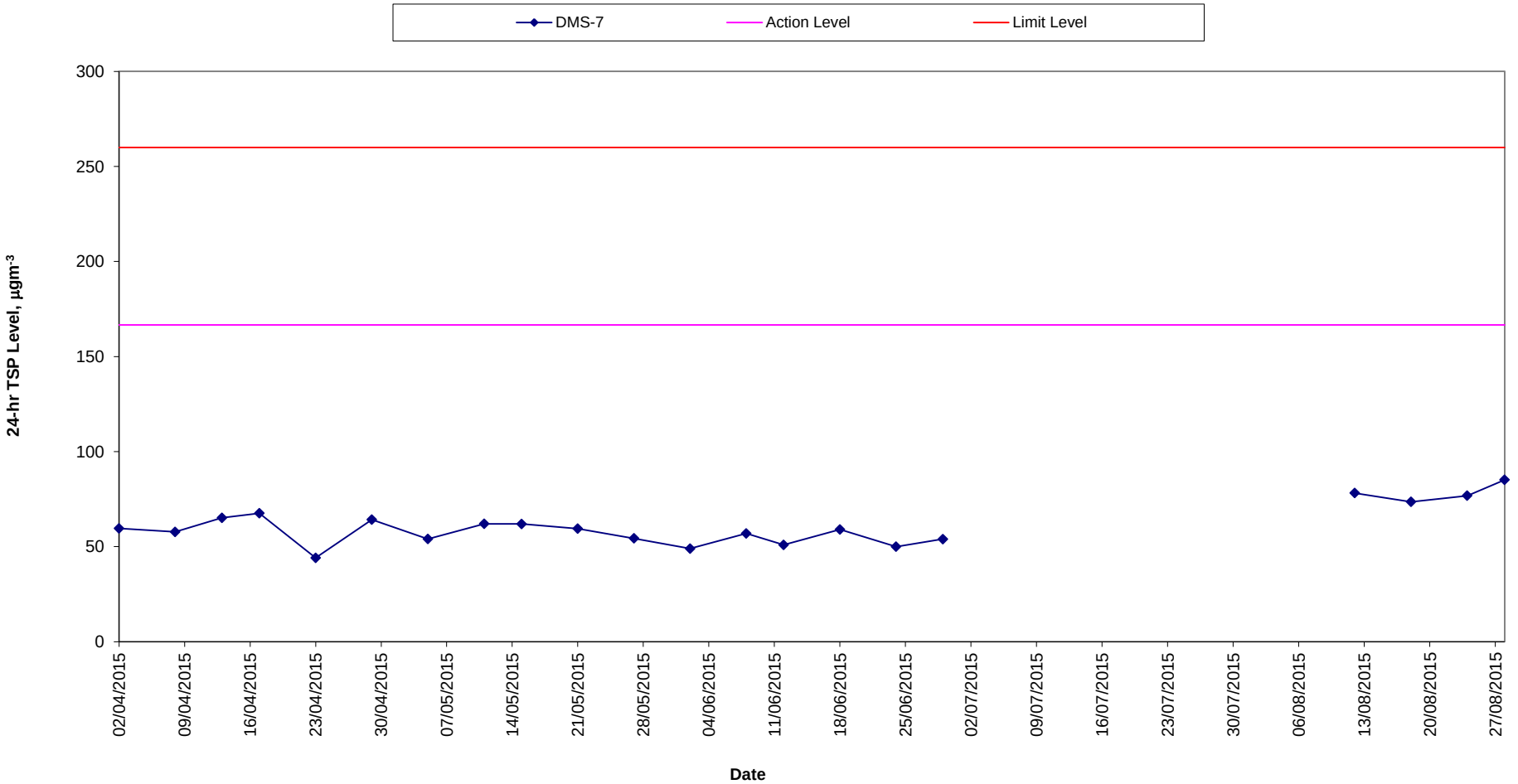
Station DMS-10 Chat Ma Mansion

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
06-Aug-15	8:43	07-Aug-15	8:43	Sunny	2.8852	2.9960	5365.20	5389.20	24.00	1.24	1.24	1.24	62	170.4	260	-	3573	6757
12-Aug-15	8:43	13-Aug-15	8:43	Fine	2.8775	2.9901	5389.20	5413.20	24.00	1.24	1.24	1.24	63	170.4	260	-	3573	6763
18-Aug-15	8:45	19-Aug-15	8:45	Sunny	2.8752	2.9982	5413.20	5437.20	24.00	1.24	1.24	1.24	69	170.4	260	-	3573	6769
24-Aug-15	8:43	25-Aug-15	8:43	Fine	2.8771	3.0039	5437.20	5461.20	24.00	1.24	1.24	1.24	71	170.4	260	-	3573	6736
28-Aug-15	8:00	29-Aug-15	8:00	Cloudy	2.8655	2.9911	5461.20	5485.20	24.00	1.24	1.24	1.24	70	170.4	260	-	3573	6744
												Minimum	62					
												Average	67					
												Maximum	71					

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

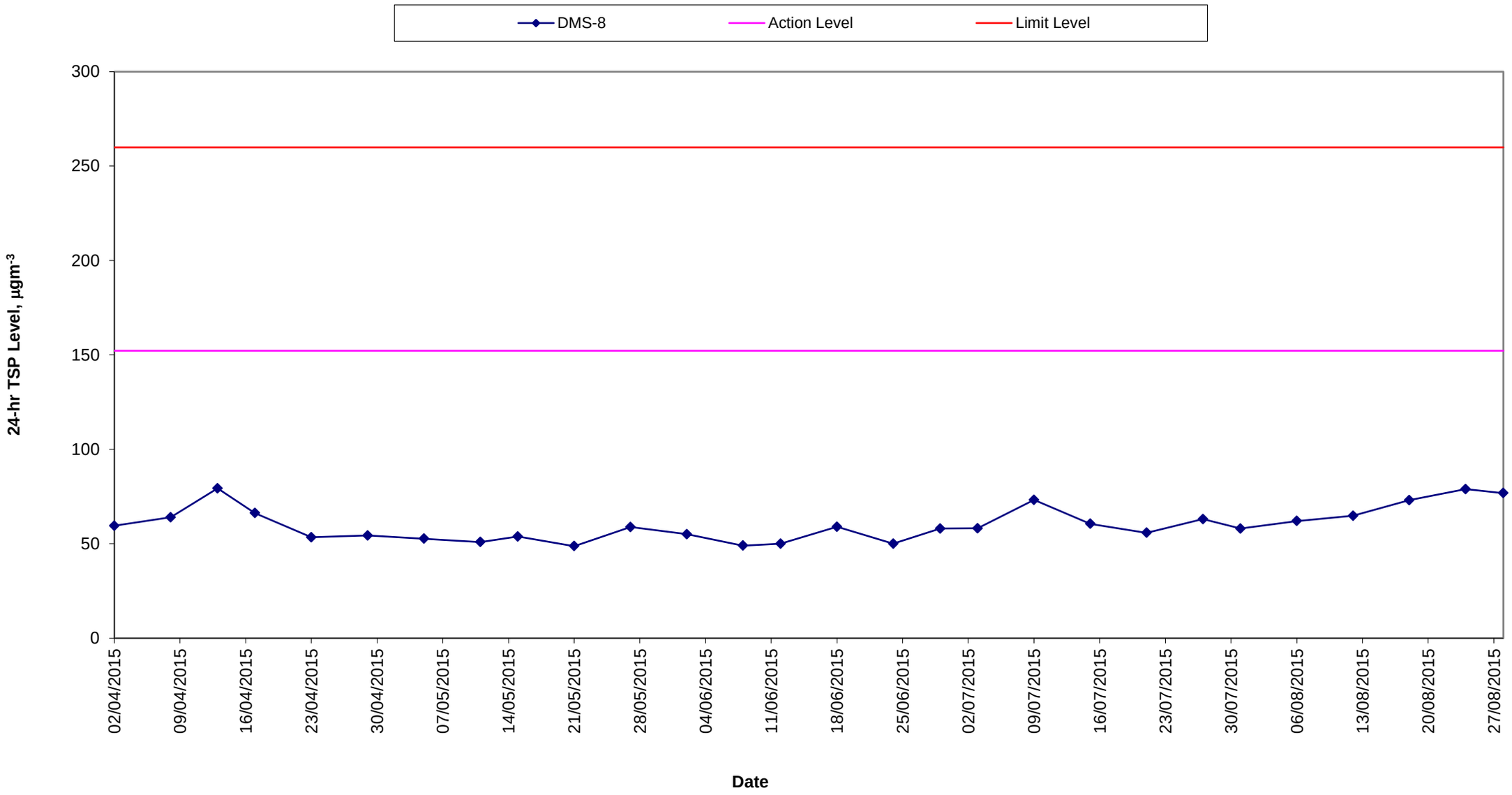


Construction Dust Monitoring Results for the Past 4 Months
DMS- 7 (Parc 22)

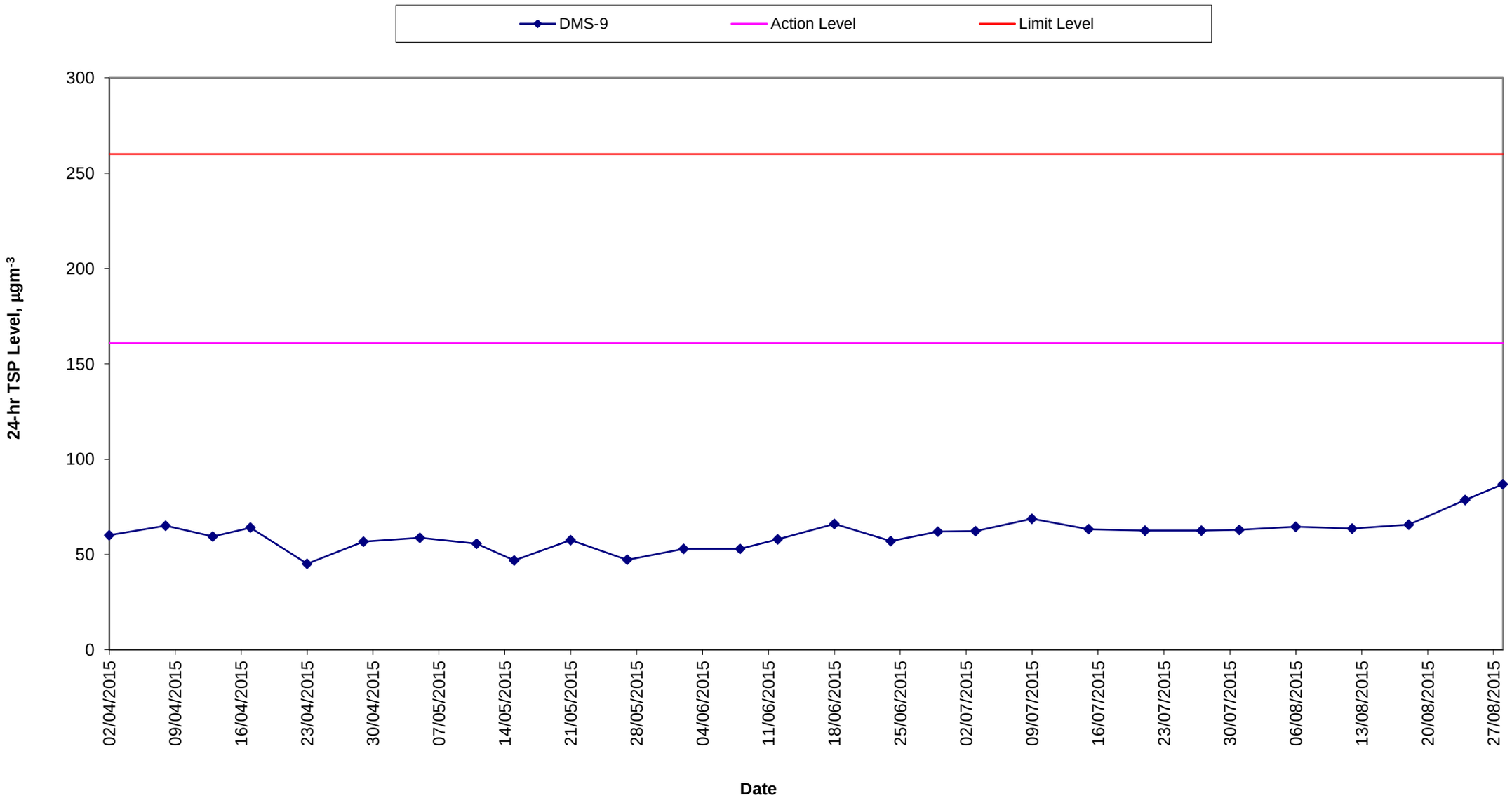


Remark: 24-hour averaged dust monitoring at DMS-7 (Parc-22) was temporary suspended since 3 July 2015 due to request from the Management Office. Dust monitoring resumed on 12 August 2015.

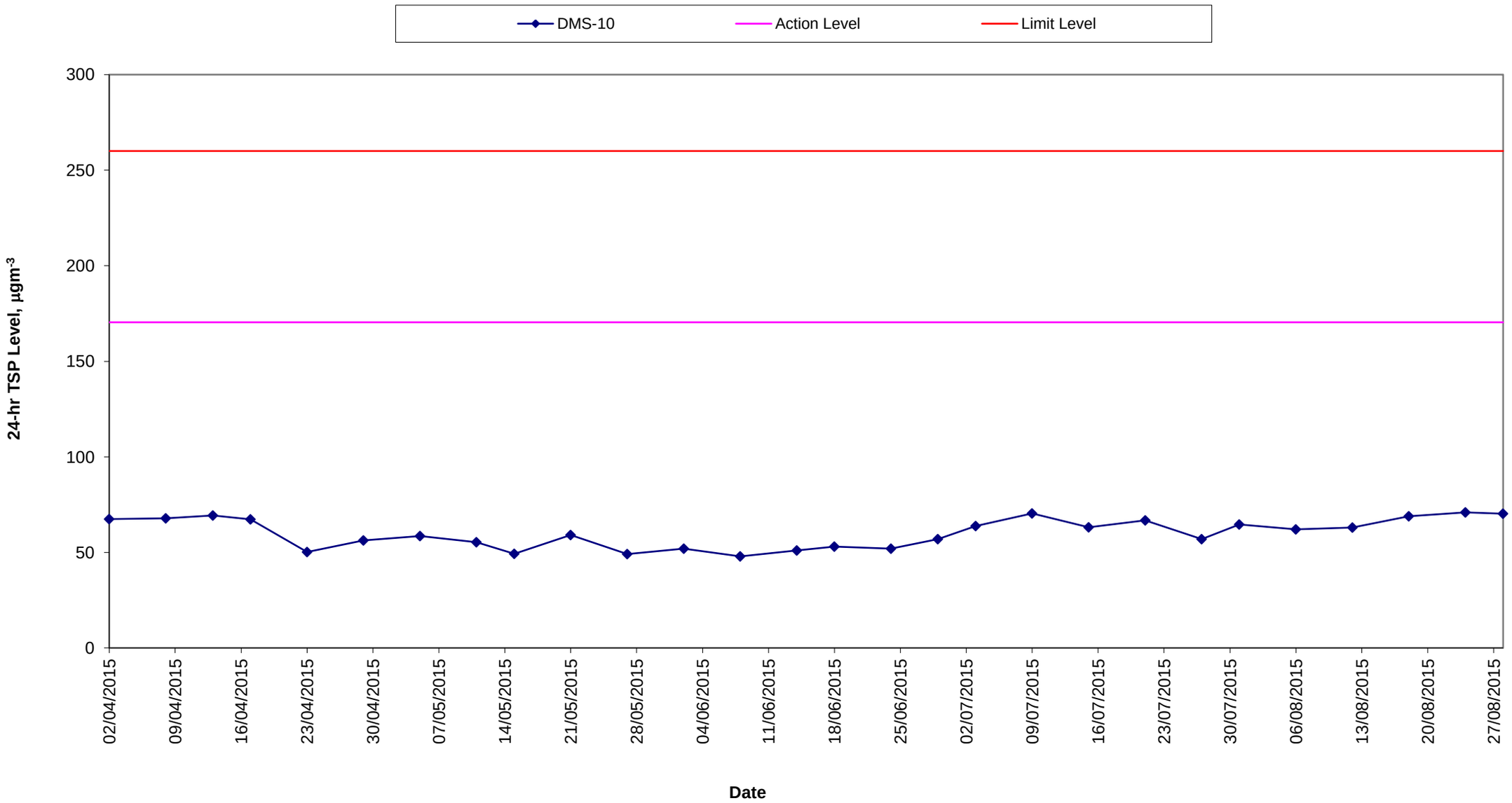
Construction Dust Monitoring Results for the Past 4 Months
DMS-8 (SKH Good Shepherd Primary School)



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



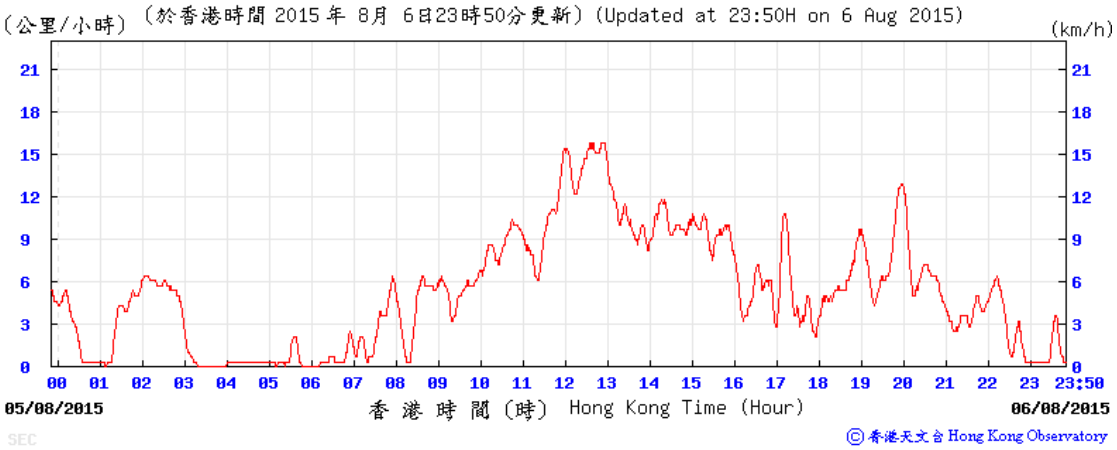
Construction Dust Monitoring Results for the Past 4 Months
DMS-10 (Chat Ma Mansion)



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

6-7 August 2015

Wind Speed:



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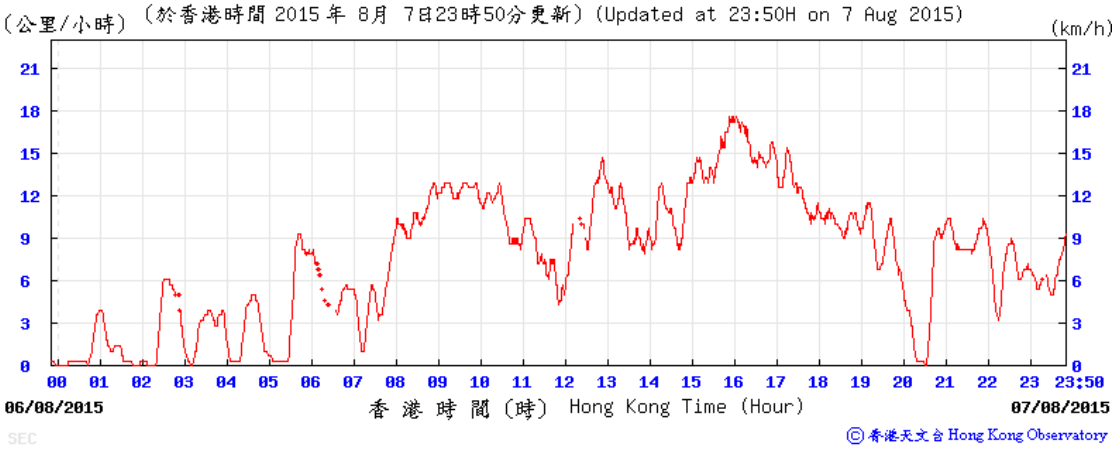
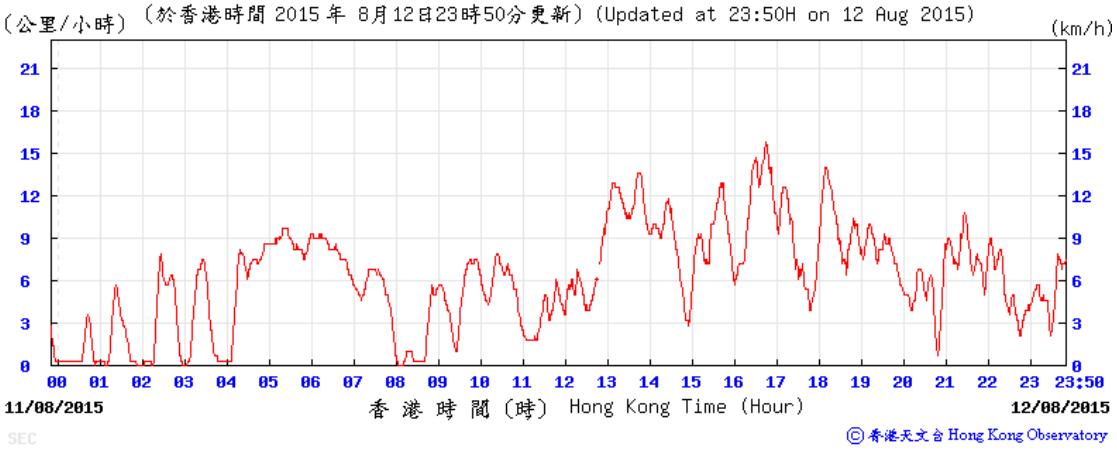


12-13 August 2015

Wind Speed:



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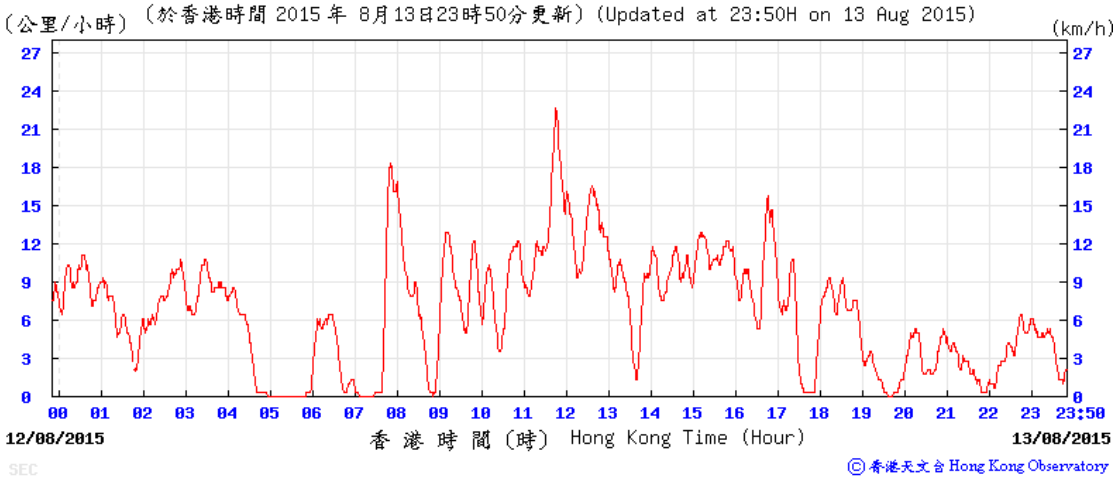
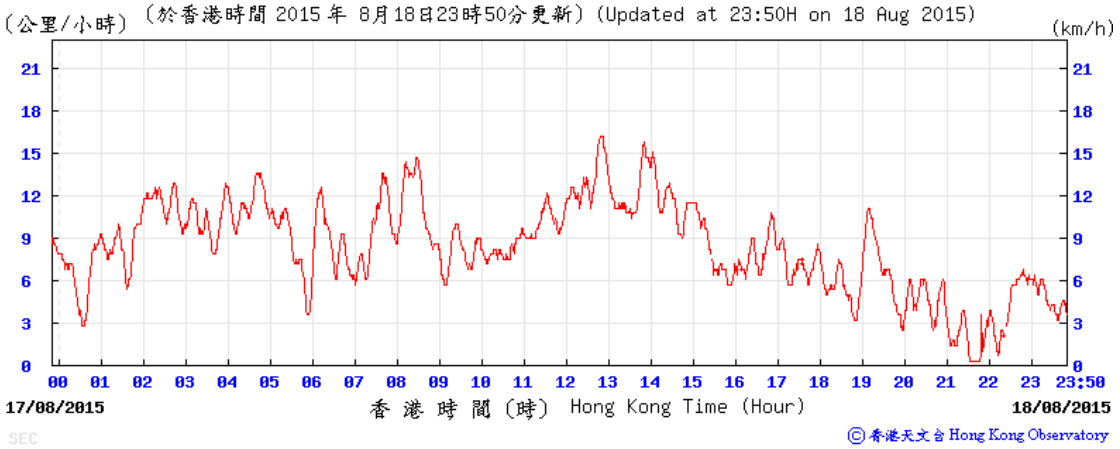


18-19 August 2015

Wind Speed:



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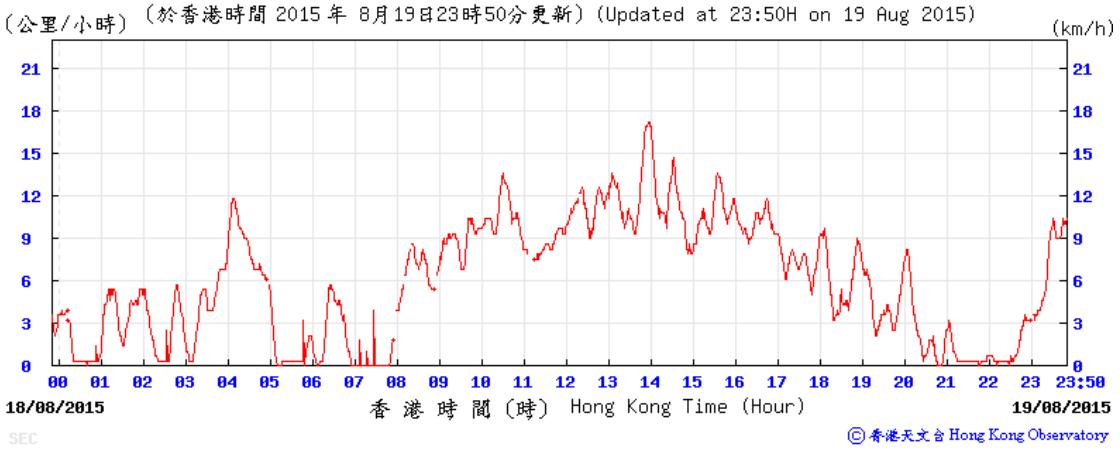
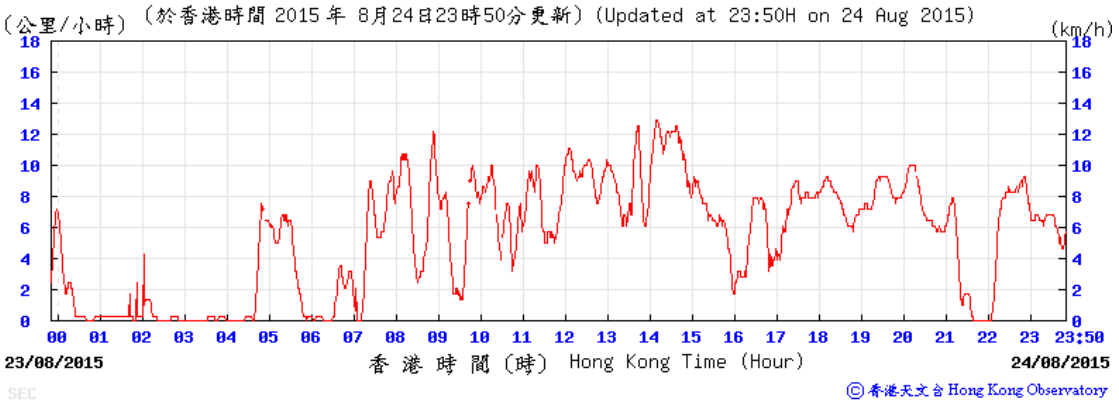


24-25 August 2015

Wind Speed:



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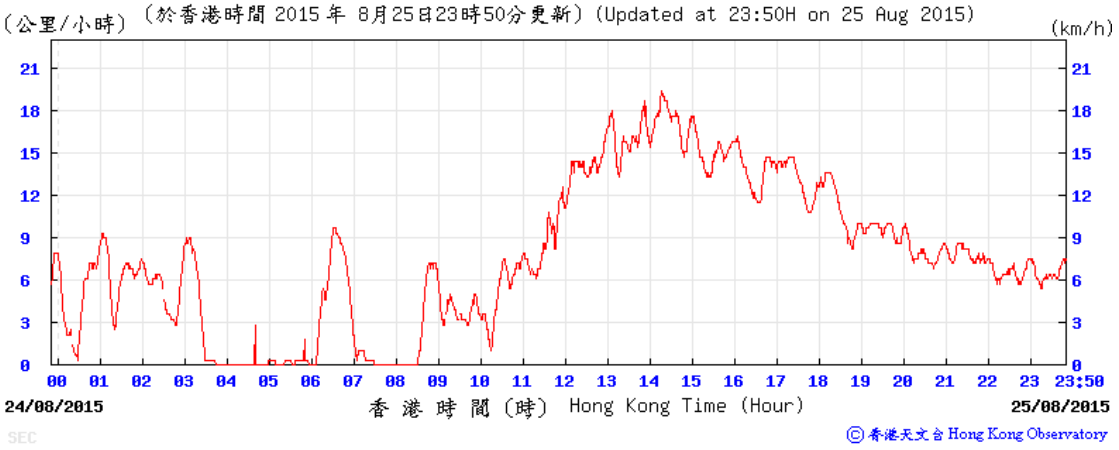
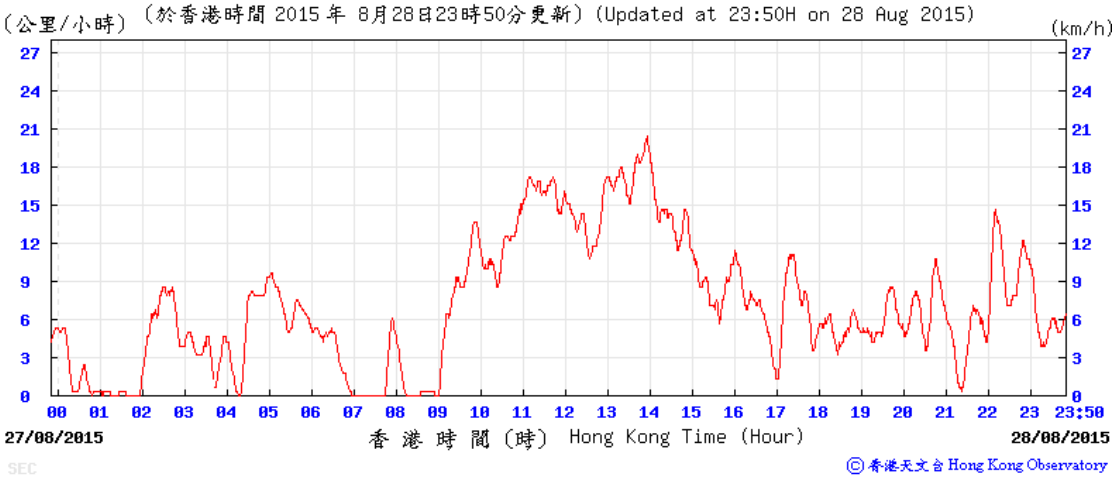


28-29 August 2015

Wind Speed:



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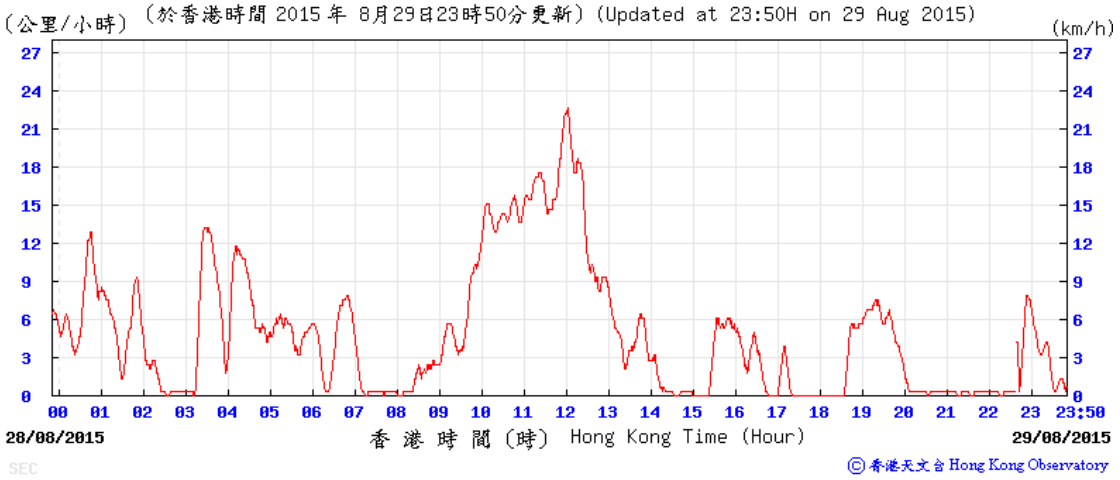
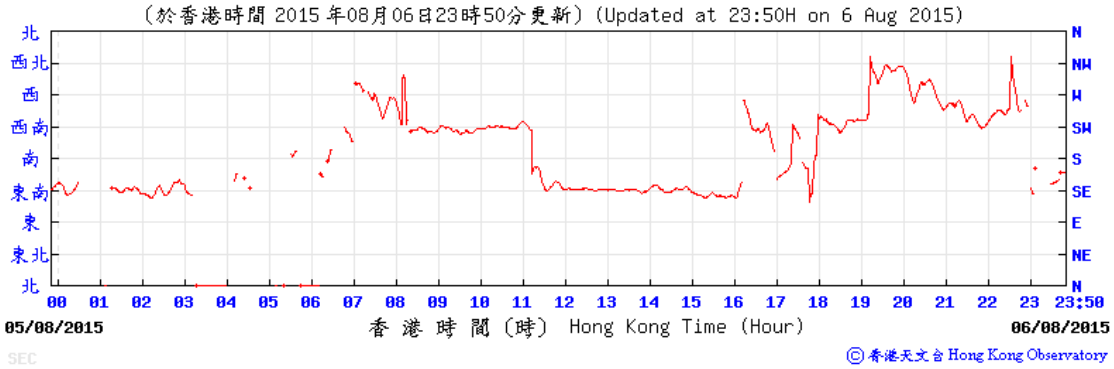

(公里/小時) (於香港時間 2015 年 8月29日23時50分更新) (Updated at 23:50H on 29 Aug 2015)
(km/h)
27
24
21
18
15
12
9
6
3
0
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
28/08/2015
香 港 時 間 (時) Hong Kong Time (Hour)
29/08/2015
SEC
© 香港天文台 Hong Kong Observatory

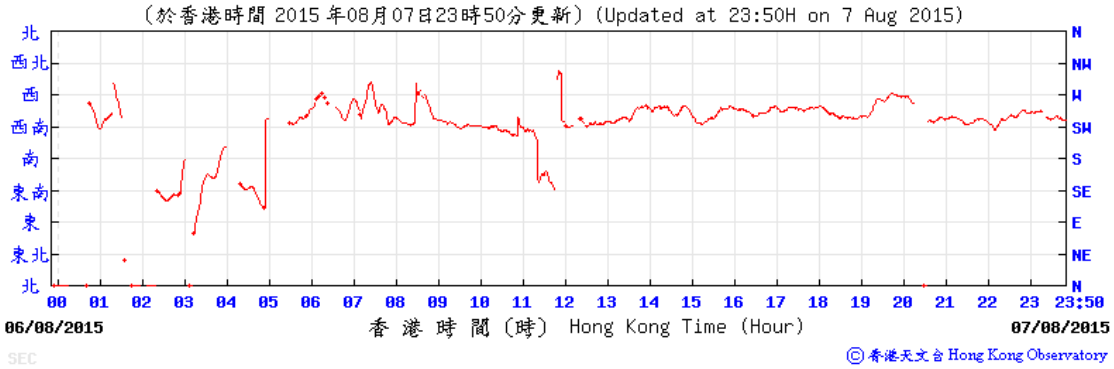
Average wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

6-7 August 2015

Wind Direction:

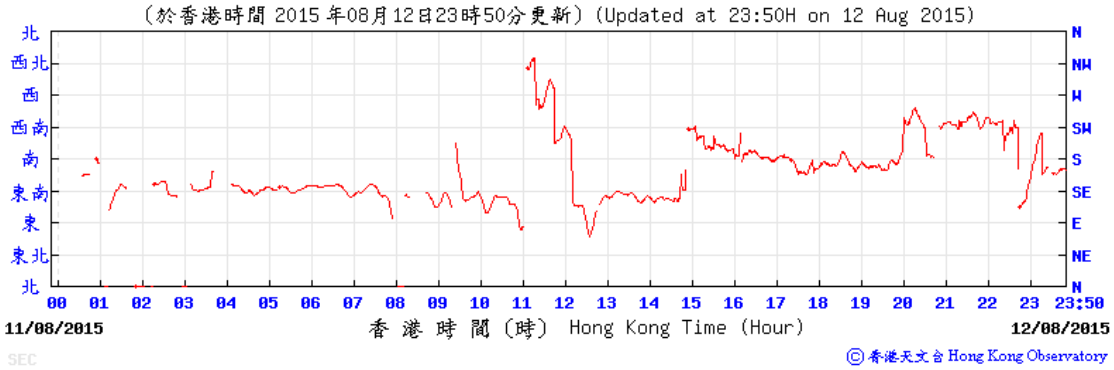


Wind Direction:



12-13 August 2015

Wind Direction:



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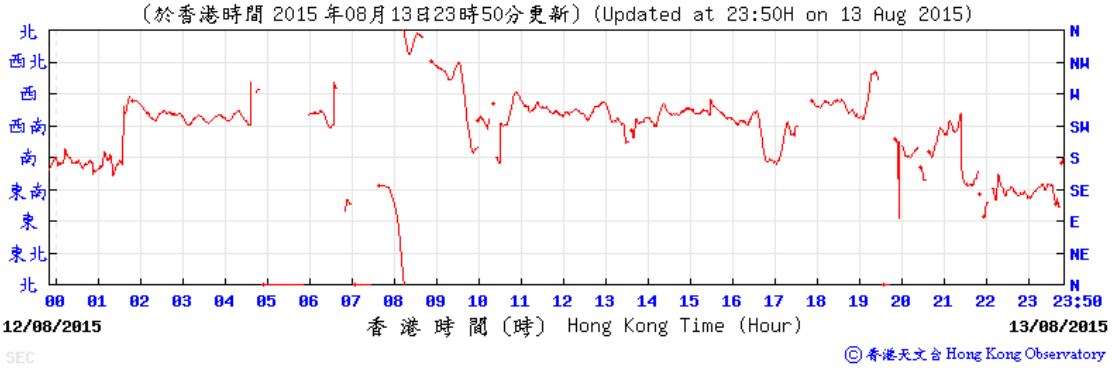
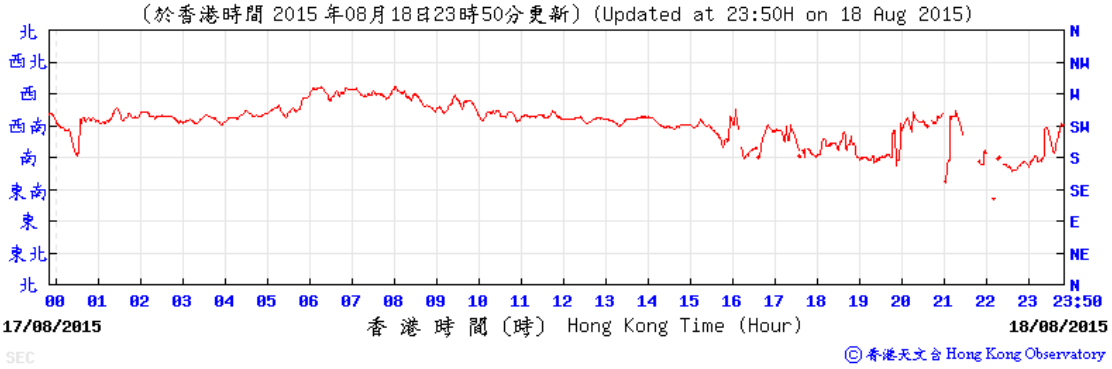
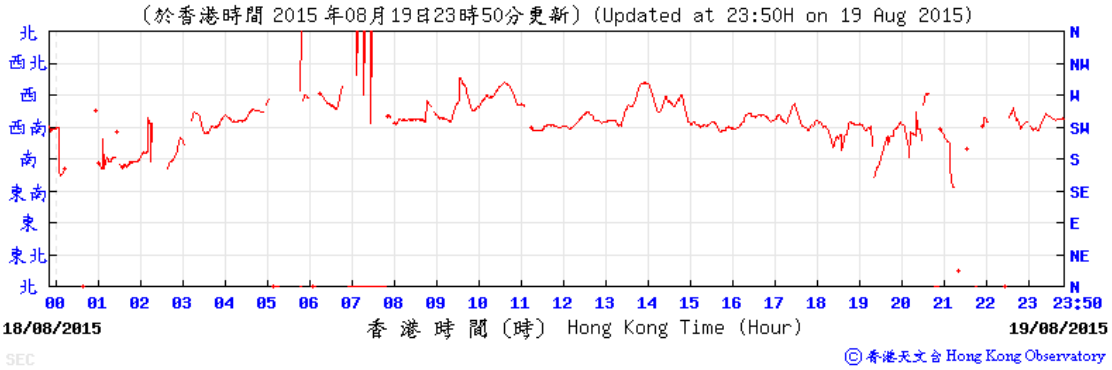


18-19 August 2015

Wind Direction:

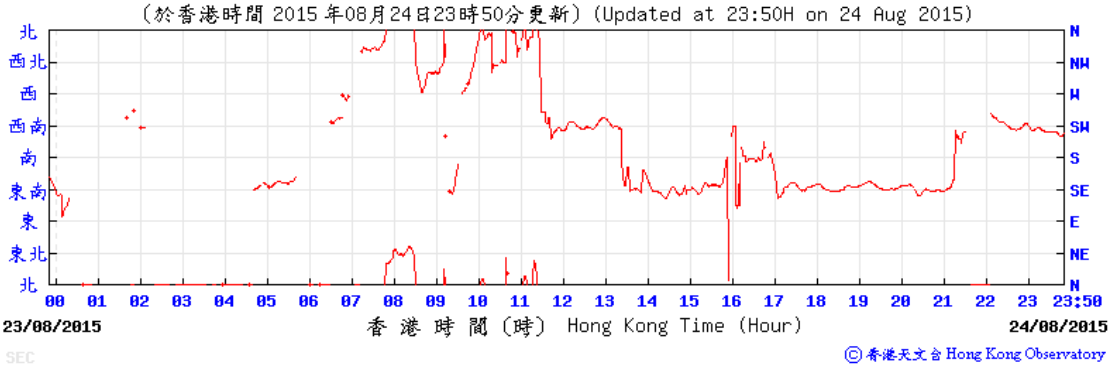


Wind Direction:



24-25 August 2015

Wind Direction:



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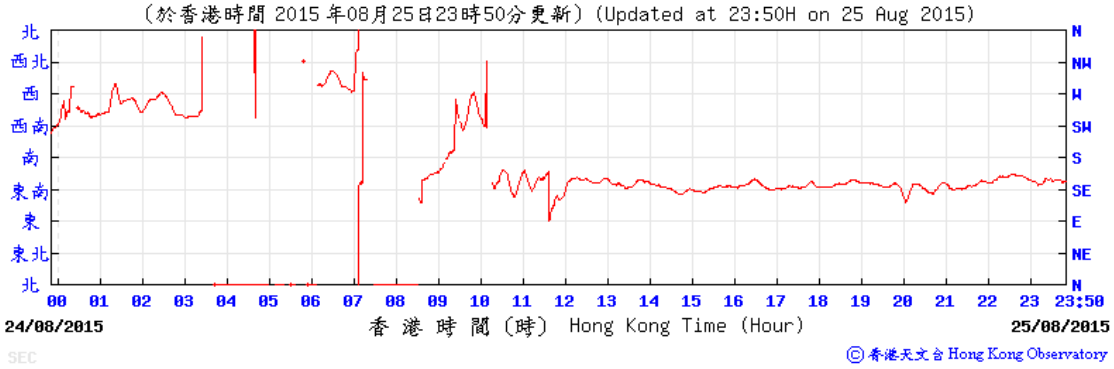
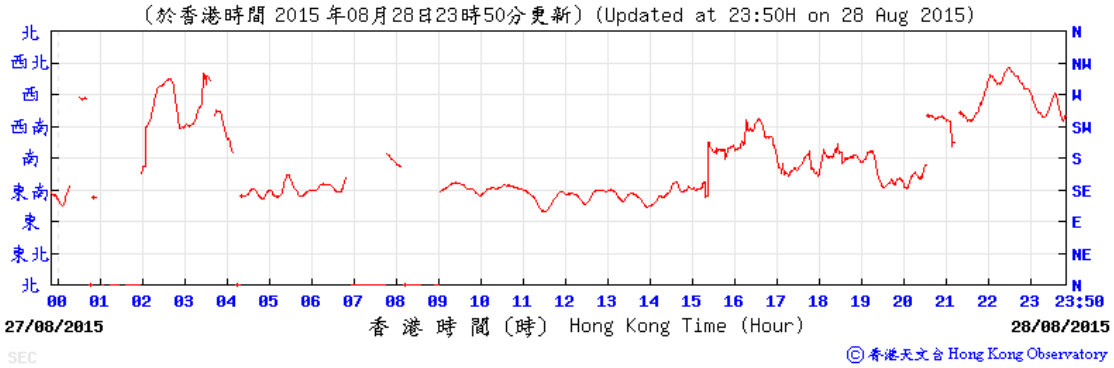
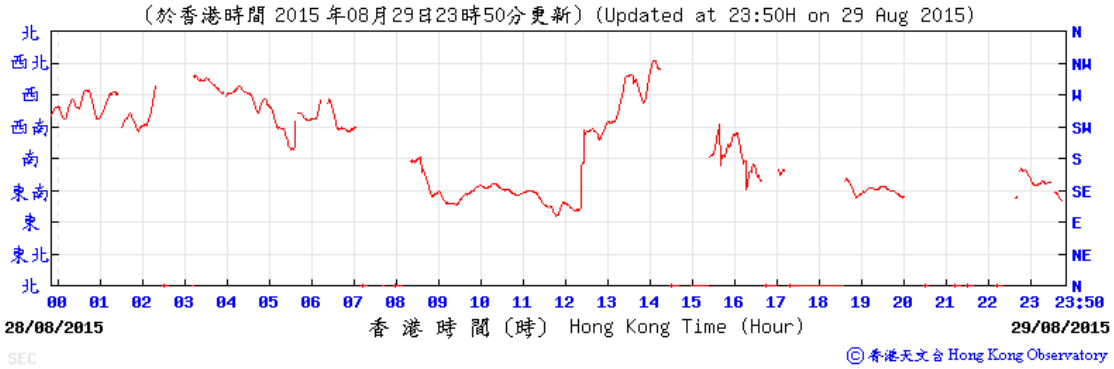


28-29 August 2015

Wind Direction:



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
Apr 2014	23.539	0.000	0.000	0.000	0.000	23.539	0.000	0.000	0.344	0.415	0.064	0.000
May 2014	11.327	0.000	0.000	0.000	0.000	11.327	0.000	0.000	0.371	0.000	0.130	0.000
Jun 2014	10.440	0.000	0.000	0.000	0.000	10.440	0.000	0.090	0.332	0.000	0.164	0.000
Jul 2014	2.103	0.000	0.000	0.000	0.000	2.103	0.000	0.099	0.544	0.200	0.131	0.000
Aug 2014	1.446	0.000	0.000	0.000	0.000	1.446	0.000	0.189	0.584	0.000	0.129	0.000
Sep 2014	1.980	0.000	0.000	0.000	0.000	1.980	0.000	0.225	0.284	0.000	0.099	0.000
Oct 2014	16.902	0.000	0.000	0.000	0.000	16.902	0.000	0.050	0.492	1.120	0.109	0.000
Nov 2014	27.687	0.000	0.000	0.000	0.000	27.687	0.000	0.140	0.352	0.000	0.083	0.000
Dec 2014	44.771	0.000	0.000	0.000	0.000	44.771	0.000	0.090	0.284	0.400	0.103	0.000
Sub-total	186.115	0.000	0.000	0.000	0.000	186.115	0.000	1.048	4.573	2.335	1.314	0.000

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly					Imported Fill
	Total Quantity Generated	Hard Rocks and Large Broken Concrete (See Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill (See Note 5)	Inert C&D Materials Delivered to 1108A Kai Tai Barging Facilities (See Note 6)	Metals	Paper/ cardboard packaging	Plastics (See Note 2)	Chemical Waste (See Note 10)	Others, e.g. general refuse (See Note 5)	
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in'000kg)	(in '000m^3)	(in '000m³)
Jan 2015	64.165	0.000	0.000	0.266	0.000	63.899	0.000	0.077	0.328	0.180	0.150	0.000
Feb 2015	46.884	0.000	0.000	2.599	0.000	44.285	0.000	0.090	3.102	0.000	0.106	0.000
Mar 2015	41.498	0.000	0.000	0.000	0.000	41.498	0.000	0.072	2.321	0.600	0.126	0.000
Apr 2015	13.049	0.000	0.000	0.000	0.000	13.049	0.000	0.081	1.598	0.000	0.119	0.000
May 2015	54.559	0.000	0.000	0.000	0.000	54.559	0.000	0.063	0.548	0.000	0.099	0.000
Jun 2015	48.857	0.000	0.000	0.000	0.000	48.857	0.000	0.041	0.880	0.000	0.144	0.000
Jul 2015	34.471	0.000	0.000	0.000	0.000	34.471	0.000	0.090	4.972	0.720	0.218	0.000
Aug 2015	28.330	0.000	0.000	0.000	0.000	28.330	0.000	0.077	1.027	1.240	0.244	0.000
Sub-total	331.813	0.000	0.000	2.865	0.000	328.948	0.000	0.591	14.776	2.740	1.206	0.000
Total	653.512	0.000	0.605	2.865	0.064	649.977	12.800	2.576	30.490	5.795	6.136	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

Investigation Reports

Investigation Report of Environmental Quality Limit Exceedance

Date	10 August 2015
Time	09:34-10:04; 10:04-10:34; 10:34-11:04; 11:04-11:34; 13:12-13:42; and 13:42-14:12.
Monitoring Location	MTW-16-1 SKH Good Shepherd Primary School
Parameter	Noise, $L_{Aeq\ (30mins)}$
Action / Limit Levels	Limit level 79 dB(A) (according to the latest Continuous Noise Monitoring Plan (CNMP))
Measured Level (With baseline level adjustment)	90.8 dB(A) (09:34-10:04); 90.9 dB(A) (10:04-10:34); 89.8 dB(A) (10:34-11:04); 84.9 dB(A) (11:04-11:34); 88.8 dB(A) (13:12-13:42); 80 dB(A) (13:42-14:12).
Possible reason	Based on the site record on 10 August 2015, the potential noise sources from the Project works included toe grout works, TTMS preparation works, preparation for TKW station excavation, and backfilling and laying temporary drainage system in E3 works area; construction of TKW station and preparation of bus stop relocation in E6 works area. The construction equipment used during the exceedance period included 2 mobile crane, 13 backhoes, 2 drilling rigs and 1 cherry picker. The above-mentioned construction works were continuously operating on 10 August 2015 (before and after the exceedance period). However, the noise levels were all below the Action/Limit Levels before and after the exceedance period. Having considered the above, construction works of 1109 may have contributed to the exceedances recorded.
Action Taken / Action to be Taken	1. Noise fabrics as barrier had been erected on the site hoarding. 2. Tailor-made movable noise barriers would be erected on site when carrying out noisy work. 3. The Contractor has conducted site inspections

	twice a day since the issue of this NOE, to collect details regarding the site activities in vicinity to the concerned works area and to check if any further mitigation measure is needed. 4. The Contractor will continue to provide sufficient and necessary mitigation measures to mitigate the noise to avoid any exceedance of the Action/Limit Level. 5. Briefing on environmental issues before works has been provided to frontline workers and keeps reminding the workers to implement noise mitigation measures. The Contractor will strictly implement relevant and appropriate noise mitigation measures to minimise the noise generation as far as possible and avoid exceedance of the Action/ Limit Level or causing noise disturbance where practicable.
Remarks	-

Prepared by: Winnie Ko, 1109 ET Leader
Date 17-August-2015

Investigation Report of Environmental Quality Limit Exceedance

Date	11 August 2015
Time	09:12-09:42; 09:42-10:12; 10:12-10:42; 10:42-11:12; 11:12-11:42; 13:12-13:42; 13:42-14:12; and 14:12-14:42.
Monitoring Location	MTW-16-1 SKH Good Shepherd Primary School
Parameter	Noise, $L_{Aeq\ (30mins)}$
Action / Limit Levels	Limit level 79 dB(A) (according to the latest Continuous Noise Monitoring Plan (CNMP))
Measured Level (With baseline level adjustment)	83.5 dB(A) (09:12-09:42); 81.7 dB(A) (09:42-10:12); 80.5 dB(A) (10:12-10:42); 80.5 dB(A) (10:42-11:12); 83.5 dB(A) (11:12-11:42); 83.4 dB(A) (13:12-13:42); 84.1 dB(A) (13:42-14:12); 80.4 dB(A) (14:12-14:42).
Possible reason	Based on the site record on 11 August 2015, the potential noise sources from the Project works included toe grout works, TTMS preparation works, preparation for TKW station excavation, shear pin works and backfilling and laying temporary drainage system in E3 works area; construction of TKW station, preparation of bus stop relocation and shear pin works in E6 works area. The construction equipment used during the exceedance period included 2 mobile crane, 13 backhoes, 4 drilling rigs and 1 cherry picker. The above-mentioned construction works were continuously operating on 11 August 2015 (before and after the exceedance period). However, the noise levels were all below the Action/Limit Levels before and after the exceedance period. Having considered the above, construction works of 1109 may have contributed to the exceedances recorded.
Action Taken / Action to be Taken	1. Noise fabrics as barrier had been erected on the site hoarding. 2. Tailor-made movable noise barriers would be

	erected on site when carrying out noisy work. 3. The Contractor has conducted site inspections twice a day since the issue of this NOE, to collect details regarding the site activities in vicinity to the concerned works area and to check if any further mitigation measure is needed. 4. The Contractor will continue to provide sufficient and necessary mitigation measures to mitigate the noise to avoid any exceedance of the Action/Limit Level. 5. Briefing on environmental issues before works has been provided to frontline workers and keeps reminding the workers to implement noise mitigation measures. The Contractor will strictly implement relevant and appropriate noise mitigation measures to minimise the noise generation as far as possible and avoid exceedance of the Action/ Limit Level or causing noise disturbance where practicable.
Remarks	-

Prepared by: Winnie Ko, 1109 ET Leader
Date 17-August-2015

Details of Findings

Project	SCL 1109
Date	17 August 2015
Time	--
EPD Reference No	15-20617, dated 19 August 2015
Description of the Complaint	A complaint was referred to MTR by EPD regarding some greenish liquid was discharged from the construction site to public place at Kiang Su Street near Lucky Building. The complainant worried that the liquid may cause the hygienic and environmental problem.
Site Activity Summary	Based on the site record on 17 June 2015, sheet piling works were conducted at Kiang Su Street.
Actions taken/ to be taken	1. All the wastewater generated from site activities is properly treated before discharging or is pumped away by sludge tankers for further treatment.
Remarks	There is no adverse observation recorded during regular weekly site inspection on 17 August 2015. There is no observation of greenish liquid generated and discharged from site.

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

Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
January 2014	0	0
February 2014	0	0
March 2014	0	0
April 2014	0	0
May 2014	0	0
June 2014	0	0
July 2014	0	0
August 2014	0	0
September 2014	1	0
October 2014	0	0
November 2014	0	0
December 2014	0	0
January 2015	3	0
February 2015	0	0
March 2015	0	0
April 2015	3	0
May 2015	2	0
June 2015	7	0
July 2015	0	0
August 2015	1	0
Overall Total	17	0

Appendix C

33rd 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 August 2015]

Works Contract 1101

Ma On Shan Modification Works

(September 2015)

Certified by: James Choi

Position: Environmental Team Leader

Date: 14 September 2015

ANewR Consulting Limited

ANEWR

SCL Contract No. 1101

Ma On Shan Line Modification Works

Monthly EM&A Report (SCL) (August 2015)

for

Sun Fook Kong Joint Venture

Prepared By		Checked By		Approved for Issue
F So		A Lee		J Choi
Version	0		**Date**	3 September 2015

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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). ANewR Consulting Limited (ANewR) 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/H) 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 August 2015. 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

19.50 m^3 of general refuse was disposed of to NENT Landfill in the reporting month. No inert C&D materials were disposed in the reporting month. No chemical waste was disposed 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.

ANewR Consulting Limited (ANewR) 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 34th 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 August 2015.

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 EP-438/2012/H 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	416.00 m^3
Inert C&D materials recycled	0	0
Non-inert C&D materials disposed	0	0
Non-inert C&D materials recycled	0	68.00 m^3
General waste disposed of to NENT Landfill	19.50 m^3	422.75 m^3
Chemical waste disposed of to CWTC or collected by licenced collector	0	1552.10 kg

4. SITE INSPECTION

Weekly site inspections were carried out at the sites on 5, 12, 19 and 25 August 2015. The joint site inspection with IEC was carried out on 25 August 2015. No observation was recorded on the weekly site walk at To Shek Storage Yard on 19 August 2015. 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

Category	Date	ET's Observations and Recommendations	Follow-up Action
Waste Management	29 July 2015	At To Shek Storage Yard – The contractor was reminded to clean general wastes on the ground of waste storage area. (Reminder was raised on 29.07.2015)	At To Shek Storage Yard – General wastes on the ground of waste storage area was cleaned on 5.8.2015. Reminder raised on 29.07.2015 closed.

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.

8. CONCLUSION

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

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.

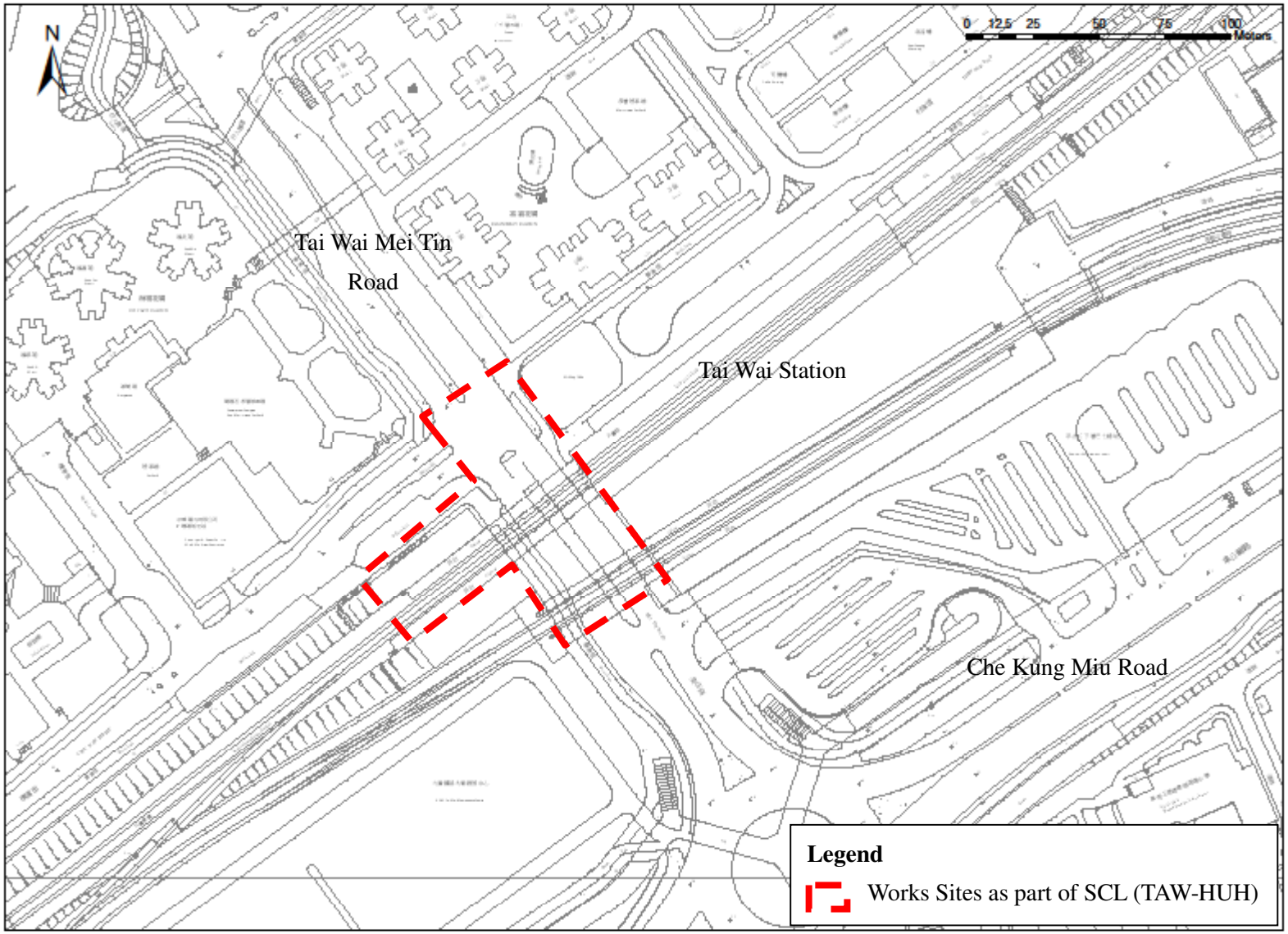
No environmental complaint was recorded in the reporting month.

No notification of summons and successful prosecution was received in the reporting month.

4 numbers of environmental site inspections were carried out in August 2015.

APPENDIX A

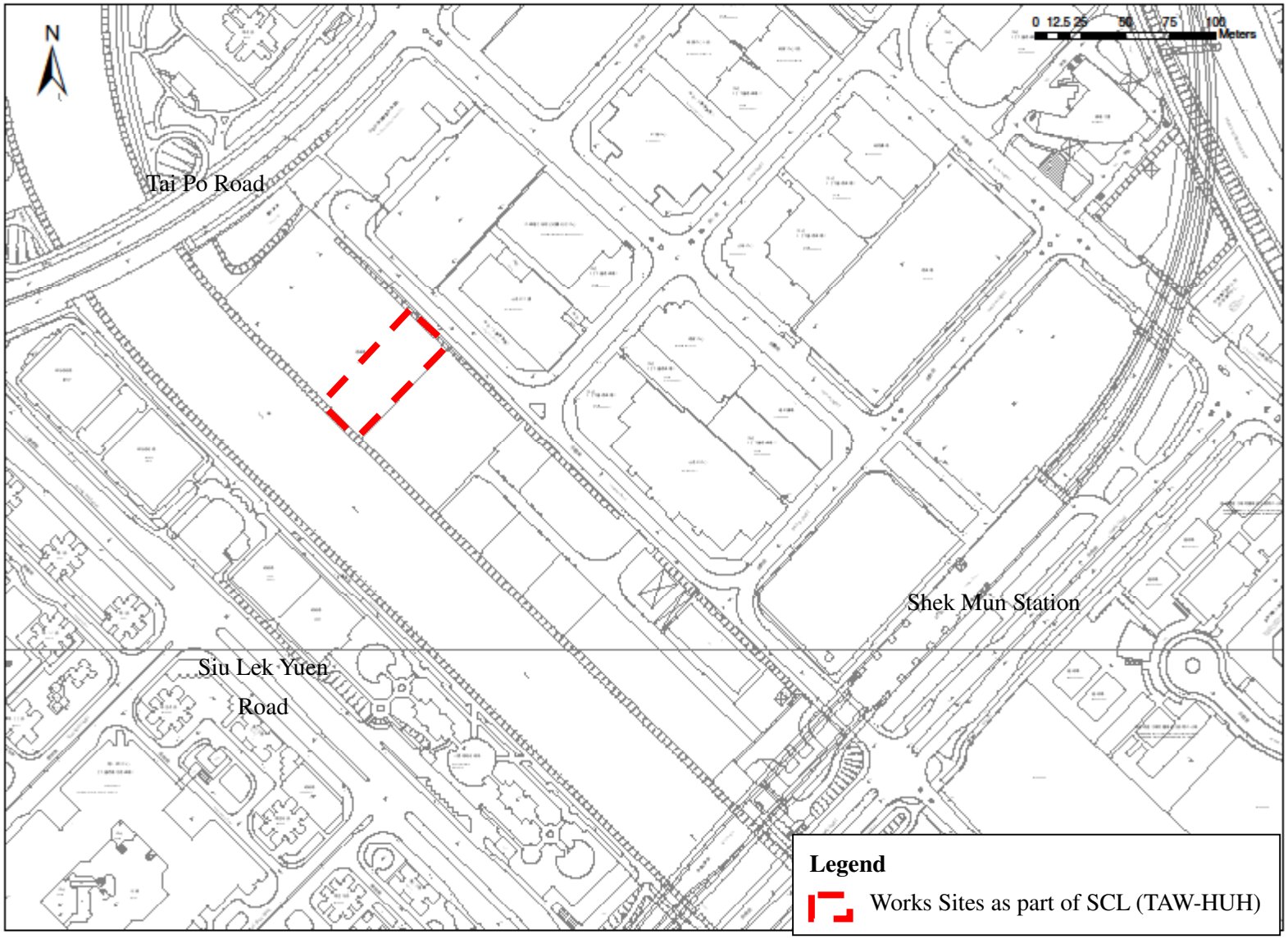
LOCATION PLAN OF WORKS AREA AND STORAGE YARD



ANEWR

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

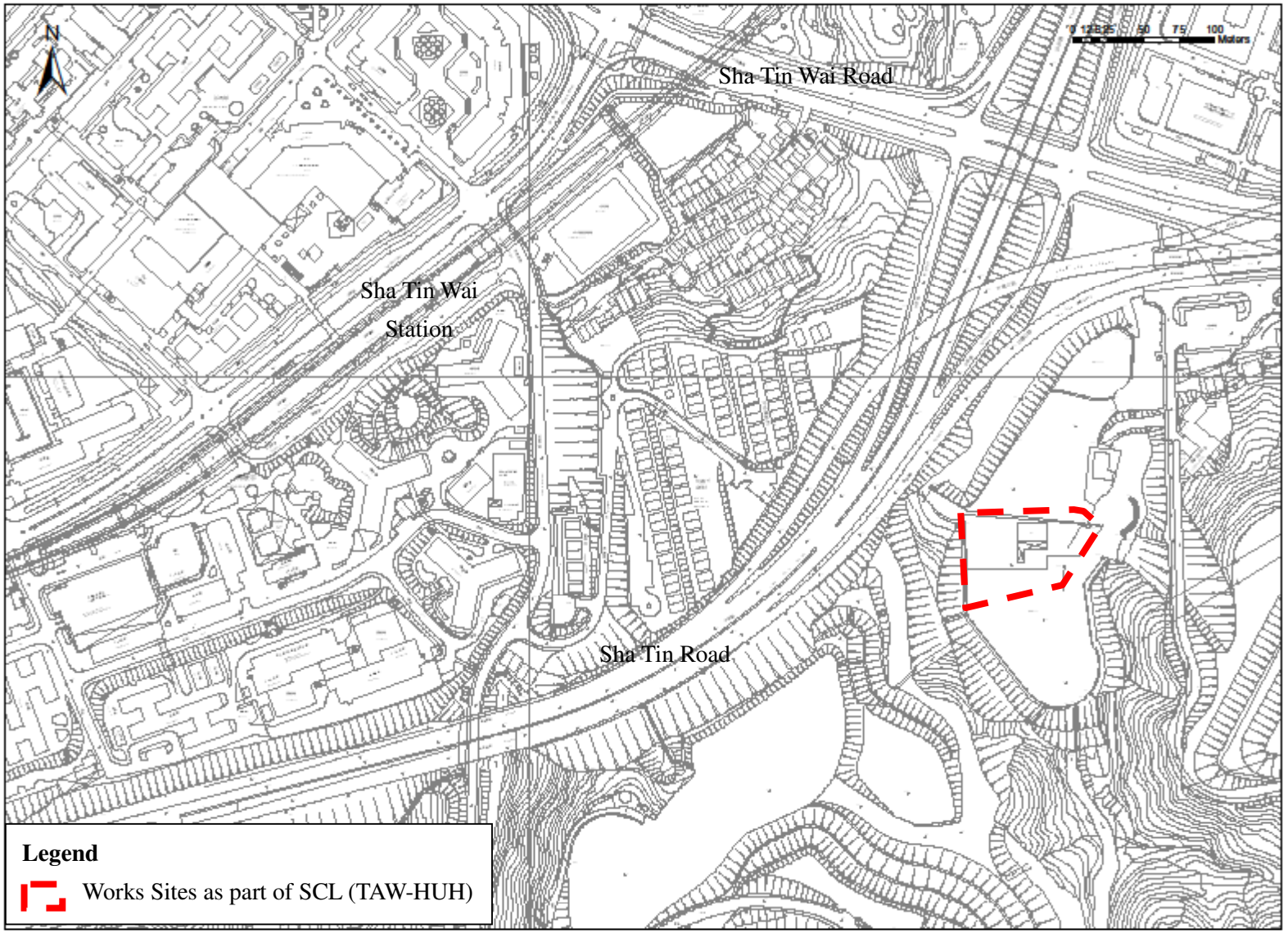
SCALE	N.T.S.	DATE	4 June 2013
CHECK	LYMA	DRAWN	YSWE
Ref. SCL Contract No.1101		FIGURE NO. App A (Sheet 1 of 3)	REV 1



ANEWR

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



ANEWR

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)

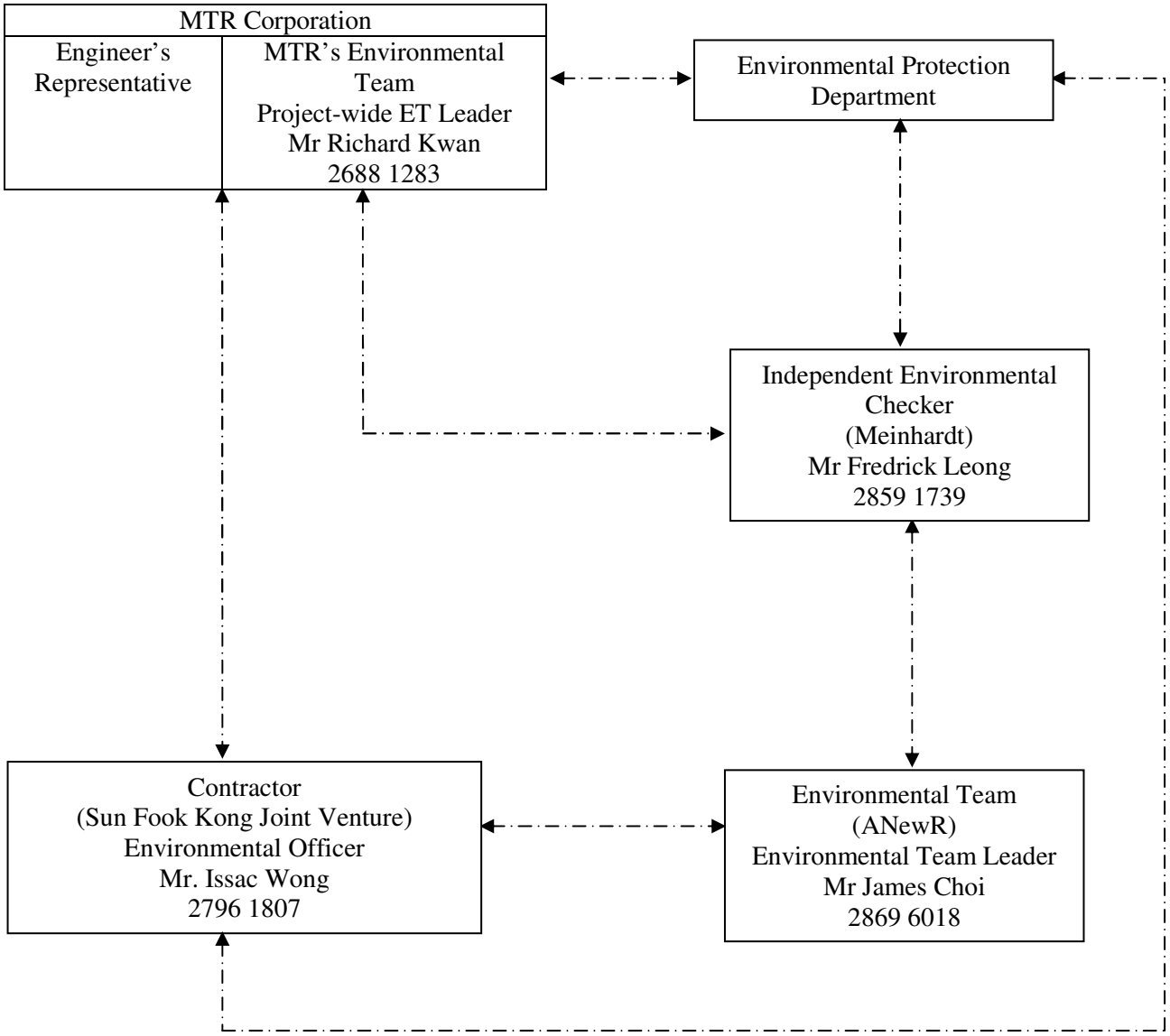
2 No construction activity had been carried out at To Shek Storage Yard and Shek Mun Storage Yard.

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/H	26 August 2014	10 September 2014	10 September 2014	N/A
Construction Noise Permit					
Tai Wai Station (At Tai Wai Mei Tin Road)	GW-RN0186-15	13 March 2015	02 April 2015	20 April 2015	19 October 2015
To Shek Storage Yard	GW-RN0007-15	30 December 2014	16 January 2015	27 February 2015	26 August 2015
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/H

EP Condition	Submission	Date of Submission
Condition 3.4	Monthly EM&A Report (July 2015)	14 August 2015

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								
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
Sub-total for 2012	**13.00**	**0.00**	**0.00**	**0.00**	**13.00**	**0.00**	**26.00**	**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
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
Sub-total for 2013	**19.50**	**0.00**	**0.00**	**0.00**	**19.50**	**3.00**	**198.50**	**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	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	120.00
May	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00
June	**0.00**	0.00	0.00	0.00	0.00	0.00	6.50	270.00
July	**19.50**	0.00	0.00	0.00	19.50	0.00	19.50	0.00
August	**71.50**	0.00	0.00	0.00	71.50	26.00	6.50	500.00
September	**6.50**	0.00	0.00	0.00	6.50	19.50	0.00	345.00
October	**6.50**	0.00	0.00	0.00	6.50	0.00	29.25	45.00
November	**13.00**	0.00	0.00	0.00	13.00	6.50	0.00	0.00
December	**0.00**	0.00	0.00	0.00	0.00	13.00	0.00	0.00
Sub-total for 2014	**117.00**	**0.00**	**0.00**	**0.00**	**117.00**	**65.00**	**61.75**	**1400.00**
Cumulative Total	**149.50**	**0.00**	**0.00**	**0.00**	**149.50**	**68.00**	**286.25**	**1400.00**

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 2015 (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	13.00	0.00
February	**0.00**	0.00	0.00	0.00	0.00	0.00	3.25	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	0.00	6.50	0.00
May	**224.25**	0.00	0.00	0.00	224.25	0.00	35.75	152.10
June	**42.25**	0.00	0.00	0.00	42.25	0.00	42.25	0.00
July	**0.00**	0.00	0.00	0.00	0.00	0.00	13.00	0.00
August	**0.00**	0.00	0.00	0.00	0.00	0.00	19.50	0.00
September								
October								
November								
December								
Sub-total for 2015	**266.50**	**0.00**	**0.00**	**0.00**	**266.50**	**0.00**	**136.50**	**152.10**
Cumulative Total	**416.00**	**0.00**	**0.00**	**0.00**	**416.00**	**68.00**	**422.75**	**1552.10**

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	<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 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	N/A ^

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> Trees of high to medium survival rate would be affected	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

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
		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	^ ^ N/A ^ ^ ^

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						^ ^ N/A N/A N/A N/A

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
		enclosed by impervious sheeting; • 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.						^ ^ N/A ^
Construction Noise (Airborne)								

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	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 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.	Control construction airborne noise	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIA	^ ^ ^ N/A ^ ^
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	^

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	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	N/A
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	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
		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 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.						^ ^

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 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. • 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						^ ^ ^ ^

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
		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 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						^ ^ ^ ^

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
		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 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						^ ^ ^ ^

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
		(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	^
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>	Separation of	Contractor	All	Construction	• DEVB TC(W)	

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
		• 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 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.	unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use		construction sites	stage	No.6/2010	^
S11.5.1	WM2	<u>Construction and Demolition Material</u> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;	Good site practice to minimize the waste generation and recycle	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions)	N/A

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
		• 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 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.	the C&D materials as far as practicable so as to reduce the amount for final disposal				Ordinance • Waste Disposal Ordinance • ETWB TCW No.19/2005	N/A N/A 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	Good site practice to minimize the waste generation and recycle the C&D materials as	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance	N/A

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
		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.	far as practicable so as to reduce the amount for final disposal				• Waste Disposal Ordinance • ETWB TCW No.19/2005	N/A
S11.5.1	WM4	<u>General Refuse</u> • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by	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
		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. • 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.						N/A ^
S11.5.1	WM7	<u>Chemical Waste</u> • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical	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
		waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated; • Disposal of chemical waste should be via a licensed waste collector, be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.						^
EM&A Project								
S14.2	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	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

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	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 requirements given in the EM&A Manual are fully complied with.						

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

32nd 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
August 2015

[September 2015]

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

Version: 0	Date: 11 September 2015

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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 August 2015. As informed by the Contractor, major activities in the reporting period were:

Hung Hom Area
- Excavation work, site clearance, slope work, cable detection, excavation lateral support, form work erection, reinforcement fixing,
- Construction of drainage and man hole, foul water diversion
- Trial pit, trial trench, pre-drilling, pilling works, pre-grouting, grouting, post-grouting, pre-spilt, backfilling, abutment works,
- Erection of hoarding, scaffolding platform, erection of utility temporary supports, erection of temporary link walkway, temporary working platform, abondoned utilities, utilities protection,
- Tie back installation, lifting works, construction of noise enclosure footing, decking installation, demolition of OB2 abutment, installation of air duct bracket, subway underpinnings, temporary support for subway
- Dismantling of scaffolding, pumping test,
- Architectural Builders Works and Finishes (ABWF) & Electrical and Mechanical (E&M) works.

Breaches of Action and Limit Levels for Air Quality

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

Breaches of Action and Limit Levels for Noise

Regular Noise Monitoring

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

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

Continuous Noise Monitoring

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

Complaint, Notification of Summons and Successful Prosecution

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

Future Key Issues

Key issues to be considered in the coming month included:

Hung Hom Area

- Excavation work, site clearance, slope work, cable detection, excavation lateral support, form work erection, reinforcement fixing,
- Construction of drainage and man hole, foul water diversion
- Trial pit, trial trench, pre-drilling, pilling works, pre-grouting, grouting, post-grouting, abutment works, pre-split,
- Erection of hoarding, scaffolding platform, erection of utility temporary supports, abondoned utilities, utilities protection, subway underpinnings
- Tie back installation, lifting works, construction of noise enclosure footing, decking installation, demolition of OB2 abutment, excavation of jacking pit and receiving pit, tunnel structure
- Dismantling of scaffolding, pumping test,
- Architectural Builders Works and Finishes (ABWF) & Electrical and Mechanical (E&M) 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 thirty second monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period from 1 to 31 August 2015.

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/H) was issued by Director of Environmental Protection (DEP) on 10 September 2014.

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 clearance, slope work, cable detection, excavation lateral support, form work erection, reinforcement fixing,
- Construction of drainage and man hole, foul water diversion
- Trial pit, trial trench, pre-drilling, pilling works, pre-grouting, grouting, post-grouting, pre-spilt, backfilling, abutment works,
- Erection of hoarding, scaffolding platform, erection of utility temporary supports, erection of temporary link walkway, temporary working platform, abondoned utilities, utilities protection,
- Tie back installation, lifting works, construction of noise enclosure footing, decking installation, demolition of OB2 abutment, installation of air duct bracket, subway underpinnings, temporary support for subway
- Dismantling of scaffolding, pumping test,
- Architectural Builders Works and Finishes (ABWF) & Electrical and Mechanical (E&M) works.

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	Ms. Michelle Tang	3904 9663	
AECOM	Contractor's Environmental Team (ET)	ET Leader	Mr. Y T Tang	3922 9393	2317 7609

2.5 Status of Environmental Licences, Notification and Permits

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

Table 2.1 Status of Environmental Licenses, Notifications and Permits

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Environmental Permit				
EP-437/2012	22 Mar 2012	-	Valid	-
EP-438/2012/H	10 Sep 2014	-	Valid	-
Construction Noise Permit				
GW-RE0132-15	7 Feb 2015	6 Aug 2015	Valid	For General works for steel decking at EWL8
GW-RE0156-15	24 Feb 2015	23 Aug 2015	Valid	For Pumping Test at NSL6
GW-RE0194-15	9 Mar 2015	8 Sep 2015	Valid	For General Work at NSL 3-5
GW-RE0190-15	10 Mar 2015	9 Sep 2015	Valid	For Grouting Station and Desandar at EWL8
GW-RE0237-15	14 Mar 2015	13 Aug 2015	Valid until cancellation and superseded by GW-RE0802-15 on 14-Aug-15	For General Work at Oi Sen Path and Ho Man Tin Siding
GW-RE0410-15	30 Apr 2015	29 Oct 2015	Valid	For General Work at NSL 3-5
GW-RE0502-15	23 May 15	22 Nov 15	Valid until cancellation and superseded by GW-RE0837-15 on 18-Aug-15	For General works for steel decking at EWL8
GW-RE0637-15	25 Jun 15	23 Dec 15	Valid	For Pumping Test / System and General Work at NSL 9
GW-RE0634-15	26 Jun 15	23 Dec 15	Valid	For Pumping Test / System and General Work at NSL 7- 8
GW-RE0632-15	1 Jul 15	31 Oct 15	Valid	For Hoarding Erection at NSL 3-5
GW-RE0674-15	11 Jul 15	31 Oct 15	Valid	For TB1 & TB2 Maintenance Work at Chatham Rd North
GW-RE0691-15	15 Jul 15	7 Jan 16	Valid	For Pumping Test / System and General Work at EWL 9
GW-RE0713-15	15 Jul 15	14 Jan 16	Valid	For Pumping Test / System at EWL 7
GW-RE0711-15	18 Jul 15	11 Oct 15	Valid	For Scaffolding and 2.4m Hoarding Erection at Ho Man Tin and Oi Sen Path
GW-RE0700-15	19 Jul 15	18 Oct 15	Valid	For 6m Hoarding and Demolition of Scaffolding Platform at NSL 9 & Oi Sen Path
GW-RE0710-15	19 Jul 15	18 Sep 15	Valid	For 6m Hoarding Erection in NSL 6
GW-RE0719-15	20 Jul 15	19 Jan 16	Valid	For dewatering and welding at NSL6
GW-RE0687-15	30 Jul 15	29 Jan 16	Valid	For General and Reprovisioning Works at Hung Hom Station

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
GW-RE0737-15	30 Jul 15	31 Oct 15	Valid	For Noise Enclosure and Steel Platform Erection Work at Oi Sen Path
GW RE0749 15	1 Aug 15	31 Oct 15	Valid	For Bar Fencing Erection near Railway Trackside Area at Ho Man Tin Sidings
GW RE0802 15	14 Aug 15	13 Feb 16	Valid	For General Work at Oi Sen Path and Ho Man Tin Siding
GW RE0837 15	18 Aug 15	9 Feb 16	Valid	For General works for steel decking at EWL8
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
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)
WT00018688 2014	14 Apr 2014	30 Apr 2019	Valid	For Hung Hom Freight Terminal Works
WT00019068 2014	25 Jun 2014	30 Jun 2019	Valid	For Oi Sen Path Works
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 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
5213 213 G2618 12	14 Apr 2014		Valid	For Hung Hom Freight Terminal Works
5213 236 G2618 14	08 May 2014		Valid	For Oi Sen Path Works
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	
Clinical Waste Producer Premises Code				
PC01/RE/00362644	30 Jan 2014		Valid	For Hung Hom Freight Yard Works

3 ENVIRONMENTAL MONITORING REQUIREMENTS

3.1 Construction Dust Monitoring

Monitoring Requirements

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

Monitoring Equipment

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

Table 3.1 Air Quality Monitoring Equipment

Equipment	Brand and Model
High Volume Sampler (24 hour TSP)	Andersen Total Suspended Particulate Mass Flow Controlled High Volume Air Sampler (Model No. GS 2310 (S/N:8259))
Calibration Kit	TISCH Environmental Orifice (Model TE 5025A (Orifice I.D.: 0843))

Monitoring Locations

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

Table 3.2 Locations of Construction Dust Monitoring Stations

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

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

Monitoring Methodology

3.1.4 24 hour TSP Monitoring

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

(i) A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
(ii) The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
(iii) A minimum of 2 meters separation from walls, parapets and penthouse for rooftop sampler.
(iv) A minimum of 2 meters separation from any supporting structure, measured horizontally is required.
(v) No furnace or incinerator flues nearby.
(vi) Airflow around the sampler was unrestricted.
(vii) Permission was obtained to set up the samplers and access to the monitoring stations.
(viii) A secured supply of electricity was obtained to operate the samplers.

(ix) The sampler was located more than 20 meters from any dripline.
(x) Any wire fence and gate, required to protect the sampler, did not obstruct the monitoring process.
(xi) Flow control accuracy was kept within ±2.5% deviation over 24 hour sampling period.

(b) Preparation of Filter Papers

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

(c) Field Monitoring

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

(d) Maintenance and Calibration

(i) The HVS and its accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
(ii) HVSs were calibrated using TE 5025A Calibration Kit upon installation and thereafter at bi monthly intervals.
(iii) Calibration certificate of the TE 5025A Calibration Kit and the HVSs are provided in **Appendix E**.

Monitoring Schedule for the Reporting Month

3.1.5 The schedule for environmental monitoring in August 2015 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: 2285692), (S/N: 2800927), (S/N: 2800930)) Rion (Model No. NL 31 (S/N: 00320528))
Acoustic Calibrator	Rion (Model No. NC 73 (S/N: 10307223))

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: $L_{eq(30\ minutes)}$ 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 August 2015 is provided in **Appendix F**.

3.3 Continuous noise monitoring

Monitoring Requirements

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

Monitoring Locations

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

Table 3.7 Summary of Proposed Continuous Noise Monitoring Location

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

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

Monitoring Equipment

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

Table 3.8 Noise Monitoring Equipment for Continuous Noise Monitoring

Equipment	Brand and Model
Integrated Sound Level Meter	B&K (Model No. 2238)
Acoustic Calibrator	Rion (Model No. NC 73)

Monitoring Parameters, Frequency and Duration

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

Monitoring Methodology

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

Event and Action Plan

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

Table 3.9 Summary of Proposed Continuous Noise Monitoring Programme

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

Note:
(1) Action/Limit level will only be applicable during the examination period.
(2) Permission of access could not be obtained from Wing Fung Building (originally proposed in the approved EM&A Manuals) and hence the monitoring location was relocated to No. 234 248 Chatham Road North. The alternative monitoring location is considered as an appropriate alternative noise monitoring station in the CNMP.
(3) Based on 2014 2015 Calendar of Carmel Secondary School, the examination periods are scheduled in January and February 2015. The continuous noise monitoring was conducted in January and February 2015.
(4) Additional continuous noise monitoring was conducted in March 2015 according to the latest 2014 2015 Calendar of Carmel Secondary School.

3.4 Landscape and Visual

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

4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

Table 4.1 Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
Condition 3.4 (EP 437/2012) & Condition 3.4 (EP 438/2012/H)	Monthly EM&A Report for July 2015	14 August 2015

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	53.7	35.6 – 100.4	183.9	260

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

5.1.3 The event and action plan is annexed in **Appendix I**.

5.1.4 Major dust sources during the monitoring included construction dust from the Project site and other nearby construction sites and also nearby traffic emission.

5.2 Regular Construction Noise Monitoring

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

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

ID	Range, dB(A), $L_{eq\ (30\ mins)}$	Limit Level, dB(A), $L_{eq\ (30\ mins)}$
NM 1(2)	<Baseline – 56.5	70 (65)(1)
NM 2(2)	<Baseline	75

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

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

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

5.2.4 The event and action plan is annexed in **Appendix I**.

5.2.5 Major noise sources during the monitoring included construction noise from the Project site and other nearby construction sites, nearby traffic noise and noise from school activities and the community.

5.3 Continuous Noise Monitoring

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

5.4 Waste Management

5.4.1 C&D materials and wastes sorting were carried out on site. Receptacles were available for C&D wastes and general refuse collection.

5.4.2 As advised by the Contractor, 7,675m^3 of inert C&D material was generated. 1,906m^3 and 75m^3 were disposed as public fills at TKO137 and TM38 respectively. 5,695m^3 of public fills was delivered to Hung Hom Barging Point and handled by other project. While 43,330kg of general refuse was disposed at NENT landfill in the reporting month. No paper/cardboard packaging material, no metals and plastic was collected by recycling contractor in the reporting month. 6,941m^3 of Type 1 marine dumping was delivered to Hung Hom Barging Point. No chemical waste was collected by licensed contractor in the reporting period. The waste flow table is annexed in **Appendix K.**

5.4.3 The Contractor is advised to properly maintain on site C&D materials and wastes collection, sorting and recording system and maximize reuse / recycle of C&D materials and wastes. The Contractor is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.

5.4.4 The Contractor is reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of 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 and 20 August 2015. 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 August 2015. The one held on 13 August 2015 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	13 Aug 15	• Muddy water or debris was observed leaking from the construction site or likely to be discharged into public drainage/public area at NSL6, Oi Sen Path and EWL7. The Contractor should implement proper and sufficient mitigation measures to avoid muddy water or debris from leaving from the site area.	The item was rectified by the Contractor on 19 Aug15.
	27 Aug 15	• Debris accumulated inside the u channel was observed at Oi Sen Path. The Contractor should remove the debris regularly.	The item was rectified by the Contractor on 2 Sep15.
Air Quality	6 Aug 15	• Site areas at NSL3 5 and NSL9 were observed dry. The Contractor shall water the exposed area timely.	The item was rectified by the Contractor on 12 Aug15.
	20 Aug 15	• Fugitive dust emitted from rock drilling rig was observed at Oi Sen Path, although water spraying was applied. The Contractor should review /enhance the preventive measures of the plant to minimize dust emission.	The item was rectified by the Contractor on 25 Aug15.
Noise	N/A	N/A	N/A
Waste/ Chemical Management	13 Aug 15	• Oil stains were observed under a piling machine at Oi Sen Path. The Contractor should clean up the oil stains and dispose of the contaminated soil as chemical waste. • Several chemical/oil containers were observed without drip tray at EWL8. The Contractor should provide drip trays for all chemical/oil containers in the site. • Containers inside the chemical waste storage area were observed without proper chemical waste labels at EWL9. The Contractor should provide chemical waste labels for all containers in the chemical waste storage area.	The item was rectified by the Contractor on 19 Aug15.
	27 Aug 15	• Chemical containers placed on ground without drip tray were observed at NSL9 and EWL8. The Contractor should store the chemical containers with drip tray properly. • Oil stain was observed at NSL6. The Contractor was reminded to remove the oil stain and dispose of as chemical waste properly.	The item was rectified by the Contractor on 2 Sep 15.
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.

7 ENVIRONMENTAL NON CONFORMANCE

7.1 Summary of Monitoring Exceedances

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

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

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

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

7.2 Summary of Environmental Non Compliance

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

7.3 Summary of Environmental Complaints

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

7.4 Summary of Environmental Summon and Successful Prosecutions

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

8 FUTURE KEY ISSUES

8.1 Construction Programme for the Project

Construction Programme for the Next Two Month

8.1.1 The major construction works in September 2015 and October 2015 will be:

Hung Hom Area

- Excavation work, site clearance, slope work, cable detection, excavation lateral support, form work erection, reinforcement fixing,
- Construction of drainage and man hole, foul water diversion
- Trial pit, trial trench, pre drilling, pilling works, pre grouting, grouting, post grouting, abutment works, pre split,
- Erection of hoarding, scaffolding platform, erection of utility temporary supports, abondoned utilities, utilities protection, subway underpinnings
- Tie back installation, lifting works, construction of noise enclosure footing, decking installation, demolition of OB2 abutment, excavation of jacking pit and receiving pit, tunnel structure
- Dismantling of scaffolding, pumping test,
- Architectural Builders Works and Finishes (ABWF) & Electrical and Mechanical (E&M) 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, water quality impact and waste management.

8.3 Monitoring Schedule for the Next Month

8.3.1 The tentative schedule for environmental monitoring in September 2015 and October 2015 is provided in **Appendix F**.

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

9.1.1 24 hour TSP and noise monitoring were carried out in the reporting month.

9.1.2 All 24 hour TSP monitoring results complied with the Action / Limit Level at in the reporting month.

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

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

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

9.1.6 4 nos. of environmental site inspections were carried out in July 2015. 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

- Provide proper drainage system management.

Chemical/ Waste Management

- Provide proper chemical and general waste management.

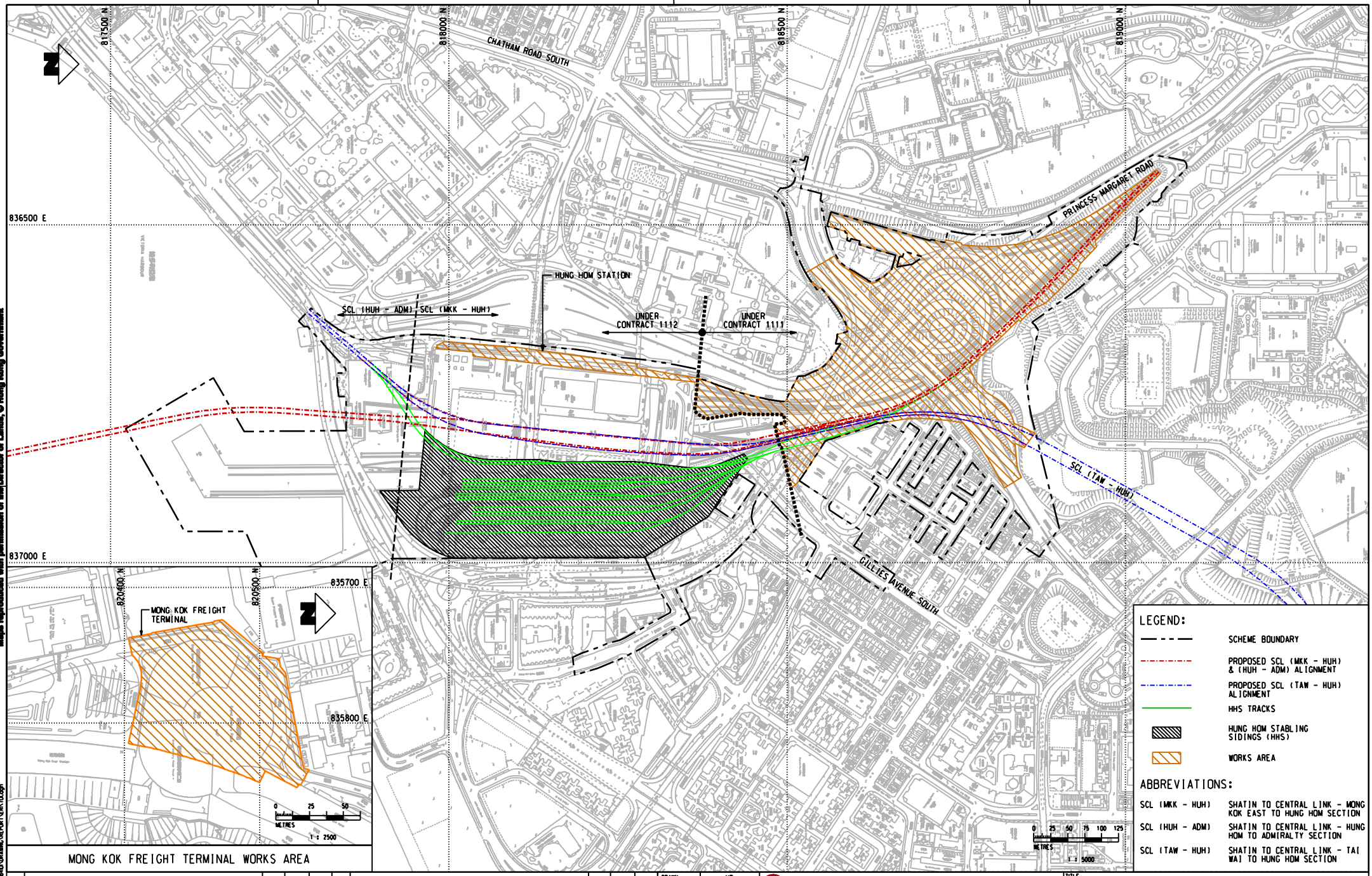
Landscape and Visual Impact

- No specific observation was identified in the reporting month.

Permits/Licenses

- No specific observation was identified in the reporting month.

FIGURES



MONG KOK FREIGHT TERMINAL WORKS AREA

LEGEND:

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

ABBREVIATIONS:

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

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SHATIN TO CENTRAL LINK

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

ORIGINATOR: AECOM

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

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FIGURE NO.: FIGURE 1.1

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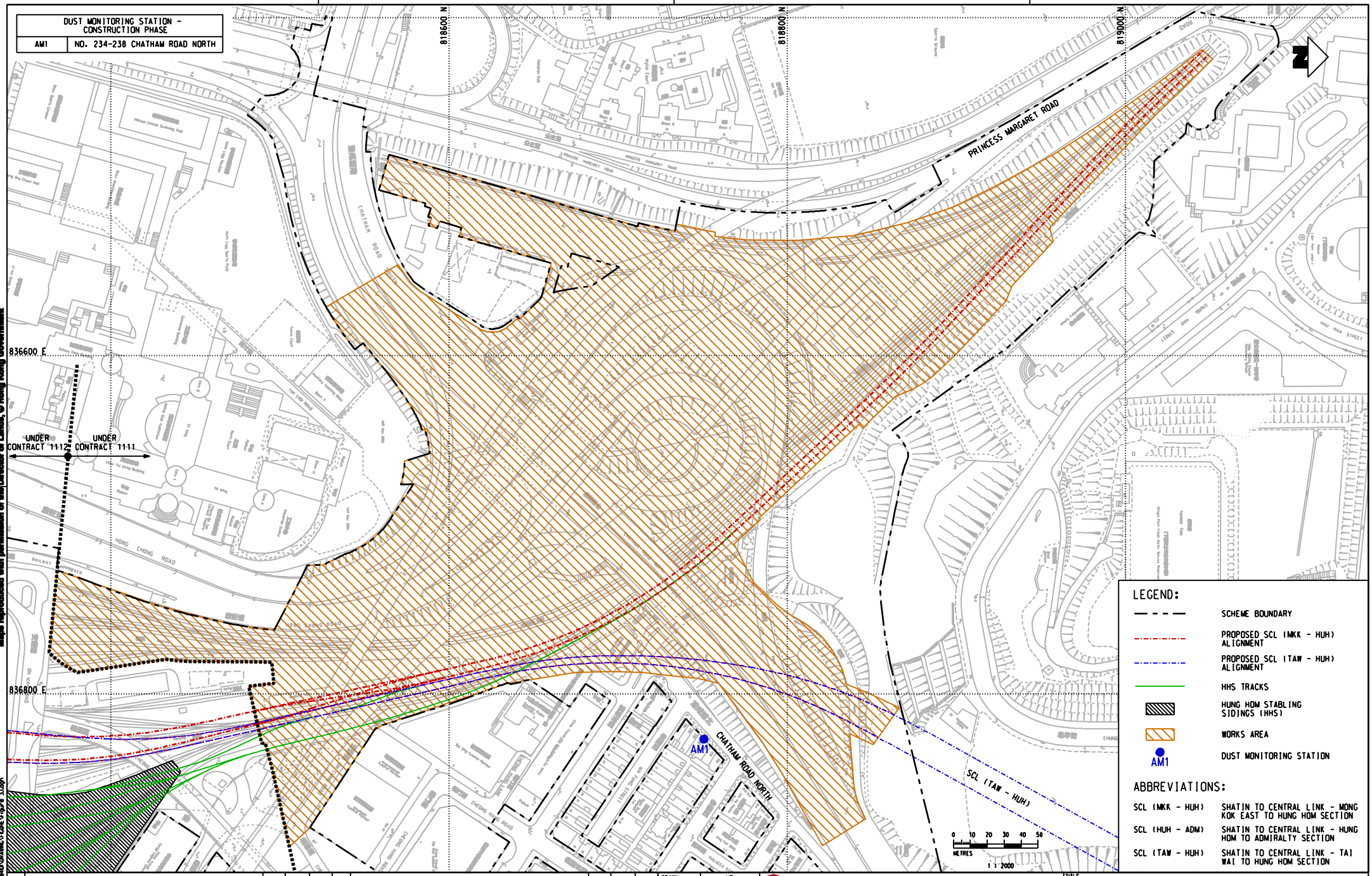

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ORIGINATOR: AECOM

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HUNG HOM NORTH APPROACH TUNNELS
LOCATION OF AIR QUALITY MONITORING STATION

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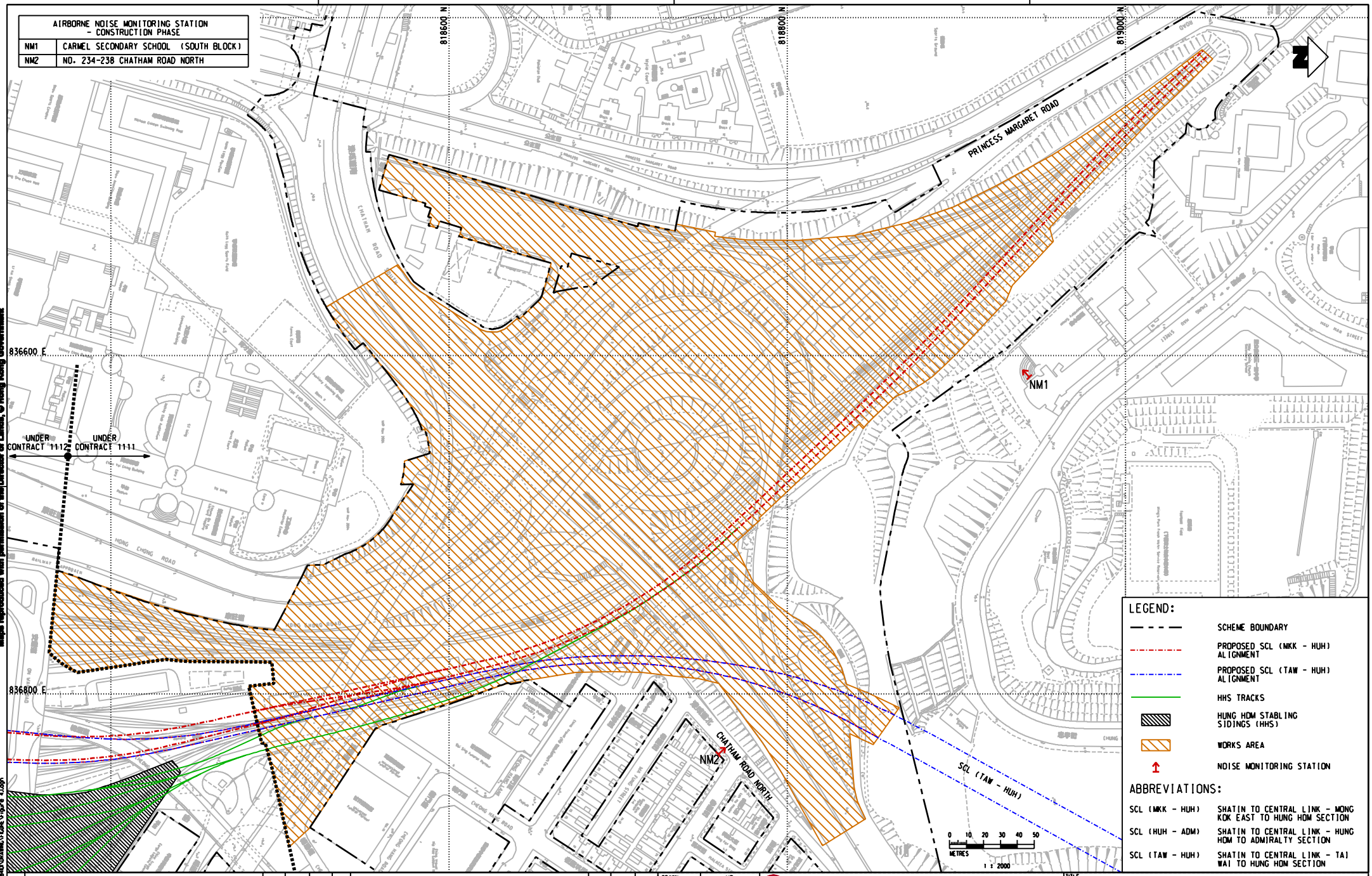

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ORIGINATOR: AECOM

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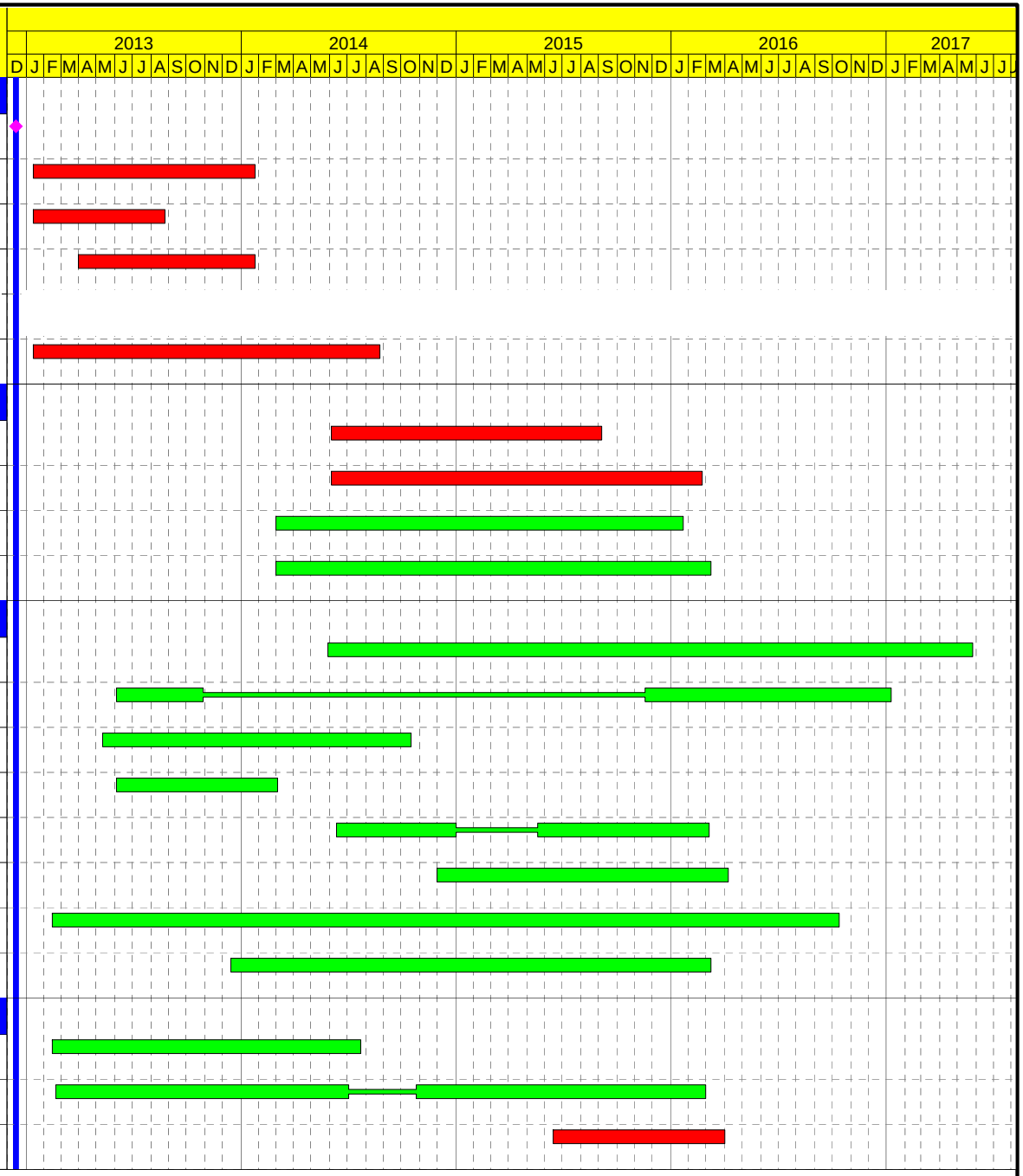
TITLE
CONTRACT 1111
HUNG HOM NORTH APPROACH TUNNELS
LOCATION OF NOISE MONITORING STATION (CONSTRUCTION PHASE)

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

APPENDIX A

Construction Programme

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



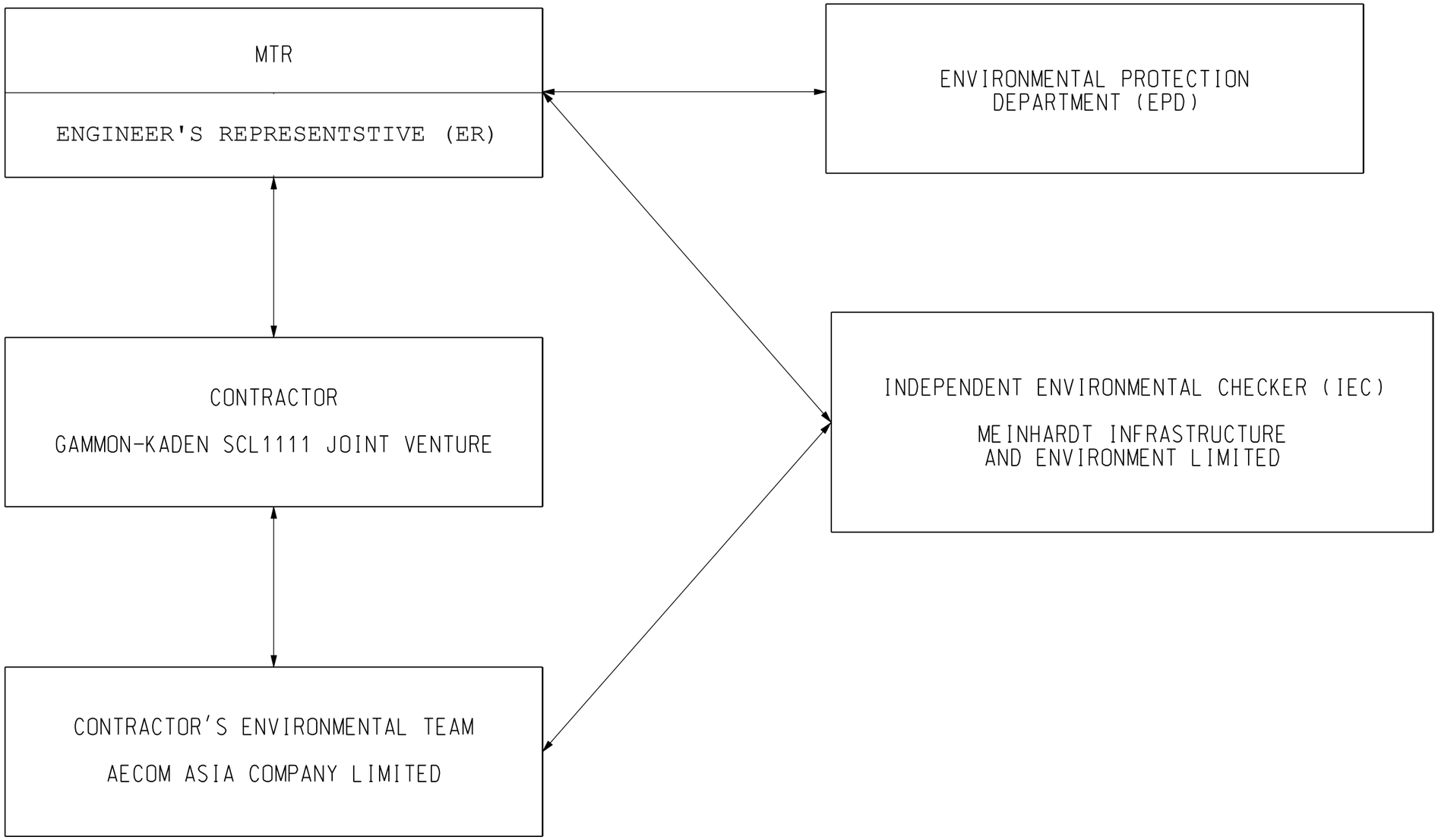
Early Bar
Progress Bar
Critical Activity

SCL 1111
SUMMARY PROGRAMME

Date	Revision	Checked	Approved
19/09/12			

APPENDIX B

Project Organization Structure



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

ORIGINATOR: AECOM

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TITLE
CONTRACT 1111
HUNG HOM NORTH APPROACH TUNNELS
PROJECT ORGANISATION

SCALE N.T.S.

FIGURE NO. Appendix B

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APPENDIX C

Implementation Schedule of Environmental Mitigation Measures

Appendix C - Implementation Schedule of Environmental Mitigation Measures

EIA Ref.	Environmental Mitigation Measures		Location	Implementation Status
Landscape and Visual Impact				
S6.9.3 (TAW-HUH) , S6.12 (HHS), S6.12 (TAW-HUH), Table 6.9 (HHS) & Table 4.9 (MKK-HUH)	Minimize visual & landscape impact	Existing topsoil shall be re-used where possible for new planting areas within the Project.	All construction sites	N/A
		Ground vegetation and the associated under storey habitats, construction contracts may designate “No-intrusion Zone” to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone.	All construction sites	N/A
		All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period.	All construction sites	V
		Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas.	All construction sites	V
		Giving control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs.	All construction sites	V
		Trees of medium to high survival rate that would be affected by the works shall be transplanted where possible and practicable.	All construction sites	N/A
		Compensatory tree & shrub planting shall be provided to compensate for the loss of shrub planting in amenity areas.	All construction sites	N/A
		Control of night-time lighting glare.	All construction sites	N/A
		All hard and soft landscape areas disturbed temporarily during construction shall be reinstated to equal or better quality, to the satisfaction of the relevant Government Departments.	All construction sites	N/A

Construction Noise Impact				
8.3.6 (TAW-HUH) , S8.5.6 (HHS) & S6 (MKK-HUH)	To control construction airborne noise	Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme.	All construction sites	V
		Machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	All construction sites	V
		Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs.	All construction sites	V
		Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works.	All construction sites	V
		Mobile plant should be sited as far away from NSRs as possible and practicable.	All construction sites	V
		Material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	All construction sites	V
		The following quiet PME should be used: • Asphalt Paver (SWL=101dB(A)) • Backhoe (SWL=106dB(A)) • Backhoe with Hydraulic Breaker (SWL=110dB(A)) • Concrete lorry mixer (SWL=96dB(A)) • Concrete mixer truck (SWL=96dB(A)) • Concrete Pump (SWL=106dB(A)) • Concrete Pump Truck (SWL=106dB(A)) • Crane, mobile (SWL=94dB(A)) • Crawler Crane (SWL=102dB(A)) • Drill, hand-held (SWL=98dB(A))	Works areas where required	N/A

Construction Noise Impact				
		• 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	@
		Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet.	All construction sites	V
		Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads	All construction sites	V
		A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones.	All construction sites	V
		The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle	All construction sites	N/A
		Vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point.	All construction sites	V
		The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.	All construction sites	V
		When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided.	All construction sites	V
		The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials.	All construction sites	V
		Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously.	All construction sites	@

Construction Air Quality Impact				
		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	V
		Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed.	All construction sites	N/A
		Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system.	All construction sites	V
		Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site.	All construction sites	N/A
		Imposition of speed controls for vehicles on site haul roads.	All construction sites	N/A
		Open burning shall be prohibited.	All construction sites	V

Construction Air Quality Impact				
/	Emission from Vehicles and Plants	All vehicles shall be shut down in intermittent use.	All construction sites	V
		Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.	All construction sites	V
		All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD).	All construction sites	V

Construction Water Quality Impact				
S10.7.1 (TAW-HUH) , S10.7.1 (HHS) & S8 (MKK-HUH)	To minimize construction water quality impactt	Construction Site Drainage should be implemented to control site run-off and drainage as well as any site effluents generated from the works areas, and to prevent run-off and construction wastes from entering nearby water environment.	Site drainage system	@
		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	V
		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 out immediately after the final surfaces are formed to prevent erosion caused by rainstorms.	All construction sites	N/A

Construction Water Quality Impact				
		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	V
		Good site practices should be adopted to remove rubbish and litter from construction sites so as to prevent the rubbish and litter from spreading from the site area.	All construction sites	V
		All vehicles and plant should be cleaned before they leave a construction site to minimize the deposition of earth, mud, debris on roads.	All construction sites	V
		Bentonite slurries used in diaphragm wall construction should be reconditioned and used again wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry should either be dewatered or mixed with inert fill material for disposal to a public filling area.	All construction sites	V
		A cofferdam wall should be built as necessary to limit groundwater inflow to the excavation works areas.	Excavation works areas	N/A

Construction Water Quality Impact				
		Wastewater generated should not be discharged into the stormwater drainage system.	All construction sites	V
		Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers.	All construction sites	N/A
		Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers over the construction site.	All construction sites	V
		The Contractor should apply for a discharge license under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.	All construction sites where practicable	N/A
		Appropriate measures will be deployed to minimize the intrusion of groundwater into excavation works areas.	All construction sites	N/A
		Measures should be put in place in order to mitigate any drawdown effects to the groundwater table during the operation of the temporary dewatering works.	All construction sites	N/A

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

Waste Management				
		Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed.	All construction sites	V
		The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides.	All construction sites	@
		The Contractor should register as a chemical waste producer if chemical wastes would be generated.	All construction sites	V
		Disposal of chemical waste should be via a licensed waste collector.	All construction sites	V
		Stockpiling of contaminated sediments should be avoided as far as possible.	All construction sites	N/A
		All storage of asbestos waste should be carried out properly in a secure place isolated from other substances so as to prevent any possible release of asbestos fibres into the atmosphere and contamination of other substances. The storage area should bear warning panels to alert people of the presence of asbestos waste. Collection, transportation and disposal of asbestos waste should follow the trip-ticket system. Licensed asbestos waste collectors should be appointed to collect the asbestos waste and deliver to the designated landfill for disposal.	All construction sites	N/A

Contaminated Land				
S10.24– 10.34 (MKK-HUH)	To act as a general precautionary measure to screen soils for the presence contamination during construction.	Precautionary measures such as visual inspection are recommended to be undertaken during construction activities that disturb soil.	Within Project Boundary where signs of contamination is identified	N/A
		If soil discolouration or the presence of oil/unnatural odour is noted during visual inspection, sampling and testing should also be undertaken to verify the presence of contamination.		N/A
	To remediate contaminated soil	If land contamination is identified, CAR and RAP detailing the proposed remediation works should be prepared. RR should then be prepared and submitted to EPD to demonstrate that the decontamination work is adequate and has been carried out in accordance with the endorsed CAR and RAP.		N/A

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

APPENDIX D

Summary of Action and Limit Levels

Appendix D – Summary of Action and Limit Levels

Table 1 Action and Limit Levels for 24-hour TSP

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

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

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

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

Table 3 Action and Limit Levels for Continuous Noise

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

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

APPENDIX E

Calibration Certificates of Equipments

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:	26-Jun-15	Next Due Date:	26-Aug-15
Equipment No.:	---	Serial No.	8259

Ambient Condition			
Temperature, Ta (K)	303	Pressure, Pa (mmHg)	753.3

Orifice Transfer Standard Information					
Serial No:	843	Slope, mc	1.99924	Intercept, bc	-0.01238
Last Calibration Date:	9-Dec-14	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	9-Dec-15				

Calibration of TSP Sampler

Resistance Plate No.	Orfice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m^3/min) **X - axis**	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) **Y-axis**
18	7.7	2.74	1.38	41.0	40.48
13	6.0	2.42	1.22	35.0	34.56
10	5.3	2.27	1.14	31.0	30.61
7	4.1	2.00	1.01	25.0	24.68
5	3.1	1.74	0.88	20.0	19.75

By Linear Regression of Y on X

Slope , mw = **42.1898** **Intercept, bw =** **-17.3851**

Correlation Coefficient* = **0.9974**

*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)]$^{1/2}$= **37.94**

Remarks: _____

QC Reviewer: WS CHAN Signature: _____ Date: 26/6/15

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:	26-Aug-15	Next Due Date:	26-Oct-15
Equipment No.:	---	Serial No.	8259

Ambient Condition			
Temperature, Ta (K)	301	Pressure, Pa (mmHg)	753.4

Orifice Transfer Standard Information					
Serial No:	843	Slope, mc	1.99924	Intercept, bc	-0.01238
Last Calibration Date:	9-Dec-14	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	9-Dec-15				

Calibration of TSP Sampler

Resistance Plate No.	Orfice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m^3/min) **X - axis**	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) **Y-axis**
18	7.6	2.73	1.37	42.0	41.61
13	6.0	2.43	1.22	35.0	34.67
10	5.2	2.26	1.14	31.0	30.71
7	4.1	2.01	1.01	26.0	25.76
5	3.2	1.77	0.89	20.0	19.81

By Linear Regression of Y on X

Slope , mw = **44.8828** **Intercept, bw =** **-20.0304**

Correlation Coefficient* = **0.9988**

*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)]$^{1/2}$= **38.68**

Remarks:

QC Reviewer: WS CHAN Signature: Date: 26/8/15

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 - Dec 09, 2014 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 0843 Pa (mm) - 755.65

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4010	3.2	2.00
2	NA	NA	1.00	0.9950	6.4	4.00
3	NA	NA	1.00	0.8830	7.9	5.00
4	NA	NA	1.00	0.8420	8.8	5.50
5	NA	NA	1.00	0.6960	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
1.0069	0.7187	1.4221
1.0027	1.0077	2.0112
1.0006	1.1332	2.2486
0.9994	1.1870	2.3584
0.9942	1.4285	2.8443

Qstd slope (m) = 1.99924
intercept (b) = -0.01238
coefficient (r) = 0.99990

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

Va	(x axis) Qa	(y axis)
0.9957	0.7107	0.8806
0.9915	0.9965	1.2454
0.9894	1.1206	1.3924
0.9883	1.1738	1.4603
0.9831	1.4126	1.7612

Qa slope (m) = 1.25189
intercept (b) = -0.00766
coefficient (r) = 0.99990

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.
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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

HKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0317 03 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2285692	,	2791211
Adaptors used:	-	,	-

Item submitted by

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	17-Mar-2015

Date of test: 18-Mar-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	20-Jun-2015	CIGISMEC
Signal generator	DS 360	33873	09-Apr-2015	CEPREI
Signal generator	DS 360	61227	09-Apr-2015	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1010 ± 5 hPa

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.

3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 19-Mar-2015 **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
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HKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 15CA0317 03 **Page** 2 **of** 2

1, Electrical Tests

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

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

2, Acoustic tests

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

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

3, Response to associated sound calibrator

N/A

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

- End -

Calibrated by: Fung Chi Yip **Date:** 18-Mar-2015

Checked by: Lam Tze Wai **Date:** 19-Mar-2015

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

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

CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0703 02-02 **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	,	2791214
Adaptors used:	-	,	-

Item submitted by

N-009 06

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	03-Jul-2015

Date of test: 04-Jul-2015

Reference equipment used in the calibration

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

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1000 ± 5 hPa

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.

3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 06-Jul-2015 **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
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HKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 15CA0703 02-02 **Page** 2 **of** 2

1, Electrical Tests

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

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

2, Acoustic tests

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

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

3, Response to associated sound calibrator

N/A

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

- End -

Calibrated by: Fung Chi Yip **Date:** 04-Jul-2015

Checked by: Lam Tze Wai **Date:** 06-Jul-2015

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

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
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香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓
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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0703 02-01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2800930	,	2250455
Adaptors used:	-	,	-

Item submitted by

N·009·07

Customer Name: AECOM ASIA CO., LTD.
Address of Customer: -
Request No.: -
Date of receipt: 03-Jul-2015

Date of test: 04-Jul-2015

Reference equipment used in the calibration

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

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 5 hPa

Test specifications

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

Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 06-Jul-2015 **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.
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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 15CA0703 02-01 **Page** 2 **of** 2

1, Electrical Tests

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

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

2, Acoustic tests

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

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

3, Response to associated sound calibrator

N/A

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

- End -

Calibrated by: Fung Chi Yip **Date:** 04-Jul-2015

Checked by: Lam Tze Wai **Date:** 06-Jul-2015

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

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 14CA1106 04-01 **Page** 1 **of** 2

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:	06-Nov-2014

Date of test: 07-Nov-2014

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	15-Jun-2015	CIGISMEC
Signal generator	DS 360	33873	09-Apr-2015	CEPREI
Signal generator	DS 360	61227	09-Apr-2015	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	65 ± 10 %
Air pressure:	1010 ± 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:** 08-Nov-2014 **Company Chop:** 綜合試驗有限公司 SOILS & MATERIALS ENGINEERING COMPANY LTD.

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
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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 14CA1106 04-01 **Page** 2 **of** 2

1, Electrical Tests

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

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

2, Acoustic tests

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

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

3, Response to associated sound calibrator

N/A

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

- End -

Calibrated by: Fung Chi Yip **Date:** 07-Nov-2014

Checked by: Lam Tze Wai **Date:** 08-Nov-2014

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

綜合試驗有限公司
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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 14CA1106 04-02 **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:	06-Nov-2014

Date of test: 07-Nov-2014

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	13-May-2015	SCL
Preamplifier	B&K 2673	2239857	10-Apr-2015	CEPREI
Measuring amplifier	B&K 2610	2346941	08-Apr-2015	CEPREI
Signal generator	DS 360	61227	09-Apr-2015	CEPREI
Digital multi-meter	34401A	US36087050	17-Dec-2014	CEPREI
Audio analyzer	8903B	GB41300350	07-Apr-2015	CEPREI
Universal counter	53132A	MY40003662	11-Apr-2015	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	65 ± 10 %
Air pressure:	1010 ± 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:** 08-Nov-2014 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

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SOILS & MATERIALS ENGINEERING CO., LTD.
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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 14CA1106 04-02 **Page:** 2 **of** 2

1, Measured Sound Pressure Level

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

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.02	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

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

At 1000 Hz **STF = 0.002 dB**

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

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

At 1000 Hz **Actual Frequency = 988.9 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

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

At 1000 Hz **TND = 1.3 %**

Estimated expanded uncertainty 0.7 %

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

- End -

Calibrated by: Fung Chi Yip **Date:** 07-Nov-2014

Checked by: Lam Tze Wai **Date:** 08-Nov-2014

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

APPENDIX F

EM&A Monitoring Schedules

Shatin to Central Link Contract 1111 - Hung Hom North Approach Tunnels
Impact Monitoring Schedule for August 2015

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

Shatin to Central Link Contract 1111 - Hung Hom North Approach Tunnels
Tentative Impact Monitoring Schedule for September 2015

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

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

Shatin to Central Link Contract 1111 - Hung Hom North Approach Tunnels
Tentative Impact Monitoring Schedule for October 2015

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

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

APPENDIX G

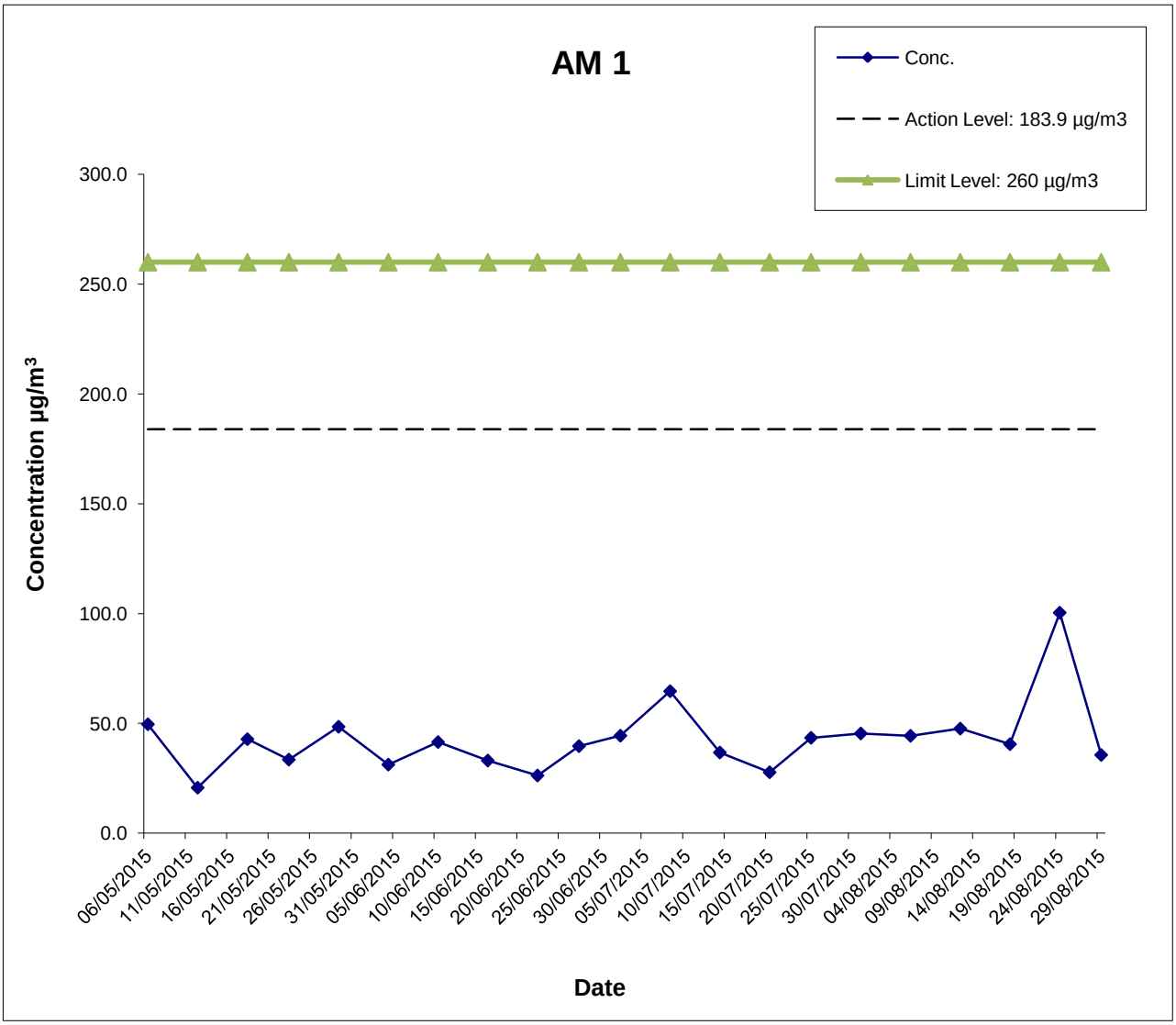
Air Quality Monitoring Results and their Graphical Presentations

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.)	($\mu g/m^3$)
6-Aug-15	0:00	7-Aug-15	0:00	Sunny	30.1	1005.3	1.31	1.31	1.31	1890.7	2.8037	2.8875	0.0838	10700.04	10724.04	24.00	44.3
12-Aug-15	0:00	13-Aug-15	0:00	Fine	30.0	1007.9	1.31	1.31	1.31	1890.7	2.8016	2.8916	0.0900	10724.04	10748.04	24.00	47.6
18-Aug-15	0:00	19-Aug-15	0:00	Fine	30.2	1008.0	1.31	1.31	1.31	1890.7	2.8219	2.8985	0.0766	10748.04	10772.04	24.00	40.5
24-Aug-15	0:00	25-Aug-15	0:00	Sunny	30.7	1002.4	1.31	1.31	1.31	1890.7	2.7970	2.9868	0.1898	10772.04	10796.04	24.00	100.4
29-Aug-15	0:00	30-Aug-15	0:00	Fine	27.8	1006.2	1.31	1.31	1.31	1890.7	2.8283	2.8957	0.0674	10796.04	10820.04	24.00	35.6
																Average	**53.7**
																Minimum	**35.6**
																Maximum	**100.4**

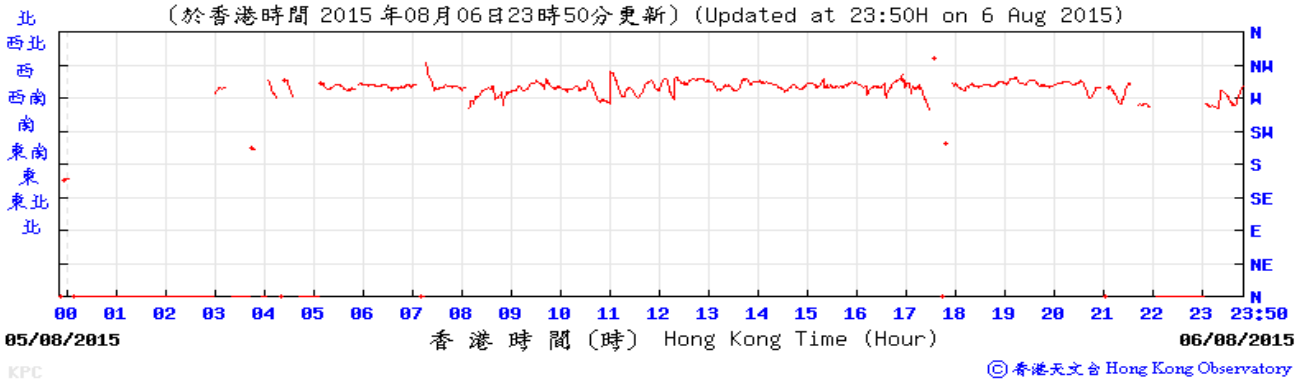
Appendix G Air Quality Monitoring Results

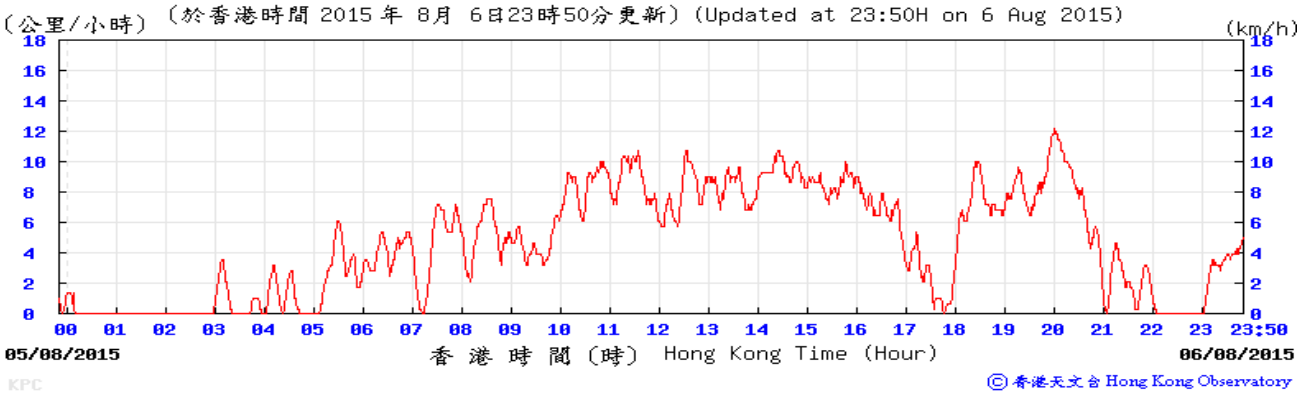


AECOM	Shatin to Central Link Works Contract 1111-Hung Hom North Approach Tunnels	SCALE	N.T.S.	DATE	Sep-15
		CHECK	TYUT	DRAWN	LLMC
	Graphical Presentations of Impact 24-hour TSP Monitoring Results	JOB NO.	60284101	APPENDIX No. G	Rev. -

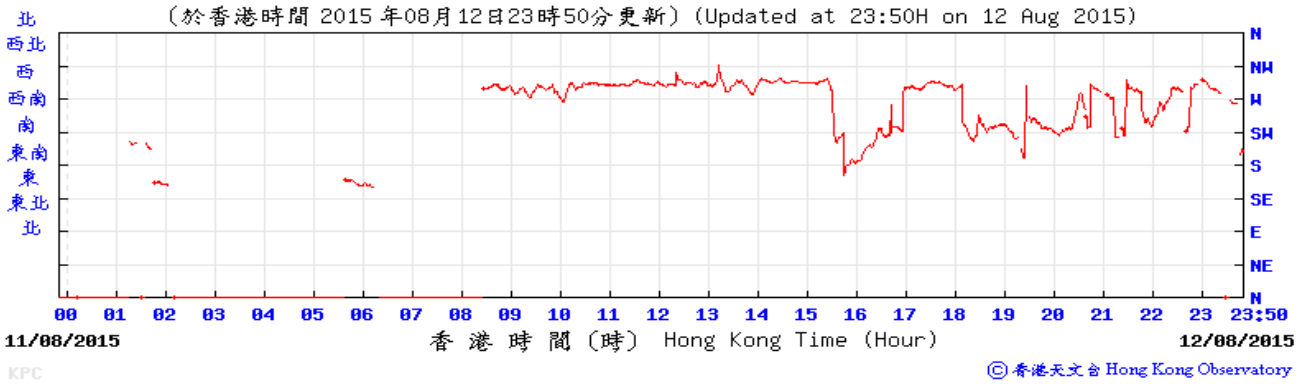
Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, June 2015

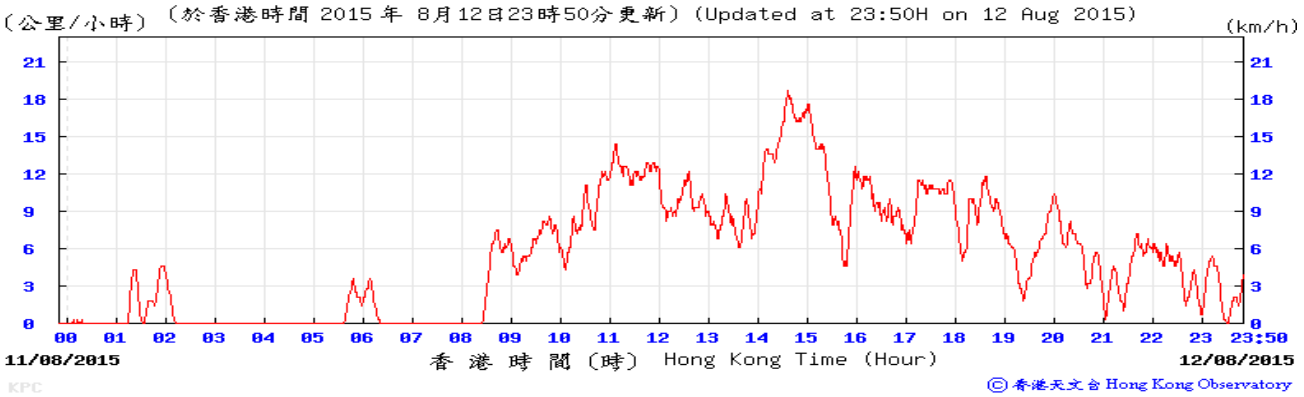
6-Aug-15





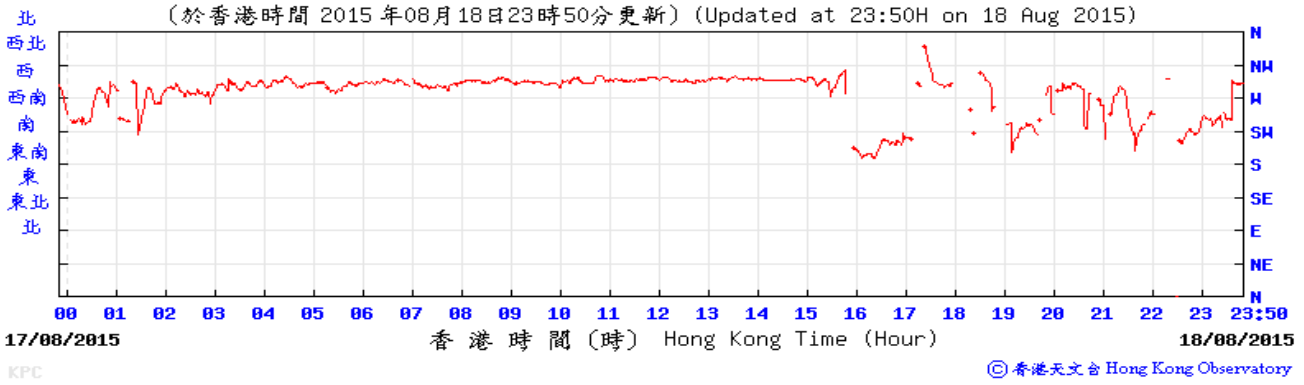
12-Aug-15

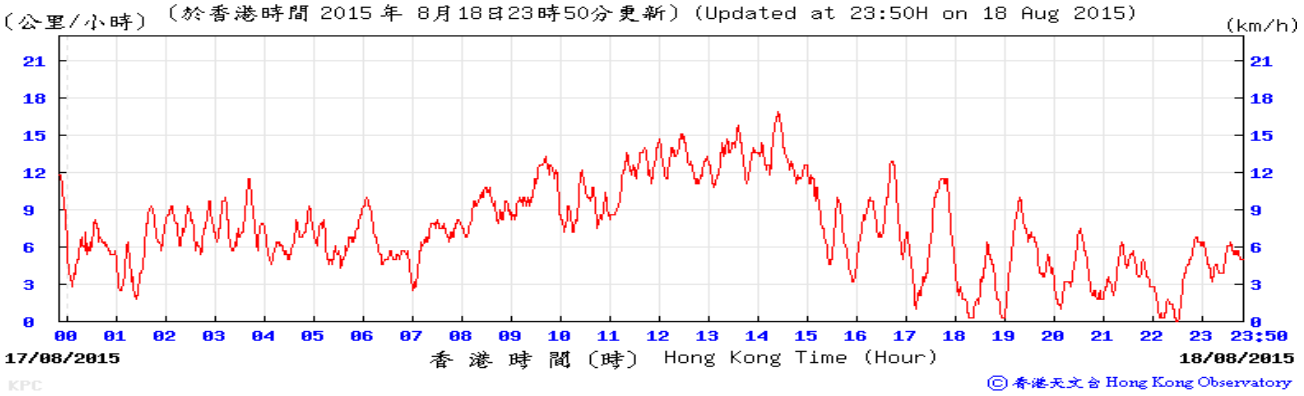




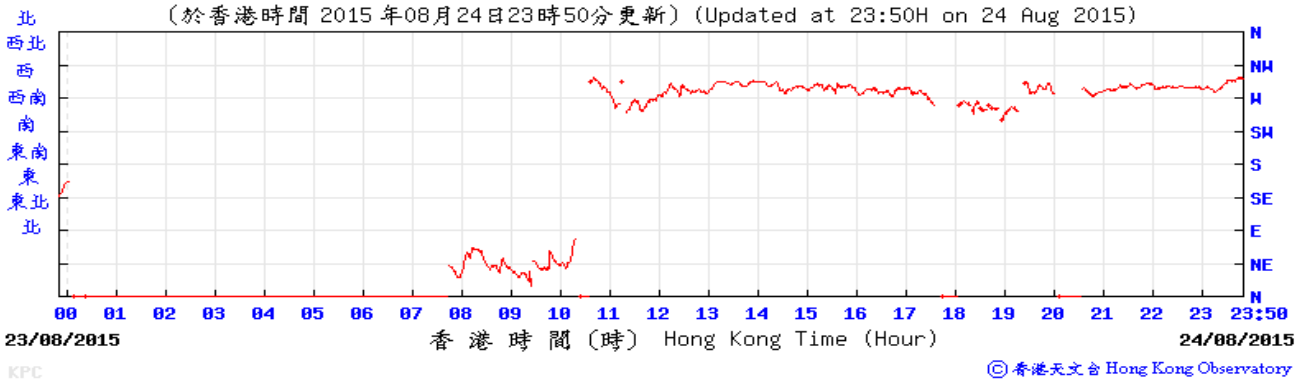
Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, June 2015

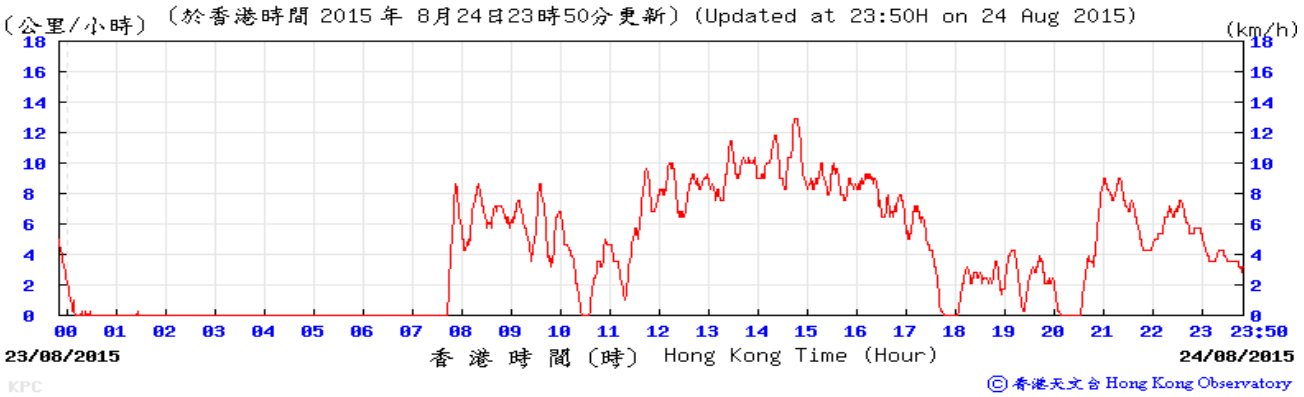
18-Aug-15





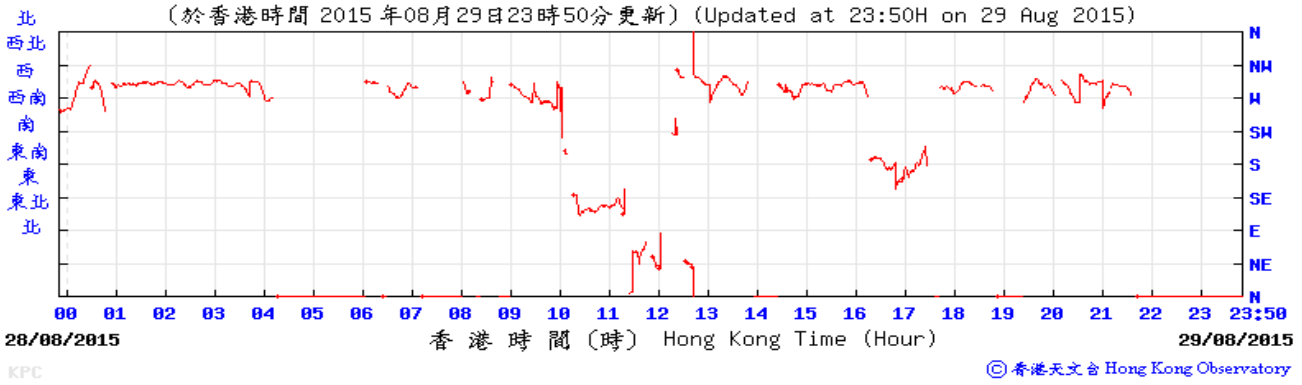
24-Aug-15

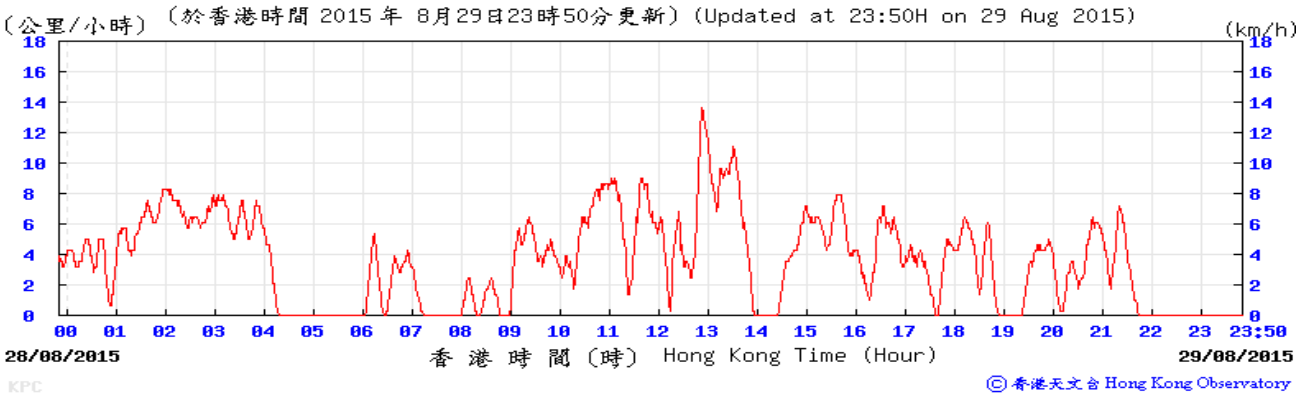




Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, June 2015

29-Aug-15





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				
7-Aug-15	Sunny	10:05	66.0	69.5	68.3	56.5	68.0	70	N
13-Aug-15	Fine	10:05	65.0	69.5	67.8	<Baseline	68.0	70	N
19-Aug-15	Sunny	10:08	66.0	69.5	67.9	<Baseline	68.0	70	N
25-Aug-15	Sunny	10:10	65.5	69.5	67.8	<Baseline	68.0	70	N

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

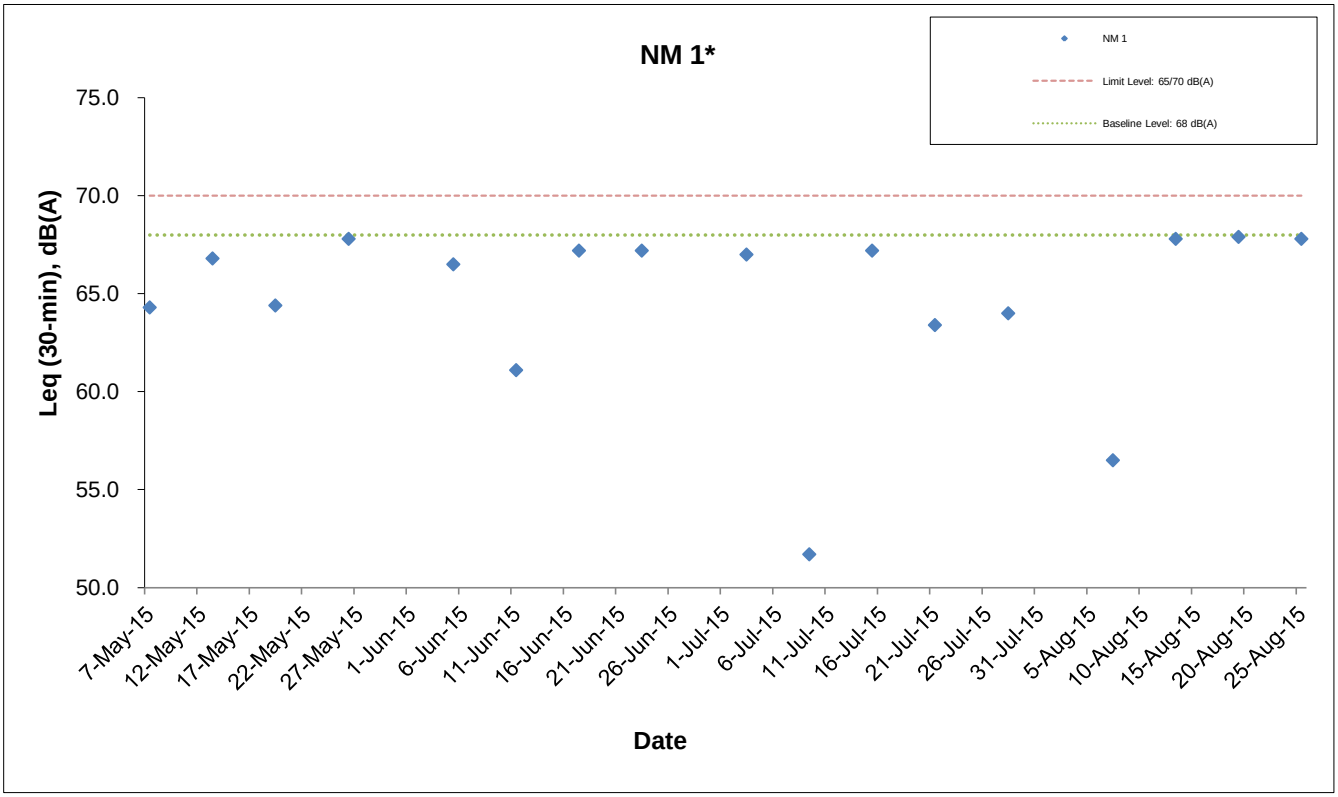
Date	Weather Condition	Noise Level for 30-min, dB(A)++				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
7-Aug-15	Sunny	10:30	68.0	71.0	69.5	<Baseline	79.0	75	N
13-Aug-15	Fine	11:00	68.5	72.0	70.1	<Baseline	79.0	75	N
19-Aug-15	Sunny	11:10	70.5	74.5	73.3	<Baseline	79.0	75	N
25-Aug-15	Sunny	10:58	70.5	75.0	73.5	<Baseline	79.0	75	N

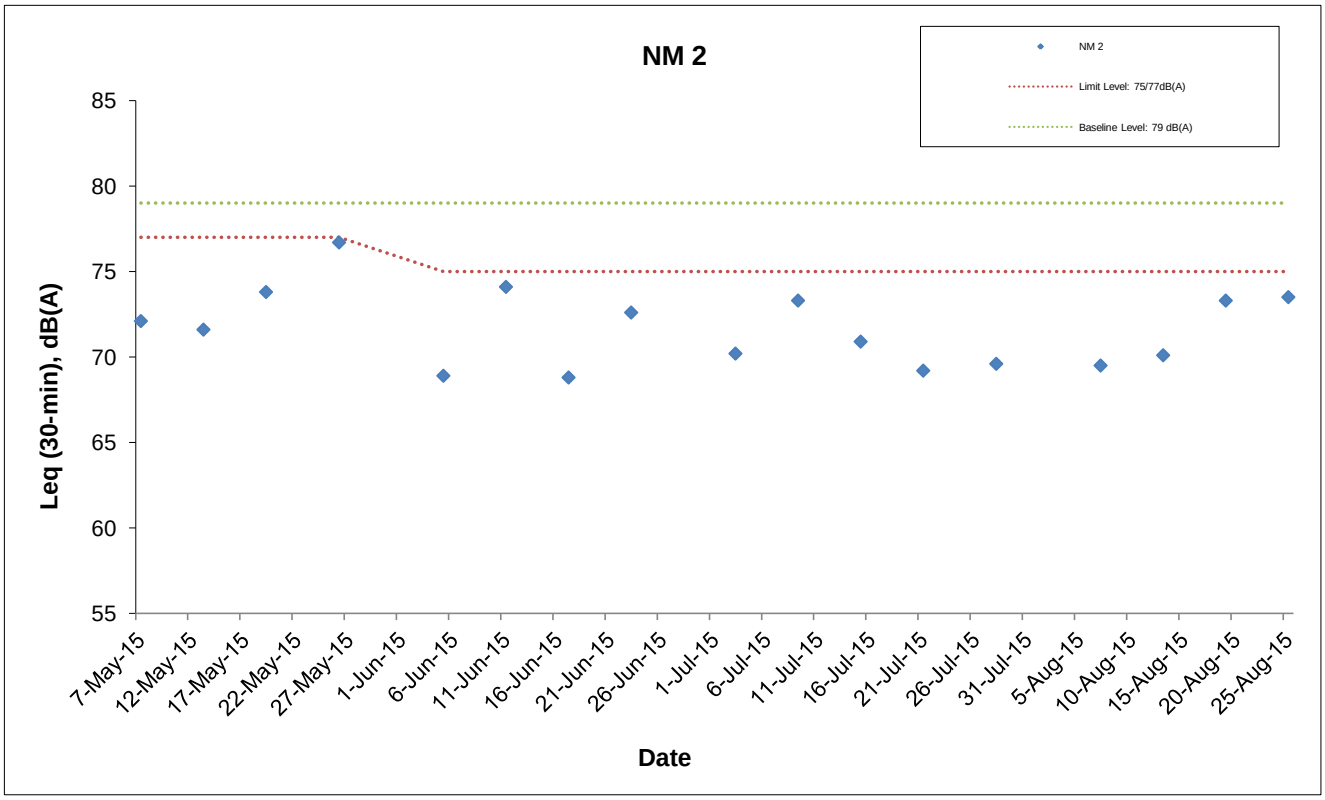
+ - Façade measurement

++ - 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	Sep-15
		CHECK	TYUT	DRAWN	LLMC
	Graphical Presentations of Noise Monitoring Results	JOB NO.	60284101	APPENDIX	H
				Rev	-

APPENDIX I

Event Action Plan

Appendix I – Event and Action Plan

Event / Action Plan for Construction Dust

EVENT	ACTION			
	ET	**IEC**	**ER**	**Contractor**
ACTION LEVEL				
1. Exceedance for one sample	1. Inform the Contractor, IEC and ER; 2. Discuss with the Contractor and IEC on the remedial measures required; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing.	1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; 3. Amend working methods agreed with the ER as appropriate.

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

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

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

Event / Action Plan for Regular Construction Noise

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

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

Event / Action Plan for Continuous Construction Noise

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

Event / Action Plan for Landscape and Visual during Construction Stage

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

APPENDIX J

Cumulative Statistics of Complaints, Notification of Summons and Successful Prosecutions

Appendix J

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. received in this month	Total no. received since project commencement
Environmental complaints	-	-	-	0	1
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	0	0

APPENDIX K

Waste Flow Table

Appendix K Monthly Summary Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated Monthly (Note 1)														Actual Quantities of Non-inert C&D Materials (i.e. C&D Wastes) Generated Monthly					Actual Quantities of Marine Dumping Monthly	
	Generated					Disposed				Reused					Recycled			Disposed		Disposed	
	Fill Material	Artificial Material			Total Quantity Generated	Disposed as Public Fills at TKO137	Disposed as Public Fills at TM38	Disposed as Public Fills at CWPFBP	Total Quantity Disposal	Reused in the Contract	Reused in other Projects		Delivered to HH Barging Point (Note 5)	Total Quantity Reused	Metals	Paper/ cardboard packaging (Note 3)	Plastics	Chemical Waste	General Refuse (Note 2)	Disposed as MD at HH Barging Point	
	Soil and Rock	Broken Concrete	Asphalt	Building Debris							Tolo	WIL 705								Type 1	Type 2
Unit	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000m^3)	('000m^3)
Jan	6.832	0.008	0.004	0.000	6.843	3.102	0.002	0.000	3.104	0.010	0.010	0.000	3.719	3.739	0.000	0.084	0.000	0.000	50.820	0.000	2.216
Feb	4.779	0.096	0.000	0.005	4.880	1.848	0.000	0.000	1.848	0.000	0.000	0.000	3.032	3.032	0.000	0.112	0.000	0.000	37.630	1.292	0.000
Mar	8.652	0.035	0.000	0.004	8.691	3.009	0.004	0.000	3.013	0.000	0.000	0.000	5.678	5.678	0.000	0.112	0.000	0.400	49.940	3.168	0.000
Apr	6.370	0.031	0.009	0.015	6.426	1.715	0.000	0.000	1.715	0.000	0.000	0.000	4.711	4.711	2.750	0.063	0.000	0.000	33.930	3.970	0.000
May	6.218	0.080	0.020	0.000	6.319	1.658	0.039	0.000	1.697	0.000	0.000	0.000	4.622	4.622	0.000	0.063	0.000	0.000	46.740	8.255	0.000
Jun	6.534	0.076	0.022	0.008	6.640	1.502	0.095	0.000	1.598	0.000	0.000	0.000	5.043	5.043	0.000	0.056	0.000	1.387	63.680	9.711	0.000
SUB-TOTAL	39.386	0.326	0.055	0.032	39.800	12.834	0.140	0.000	12.975	0.010	0.010	0.000	26.805	26.825	2.750	0.490	0.000	1.787	282.740	26.397	2.216
Jul	9.616	0.097	0.055	0.004	9.771	3.193	0.260	0.000	3.453	0.113	0.000	0.000	6.206	6.318	0.000	0.056	0.000	0.595	41.170	5.292	0.000
Aug	7.640	0.025	0.010	0.000	7.675	1.906	0.075	0.000	1.981	0.000	0.000	0.000	5.695	5.695	0.000	0.000	0.000	0.000	43.330	6.941	0.000
Sep																					
Oct																					
Nov																					
Dec																					
2015 TOTAL	56.642	0.448	0.120	0.036	57.247	17.934	0.475	0.000	18.409	0.123	0.010	0.000	38.705	38.838	2.750	0.546	0.000	2.382	367.240	38.629	2.216

Note:

1. Assume the density of fill is 2 ton/m^3.
2. Refuses disposed of at North East New Territories (NENT) Landfill.
3. Assume the weight of recycled papers is 7 kg/bag.
4. Public fills disposed of at Tseung Kwan O Area 137 Fill Bank (TKO137), Tuen Mun Area 38 Fill Bank (TM38) and Chai Wan Public Fill Barging Point (CWPFBP).
5. Public fills was delivered to Hung Hom Barging Point and handled by the Contractor of SCL1112.

Appendix E

31st EM&A Report for Works Contract 1103 –
Hin Keng to Diamond Hill

MTR Corporation Limited

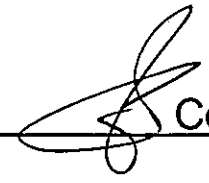
Shatin to Central Link –
Tai Wai to Hung Hom Section

Monthly EM&A Report No. 31

[Period from 1 to 31 August 2015]

Works Contract 1103 – Hin Keng to Diamond Hill Tunnels

(August 2015)

Certified by:  Coleman Ng

Position: Environmental Team Leader

Date: 11 September 2015

MTR Corporation Limited

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

Monthly Environmental Monitoring and Audit Report – August 2015

228105-27

September 2015

Job number 228105-27

Ove Arup & Partners Hong Kong Ltd
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ARUP

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Executive Summary

This is the thirty-first 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 August 2015 (1 to 31 August 2015).

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

- Tunnel Boring Machine (TBM) tunneling and machinery site assembly at Diamond Hill;
- Pipe Piling, grouting and tunnel blasting at Hin Keng;
- Shaft Excavation and ELS and sheet piling for retaining wall at Fung Tak; and
- Shaft Excavation and ELS at Ma Chai Hang.

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

Impact monitoring was carried out at 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 exceedance of Action or 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 34,182m^3 were generated and disposed of at public fill in TKO137FB and Kai Tak Barging Point Facility (Contract 1108A). 94m^3 of general refuse was generated and disposed of at NENT landfill and 1,000kg of chemical waste was generated.

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 August 2015 and the final was undertaken on 26 August 2015. An IEC joint site audit was undertaken on 19 August 2015. No non-conformance to the environmental requirements was identified during the reporting period.

Complaint Log

No complaints related to environmental issues were received during the reporting month.

Notifications of Summons and Successful Prosecutions

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

Reporting Changes

There were no reporting changes during the reporting month.

Future Key Issues

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

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

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

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

1 Environmental Status

1.1 Project Background

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

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

1.2 Construction Programme

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

1.3 Work Undertaken During the Reporting Month

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

Table 1.1 Construction Activities in the Reporting Month

Locations	Major Works Undertaken
Diamond Hill	Tunnel Boring Machine (TBM) tunneling and machinery site assembly.
Hin Keng	Pipe Piling, grouting and tunnel blasting.
Fung Tak	Shaft Excavation and ELS and sheet piling for retaining wall.
Ma Chai Hang	Shaft Excavation and ELS.

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	Superseded
	EP-438/2012/E	All	4 April 2014	Superseded
	EP-438/2012/F	All	15 July 2014	Superseded
	EP-438/2012/G	All	14 Aug 2014	Superseded
	EP-438/2012/H	All	10 Sept 2014	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-RE1346-14	Ma Chai Hang	2 Dec 2014	Superseded
	GW-RE0415-15	Ma Chai Hang	5 May 2015	Superseded
	GW-RE0747-15	Ma Chai Hang	5 Aug 2015	4 Feb 2016
	GW-RE0197-15	Fung Tak	4 Mar 2015	3 Sept 2015
	GW-RN0139-15	Hin Keng	17 Mar 2015	16 Sept 2015
	GW-RN0006-15	Hin Keng	1 Feb 2015	Superseded

Types of Permits / Licenses	Reference No.	Site	Valid from	Valid to
	GW-RN0008-15	Hin Keng	1 Feb 2015	Superseded
	GW-RN0395-15	Hin Keng	8 July 2015	7 Jan 2016
	GW-RN0396-15	Hin Keng	8 July 2015	7 Jan 2016
	GW-RE0117-15	Diamond Hill	8 Feb 2015	2 Aug 2015
	GW-RE0259-15	Diamond Hill	8 April 2015	8 Sept 2015
	GW-RE0509-15	Diamond Hill	10 June 2015	10 Sept 2015
	GW-RE0510-15	Diamond Hill	1 June 2015	29 Aug 2015
	GW-RE0698-15	Diamond Hill	9 Aug 2015	10 Jan 2016
	GW-RE0759-15	Diamond Hill	3 Aug 2015	2 Feb 2016
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
	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 thirty-first 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 August 2015.

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 (July 2015)	14 August 2015

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	TE-5025A		2421

3.2.2 Maintenance and Calibration

High Volume Sampler

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

The HVSs were calibrated at 2-month intervals using 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**.

3.2.3 Monitoring Procedures

High Volume Sampler

Specifications of the HVS are as follows:

- 0.6 – 1.7 m^3/min (20 – 60SCFM);
- Equipped with a timing/control device with +/- 5 minutes accuracy for 24 hour operation;
- Installed with elapsed time meter with +/- 2 minutes accuracy for 24 hour operation;
- Capable of providing a minimum exposed area of 406 cm^2 (63in^2);
- Flow control accuracy: +/-2.5% deviation over 24-hour sampling period;
- Equipped with a shelter to protect the filter and sampler;
- Incorporated with an electronic mass flow rate controller or other equivalent devices;
- Equipped with a flow recorder for continuous monitoring;
- Provided with a peaked roof inlet;
- Incorporated with a manometer;
- Able to hold and seal the filter paper to the sampler housing at horizontal position;
- Easy to change the filter; and
- Capable of operating continuously for 24-hour period.

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

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

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

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

3.3 Monitoring Results and Observations

3.3.1 Weather Condition

August 2015 was characterised at times by sunny and cloudy conditions associated with low a trough of low pressure.

Hot and humid conditions associated with a southerly airstream were also present throughout the month of August.

3.3.2 Air Quality Monitoring Results

Monitoring of 24-hour TSP was conducted on 1, 7, 13, 19, 25 and 31 August 2015. All monitoring data and graphical presentation of the monitoring results are provided in **Appendix E** and are summarised in **Table 3.6**. The graphical presentations of the monitoring results are provided in **Appendix E**. Wind data obtained from the Hong Kong Observatory – Kai Tak and Sha Tin stations during the reporting period are presented in **Appendix F**.

Table 3.6 Summary of Impact Air Quality Monitoring Results

Monitoring Station	24- hour TSP Monitoring Results (μg/m$^{3)}$		Action Level	Limit Level
	Average	Range(Note 1)		
DMS-1	20.4	15.3	148.7	260
DMS-2	23.0	6.0	167.4	260
DMS-3 / DMS-4	24.7	9.5	159.1	260

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

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

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

3.3.3 General Observations

Major construction works including Tunnel Boring Machine (TBM) tunneling and machinery site assembly at Diamond Hill; Pipe Piling, grouting and tunnel blasting at Hin Keng; Shaft Excavation and ELS and Sheet piling for retaining wall at Fung Tak and Shaft Excavation and ELS at Ma Chai Hang.

4 Noise Monitoring

4.1 Noise Monitoring Requirements

4.1.1 Impact Monitoring

Monitoring Parameters

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

Monitoring Frequency

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

Table 4.1 Construction Noise Monitoring Parameters and Frequency

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

Monitoring Location

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

Table 4.2 Noise Monitoring Locations

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

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.

4.1.2 Continuous Noise Monitoring

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

4.2 Noise Monitoring Methodology

4.2.1 Monitoring Equipment

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

Table 4.4 Noise Equipment List for Impact Noise Monitoring

Equipment	Manufacturer & Model No.	Serial No.	Precision Grade
Integrated SLM	Brüel & Kjær 2238	2320694	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

August 2015 was characterised at times by sunny and cloudy conditions associated with low a trough of low pressure.

Hot and humid conditions associated with a southerly airstream were also present throughout the month of August.

4.3.2 Noise Monitoring Results

Impact Monitoring

Monitoring of the construction noise level was conducted 3, 14, 20 and 26 August 2015. 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)
3 August 15	14:00-14:30	59.8	57.0	56.6	75/70
14 August 15	13:10-13:40	59.7		56.4	
20 August 15	13:50-14:20	60.4		57.7	
26 August 15	14:30-15:00	61.0		58.8	

Notes:

1. Construction Noise Level = Measured Noise Level – Baseline Noise Level.
2. For normal day-time working hours, the noise criteria is 75 dB(A) and 70 dB(A) for normal teaching periods and examination periods respectively.

Table 4.6 Summary of Impact Noise Monitoring at Location NMS-CA-2

Date	Time	Measured Noise Level, dB(A)	Baseline Noise Level, dB(A)	Construction Noise Level(Note1), dB(A)	Limit Level (Note 2)
		Leq (30min)	Leq (30min)	Leq (30min)	dB(A)
3 August 15	08:45-09:15	67.0	66.0	60.1	75/70
14 August 15	10:40-11:10	65.9		< Baseline Level	
20 August 15	08:30-09:00	66.4		< Baseline Level	
26 August 15	08:40-09:10	67.0		60.1	

Notes:

1. Construction Noise Level = Measured Noise Level – Baseline Noise Level.
2. For normal day-time working hours, the noise criteria is 75 dB(A) and 70 dB(A) for normal teaching periods and examination periods respectively.

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

Date	Time	Measured Noise Level, dB(A)	Baseline Noise Level, dB(A)	Construction Noise Level(Note1), dB(A)	Limit Level (Note 2)
		Leq (30min)	Leq (30min)	Leq (30min)	dB(A)
3 August 15	10:30-11:00	71.2	73.0	< Baseline Level	75/70
14 August 15	09:15-09:45	70.1		< Baseline Level	
20 August 15	10:30-11:00	70.8		< Baseline Level	
26 August 15	10:25-10:55	70.9		< Baseline Level	

Notes:

1. Construction Noise Level = Measured Noise Level – Baseline Noise Level.
2. For normal day-time working hours, the noise criteria is 75 dB(A) and 70 dB(A) for normal teaching periods and examination periods respectively.

4.3.3 Exceedance of Limit and Action Levels for Construction Noise

No exceedance of the Action or 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 August 2015. 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	34,182m^3	TKO137FB and Kai Tak Barging Point Facility (1108A)
Chemical Waste	1,000kg	Disposed of by a licensed collector
Paper / cardboard packaging	0kg	-
Plastic	0kg	
Metal	0kg	
General Refuse	94m^3	NENT Landfill

7 Cultural Heritage

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

8 Environmental Performance

8.1 Environmental Site Inspection

Environmental site inspections were carried out on a weekly basis, with the IEC joint site inspection being carried out on 19 August 2015, 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 8.1**.

Table 8.1 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
Waste				
29 July 2015, 12 August 2015 and 26 August 2015	Hin Keng	The contractor is reminded to ensure that oil drums have the provision of a drip tray directly after unloading.	Agreed with ET's Advice.	The contractor noted the issue and will report the status in the next reporting month.
5 August 2015	Diamond Hill	The contractor is reminded to ensure that chemical containers have the provision of a drip tray.	Agreed with ET's Advice.	The contactor rectified the issue and ensured that chemical containers have the provision of a drip tray. Closed 12 August 2015.
12 August 2015	Fung Tak	The contractor is reminded to ensure that chemical containers have the provision of a drip tray directly after unloading.	Agreed with ET's Advice.	The contactor rectified the issue and ensured chemical containers have the provision of a drip tray directly after unloading. Closed 19 August 2015.
Water				
19 August 2015	Fung Tak	Whilst no discharge was observed, the contractor is reminded to ensure that water is properly treated prior to discharge.	Agreed with ET's Advice.	The contactor rectified the issue and ensured that water is properly treated prior to discharge. Closed 26 August 2015.

Inspection Date	Works Area	Key Observations and Recommendations	Contractor's Response / Environmental Outcome	Closed Date / Follow up Status
Air				
26 August 2015	Fung Tak	The contractor is reminded to ensure that the current tarpaulin sheet covering the stockpile is extended further across the unused portion of the stockpile in order to avoid dust nuisance.	Agreed with ET's Advice.	The contractor noted the issue and will report the status in the next reporting month.

8.2 Summary of Environmental Complaint

There were no complaints regarding environmental issues recorded in the reporting month. The updated statistical summary of complaint is presented in **Table 8.2**. The updated complaint logs for the Project in the reporting month is shown in **Appendix L**.

Table 8.2 Summary of Complaints

Reporting Period	Complaint Statistics		Area of Concern	Status
	Number	Cumulative		
01/08/15–31/08/15	0	10	-	-

8.3 Summary of Environmental Non-Compliance

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

8.4 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.

9 Future Key Issues

9.1 Key Issues for the Coming Month

Works to be undertaken in the coming reporting month are summarised in **Table 9.1** below.

Table 9.1 Tentative Programme of Construction Works for the Coming Month

Locations	Major Works Undertaken
Diamond Hill	Tunnel Boring Machine (TBM) tunneling and machinery site assembly.
Hin Keng	Pipe Piling, grouting and tunnel blasting.
Fung Tak	Shaft Excavation and ELS and Sheet piling for retaining wall.
Ma Chai Hang	Shaft Excavation and ELS.

9.2 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**.

9.3 Construction Program for the Coming Month

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

10 Conclusions and Recommendations

10.1 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 for 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 complaints and no summons/prosecution was received during the reporting period.

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

10.2 Recommendations

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

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

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

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

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

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

11 Reference

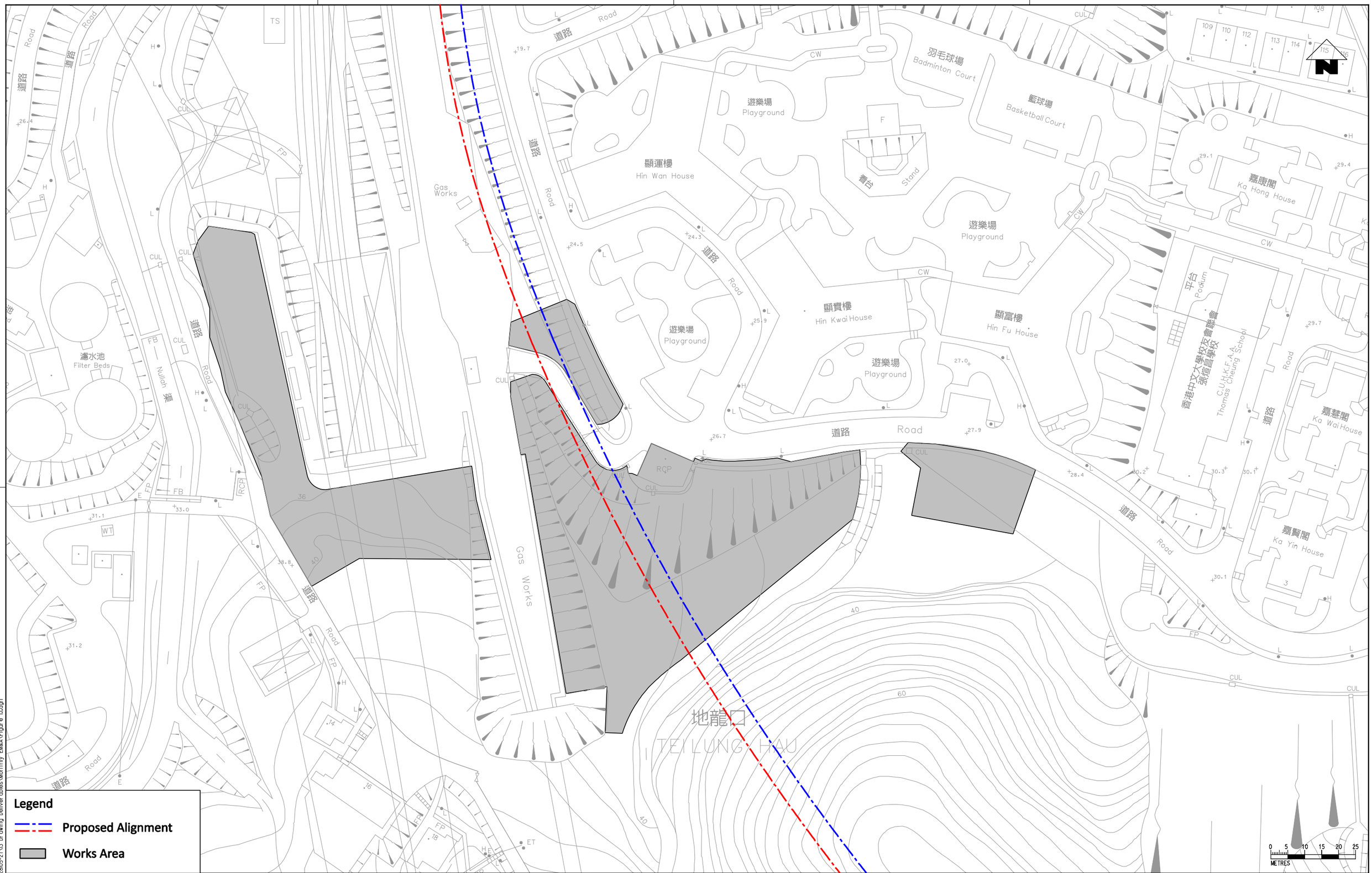
(1) MTR Corporation Limited. SCL – NEX/2206 EIA Study for Tai Wai to Hung Hom Section. Final Environmental Impact Assessment Report. October 2011.

(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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TITLE

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

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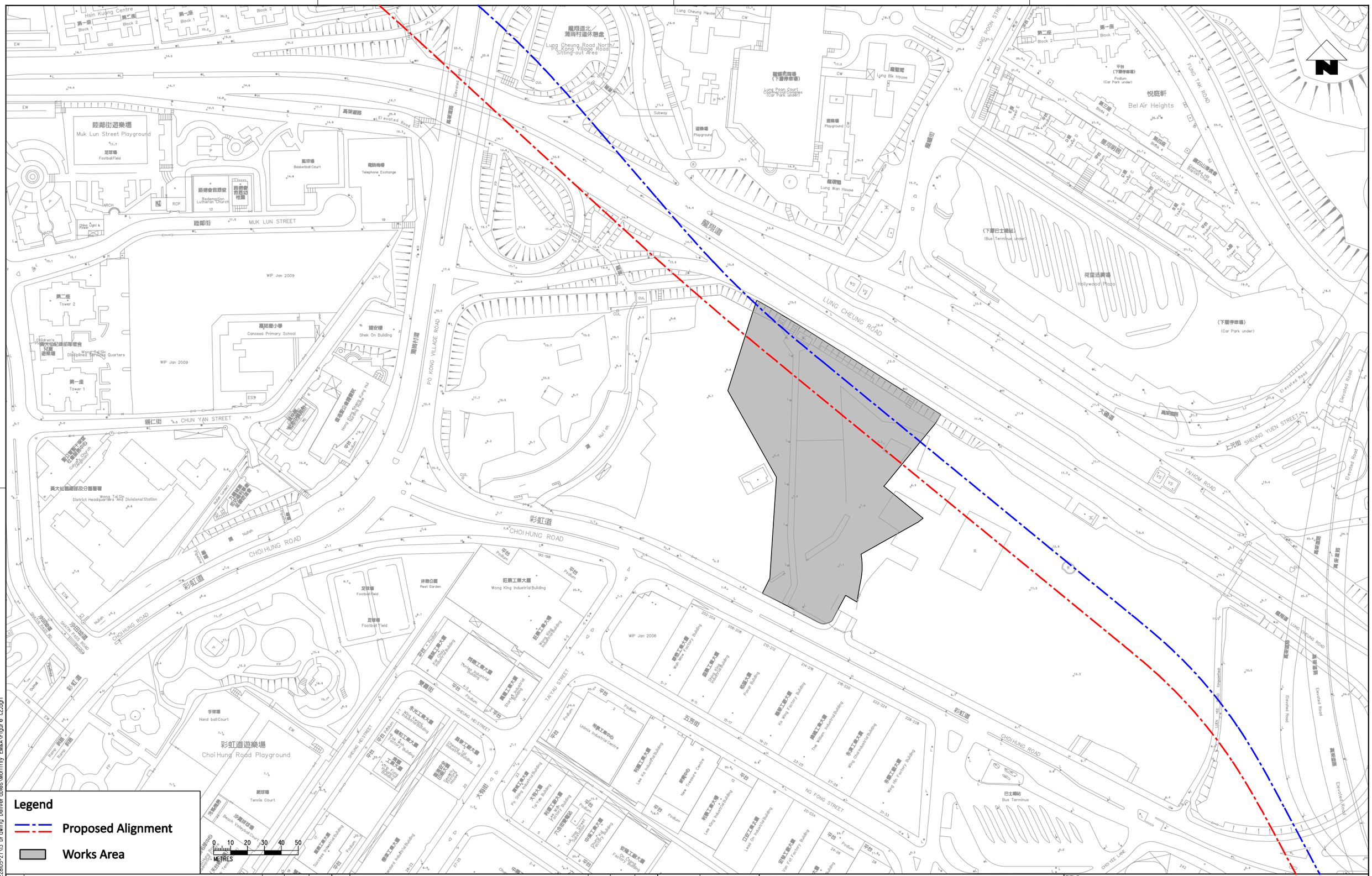

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HIN KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Areas
- General Site Layout of Diamond Hill Works Area
(Sheet 2 of 6)

SCALE	DRAWING NO.	REV.
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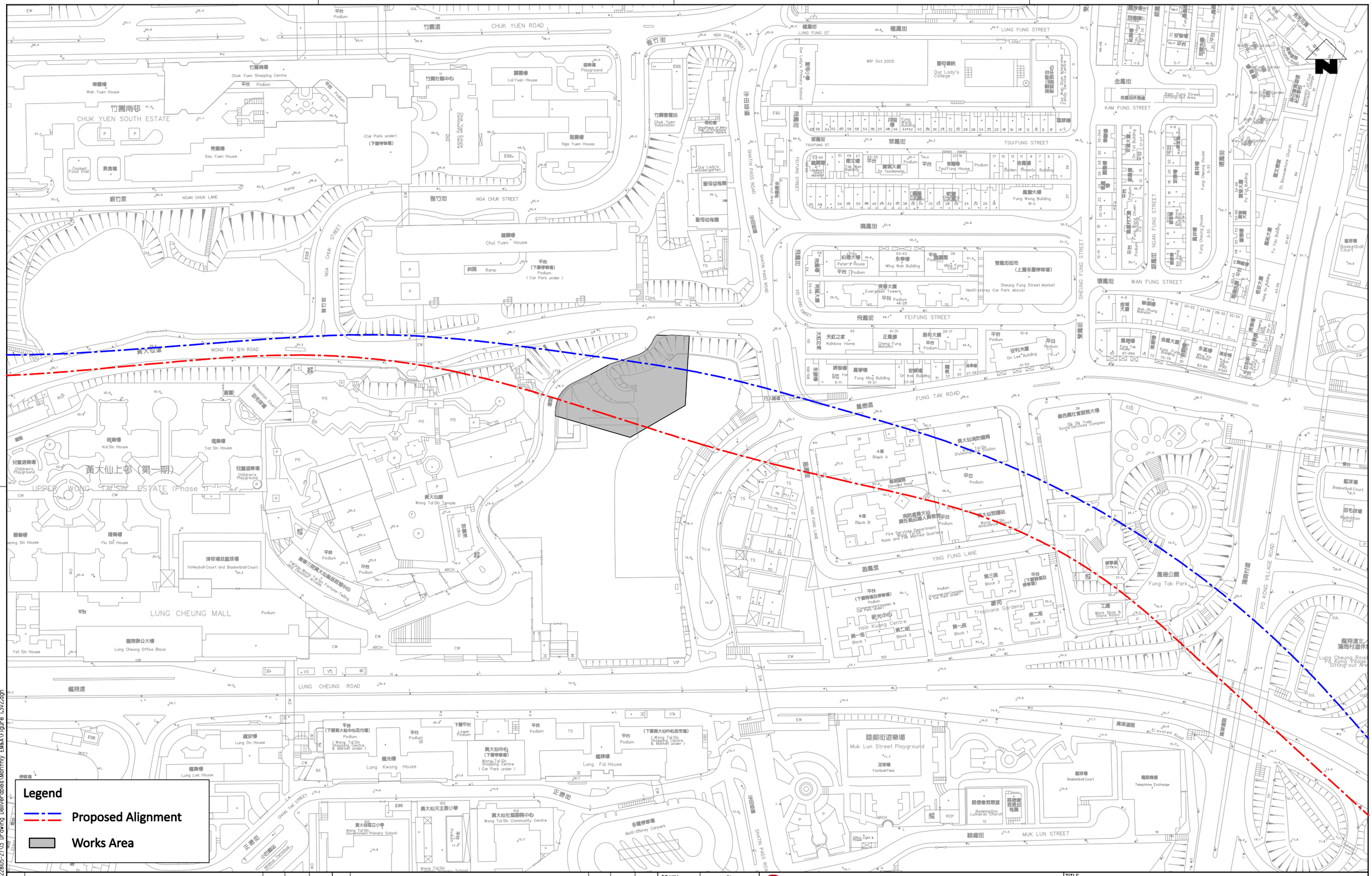

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CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Areas - Site Layout Plan of Fung Tak EAP/EEP Building (Sheet 3 of 6)

SCALE	DRAWING NO.	REV.
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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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HIK KENG TO DIAMOND HILL TUNNELS
Locations of Project Works Area
General Site Layout of Shui Chuen O Works Area
(Sheet 5 of 6)

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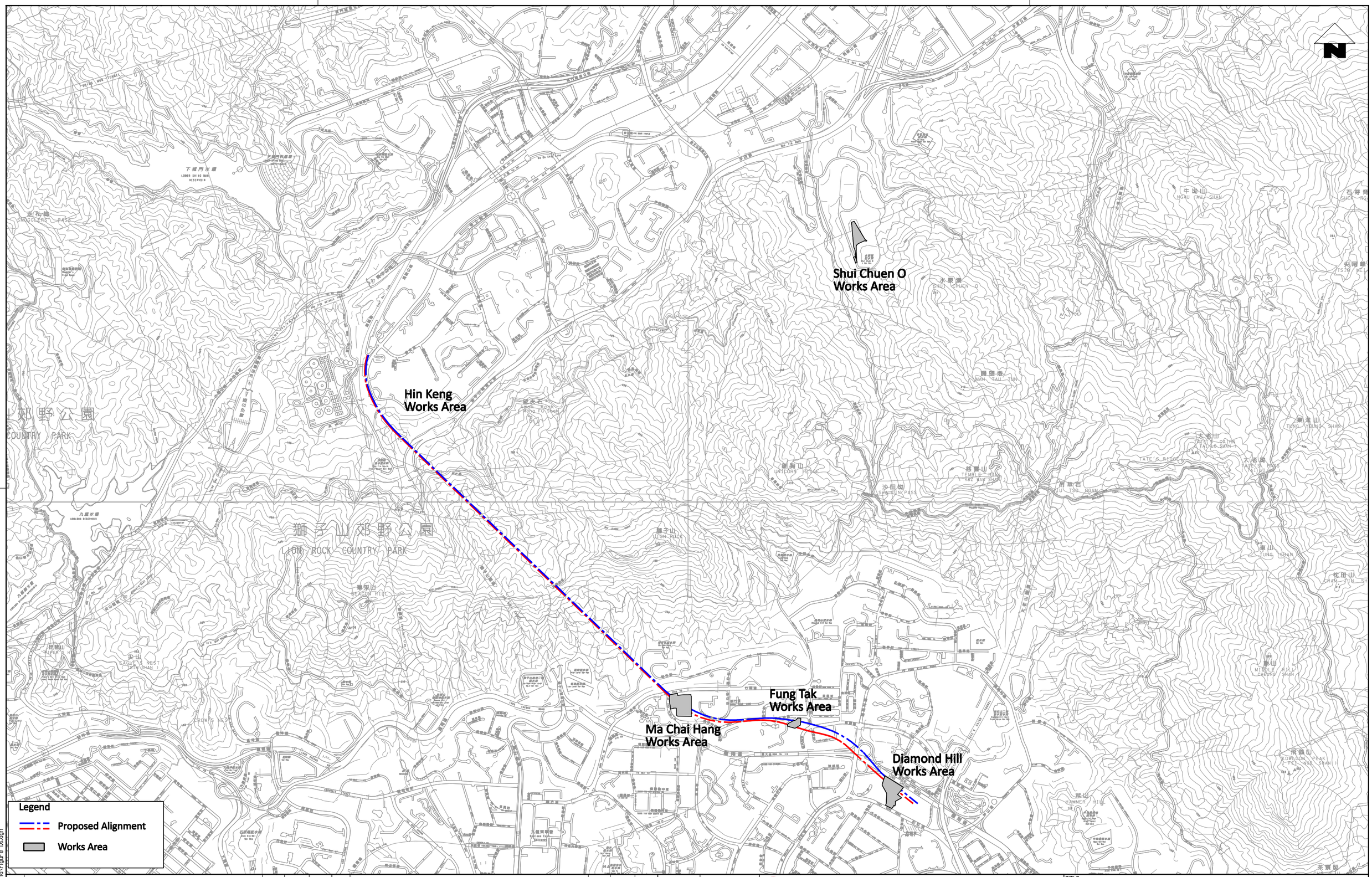

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CONTRACT 1103

HIN KENG TO DIAMOND HILL TUNNELS

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

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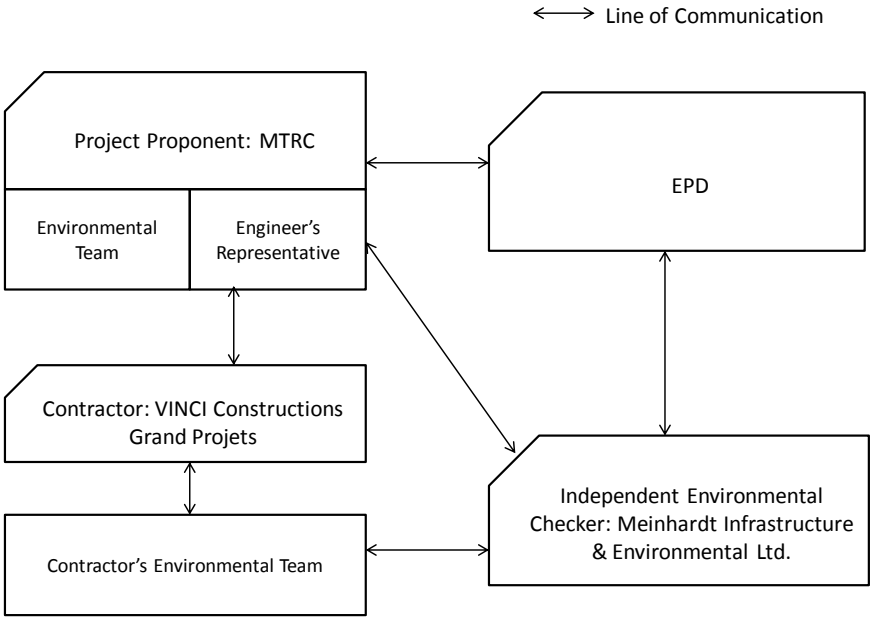
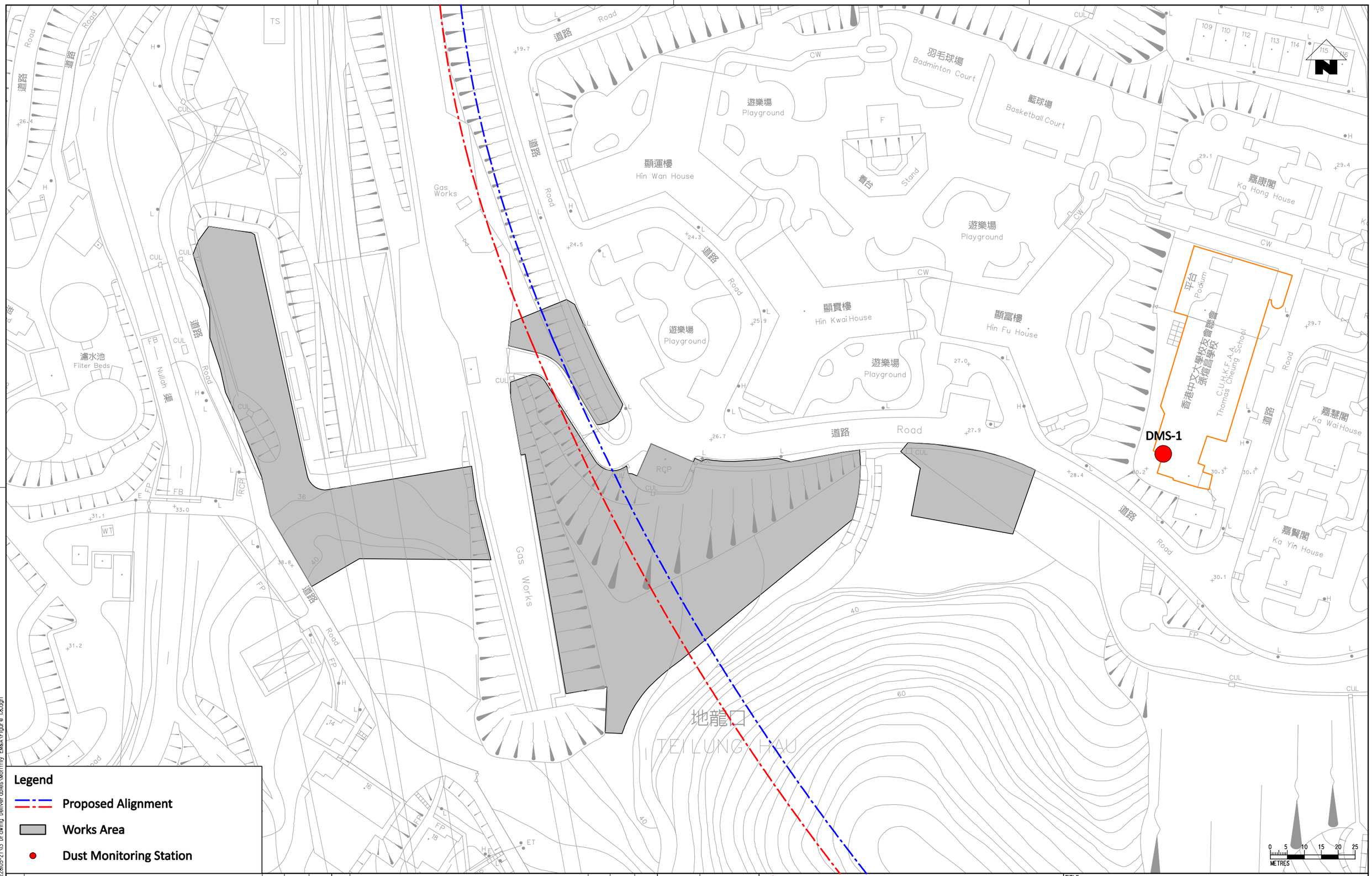
Figure 1.7 - Project Organisation for Environmental Works





Legend

- Proposed Alignment
- Works Area
- Dust Monitoring Station

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

SCALE	DRAWING NO.	REV.
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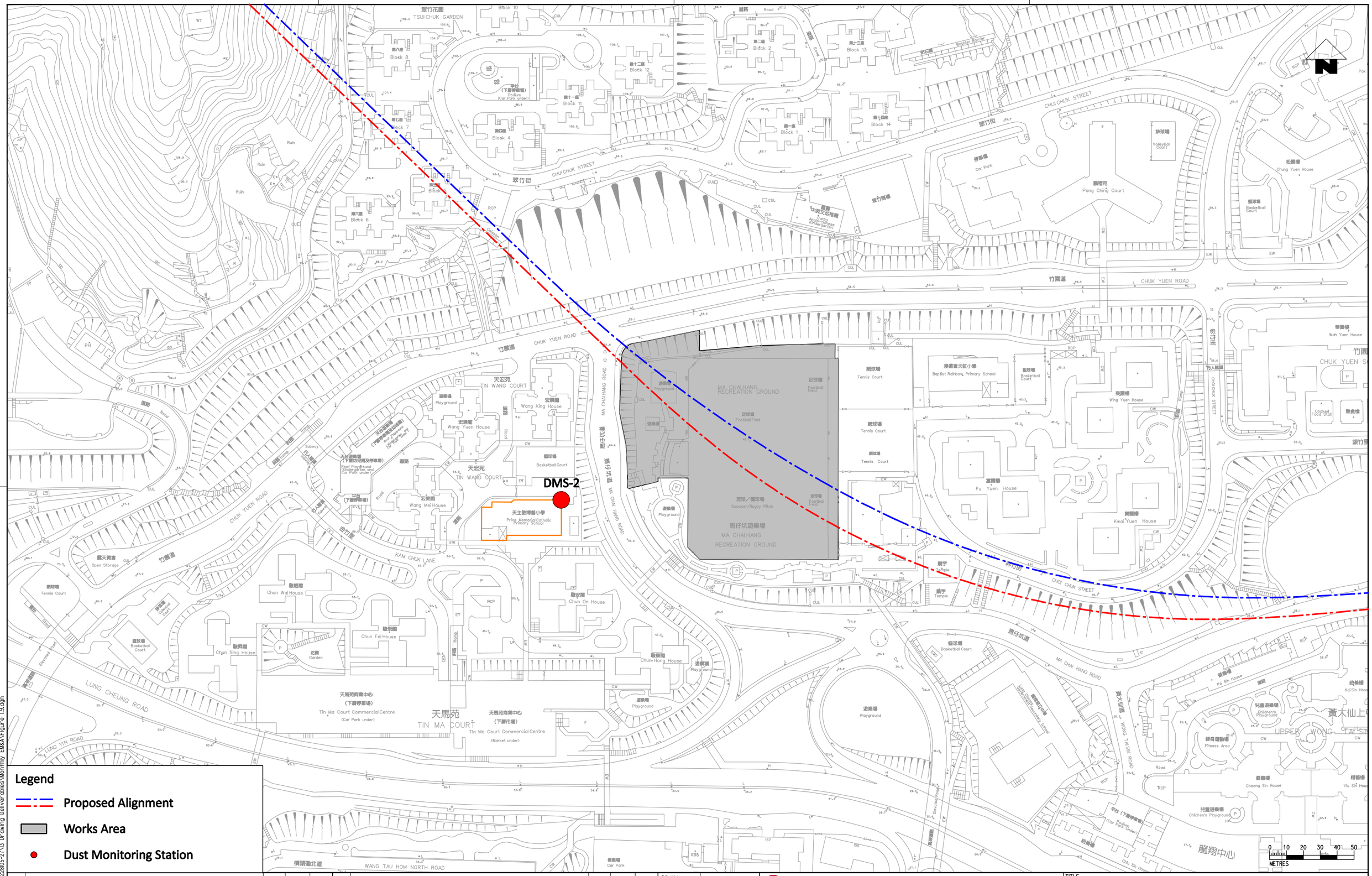

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CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Proposed Dust Monitoring Stations
(Sheet 2 of 3)

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

DMS-3/DMS-4

Legend

- Proposed Alignment
- Works Area
- Dust Monitoring Station

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

SCALE 1:2000 (A3)

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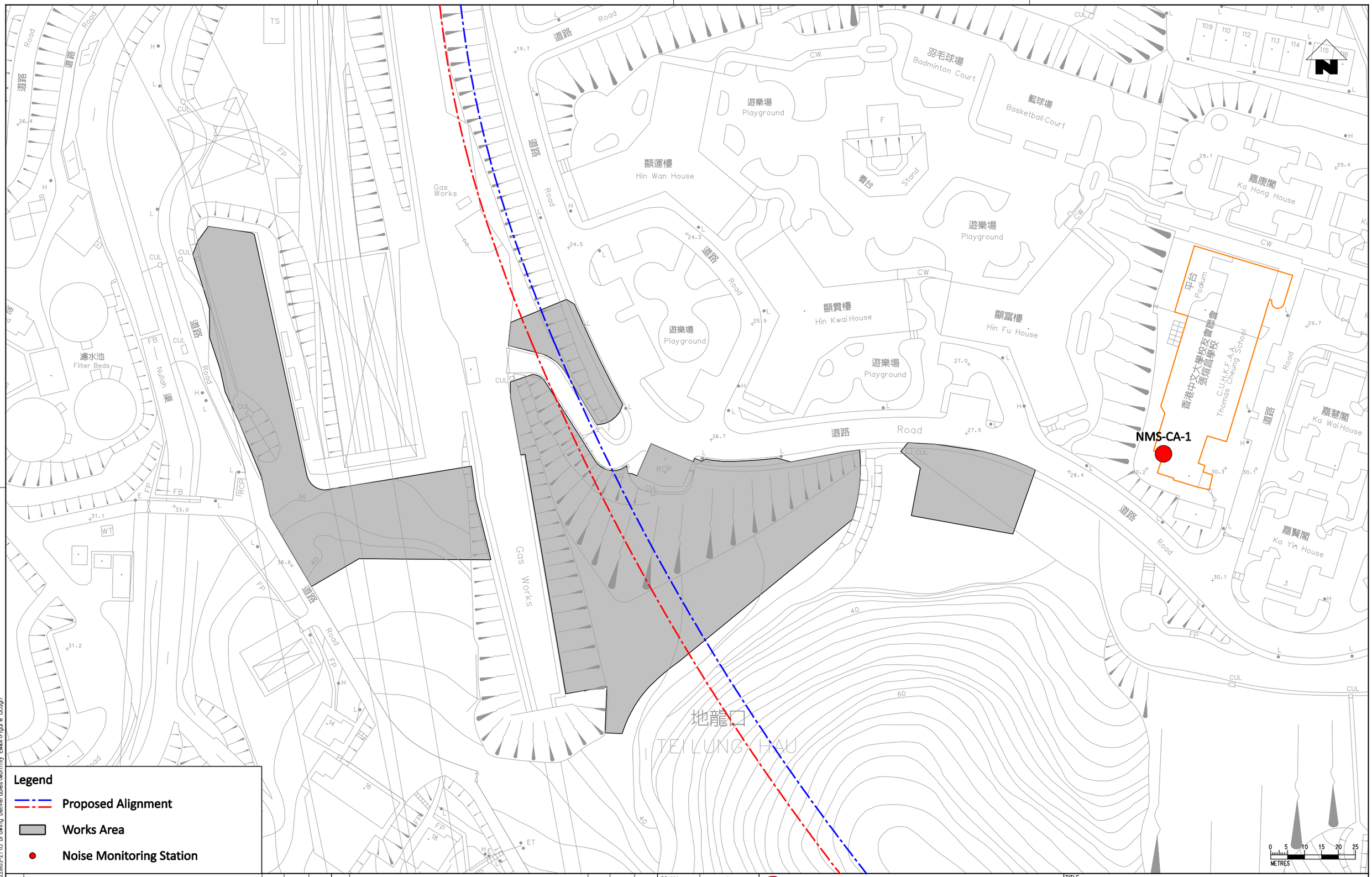

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A	FIRST ISSUE	GL	12/12	ST

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APPROVED	ST
DATE	12/12

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SHATIN TO CENTRAL LINK

ORIGINATOR

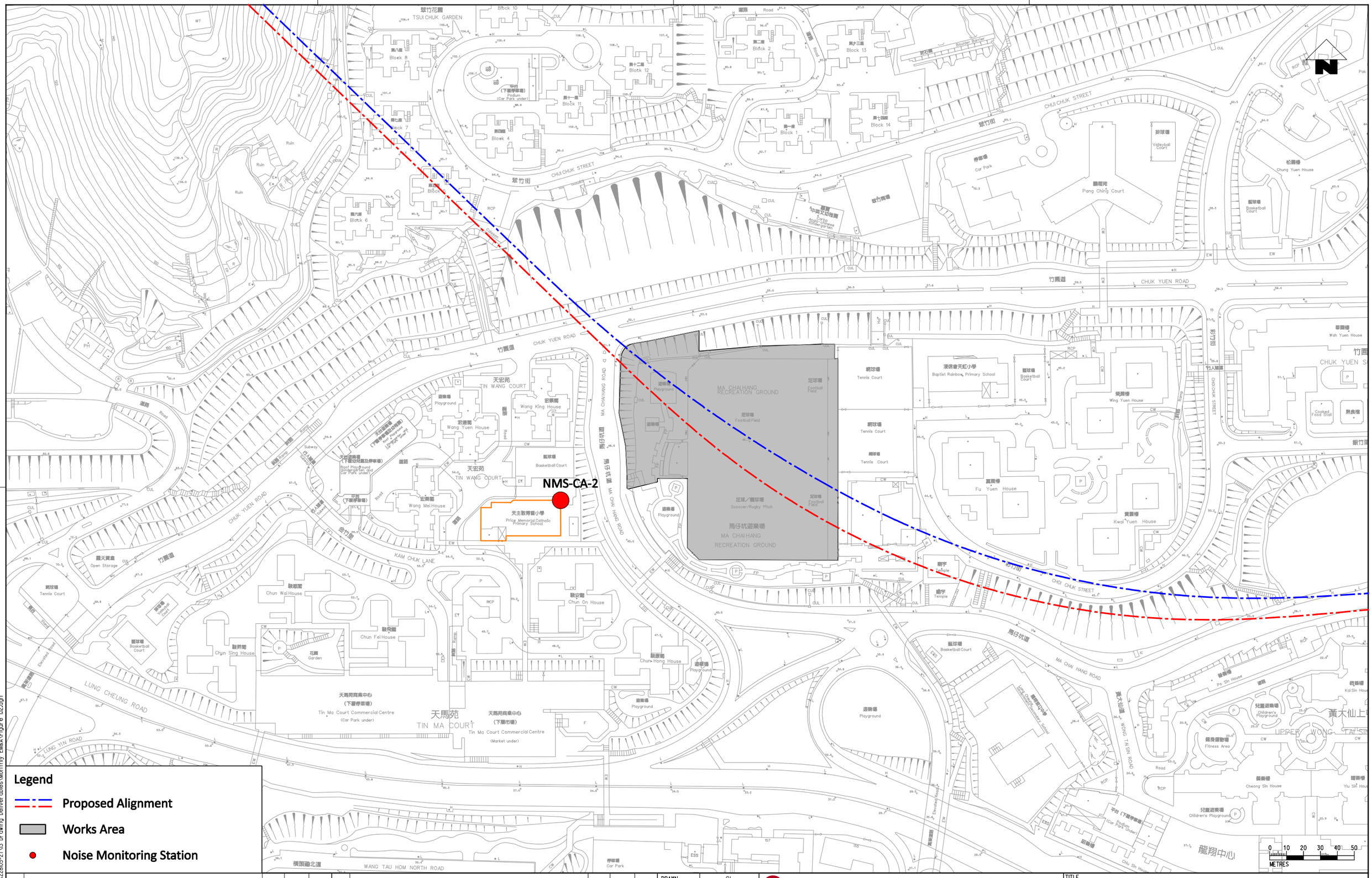
ARUP Ove Arup & Partners Hong Kong Limited

CADD REF.

TITLE

CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Noise Monitoring Stations
(Construction Airborne Noise)
(Sheet 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
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DATE	12/12

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ORIGINATOR

ARUP Ove Arup & Partners Hong Kong Limited

CADD REF.

TITLE

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

SCALE	DRAWING NO.	REV.
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NMS-CA-3/NMS-CA-4

Legend

- Proposed Alignment
- Works Area
- Noise Monitoring Station

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A	FIRST ISSUE	GL	12/12	ST

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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.

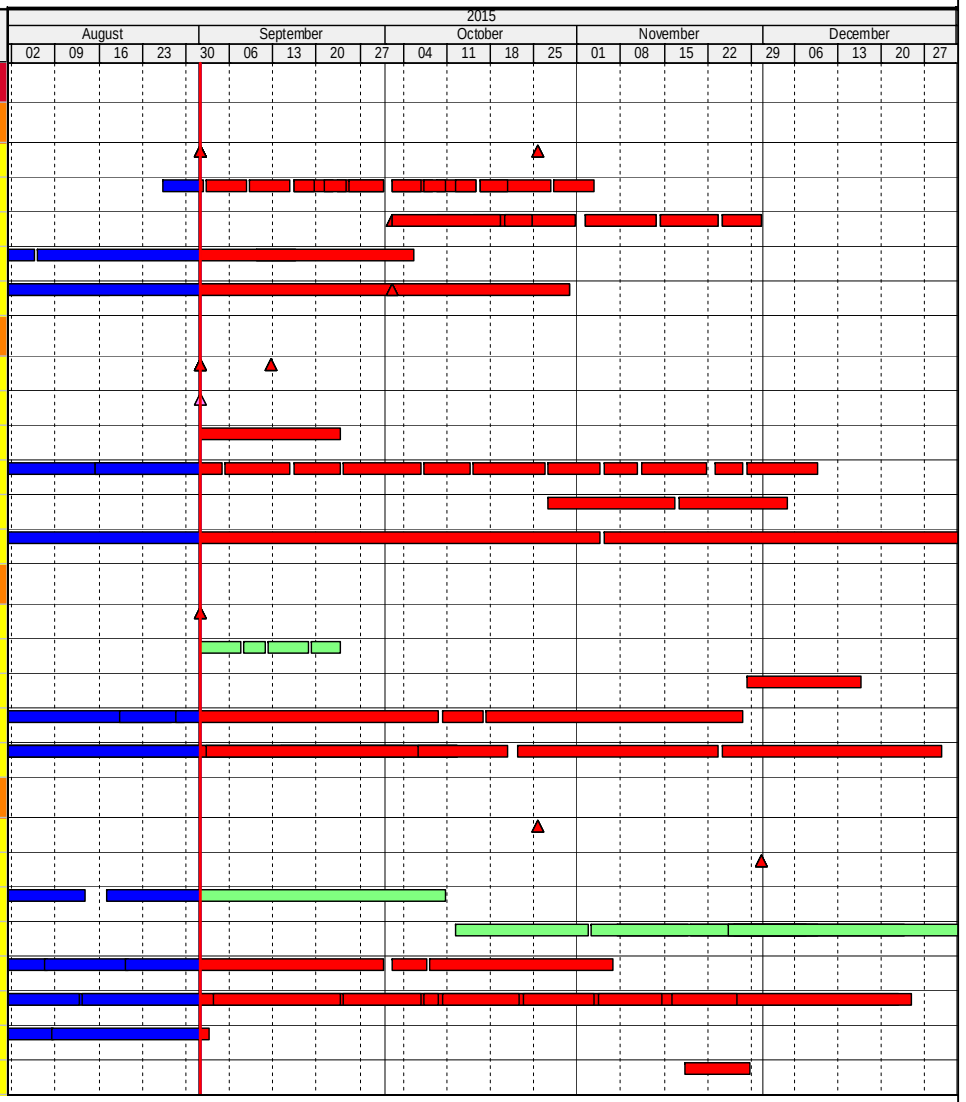
TITLE
CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
Locations of Noise Monitoring Stations
(Construction Airborne Noise)
(Sheet 3 of 3)

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 C - TBM TUNNELS BETWEEN DIH and D Ch 95+357						
	Milestone Schedule - TBM Tunnels between DIH and D Ch95+357					
	TBM Tunnel Up Track - DIH U97+064 to U95+376					
	TBM Tunnel Down Track - DIH D97+054 to D95+357					
	Tunnels Sumps					
	Specialized Construction Machinery Site Assembly and Related Establishment					
COST CENTER F - MA CHAI HANG VENTILATION BUILDING (MCV)						
	COST CENTER F - Milestone Schedule - MCV					
	MCV - Site Preparation					
	MCV - Shaft Excavation and ELS					
	MCV - Central Core					
	MCV - Connection Tunnels					
	Ventilation Duct (Ch V 000 to V 250)					
COST CENTER G - FUNG TAK EAP/EEP BUILDING (FTA)						
	COST CENTER G - Milestone Schedule - FTA					
	FTA - Shaft Excavation and ELS					
	FTA - C&S Works					
	FTA - Connection Tunnels					
	PTT - RC Concrete and ELS Work					
COST CENTER H - HIN KENG WORKING SHAFT						
	COST CENTER H - Milestone Schedule - HIK Shaft					
	HIK - Site Formation					
	HIK - Excavation and ELS					
	HIK - C&S for HIK Cut & Cover Tunnel					
	Excavation and Temporary Support from HIK (Ch D93+300 to D95+357) 2057m					
	D&B - Tunnel Lining					
	Mined Tunnel - Tunnel Lining					
	Partition Walls, Dividing Slabs, Drains and Walkways					



VINCI CONSTRUCTION GRANDS PROJETS

Three Month Rolling Programme
As of 1-Sep-2015

Date	Revision	Checked	Approved
03-Sep-15	Submission for MTR Information	QT	EC

Appendix B

Environmental Monitoring Programme in Reporting Month

SCL Works Contract 1103 - Hin Keng to Diamond Hill Tunnels
Tentative Impact Monitoring Schedule - August 2015

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

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

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

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

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

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

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

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

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	✓ ✓ ✓ ✓
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	*Groundwater from Contaminated Area:* • No direct discharge of groundwater from contaminated areas should be adopted. Prior to the excavation works within these potentially contaminated areas, the groundwater quality should be reviewed with reference to the site investigation data in this EIA report for compliance to the Technical Memorandum on Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters (TM-Water) and the existence of prohibited substance should be confirmed. The review results should be submitted to EPD for examination If the review results indicated that the groundwater to be generated from the excavation works would be contaminated, the contaminated groundwater should be either properly treated in compliance with the requirements of the TM-Water or properly recharged into the ground. • If wastewater treatment is deployed, the wastewater treatment unit shall deploy suitable treatment process (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (e.g. TPH) to undetectable range. All treated effluent from wastewater treatment plant shall meet the requirements as stated in TM-Water and should be discharged into the foul sewers. • If groundwater recharging wells are deployed, recharging wells should be installed as appropriate for recharging the 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	✓ ✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.					
S11.5.1	WM4	*General Refuse* • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. • Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor.	Minimize production of the general refuse and avoid odour, pest and litter impacts	All construction sites	Construction stage	• Waste Disposal Ordinance	✓ ✓ ✓ ✓
S11.5.1	WM5	Excavated Contaminated Soils Details of the mitigation measures on handling of the contaminated soil shall be referred to Section on Land Contamination below.	To remediate contaminated soil	Site L4 (Former Tai Hom Village)	Site remediation	• Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boat yards and Car Repair/Dismantling Workshop.	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S11.5.1	WM7	*Chemical Waste* • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. • Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.	Control the chemical waste and ensure proper storage, handling and disposal.	All construction sites	Construction stage	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	✓ ✓ ✓ ✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S14.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO	✓
S14.2 – 14.4	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO	✓ ✓ ✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Chapter 13.13	A13A.10.2.1 and A13A.10.2.4	The truck design should comply with the Requirements for Approval of an Explosives Delivery Vehicle (CEDD 2) and limit the amount of combustibles in the cabin. This should be combined with monthly vehicle inspection	To meet the ALARP requirement.	Explosive Magazine	Construction phase		✓
Chapter 13.13	A13A.10.2.2	Blasting activities including storage, transport and use of explosives should be supervised and audited by competent site staff to ensure strict compliance with the blasting permit conditions.	To ensure that the risks from the proposed explosives storage, transport and use would not be unacceptable	Works areas at which explosives would be stored and/or used.	Construction phase	•Dangerous Goods Ordinance	✓
Chapter 13.13	A13A.10.2.1 and A13A.10.2.5	Only the required quantity of explosives for a particular blast should be transported to avoid the return of unused explosives to the temporary magazines. The number of return trips to the magazine should be minimized. If disposal is required for small quantities, disposal should be made in a controlled and safe manner by a Registered Shotfirer.	To reduce the risk during explosives transport.	Works areas at which explosives would be stored and/ or used.	Construction phase		✓
Chapter 13.13	A13A.10.2.1	A minimum headway between two consecutive truck conveys of at least 10 min is recommended.	To ensure that the risk from the proposed explosives transport would not be unacceptable	Along explosives transport route.	Construction phase.		✓
Chapter 13.13	A13A.10.2.1	The explosive truck accident frequency should be minimized by implementing a dedicated training programme for both the driver and his attendants, including regular briefing sessions, implementation of a defensive driving attitude. In addition, drivers should be selected based on good safety record, and medical checks.	To meet the ALARP requirement.	-	Construction phase		✓
Chapter 13.13	A13A.10.2.1	The explosive truck fire involvement frequency should be minimized by implementing a better emergency response and training to make	To meet the ALARP requirement.	-	Construction phase		

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		sure the adequate fire extinguishers are used and attempt is made to evacuate the area of the incident or securing the explosive load if possible. All explosive vehicles should also be equipped with the required amount and type of fire extinguishers and shall be agreed with Mines Division.					✓
Chapter 13.13	A13A.10.2.1	The contractor should as far as practicable combine the explosive deliveries for a given work area.	To meet the ALARP requirement.	-	Construction phase		✓
Chapter 13.13	A13A.10.2.1	The Contractor should as far as practicable use the preferred transport route.	To ensure that the risk from the proposed explosives transport would not be unacceptable	Along explosives transport route.	Construction phase		✓
Chapter 13.13	A13A.10.2.1	The Contractor should coordinate explosives deliveries with the delivery of chlorine to Shatin Water Treatment Works in order to avoid overlapping.	To ensure that the risk from the proposed explosives transport would not be unacceptable	Along explosives transport route.	Construction phase		✓
Chapter 13.13	A13A.10.2.4	Use only experienced driver(s) with good safety record for explosive vehicle(s). Training should be provided to ensure it covers all major safety subjects.	To ensure safe transport of explosives	At suitable location	Construction phase		✓
Chapter 13.13	A13A.10.2.4	Develop procedure to ensure that parking space on the site is available for the explosive truck. Confirmation of parking space should be communicated to truck drivers before delivery.	To ensure that the risks from the proposed explosives storage and transport would not be unacceptable	Explosive magazine	Construction phase		✓
Chapter 13.13	A13A.10.2.3	Delivery vehicles shall not be permitted to remain unattended within the magazine site (or appropriately wheel-locked).	To reduce the risk of fire within the magazine	Explosive Magazine	Construction phase		✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Chapter 13.13	A13A.10.2.3	Good house-keeping within and outside of the magazine to ensure that combustible materials (including vegetation) are removed and not allowed to accumulate.	To reduce the risk of fire within the magazine	Explosive Magazine	Construction phase		✓
Chapter 13.13	A13A.10.2.4	Detonators shall not be transported in the same vehicle with other Class 1 explosives	To reduce the risk of explosion during the transport of cartridged emulsion	-	Construction phase		✓
Chapter 13.13	A13A.10.2.2	Emergency plan (ie magazine operational manual) shall be developed to address uncontrolled fire in magazine area. The case of fire near an explosive carrying truck in jammed traffic should also be covered. Drill of the emergency plan should be carried out at regular intervals.	To reduce the risk of fire	Explosive Magazine and along explosives transport route.	Construction phase		✓
Chapter 13.13	A13A.10.2.2	The magazine storage quantities need to be reported on a monthly basis to ensure that the two day storage capacity is not exceeded.	To reduce the risk within the magazine	Temporary explosives magazine	Construction phase		✓
Chapter 13.13	A13A.10.2.2	Adverse weather working guideline should be developed to clearly define procedure for transport explosives during thunderstorm.	To ensure safe transport of explosives	Along explosives transport route.	Construction phase		✓
Chapter 13.13	A13A.10.2.4	During transport of the explosives within the tunnel, hot work should not be permitted	To ensure safe transport of explosives	Along explosives transport route.	Construction phase		✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Chapter 13.13	A13A.10.2.4	Ensure that packaging of detonators remains intact until handed over at blasting site.	To reduce the risk of explosion during the transport of detonator	-	Construction phase		✓
Chapter 13.13	A13A.10.2.4	Steel vehicle tray welded to a steel vertical fire screen should be mounted at least 150 mm behind the drivers cab and 100 mm from the steel cargo compartment, the vertical screen shall protrude 150 mm in excess of all three (3) sides of the steel cargo compartment	To reduce the risk during explosives transport.	-	Construction phase		✓
Chapter 13.13	A13A.10.2.5	Ensure cartridged emulsion with high water content should be preferred. Also, the emulsion with perchlorate formulation should be avoided.	To ensure safe explosives to be used	-	Construction phase		✓
Chapter 13.13	A13A.10.2.3	Traffic Management should be implemented within the temporary magazine site, to ensure that no more than 1 vehicle will be loaded at any time, in order to avoid accidents involving multiple vehicles within the site boundary. Based on the construction programme, considering that 6 trucks could be loaded over a peak 2 hour period, this is considered feasible.	To ensure that the risks from the proposed explosives storage and transport would not be unacceptable	Temporary explosives magazine	Construction phase		✓
Chapter 13.13	A13A.10.2.3	The design of the fill slope close to the temporary magazine site should consider potential washout failures and incorporate engineering measures to prevent a washout causing damage to the temporary magazine stores	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	Construction phase		✓
Chapter 13.13	A13A.10.2.2	The security plan should address different alert security level to reduce opportunity for arson / deliberate initiation of explosives. The corresponding security procedure should be implemented with respect to prevailing security alert status announced by the	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	Construction phase		✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		Government.					
Chapter 13.13	A13A.10.2.3	A suitable work control system should be introduced, such as an operational manual including Permit-to-Work system.	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	Construction phase		✓
Chapter 13.13	A13A.10.2.3	The magazine building shall be regularly checked for water seepage through the roof, walls or floor.	To ensure that the risks from the proposed explosives storage would not be unacceptable	Temporary explosives magazine	Construction phase		✓
Chapter 13.13	A13B.7.2	Blast charge weight (MIC) should be within the maximum MIC as specified for the given section.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7.2	Temporary mitigation measures such as blast doors or heavy duty blast curtains should be installed at the access adits, shafts/ portals and at suitable locations underground to prevent flyrock and control the air overpressure.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7.2	Blasting from multiple faces as well as different locations will be carried out for this project. Good communication and control will need to be adopted in ensuring that the works are carried out safely.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7.2	It is intended that complete evacuation of the underground tunnels need not be carried out and secure refuge areas should be identified to workers in the area.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
Chapter 13.13	A13B.7.2	A Chief Shotfirer and a Blasting Coordinator shall be employed in addition to the normal blasting personnel to ensure that the works are safe and coordinated between blasting areas and between	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓

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

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

Appendix D

Calibration Certificates for Air Monitoring Equipment

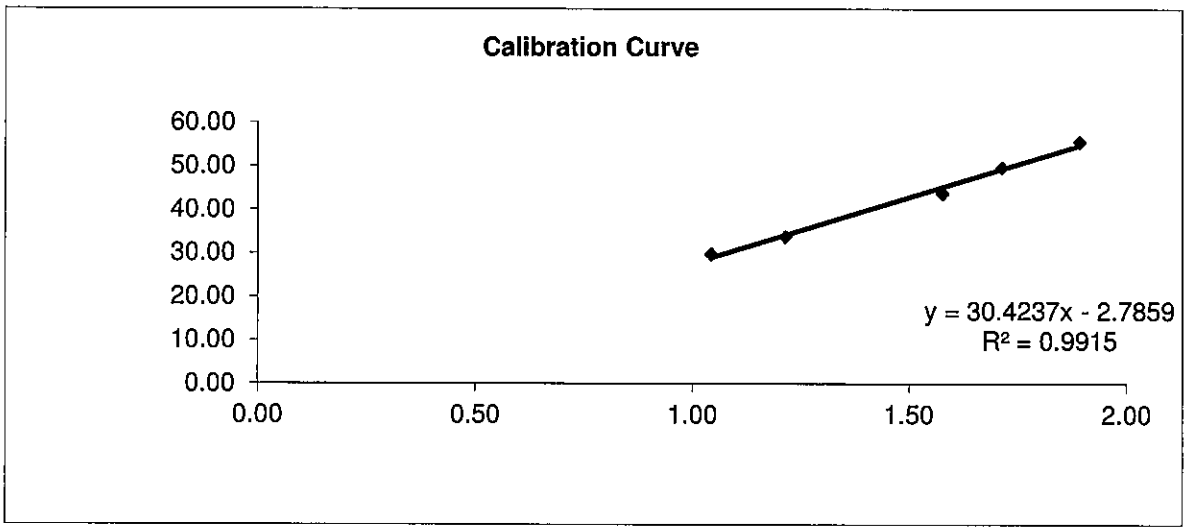
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	12-Jun-15	**Barometric pressure**	756 mm Hg
Next Calibration date	11-Aug-15	**Tempature (°C)**	28 °C
Sampler location	DMS1 - Thomas Cheung School	**Tempature (K)**	301 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	3.70	30.00	1.04	29.77
7	5.20	34.00	1.21	33.74
10	9.20	44.00	1.58	43.66
13	11.00	50.00	1.71	49.62
18	13.60	56.00	1.89	55.57



Linear Regression

Sampler slope (m) :	**30.4237**
Sampler intercept (b) :	**-2.7859**
Correlation coefficient (R^2) :	**0.9915**

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

Performed by: _____ Date: 12/6/2015

Checked by: _____ Date: 12/6/2015

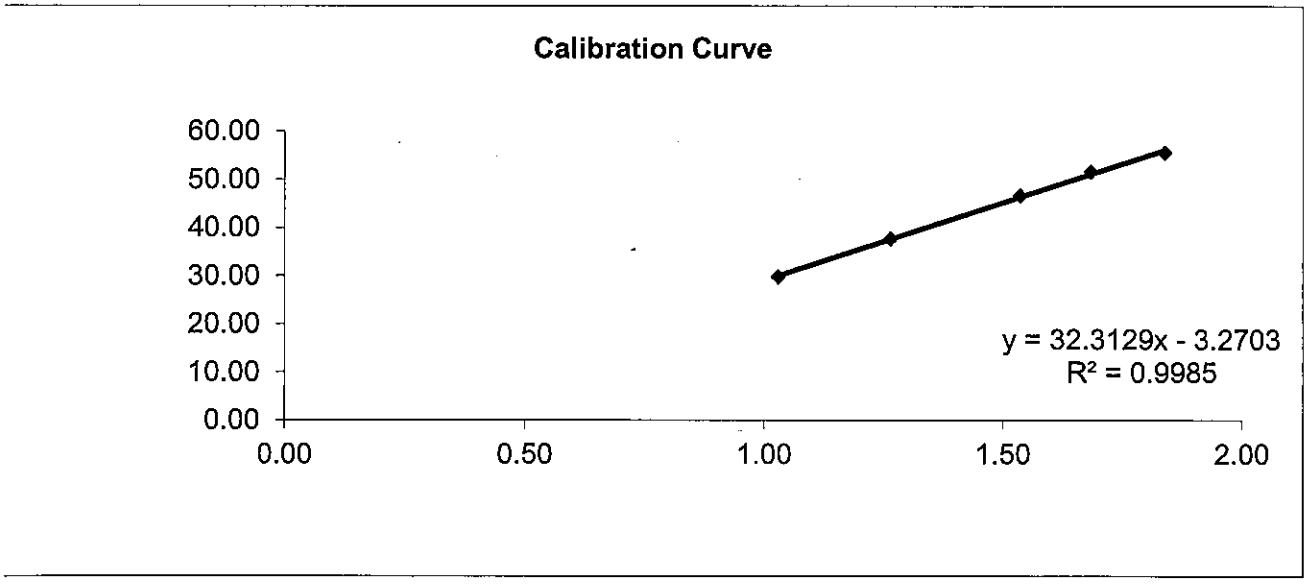
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	12-Jun-15	**Barometric pressure**	756 mm Hg
Next Calibration date	11-Aug-15	**Tempature (°C)**	28 °C
Sampler location	DMS2 - Price Memorial Catholic Pri	**Tempature (K)**	301 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	3.60	30.00	1.03	29.77
7	5.70	38.00	1.27	37.71
10	8.70	47.00	1.54	46.64
13	10.60	52.00	1.68	51.60
18	12.80	56.00	1.84	55.57



Linear Regression

Sampler slope (m) : **32.3129**
Sampler intercept (b) : **-3.2703**
Correlation coefficient (R^2) : **0.9985**

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

Performed by: _____ Date: 12/6/2015

Checked by: _____ Date: 12/6/2015

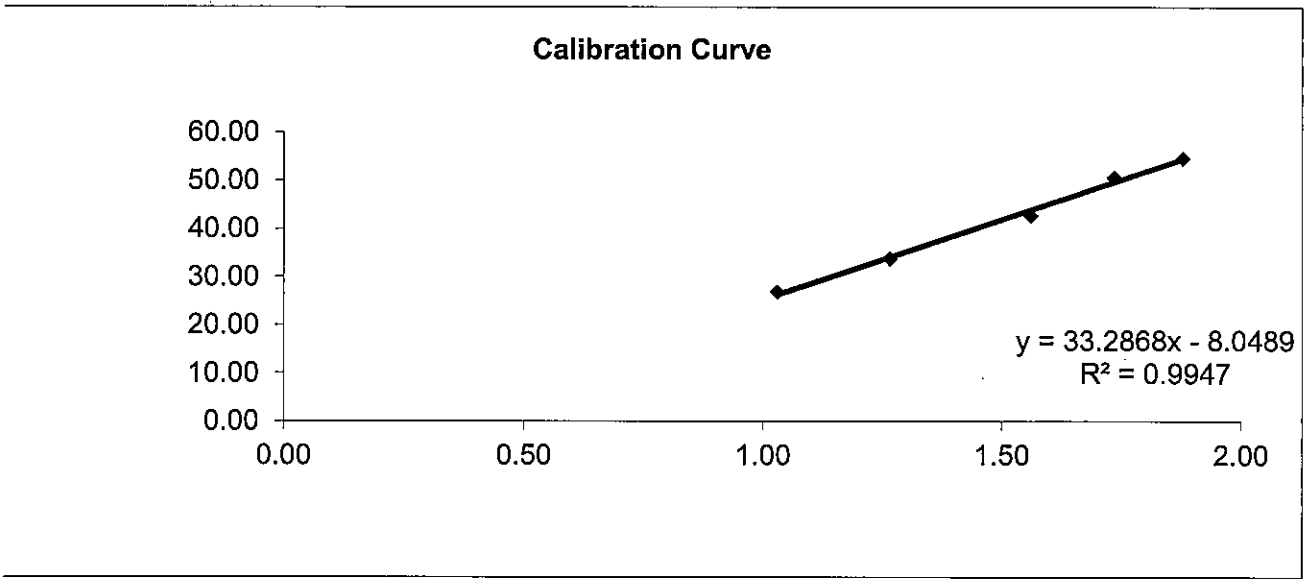
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	12-Jun-15	**Barometric pressure**	756 mm Hg
Next Calibration date	11-Aug-15	**Tempature (°C)**	28 °C
Sampler location	DMS3 - Sheng Kung Hui Nursing H	**Tempature (K)**	301 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	3.60	27.00	1.03	26.79
7	5.70	34.00	1.27	33.74
10	9.00	43.00	1.56	42.67
13	11.30	51.00	1.73	50.61
18	13.40	55.00	1.88	54.58



Linear Regression

Sampler slope (m) :	**33.2868**
Sampler intercept (b) :	**-8.0489**
Correlation coefficient (R^2) :	**0.9947**

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

Performed by: _____ Date: 12/6/2015

Checked by: _____ Date: 12/6/2015

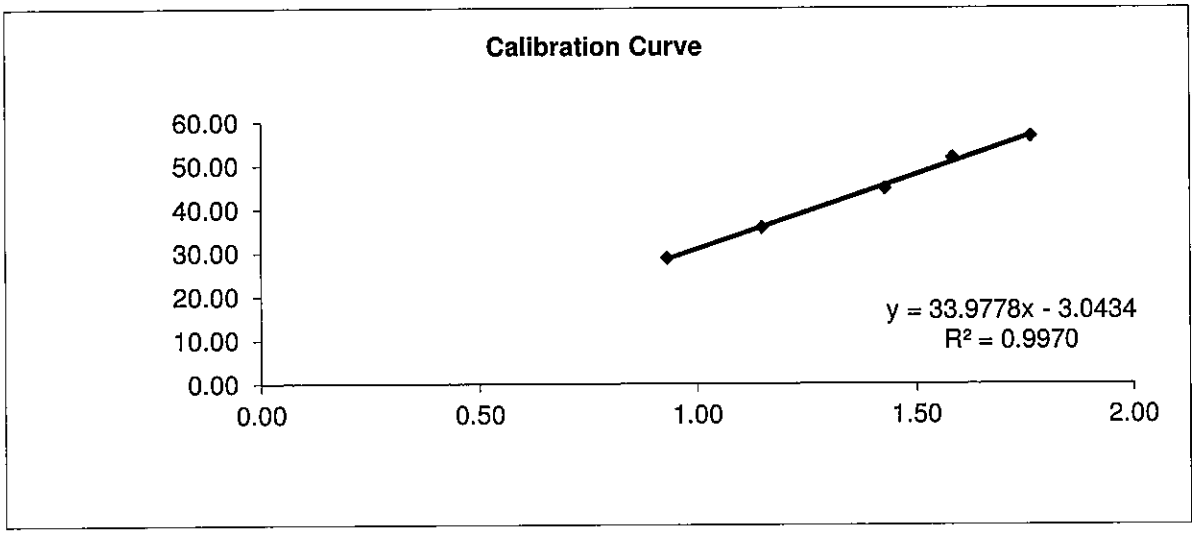
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	29-Jul-15	**Barometric pressure**	761 mm Hg
Next Calibration date	27-Sep-15	**Tempature (°C)**	29 °C
Sampler location	DMS1 - Thomas Cheung School	**Tempature (K)**	302 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	2.07308
Intercept of the standard curve, b_s	-0.04607

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	3.60	29.00	0.93	28.83
7	5.50	36.00	1.15	35.78
10	8.60	45.00	1.43	44.73
13	10.60	52.00	1.58	51.69
18	13.20	57.00	1.76	56.66



Linear Regression

Sampler slope (m) :	**33.9778**
Sampler intercept (b) :	**-3.0434**
Correlation coefficient (R^2) :	**0.9970**

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

Performed by: _____ Date: 29-7-2015

Checked by: _____ Date: 29/7/2015

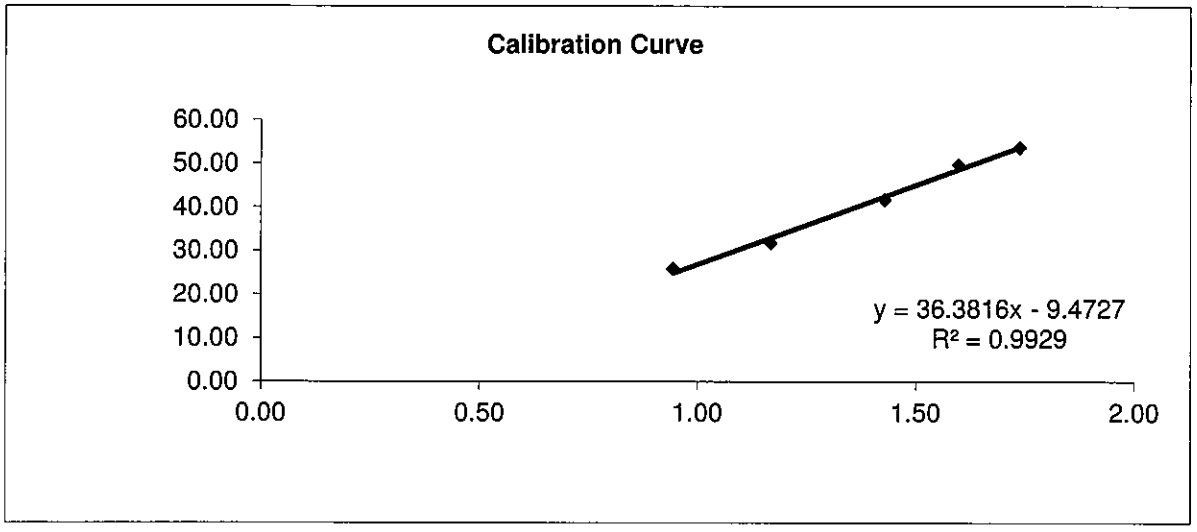
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	29-Jul-15	**Barometric pressure**	761 mm Hg
Next Calibration date	27-Sep-15	**Tempature (°C)**	29 °C
Sampler location	DMS2 - Price Memorial Catholic Pri	**Tempature (K)**	302 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	2.07308
Intercept of the standard curve, b_s	-0.04607

Resistance Plate No.	Manometer Reading (inch H_2O)	Flow Recorder Reading (CFM)	Calculated Q_{std} (m^3/min)	Continuous Flow Recorder Reading IC (CFM)
5	3.70	26.00	0.94	25.84
7	5.70	32.00	1.17	31.81
10	8.60	42.00	1.43	41.75
13	10.80	50.00	1.60	49.70
18	12.80	54.00	1.74	53.68



Linear Regression

Sampler slope (m) :	**36.3816**
Sampler intercept (b) :	**-9.4727**
Correlation coefficient (R^2) :	**0.9929**

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

Performed by: _____ Date: 29-7-2015

Checked by: _____ Date: 29/7/2015

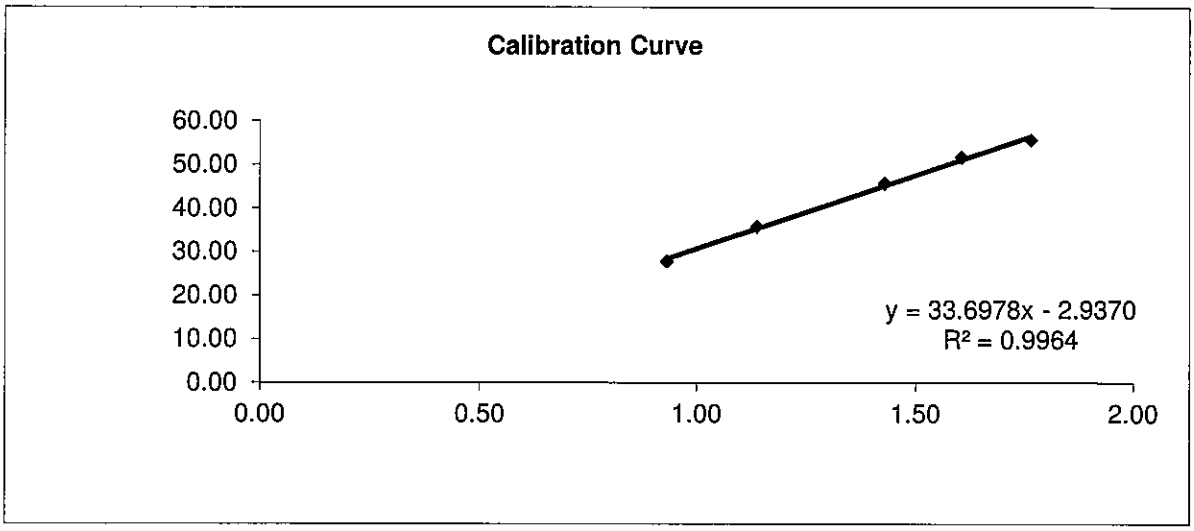
Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	29-Jul-15	**Barometric pressure**	761 mm Hg
Next Calibration date	27-Sep-15	**Tempature (°C)**	29 °C
Sampler location	DMS3 - Sheng Kung Hui Nursing Hc	**Tempature (K)**	302 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	2.07308
Intercept of the standard curve, b_s	-0.04607

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	3.60	28.00	0.93	27.83
7	5.40	36.00	1.14	35.78
10	8.60	46.00	1.43	45.72
13	10.90	52.00	1.61	51.69
18	13.20	56.00	1.76	55.66



Linear Regression

Sampler slope (m) :	**33.6978**
Sampler intercept (b) :	**-2.9370**
Correlation coefficient (R^2) :	**0.9964**

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

Performed by: _____ Date: 29-7-2015

Checked by: _____ Date: 29/7/2015

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 20, 2015 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 2421 Pa (mm) - 749.3

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	1.4130	3.2	2.00
2	NA	NA	1.00	1.0060	6.3	4.00
3	NA	NA	1.00	0.9020	7.8	5.00
4	NA	NA	1.00	0.8590	8.7	5.50
5	NA	NA	1.00	0.7090	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9984	0.7066	1.4162		0.9957	0.7047	0.8843
0.9943	0.9884	2.0027		0.9916	0.9857	1.2507
0.9922	1.1000	2.2391		0.9895	1.0970	1.3983
0.9911	1.1538	2.3484		0.9884	1.1506	1.4665
0.9858	1.3905	2.8323		0.9831	1.3867	1.7687
Qstd slope (m) =		2.07308		Qa slope (m) =		1.29813
intercept (b) =		-0.04607		intercept (b) =		-0.02877
coefficient (r) =		0.99995		coefficient (r) =		0.99995
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

Appendix 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					
131353	Aug-15	1-Aug-15	0:00	0:00	DMS1	Fine	Normal Operation	753.8	753.8	28.8	28.8	40.0	40.0	2.7477	2.7864	0.0387	1.2799	1.2799	1.2799	3613.38	3637.38	1440.00	1843.06	21.0	148.7	260.0
131367	Aug-15	7-Aug-15	0:00	0:00	DMS1	Fine	Normal Operation	753.0	753.0	28.8	28.8	38.0	38.0	2.7872	2.8320	0.0448	1.2224	1.2224	1.2224	3637.39	3661.39	1440.00	1760.26	25.5	148.7	260.0
131371	Aug-15	13-Aug-15	0:00	0:00	DMS2	Fine	Normal Operation	753.8	753.8	28.4	28.4	40.0	40.0	2.7677	2.7866	0.0189	1.2806	1.2806	1.2806	3661.40	3685.40	1440.00	1844.06	10.2	148.7	260.0
131370	Aug-15	19-Aug-15	0:00	0:00	DMS1	Fine	Normal Operation	754.0	753.9	28.5	28.6	39.0	39.0	2.7747	2.8122	0.0375	1.2521	1.2519	1.2520	3685.41	3709.41	1440.00	1802.88	20.8	148.7	260.0
131374	Aug-15	25-Aug-15	0:00	0:00	DMS1	Fine	Normal Operation	754.5	754.5	28.4	28.4	40.0	40.0	2.7570	2.7972	0.0402	1.2812	1.2812	1.2812	3709.42	3733.42	1440.00	1844.93	21.8	148.7	260.0
131377	Aug-15	31-Aug-15	0:00	0:00	DMS1	Fine	Normal Operation	754.5	754.5	28.8	28.7	40.0	40.0	2.7713	2.8140	0.0427	1.2804	1.2806	1.2805	3733.43	3757.43	1440.00	1843.92	23.2	148.7	260.0

Average (µg/m3)	20.4
Max (µg/m3)	25.5
Min (µg/m3)	10.2

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					
131361	Aug-15	1-Aug-15	0:00	0:00	DMS2	Fine	Normal Operation	753.8	753.8	28.8	28.8	38.0	38.0	2.7746	2.8146	0.0400	1.2634	1.2634	1.2634	3000.4	3024.4	1440.00	1819.3	22.0	167.4	260.0
131354	Aug-15	7-Aug-15	0:00	0:00	DMS2	Fine	Normal Operation	753.0	753.0	28.8	28.8	39.0	39.0	2.7541	2.7984	0.0443	1.2926	1.2926	1.2926	3024.4	3048.4	1440.00	1861.3	23.8	167.4	260.0
131368	Aug-15	13-Aug-15	0:00	0:00	DMS2	Fine	Normal Operation	753.8	753.8	28.4	28.4	38.0	38.0	2.7827	2.8215	0.0388	1.2641	1.2641	1.2641	3048.43	3072.43	1440.00	1820.30	21.3	167.4	260.0
131372	Aug-15	19-Aug-15	0:00	0:00	DMS2	Fine	Normal Operation	754.0	753.9	28.5	28.6	39.0	39.0	2.7780	2.8201	0.0421	1.2939	1.2937	1.2938	3072.44	3096.44	1440.00	1863.07	22.6	167.4	260.0
131375	Aug-15	25-Aug-15	0:00	0:00	DMS2	Fine	Normal Operation	754.5	754.5	28.4	28.4	40.0	40.0	2.7365	2.7879	0.0514	1.3244	1.3244	1.3244	3096.45	3120.45	1440.00	1907.14	27.0	167.4	260.0
131378	Aug-15	31-Aug-15	0:00	0:00	DMS2	Fine	Normal Operation	754.5	754.5	28.8	28.7	38.0	38.0	2.7758	2.8140	0.0382	1.2639	1.2641	1.2640	3120.46	3144.46	1440.00	1820.16	21.0	167.4	260.0

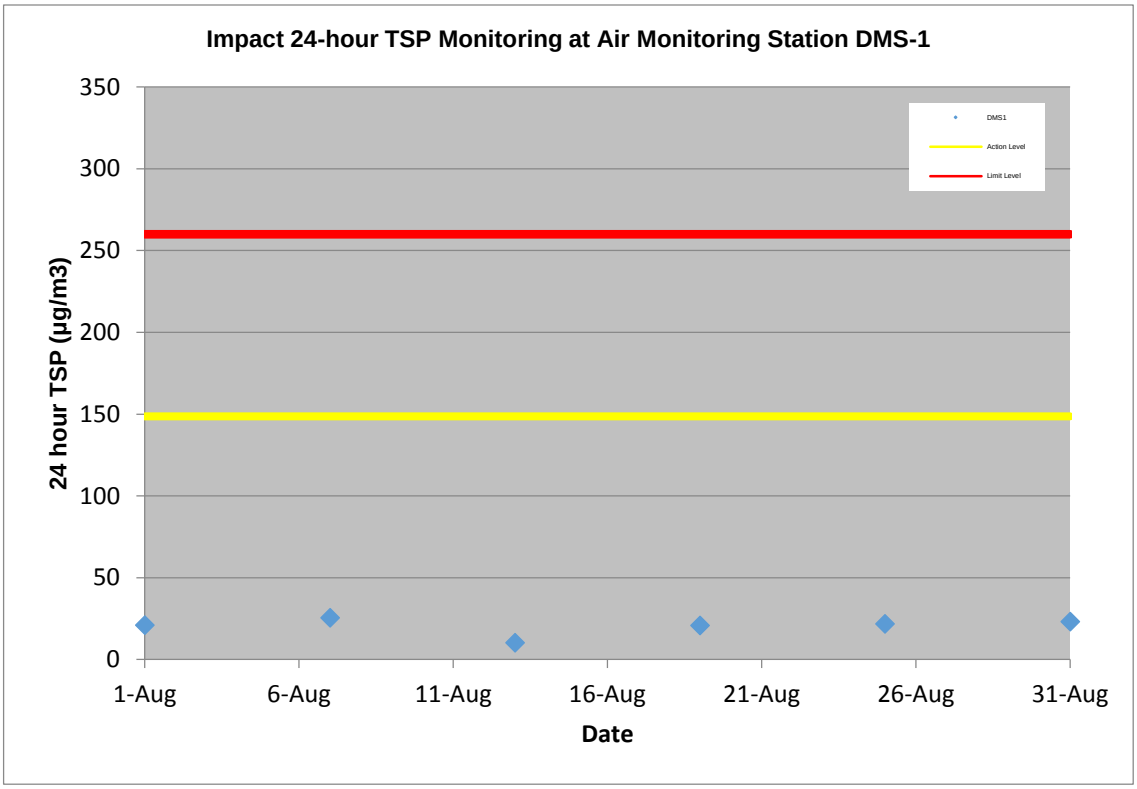
Average (µg/m3)	23.0
Max (µg/m3)	27.0
Min (µg/m3)	21.0

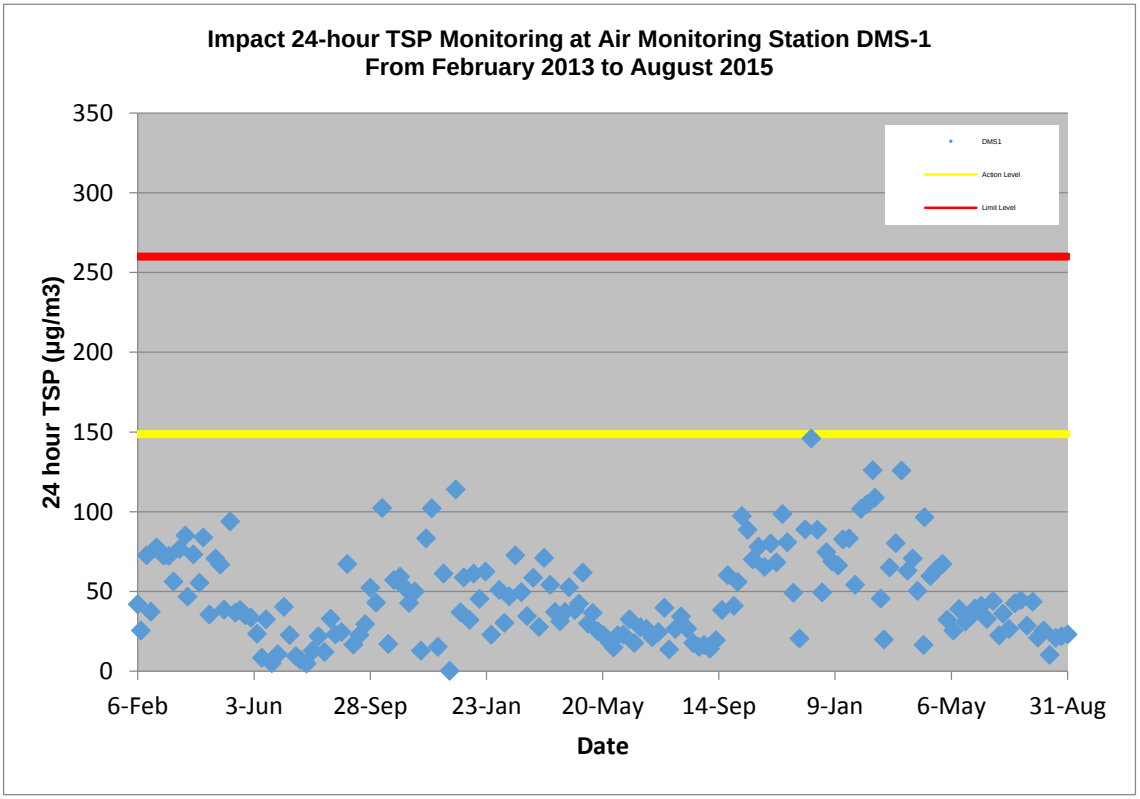
Location: DMS-3/DMS-4 - Hong Kong Sheng Kung Hui Nursing Home

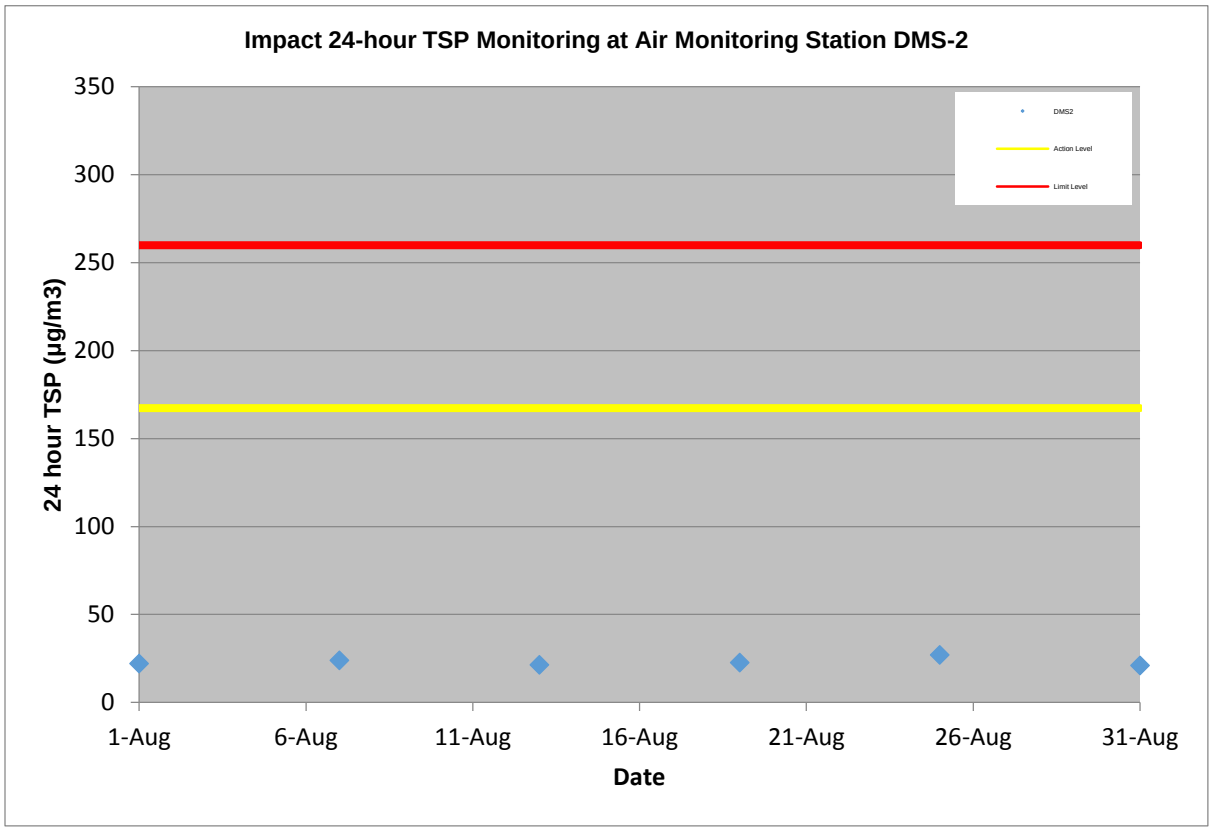
Details of 24-Hour TSP Monitoring

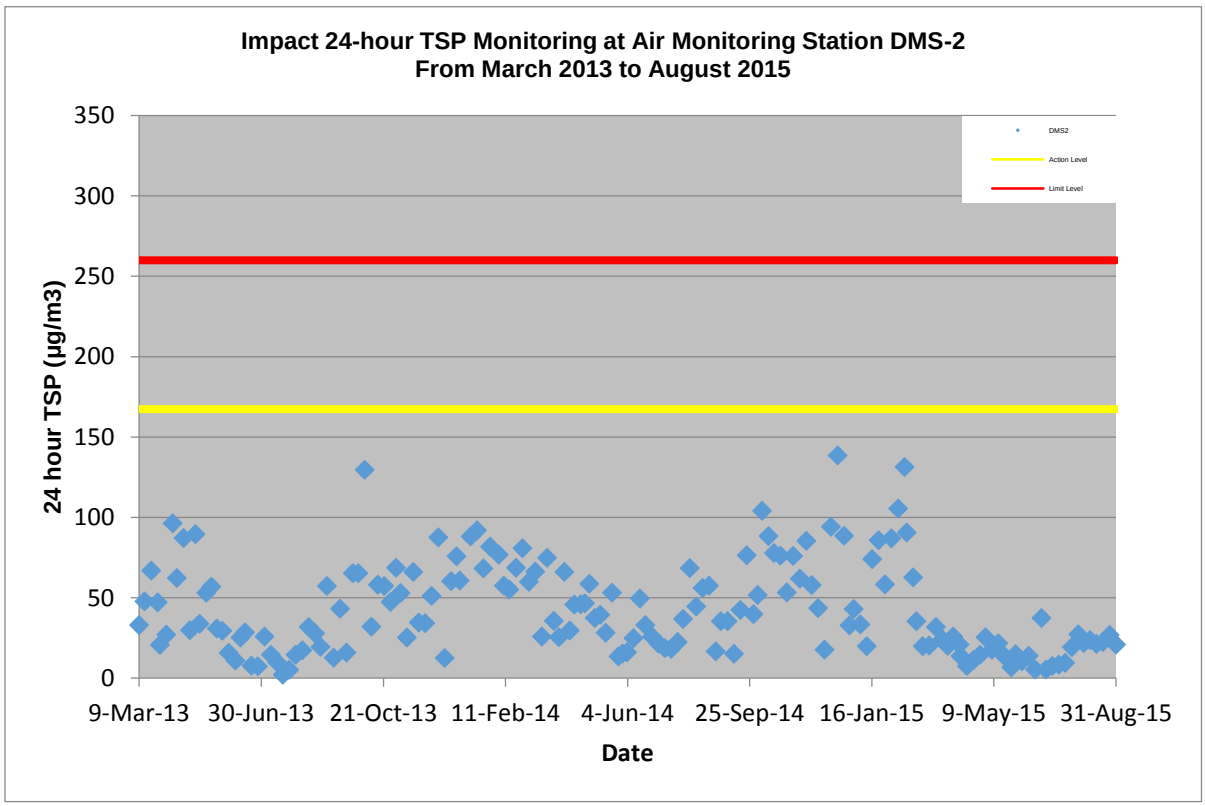
Filter No.	Month	Date	Time periods		Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m^3/min)		Average Flow Rate (m^3/min)	Elapse Time		Sampling Time (mins.)	Total vol. (m^3)	24-hour TSP Level ($\mu g/m^3$)	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					
131360	Aug-15	1-Aug-15	0:00	0:00	DMS3	Fine	Normal Operation	753.8	753.8	28.8	28.8	39.0	39.0	2.7575	2.7945	0.0370	1.2365	1.2365	1.2365	3128.88	3152.88	1440.00	1780.56	20.8	159.1	260.0
131355	Aug-15	7-Aug-15	0:00	0:00	DMS3	Fine	Normal Operation	753.0	753.0	28.8	28.8	39.0	39.0	2.7528	2.8042	0.0514	1.2357	1.2357	1.2357	3152.89	3176.89	1440.00	1779.41	28.9	159.1	260.0
131369	Aug-15	13-Aug-15	0:00	0:00	DMS4	Fine	Normal Operation	753.8	753.8	28.4	28.4	40.0	40.0	2.7828	2.8372	0.0544	1.2808	1.2808	1.2808	3176.90	3200.90	1440.00	1844.35	29.5	159.1	260.0
131365	Aug-15	19-Aug-15	0:00	0:00	DMS3	Fine	Normal Operation	754.0	753.9	28.5	28.6	40.0	40.0	2.7794	2.8229	0.0435	1.2808	1.2804	1.2806	3200.91	3224.91	1440.00	1844.06	23.6	159.1	260.0
131376	Aug-15	25-Aug-15	0:00	0:00	DMS3	Fine	Normal Operation	754.5	754.5	28.4	28.4	38.0	38.0	2.7550	2.7894	0.0344	1.1953	1.1953	1.1953	3224.92	3248.92	1440.00	1721.23	20.0	159.1	260.0
131379	Aug-15	31-Aug-15	0:00	0:00	DMS3	Fine	Normal Operation	754.5	754.5	28.8	28.7	38.0	38.0	2.7625	2.8061	0.0436	1.1943	1.1945	1.1944	3248.93	3272.93	1440.00	1719.94	25.3	159.1	260.0

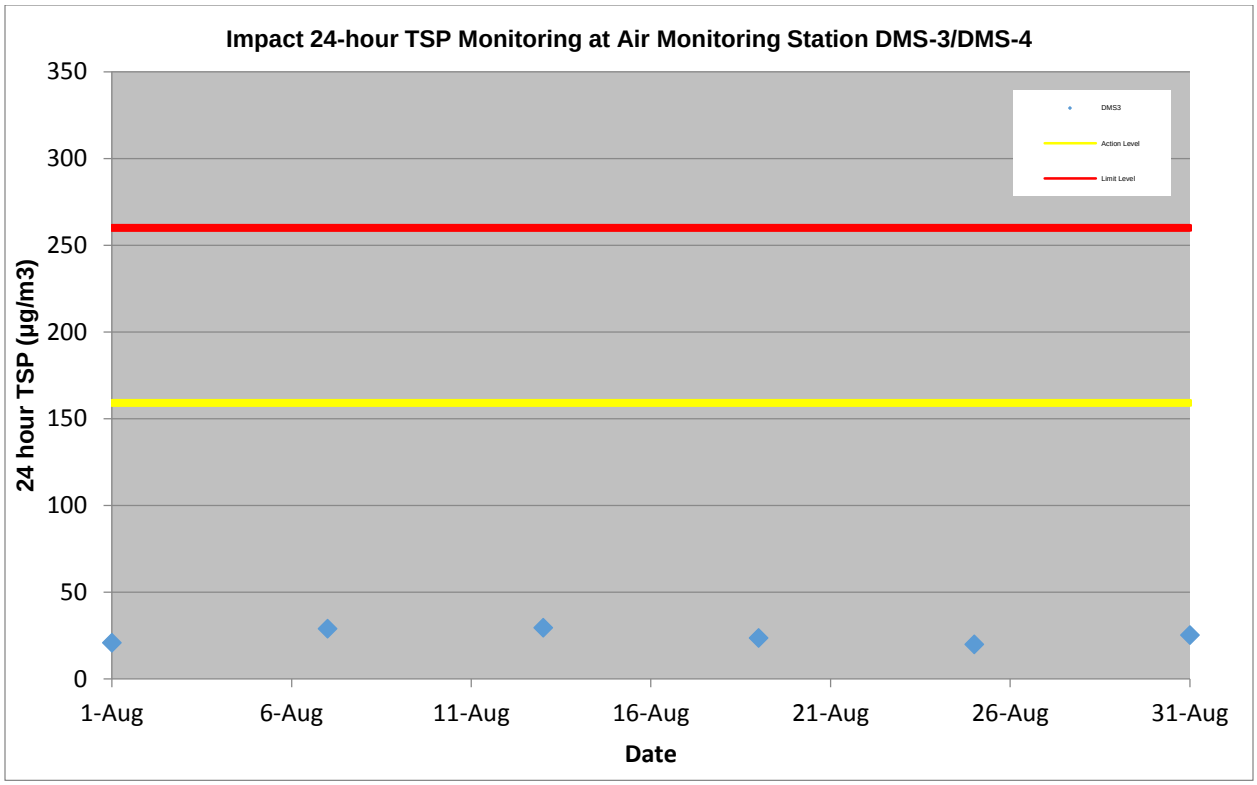
Average (µg/m3)	24.7
Max (µg/m3)	29.5
Min (µg/m3)	20.0

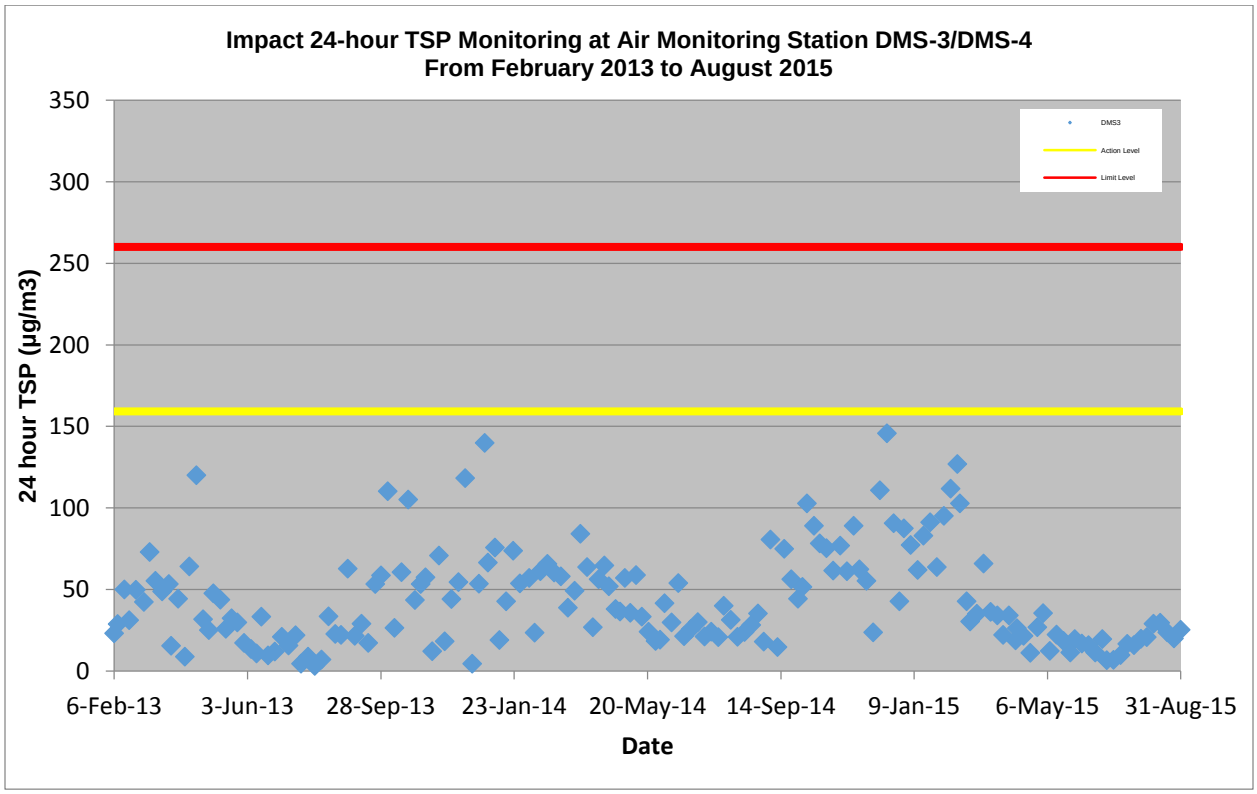

Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-1
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
DMS1
Action Level
Limit Level
1-Aug
6-Aug
11-Aug
16-Aug
21-Aug
26-Aug
31-Aug
Date


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-1
From February 2013 to August 2015
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
DMS1
Action Level
Limit Level
6-Feb
3-Jun
28-Sep
23-Jan
20-May
14-Sep
9-Jan
6-May
31-Aug
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)
1-Aug
6-Aug
11-Aug
16-Aug
21-Aug
26-Aug
31-Aug
Date
DMS2
Action Level
Limit Level


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-2
From March 2013 to August 2015
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
9-Mar-13
30-Jun-13
21-Oct-13
11-Feb-14
4-Jun-14
25-Sep-14
16-Jan-15
9-May-15
31-Aug-15
Date
DMS2
Action Level
Limit Level


Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-3/DMS-4
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
DMS3
Action Level
Limit Level
1-Aug
6-Aug
11-Aug
16-Aug
21-Aug
26-Aug
31-Aug
Date

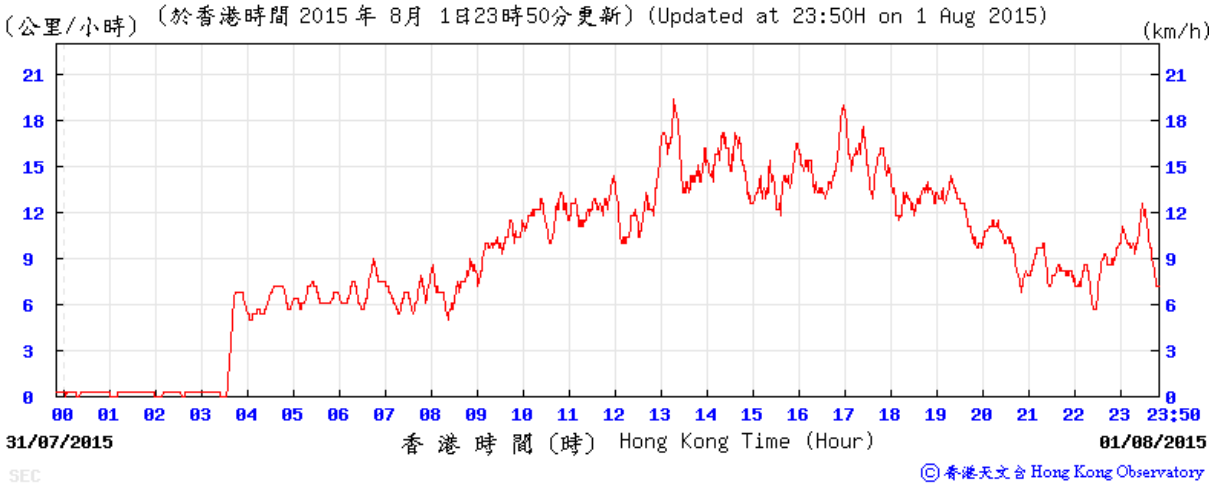

Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-3/DMS-4
From February 2013 to August 2015
350
300
250
200
150
100
50
0
24 hour TSP (µg/m3)
DMS3
Action Level
Limit Level
6-Feb-13
3-Jun-13
28-Sep-13
23-Jan-14
20-May-14
14-Sep-14
9-Jan-15
6-May-15
31-Aug-15
Date

Appendix F

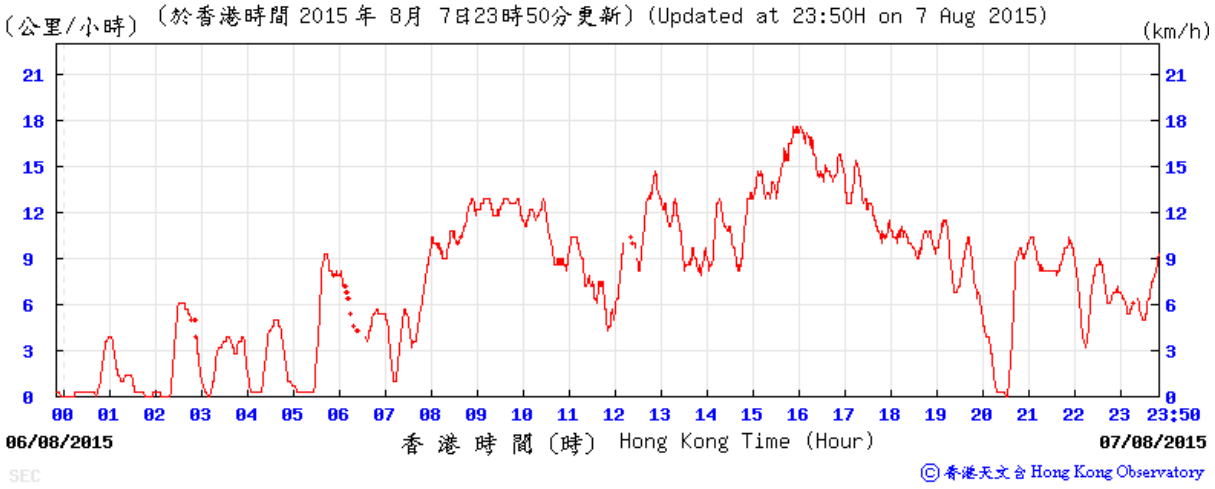
Wind data

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

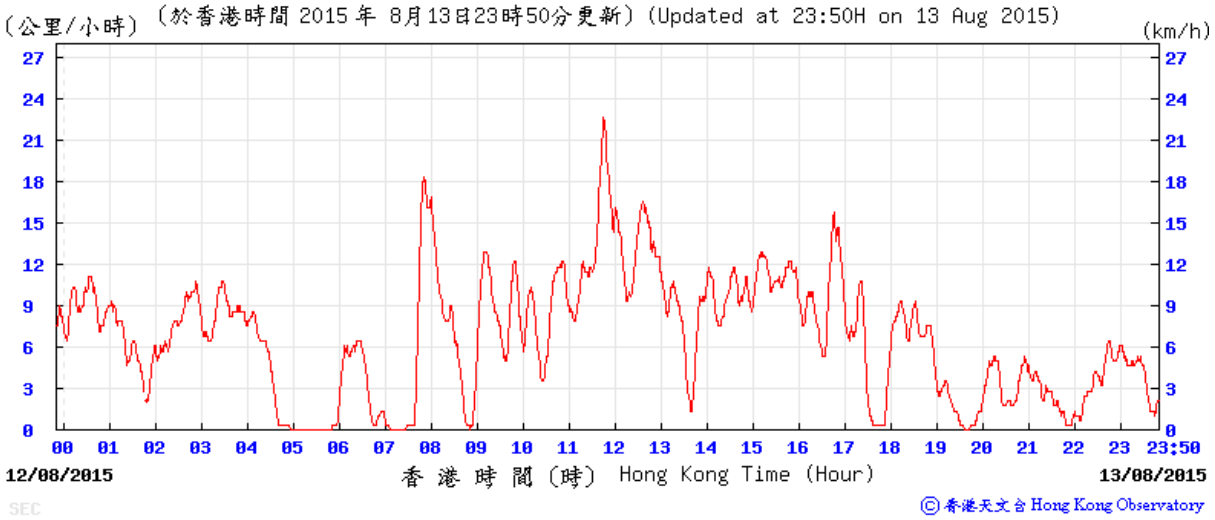
1 August 2015



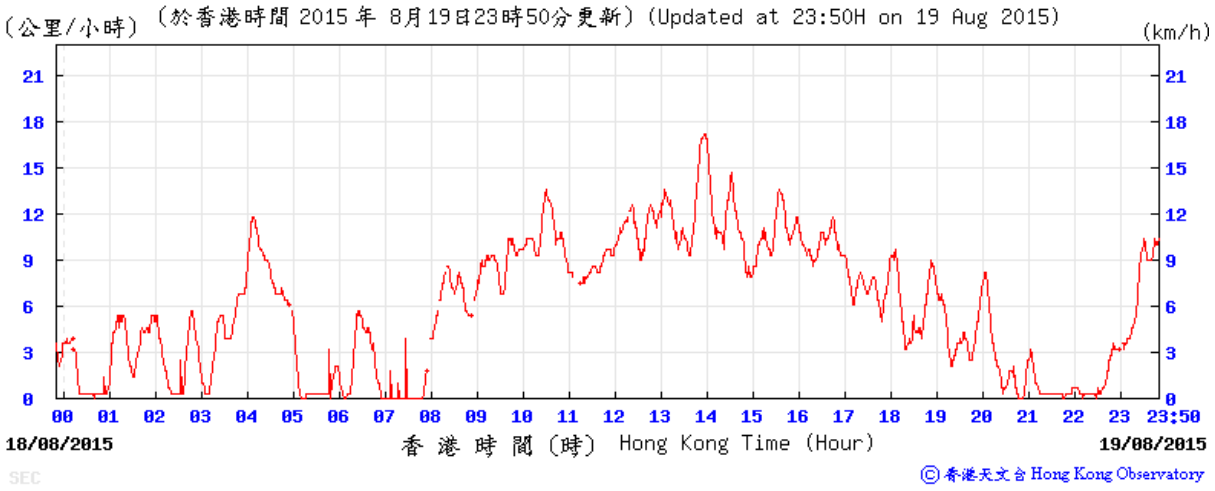
7 August 2015



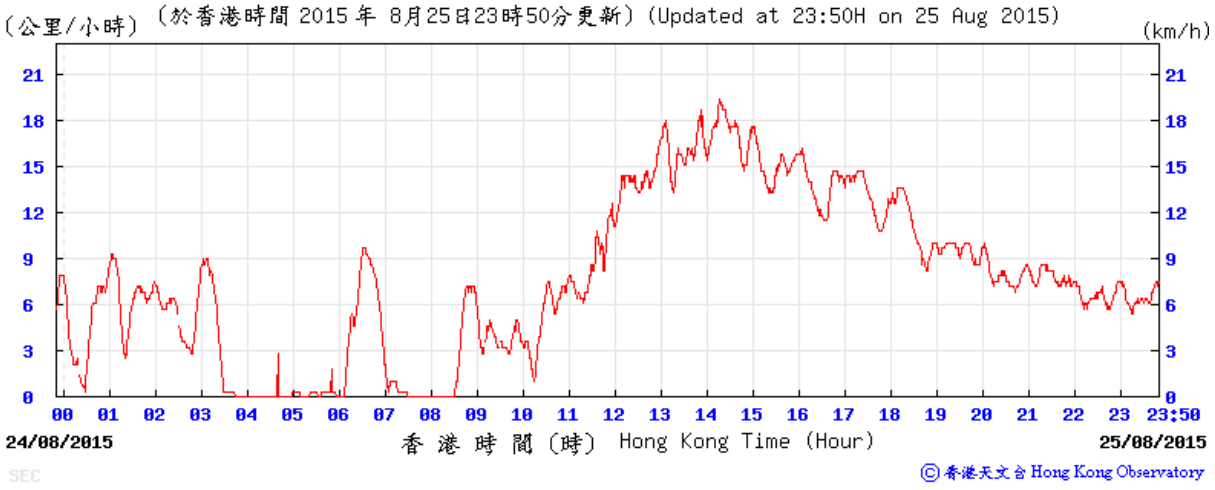
13 August 2015



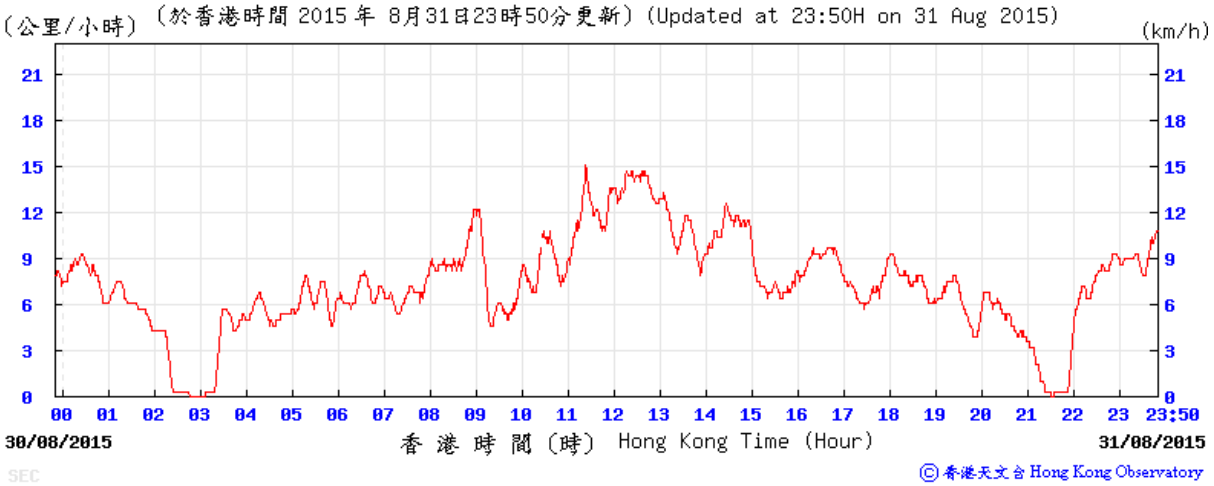
19 August 2015



25 August 2015



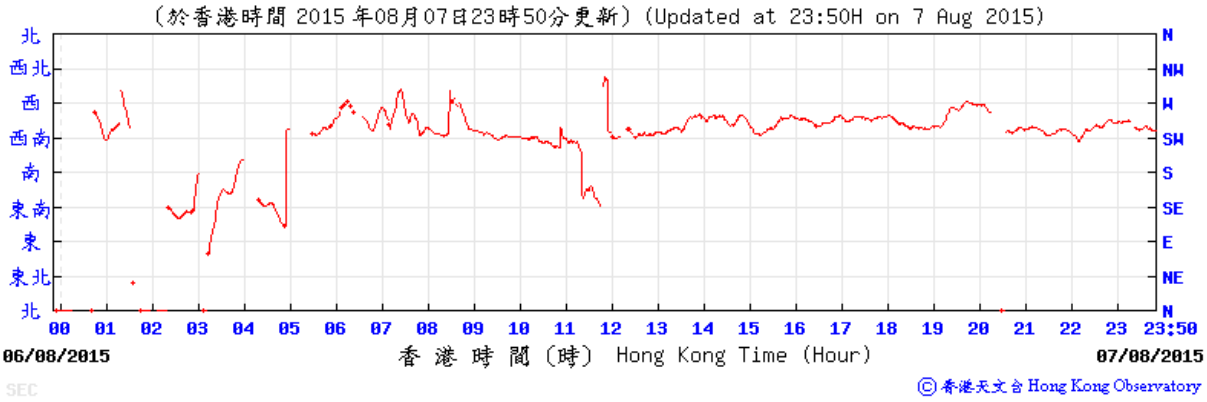
31 August 2015



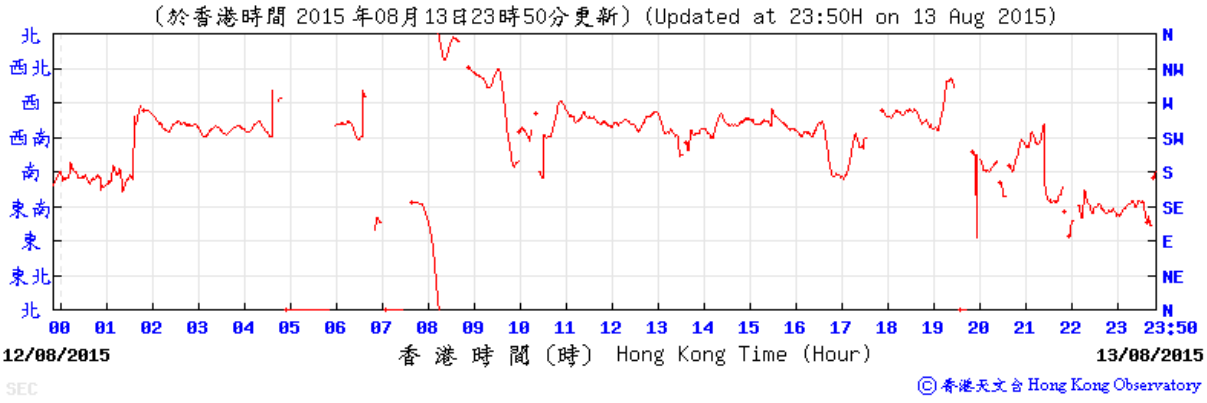
Average wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

1 August 2015

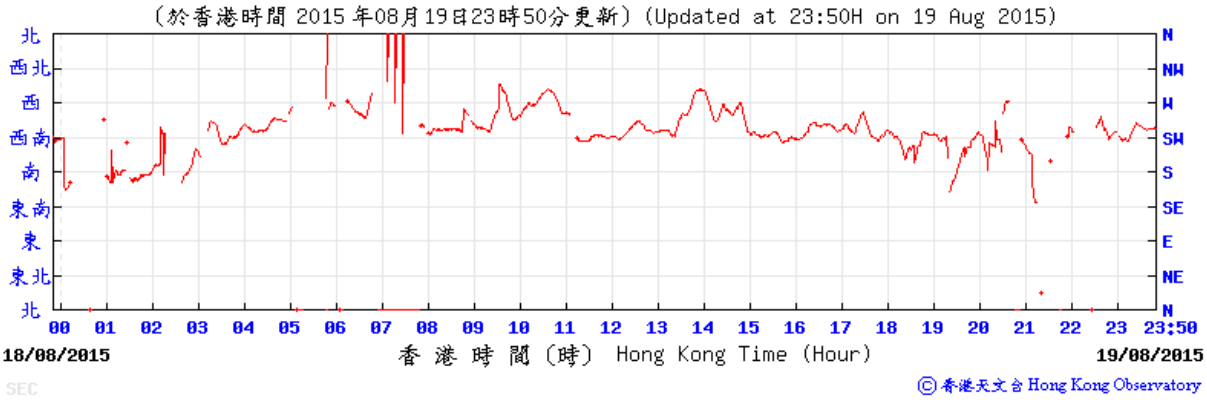
7 August 2015



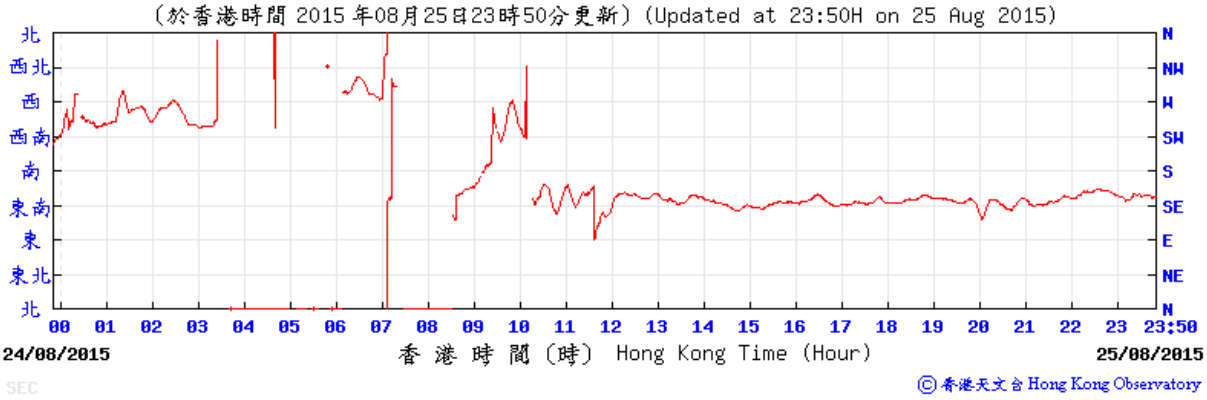
13 August 2015



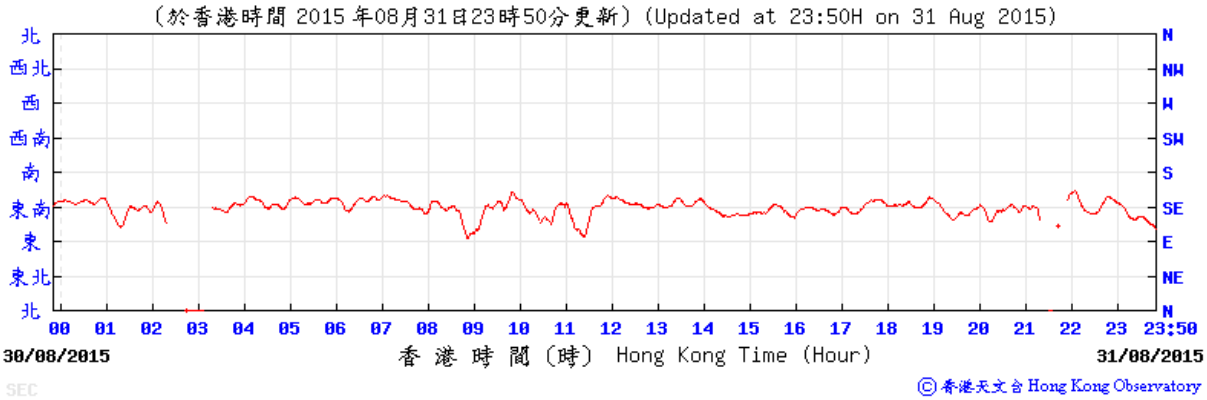
19 August 2015



25 August 2015

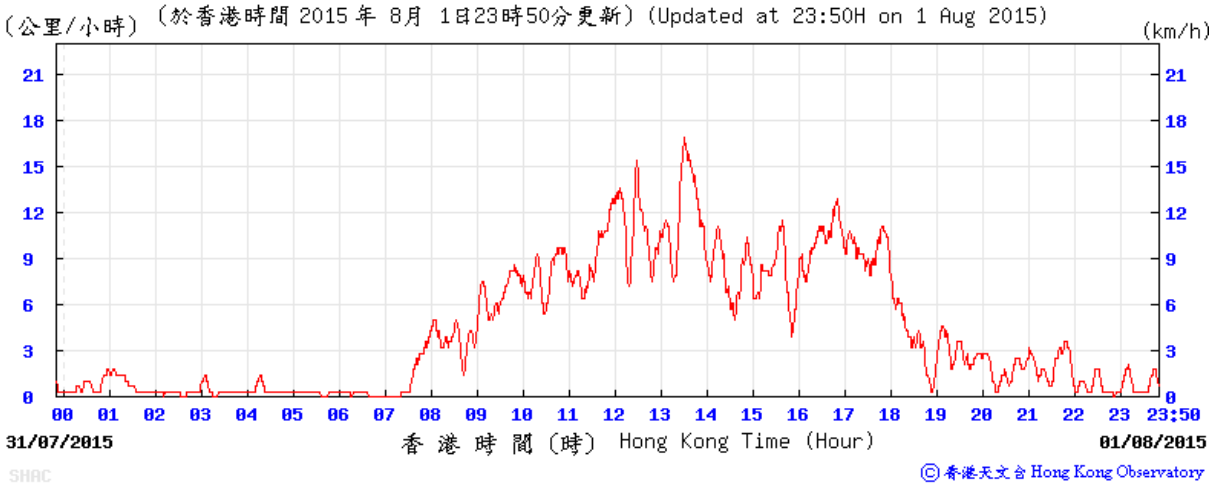


31 August 2015

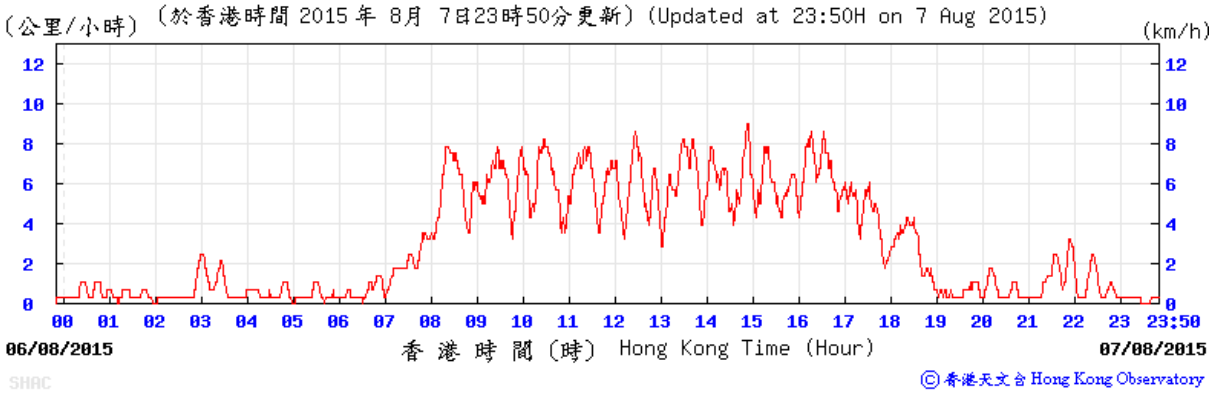


Average wind speed obtained from the meteorological station at Sha Tin from the Hong Kong Observatory (HKO)

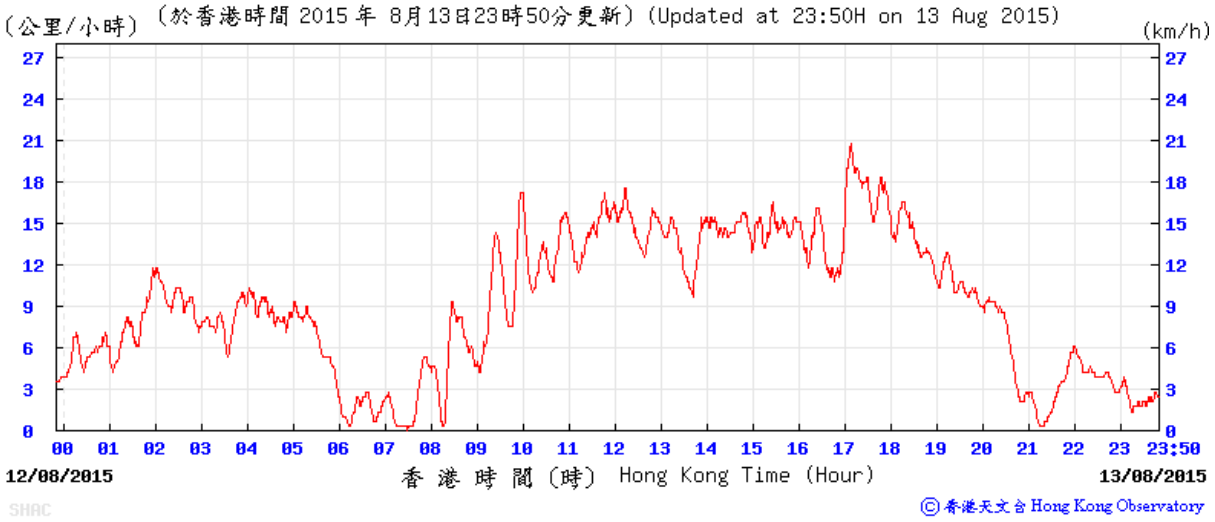
1 August 2015



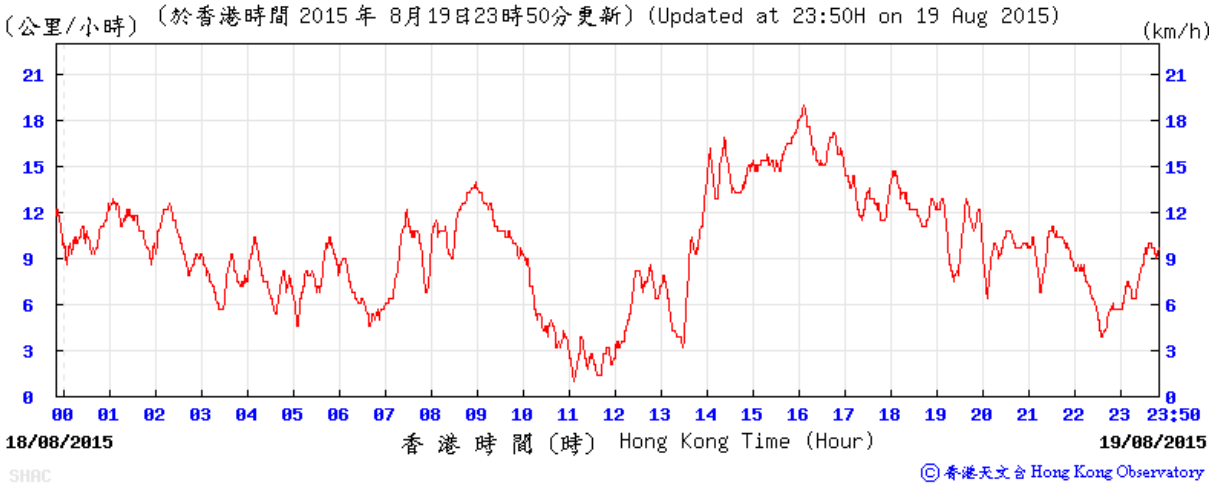
7 August 2015



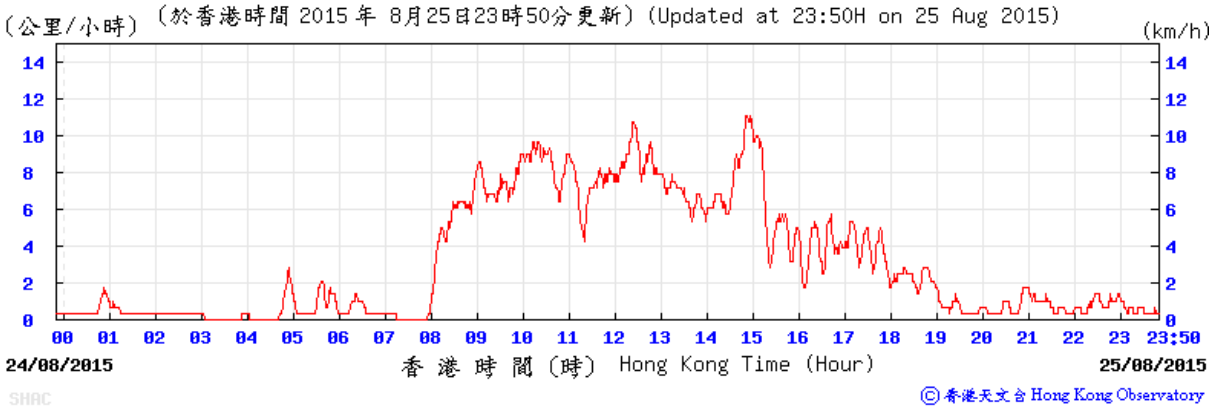
13 August 2015



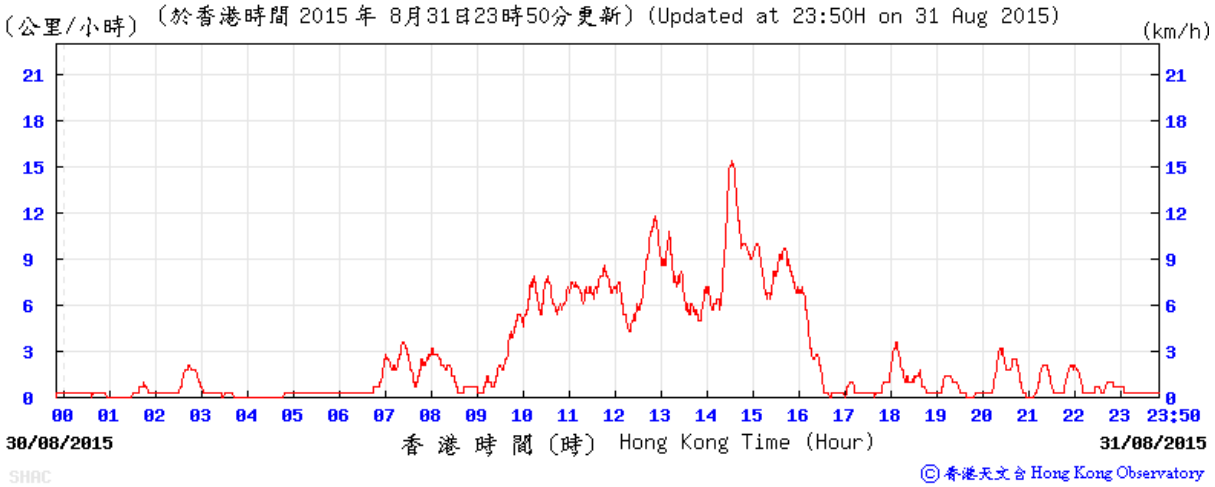
19 August 2015



25 August 2015

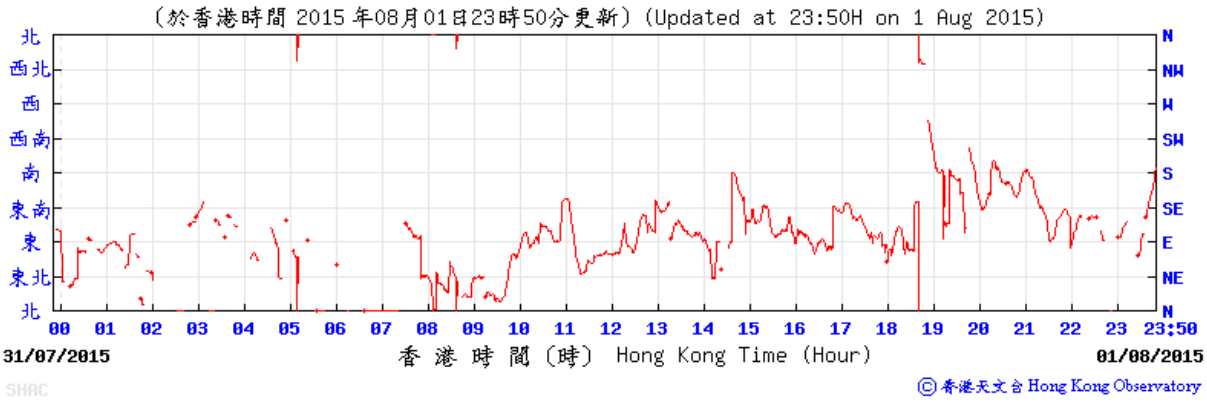


31 August 2015

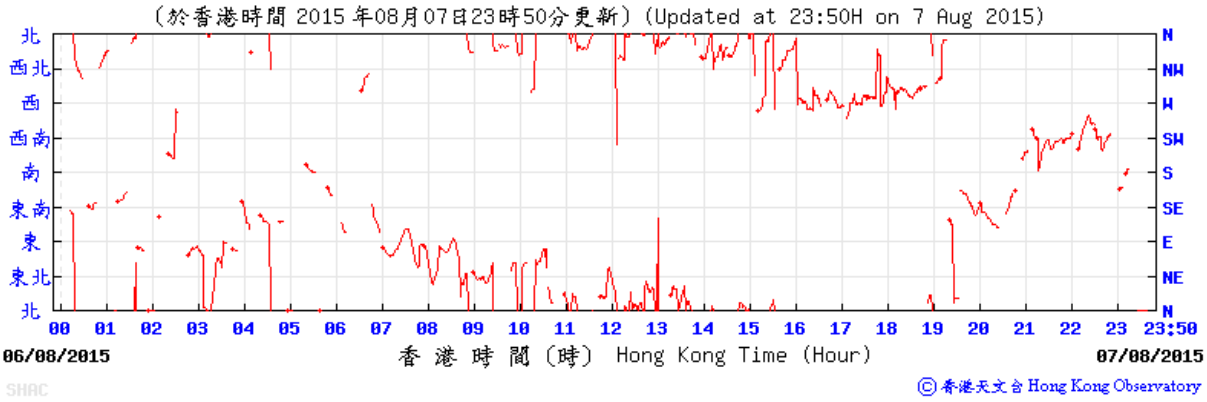


Average wind direction obtained from the meteorological station at Sha Tin from the Hong Kong Observatory (HKO)

1 August 2015



7 August 2015



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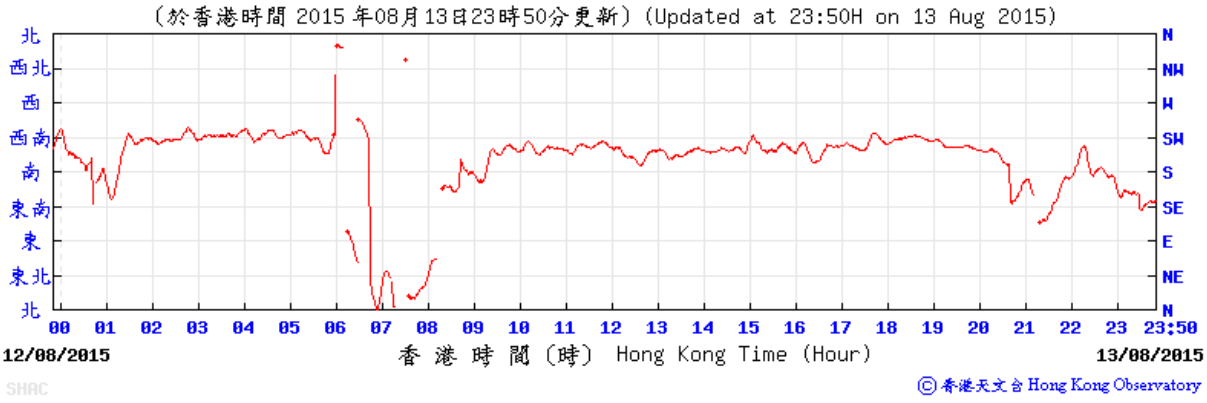
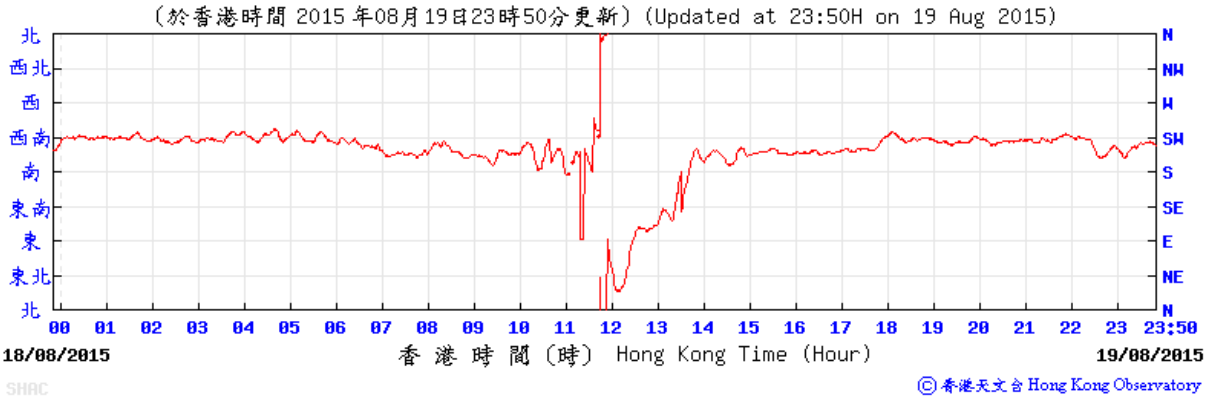


19 August 2015



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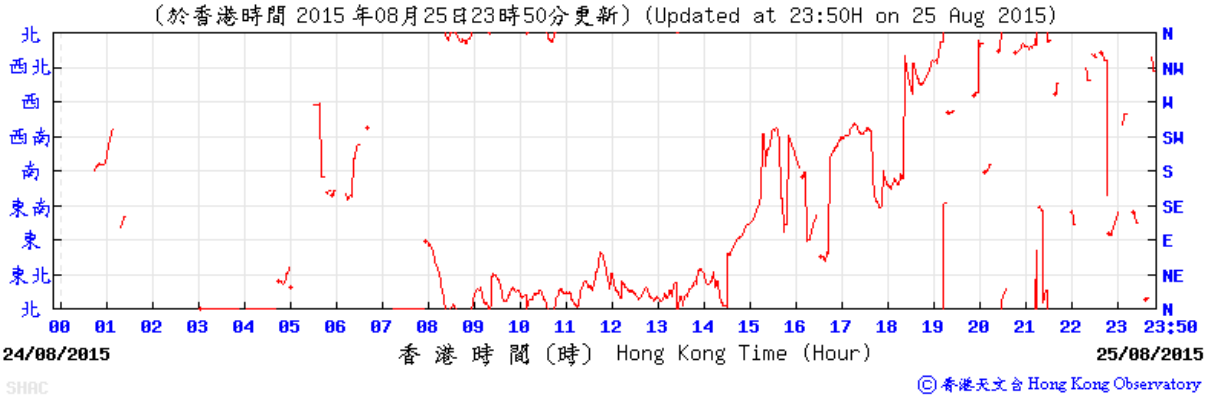
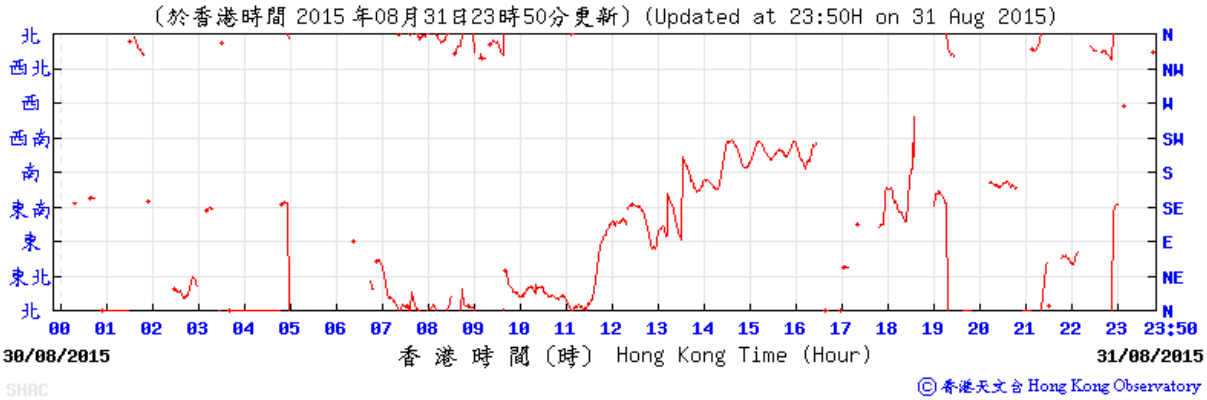


31 August 2015



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. : C145333
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-2191) Date of Receipt / 收件日期 : 25 August 2014

Description / 儀器名稱 : Integrating Sound Level Meter
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 2238
Serial No. / 編號 : 2320694
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 : 30 August 2014

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, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 1 September 2014

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. : C145333
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	C140016
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	93.9

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	94.0	± 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	94.0 (Ref.)
				104.00		104.0
				114.00		113.9

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

Certificate of Calibration
校正證書

Certificate No. : C145333
證書編號

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	94.0	Ref.
	L_{ASP}		S			94.0	± 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	54.7	-39.4 ± 1.5
					63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.8	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)

Certificate of Calibration
校正證書

Certificate No. : C145333
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	91.0	-3.0 ± 1.5
					63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	90.9	-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)	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	89.9	± 0.5
			60 sec.			$1/10^3$		80	79.2	± 1.0
			5 min.			$1/10^4$		70	69.2	± 1.0

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2791364

- 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.

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. : C145331
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-2191) Date of Receipt / 收件日期 : 25 August 2014

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 : 30 August 2014

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, Project Engineer

Certified By 核證 : K M Wu, Engineer

Date of Issue 簽發日期 : 1 September 2014

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. : C145331
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	C143868
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

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.

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Appendix H

Noise Results

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

Daytime Noise Monitoring Results

Date	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Baseline Corrected Level
		L_{Aeq},30min	Limit	L_{10},30min	L_{90},30min	L_{Aeq},30min	L_{Aeq},30min
3-Aug-15	14:00-14:30	59.8	70.0	61.5	55.5	57.0	56.6
14-Aug-15	13:10-13:40	59.7	70.0	62.0	55.0	57.0	56.4
20-Aug-15	13:50-14:20	60.4	70.0	62.5	55.5	57.0	57.7
26-Aug-15	14:30-15:00	61.0	70.0	63.0	55.6	57.0	58.8

Notes: (*): Façade correction is included

Average	L_{Aeq},30min	60.2
Max	L_{Aeq},30min	61.0
Min	L_{Aeq},30min	59.7

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

Daytime Noise Monitoring Results

Date	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Baseline Corrected Level
		L_{Aeq},30min	Limit	L_{10},30min	L_{90},30min	L_{Aeq},30min	L_{Aeq},30min
3-Aug-15	08:45-09:15	67.0	70.0	69.0	64.5	66.0	60.1
14-Aug-15	10:40-11:10	65.9	70.0	67.0	62.5	66.0	< Baseline Level
20-Aug-15	08:30-09:00	66.4	70.0	67.5	62.5	66.0	< Baseline Level
26-Aug-15	08:40-09:10	67.0	70.0	69.0	63.5	66.0	60.1

Notes: (*): Façade correction is included

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

Average	L_{Aeq},30min	66.6
Max	L_{Aeq},30min	67.0
Min	L_{Aeq},30min	65.9

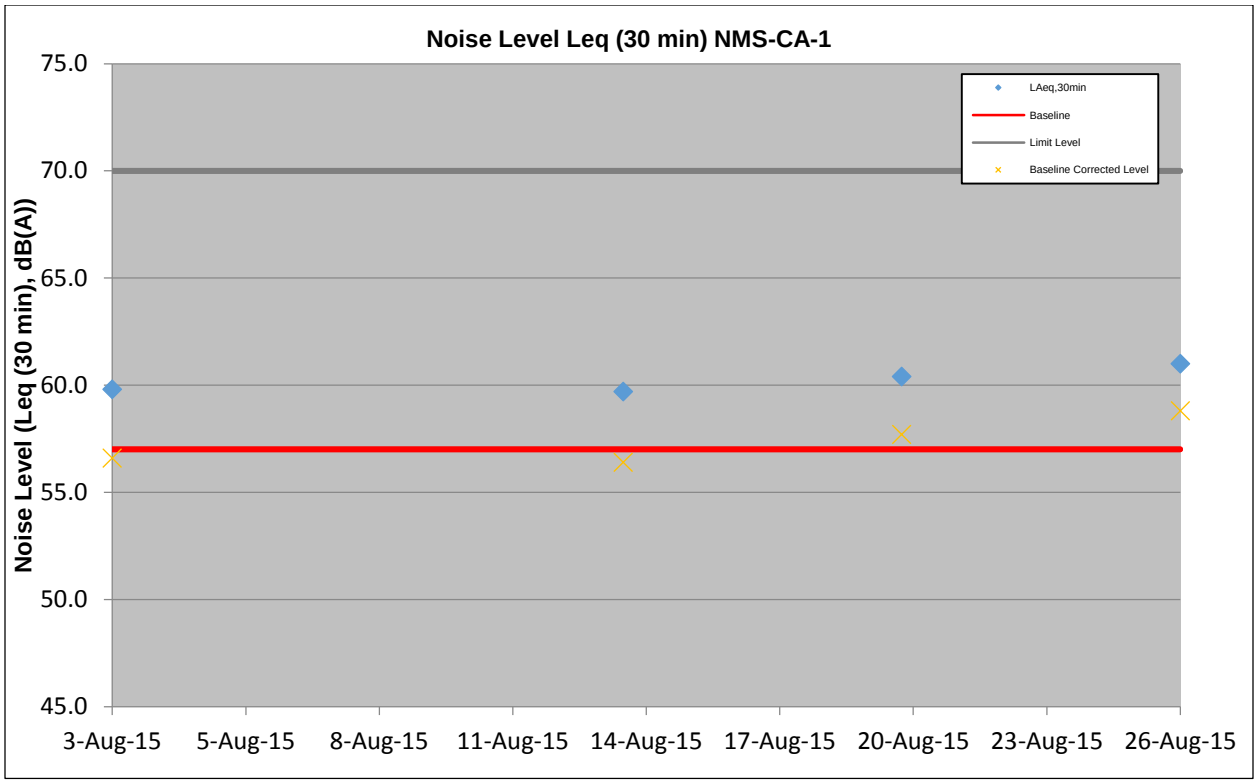
Location: NMS-CA-3 / NMS-CA-4 - Hong Kong Sheng Kung Hui Nursing Home

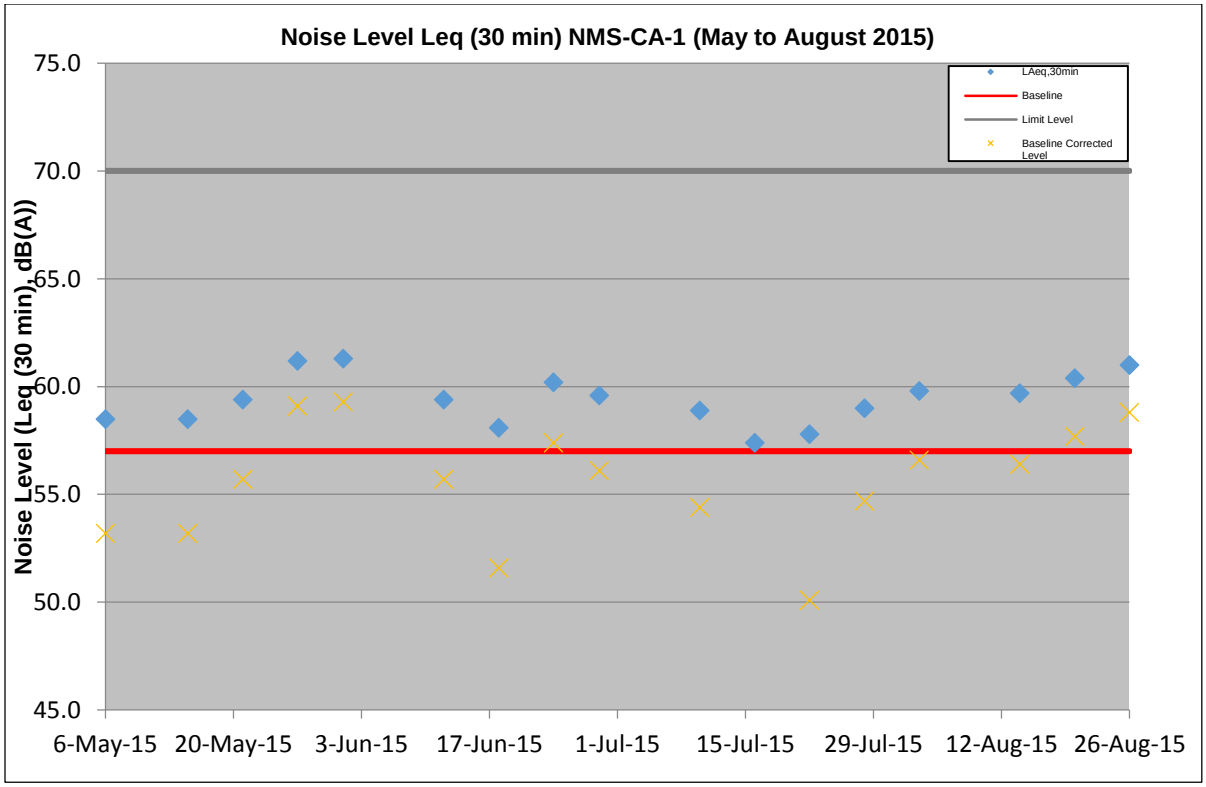
Daytime Noise Monitoring Results

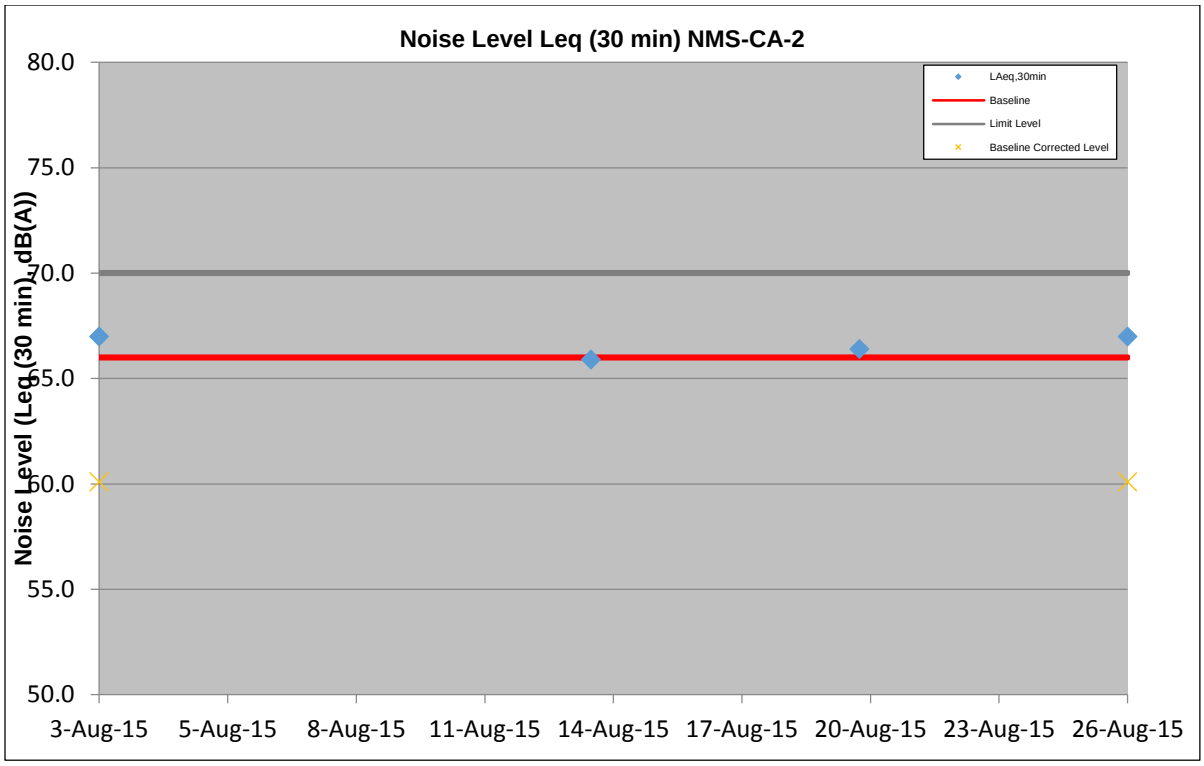
Date	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Baseline Corrected Level
		L_{Aeq},30min	Limit	L_{10},30min	L_{90},30min	L_{Aeq},30min	L_{Aeq},30min
3-Aug-15	10:30-11:00	71.2	70.0	73.5	66.0	73.0	< Baseline Level
14-Aug-15	09:15-09:45	70.1	70.0	72.5	66.0	73.0	< Baseline Level
20-Aug-15	10:30-11:00	70.8	70.0	72.5	65.0	73.0	< Baseline Level
26-Aug-15	10:25-10:55	70.9	70.0	72.5	65.5	73.0	< Baseline Level

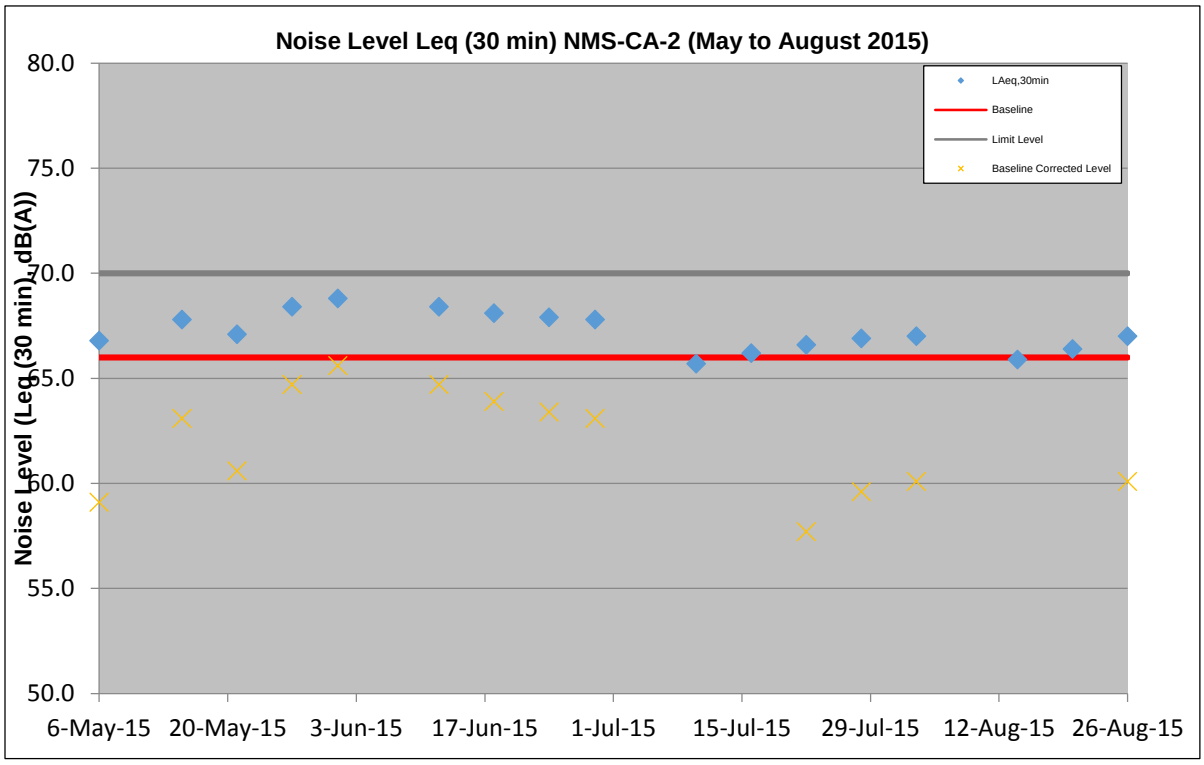
Notes: (*): Façade correction is included

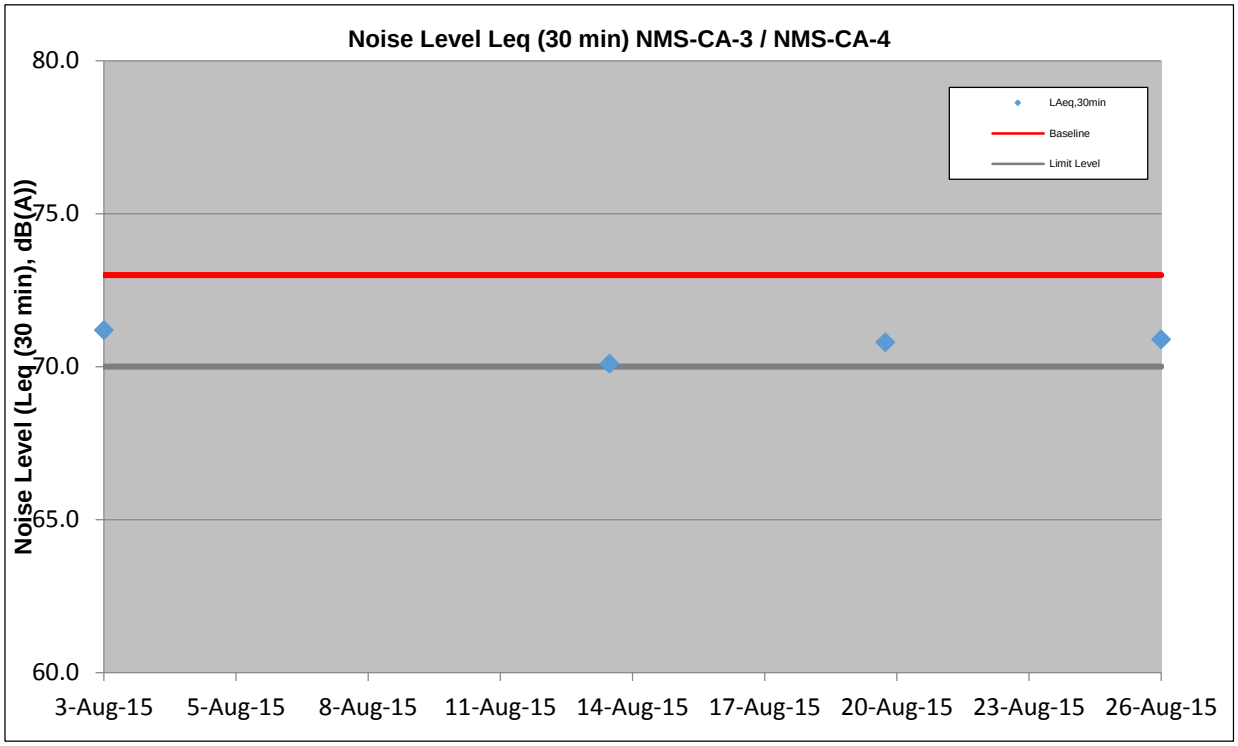
Average	L_{Aeq},30min	70.8
Max	L_{Aeq},30min	71.2
Min	L_{Aeq},30min	70.1

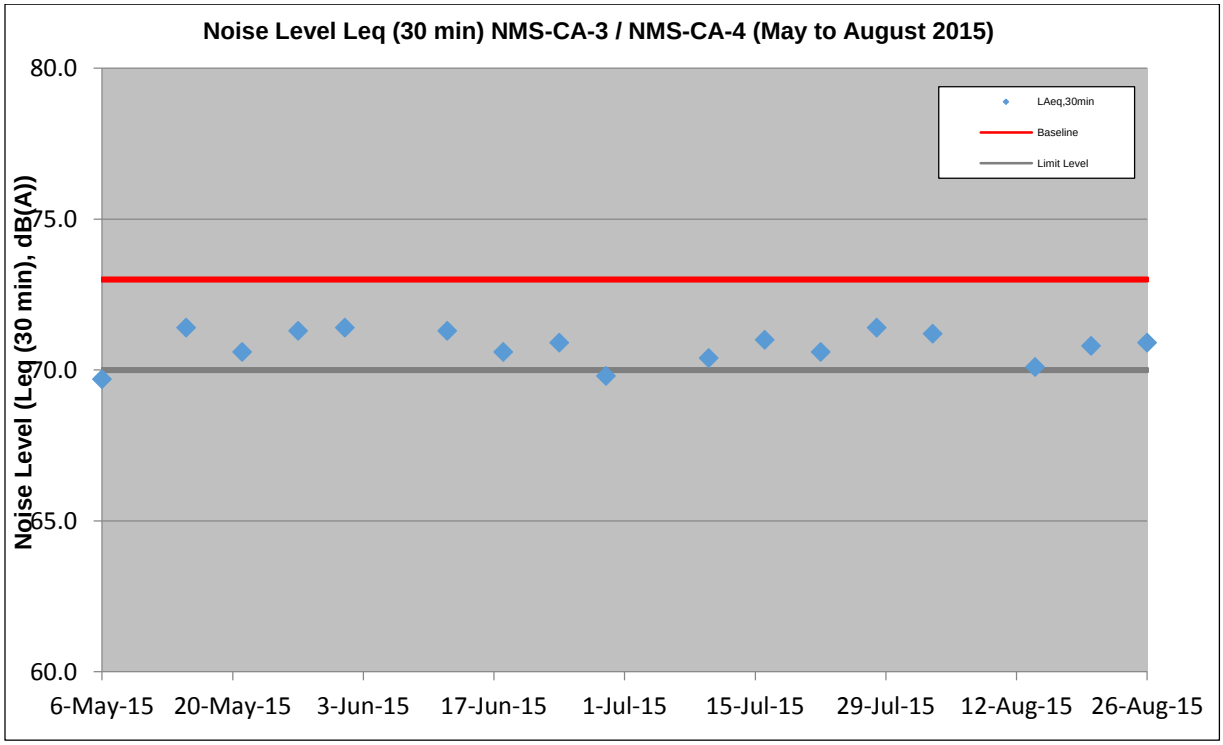

Noise Level Leq (30 min) NMS-CA-1
Noise Level (Leq (30 min), dB(A))
75.0
70.0
65.0
60.0
55.0
50.0
45.0
3-Aug-15
5-Aug-15
8-Aug-15
11-Aug-15
14-Aug-15
17-Aug-15
20-Aug-15
23-Aug-15
26-Aug-15
LAeq,30min
Baseline
Limit Level
Baseline Corrected Level


Noise Level Leq (30 min) NMS-CA-1 (May to August 2015)
Noise Level (Leq (30 min), dB(A))
75.0
70.0
65.0
60.0
55.0
50.0
45.0
6-May-15
20-May-15
3-Jun-15
17-Jun-15
1-Jul-15
15-Jul-15
29-Jul-15
12-Aug-15
26-Aug-15
LAeq,30min
Baseline
Limit Level
Baseline Corrected Level


Noise Level Leq (30 min) NMS-CA-2
Noise Level (Leq (30 min), dB(A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
3-Aug-15
5-Aug-15
8-Aug-15
11-Aug-15
14-Aug-15
17-Aug-15
20-Aug-15
23-Aug-15
26-Aug-15
LAeq,30min
Baseline
Limit Level
Baseline Corrected Level


Noise Level Leq (30 min) NMS-CA-2 (May to August 2015)
Noise Level (Leq (30 min), dB(A))
80.0
75.0
70.0
65.0
60.0
55.0
50.0
6-May-15
20-May-15
3-Jun-15
17-Jun-15
1-Jul-15
15-Jul-15
29-Jul-15
12-Aug-15
26-Aug-15
LAeq,30min
Baseline
Limit Level
Baseline Corrected Level


Noise Level Leq (30 min) NMS-CA-3 / NMS-CA-4
Noise Level (Leq (30 min), dB(A))
80.0
75.0
70.0
65.0
60.0
3-Aug-15
5-Aug-15
8-Aug-15
11-Aug-15
14-Aug-15
17-Aug-15
20-Aug-15
23-Aug-15
26-Aug-15
LAeq,30min
Baseline
Limit Level


Noise Level Leq (30 min) NMS-CA-3 / NMS-CA-4 (May to August 2015)
Noise Level (Leq (30 min), dB(A))
80.0
75.0
70.0
65.0
60.0
6-May-15
20-May-15
3-Jun-15
17-Jun-15
1-Jul-15
15-Jul-15
29-Jul-15
12-Aug-15
26-Aug-15
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

Name of Department: ENV

Contract No.:MTR-SCL1103

Monthly Summary Waste Flow Table for 2015

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	36.897	0.000	0.000	31.770	5.127	0.000	0.000	0.086	0.000	1.400	0.194
Feb	34.994	0.000	0.000	28.434	6.559	0.000	0.000	0.138	0.000	0.800	0.153
Mar	51.076	0.000	0.788	41.125	9.164	0.000	0.000	0.000	0.000	1.260	0.151
Apr	47.056	0.000	3.593	38.123	5.340	0.000	0.000	0.000	0.000	0.000	0.114
May	45.841	0.000	0.023	44.351	1.468	0.000	0.000	0.000	0.000	1.500	0.166
Jun	41.083	0.000	0.000	37.969	3.114	0.000	0.000	0.000	0.000	9.190	0.170
Sub-total	256.947	0.000	4.403	221.772	30.772	0.000	0.000	0.224	0.000	14.150	0.948
July	29.374	0.000	0.000	25.820	3.554	0.000	0.000	0.214	0.000	5.200	0.124
August	34.182	0.000	0.000	32.391	1.791	0.000	0.000	0.000	0.000	1.000	0.094
September											
October											
November											
December											
Total	320.503	0.000	4.403	279.983	36.117	0.000	0.000	0.438	0.000	20.350	1.165

Comments:

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

2) The cut-off date of waste amount in Aug is 31/8/2015 for TKO137FB/TM38FB, NENT landfill, Kai Tak 1108A, Nam Cheong 820 and KWP Quarry.

3) The amounts of waste in Aug are 94.02 tons for NENT Landfill, 3581.83 tons for TKO137FB/TM38FB, 0 tons for Kai Tak Contract 1108A, 0 tons for Contract 820 and 64781.6 tons for KWP Quarry.

4) The amount of C&D waste reused in the Contract in Aug is 0 trucks, approximately 0 tons, for cut-off date as 31/8/2015.

5) The amount of chemical waste in Aug is 1000kg for cut-off date as 31/8/2015.

Appendix K

Environmental Monitoring Programme for Coming Month

SCL Works Contract 1103 - Hin Keng to Diamond Hill Tunnels
Tentative Impact Monitoring Schedule - September 2015

Date		Air Quality	Noise	Site Inspection
		24-hours TSP	L_{Aeq}, 30 min	
1-Sep-15	Tue			
2-Sep-15	Wed			
3-Sep-15	Thu			
4-Sep-15	Fri			
5-Sep-15	Sat			
6-Sep-15	Sun			
7-Sep-15	Mon			
8-Sep-15	Tue			
9-Sep-15	Wed			
10-Sep-15	Thu			
11-Sep-15	Fri			
12-Sep-15	Sat			
13-Sep-15	Sun			
14-Sep-15	Mon			
15-Sep-15	Tue			
16-Sep-15	Wed			
17-Sep-15	Thu			
18-Sep-15	Fri			
19-Sep-15	Sat			
20-Sep-15	Sun			
21-Sep-15	Mon			
22-Sep-15	Tue			
23-Sep-15	Wed			
24-Sep-15	Thu			
25-Sep-15	Fri			
26-Sep-15	Sat			
27-Sep-15	Sun			
28-Sep-15	Mon			
29-Sep-15	Tue			
30-Sep-15	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 (August 2015)

ET's Complaint Log Ref. no.	Incoming Complaint Ref no.	Name of Complainant	Date Complaint Received from EPD	Complaint Date/ Period	Complaint Location	Area of Concern	Details of Complaint	Date Complaint Received by ET	ET's Investigation Date	Investigation/Mitigation Measures	Status
-	-	-	-	-	-	-	-.	-	-	-	-

Ove Arup and Partners HK Ltd.

Environmental Complaint Log (Cumulative)

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
February 2013	0	0	0
March 2013	0	0	0
April 2013	0	0	0
May 2013	0	0	0
June 2013	0	0	0
July 2013	0	0	0
August 2013	0	0	0
September 2013	0	0	0
October 2013	0	0	0
November 2013	0	0	0
December 2013	0	0	0
January 2014	0	0	0
February 2014	0	0	0
March 2014	0	0	0
April 2014	0	0	0
May 2014	0	0	0
June 2014	0	0	0
July 2014	0	0	0
August 2014	0	0	0
September 2014	0	0	0
October 2014	0	0	0
November 2014	1	0	0
December 2014	2	0	0
January 2015	0	0	0
February 2015	3	0	0
March 2015	3	0	0
April 2015	0	0	0
May 2015	0	0	0
June 2015	0	0	0
July 2015	1	0	0
August 2015	0	0	0
Total	10	0	0

Appendix F

30th 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. 30

[Period from 1 to 31 August 2015]

Works Contract 1106 – Diamond Hill Station

(September 2015)

Certified by: Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 9th September 2015

Sembawang – Leader Joint Venture

Shatin to Central Link – Contract 1106 Diamond Hill Station

Monthly Environmental Monitoring and Audit Report For August 2015

(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.

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EXECUTIVE SUMMARY

Introduction

1. This is the 30th 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 August 2015.

Summary of Construction Works undertaken during the Reporting Month

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

- Construction of slabs/beams, columns and walls at SCL-DIH station area, Interchange Adit, West Unpaid Link Adit and Entrance A1;
- Concreting works;
- Backfilling works; and
- Preparation of piling works and pre-drilling works at East MOE.

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)) 4 times
- NMS-CA-5(1)/NMS-CA-2(2) (Block 1, Rhythm Garden (northern façade)) 4 times

- Construction Dust (24-hour TSP) Monitoring

Dust Monitoring Station ID

- DMS-3(1) (4) /DMS-4(2) (4) (H.K. Sheng Kung Hui Nursing Home) 6 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. A draft Archaeological Survey-cum-Excavation Report was submitted to AMO for review in March 2014. Comments from AMO were received in September 2014. A revised draft report was submitted to AMO in April 2015 for their further review.

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

Waste Management

6. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. About 310 m^3 of inert C&D materials were generated from the Project and were sent to Tseung Kwan O 137 and Tuen Mun Area 38 Fill Bank during the reporting month. 102 m^3 of non-recyclable non-inert C&D materials, such as general refuse, were disposed of at NENT Landfill. No chemical waste was collected by licensed collector during the reporting month. No plastics and metal, but 420 kg of paper/ cardboard packaging were generated in this reporting month.

Landscape and Visual

7. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 13 and 27 August 2015. 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

8. Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 6, 13, 20 and 27 August 2015. The representative of the IEC joined the site inspection on 27 August 2015. Details of the audit findings and implementation status are presented in Section 6.

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

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

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

11. No Project related environmental complaint and notification of summons/ successful prosecutions were received in this reporting period.

Future Key Issues

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

- Construction of slabs/beams, column and walls at SCL-DIH station area, Interchange Adit, West Unpaid Link Adit and Entrance A1;
- Concreting works;
- Backfilling works;
- Structural and installation works for lift at Entrance A1; and
- Preparation of piling works and pre-drilling works at East MOE.

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 30th 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 August 2015.

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**.

- Construction of slabs/beams, columns and walls at SCL-DIH station area, Interchange Adit, West Unpaid Link Adit and Entrance A1;
- Concreting works;
- Backfilling works; and
- Preparation of piling works and pre-drilling works at East MOE.

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/H	10/09/2014	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
No.: 378656	28/08/2014	N/A	Valid
Billing Account for Construction Waste Disposal			
Account No.: 7016601	27/12/2012	N/A	Valid
Registration of Chemical Waste Producer			
5213-281-S3711-02	28/01/2015	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00014959-2012	14/01/2013	31/01/2018	Valid
WT00016920-2013	06/09/2013	30/09/2018	Valid
Construction Noise Permit (CNP)			
GW-RE0449-15	26/05/2015	25/11/2015	Valid
GW-RE0732-15	11/08/2015	18/09/2015	Valid

Summary of EM&A Requirements

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

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

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

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

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Regular Construction Noise Monitoring

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

Table 3.1 Regular Construction Noise Monitoring Location

Regular Construction Noise Monitoring Location	Description	Type of Measurement
NMS-CA-3(1)(3)(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 (Serial no.: 12553, 14303)
Calibrator	SV30A (Serial no.: 24791, 24780)

Maintenance and Calibration

3.6 Maintenance and Calibration procedures were as follows:

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

Action & Limit Level for Construction Noise Monitoring

3.7 The Action and Limit Levels are presented in **Appendix B** and the Event / Action Plan (EAP) for noise monitoring is presented in **Appendix I.**

Continuous Noise Monitoring

3.8 With reference to the latest Continuous Noise Monitoring Plan (CNMP) and CNMMP prepared and submitted under EP Condition 2.9 and 2.10, it is predicted that no residual air-borne construction noise impacts exceeding the relevant noise criteria will be anticipated. Therefore, no continuous noise monitoring is required during the construction of the SCL (TAW-HUH) under Works Contract 1106.

Regular Construction Dust Monitoring

3.9 The proposed dust monitoring stations for the construction phase of the Project, as recommended in the approved EM&A Manual, are listed in **Table 3.3** and shown in **Figure 3**. The proposed locations have been agreed with the ER, EPD and IEC.

Table 3.3 Dust Monitoring Location

Regular Dust Monitoring Location	Description
DMS-3(1)(3)(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: 2896	1

Instrumentation

3.12 High Volume Samplers (HVS) connected with appropriate sampling inlets were employed for air quality monitoring. Each sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 Appendix B (Part 50).

HVS Installation

3.13 The following guidelines were adopted during the installation of HVS:

- Sufficient support was provided to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The samplers were more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction

during monitoring.

Filters Preparation

3.14 Fiberglass filters were used which have a collection efficiency of larger than 99% for particles of 0.3 μm diameter. A HOKLAS accredited laboratory, Wellab Ltd. (HOKLAS Registration No. 083), was responsible for the preparation of pre-weighed filter papers for Cinotech's monitoring team.

3.15 All filters, which were prepared by Wellab Ltd., were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%.

3.16 Wellab Ltd. has a comprehensive quality assurance and quality control programmes.

Operating/Analytical Procedures

3.17 Operating/analytical procedures for the TSP monitoring were highlighted as follows:

- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard.
- The power supply was checked to ensure the sampler worked properly.
- The filter holding frame and the area surrounding the filter were cleaned.
- On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the air quality monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts to avoid air leakage at the edges.
- The shelter lid was closed and secured with the aluminum strip.
- A new flow rate record chart was set into the flow recorder.
- The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- The flow rate of the HVS sampler would be verified to be constant and recorded on the data sheet before and after sampling.
- The elapsed time and other relevant information was recorded. After sampling, the sampled filter was removed carefully and folded in half-length so that only surfaces with collected particulate matter were in contact.
- It was then placed in a clean plastic envelope and sealed and sent to the Wellab Ltd. for weighing.
- Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%. Weighing results were returned to Cinotech for further analysis of TSP concentrations.

Maintenance/Calibration

3.18 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- Calibration of the HVS (five point calibration) using Calibration Kit was carried out every two months. Copies of calibration certificates are attached in **Appendix C**.
- The HVS calibration orifice will be calibrated annually.

Action and Limit Levels for Dust Monitoring

3.19 The Action and Limit levels have been established and are presented in **Appendix B** and the Event / Action Plan (EAP) for dust monitoring is presented in **Appendix I.**

Cultural Heritage

3.20 An Archaeological Action Plan (AAP) for the survey-cum-excavation at the former Tai Hom Village site was approved by EPD on 8 April 2013. A Licence to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance has been subsequently obtained from Antiquities and Monuments Office (AMO) on 19 April 2013. The archaeological survey-cum-excavation at Former Tai Hom Village shall be conducted in accordance with the Licence granted and the approved AAP.

3.21 The Conservation Plans for the two historic buildings, namely Former Royal Air Force Hangar and the Old Pillbox at the former Tai Hom Village site, were approved by EPD on 24 April 2013. Dismantling works on Former Royal Air Force Hangar and relocation work of the Old Pillbox shall be carried out in accordance with the approved Conservation Plan. Regular maintenance and inspection works of the two historic buildings shall be carried out in accordance with the approved Conservation Plan.

Landscape and Visual

3.22 In accordance with the EM&A Manual, the landscape and visual mitigation measures shall be implemented and a site inspection shall be conducted once every two weeks throughout the construction period. The implementation status is given in **Appendix J**. The Event / Action Plan (EAP) for landscape and visual are presented in **Appendix I.**

4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

4.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status of the environmental mitigation measures of the reporting period is summarized in **Appendix J**. Status of required submissions under the Environmental Permit (EP) of the reporting period is presented in **Table 4.1**.

Table 4.1 Status of Required Submissions under EP

EP Condition	Submission	Submission Date
Condition 3.4	Monthly EM&A Report (July 2015)	14h August 2015

5 MONITORING RESULTS

Regular Construction Noise Monitoring

5.1 A total of 8 sets of 30-minute construction noise measurements were carried out at the monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. No exceedance of the limit level was recorded at designated monitoring stations.

5.2 The noise monitoring results recorded at NMS-CA-5(1)/NMS-CA-2(2) (Block 1, Rhythm Garden (northern façade)) on 6 and 24 August 2015 exceeded the daytime construction noise criterion. However, the results are not considered as exceedance since the results were below the baseline noise level. The noise monitoring results recorded at NMS-CA-4(1)/NMS-CA-3(2) (Block 1, Rhythm Garden (north-eastern façade)) in August 2015 did not exceed the daytime construction noise criterion.

5.3 Based on observation during the on-site monitoring, road traffic nearby, excavation and breaking works in other construction site at 210-212 Choi Hung Road are considered as potential noise source other than construction works of the Project that affects the monitoring results in the reporting month.

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

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

Regular Dust Monitoring

5.6 A total of 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/m³	Maximum µg/m³	Average µg/m³	Action Level, µg/m³	Limit Level, µg/m³
24-hr TSP (DMS-3(1)(4)/ DMS-4(2) (4))	20.0	29.5	24.7	159.1	260
24-hr TSP (DMS-4(1)/ DMS-3(2))	27.0	42.4	34.1	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,

excavation and breaking works in other construction site at 210-212 Choi Hung Road are considered as potential dust source other than construction works of the Project that affects the monitoring results in the reporting month.

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

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

Cultural Heritage

5.10 An Archaeological Action Plan (AAP) for the survey-cum-excavation at the former Tai Hom Village site was approved by EPD on 8 April 2013. A Licence to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance has been subsequently obtained from Antiquities and Monuments Office (AMO) on 19 April 2013. The archaeological survey-cum-excavation at Former Tai Hom Village commenced on 25 April 2013 and completed in September 2013 in accordance with the Licence granted and the approved AAP. A draft Archaeological Survey-cum-Excavation Report was submitted to AMO for review in March 2014. Comments from AMO were received in September 2014. A revised draft report was submitted to AMO in April 2015 for their further review.

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

Waste Management

5.12 Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, vegetative wastes and recyclable wastes like plastics and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in **Table 5.2**. 310 m^3 of C&D materials and 102 m^3 of general refuse were generated. No chemical waste was collected by licensed collector during the reporting month. No plastics and metal but 420 kg of paper/ cardboard packaging were generated in this reporting month. Detail of waste management data is presented in **Appendix K**.

Table 5.2 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	C&D Materials (inert) [a]	C&D Materials (non-inert) [b]				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/ cardboard	Plastics	Metals
August 2015	310m^3	102m^3	0kg	420kg	0kg	0kg

Notes:
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil, which were delivered to Tseung Kwan O 137 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 13 and 27 August 2015. 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 6, 13, 20 and 27 August 2015. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 27 August 2015. EPD conducted site inspection on 3 August 2015 for complaint related to construction noise during restricted hours in July 2015 (Complaint Log Ref.: CP 23). No construction activity was conducted during the visit. No adverse comment was received. The details of observations during site audits carried out by ET can refer to **Table 6.1**.

Implementation Status of Environmental Mitigation Measures

6.3 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix J**.

6.4 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 6.1**

Table 6.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	30 Jul 2015	Reminder: Bund for gully in A1 work area should be properly enhanced to prevent untreated runoff entering the gully.	As observed on 6 Aug 2015, sand bags were provided to the gully in A1 work area.
	6 Aug 2015	Reminder: Sand bags or bund should be provided to surround stockpile in A1 work area to prevent any potential runoff leakage.	As observed on 13 Aug 2015, the stockpile was removed.
	13 Aug 2015	Reminder: The pH value of the effluent in aquased near site entrance should be properly improved.	As observed on 20 Aug 2015, the pH value of effluent in aquased near site entrance was observed improved during site inspection.
Noise	---	---	---
Landscape and Visual	30 Jul 2015	Observation: Construction materials inside tree protection zone in A1 work area should be removed.	As observed on 6 Aug 2015, this item was found outstanding and remarked. Please refer to the item on 6 Aug.
	6 Aug 2015	Observation: Construction materials placed near retained trees in A1 work area should be removed to prevent damage to planter. The Contractor was reminded to enlarge the tree protection zone as soon as possible.	As observed on 13 Aug 2015, the materials were removed and the tree protection zone was enlarged.
	13 Aug 2015	Observation: Retained trees in bar bending area at W8 should be properly protected and fenced off by tree protection zone.	As observed on 20 Aug 2015, the retained trees in bar bending area at W8 were fenced off.

Parameters	Date	Observations and Recommendations	Follow-up
Cultural Heritage	---	---	---
Air Quality	27 Aug 2015	Reminder: The Contractor was reminded to cover dusty stockpile in Interchange Adit work area to suppress dust generation.	The follow up action will be reported in the next reporting month.
Waste/ Chemical Management	20 Aug 2015	Observation: Drip tray should be provided to the chemical containers near ramp to prevent leakage.	As observed on 27 Aug 2015, the chemical containers were removed.
Permits/ Licenses	---	---	---

7 EIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

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

Summary of Environmental Non-Compliance

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

Summary of Environmental Complaint

7.3 No environmental Project-related 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:

- Construction of slabs/beams, column and walls at SCL-DIH station area, Interchange Adit, West Unpaid Link Adit and Entrance A1;
- Concreting works;
- Backfilling works;
- Structural and installation works for lift at Entrance A1; and
- Preparation of piling works and pre-drilling works at East MOE.

Key Issues in the Next Month

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

- Dust arising from loading, unloading, transfer, handling or storage of bulk cement or dry PFA and excavated materials;
- Control of silty surface runoff;
- Preservation of Former Royal Air Force Hangar and Old Pillbox after dismantling and relocation;
- Preservation and protection of retained and transplanted trees; and
- Implementation of mitigation measures for noise nuisance from construction works.

Monitoring Schedule in the Next Month

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

9 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

9.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 to 31 August 2015 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. The quality of the effluent discharged should be ensured to comply with the valid discharge license.
- Sand bag bund should be provided to stockpile of dusty material to reduce silty runoff and prevent potential runoff leakage during rainstorm.

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.

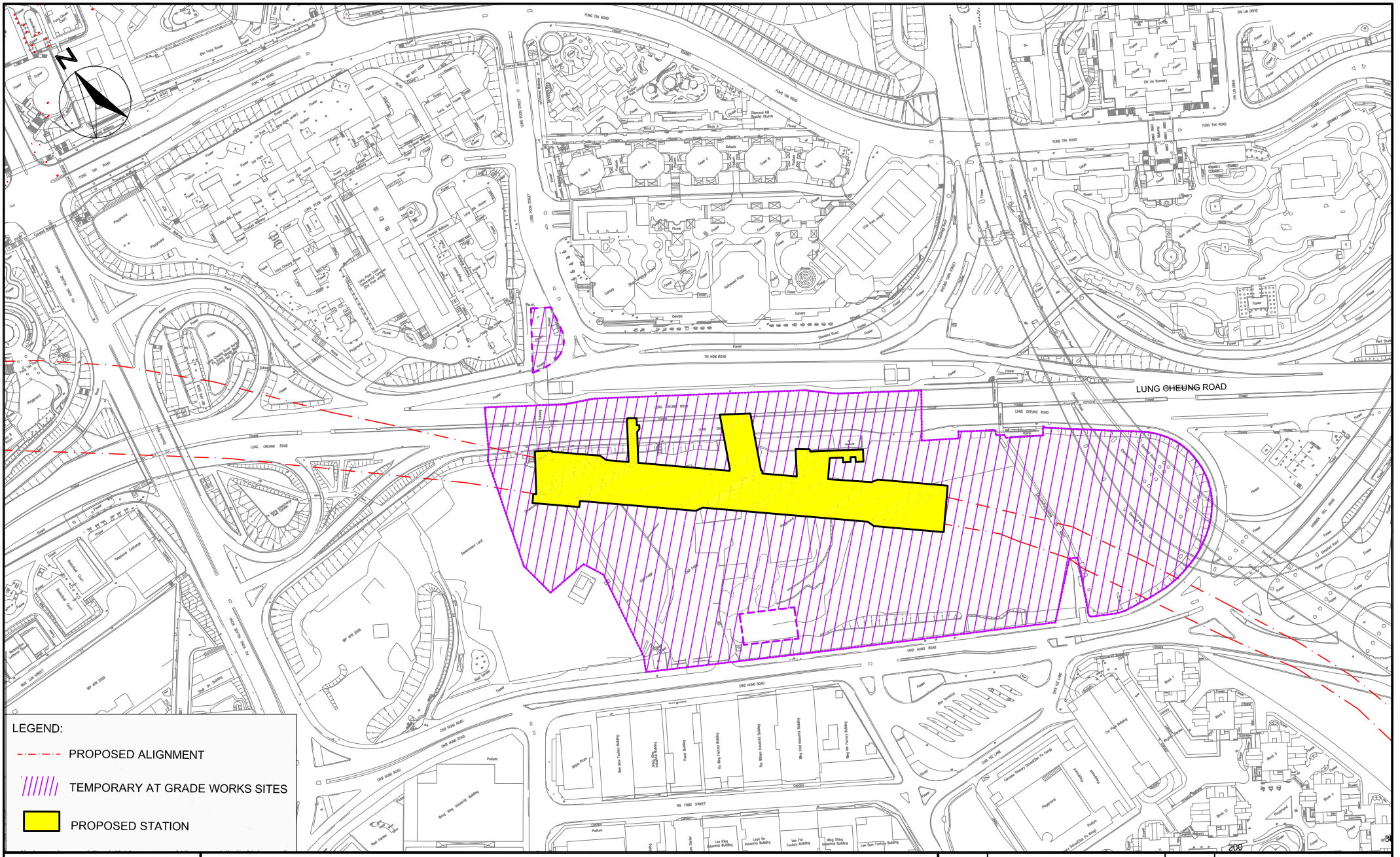
Air Quality

- Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet.

Waste/Chemical Management

- Good site practice of providing drip trays for temporary use of chemicals and oil containers shall be sustained. Drip trays should also be properly maintained.

FIGURES



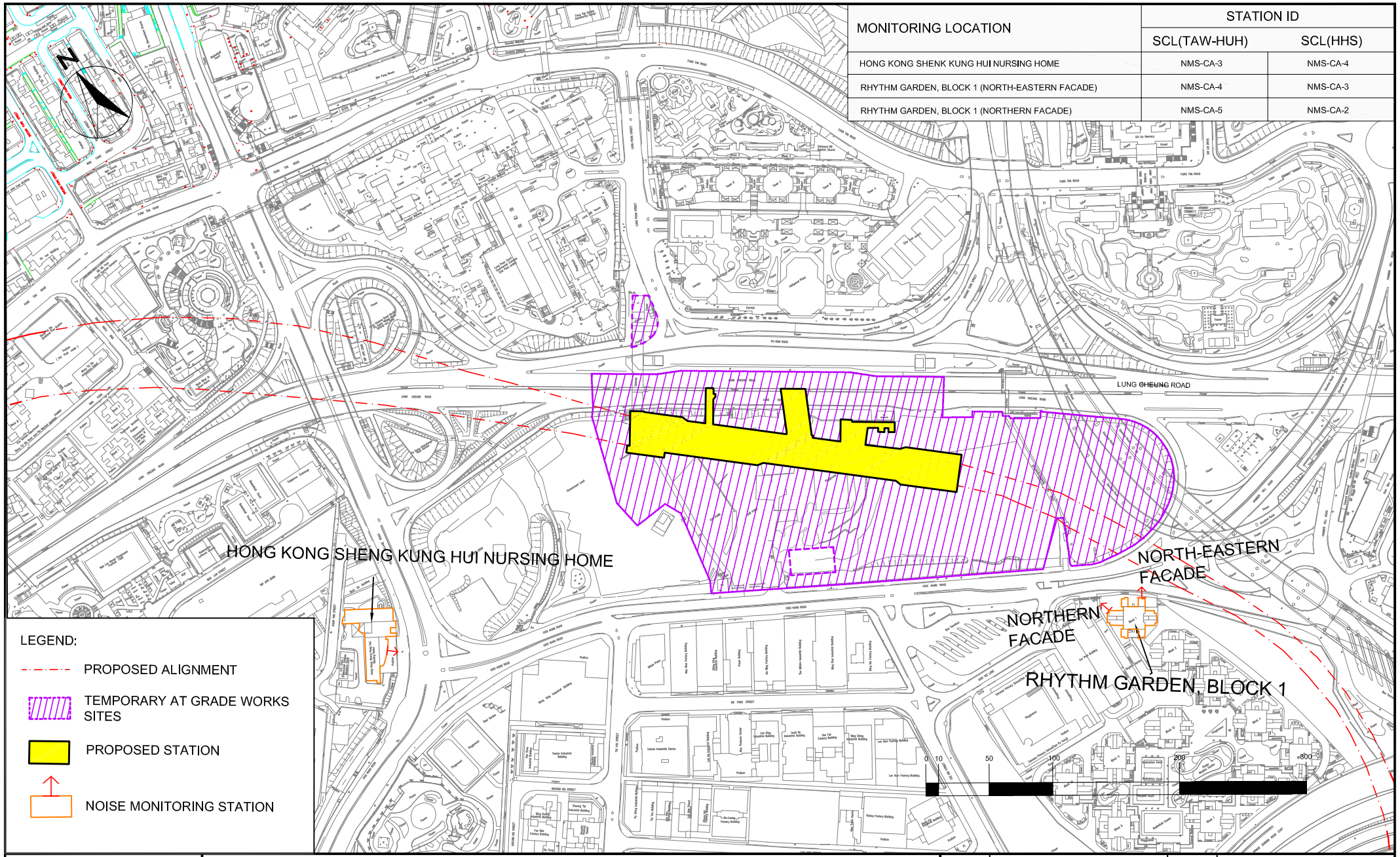
CINOTECH
Cinotech Consultants Limited

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

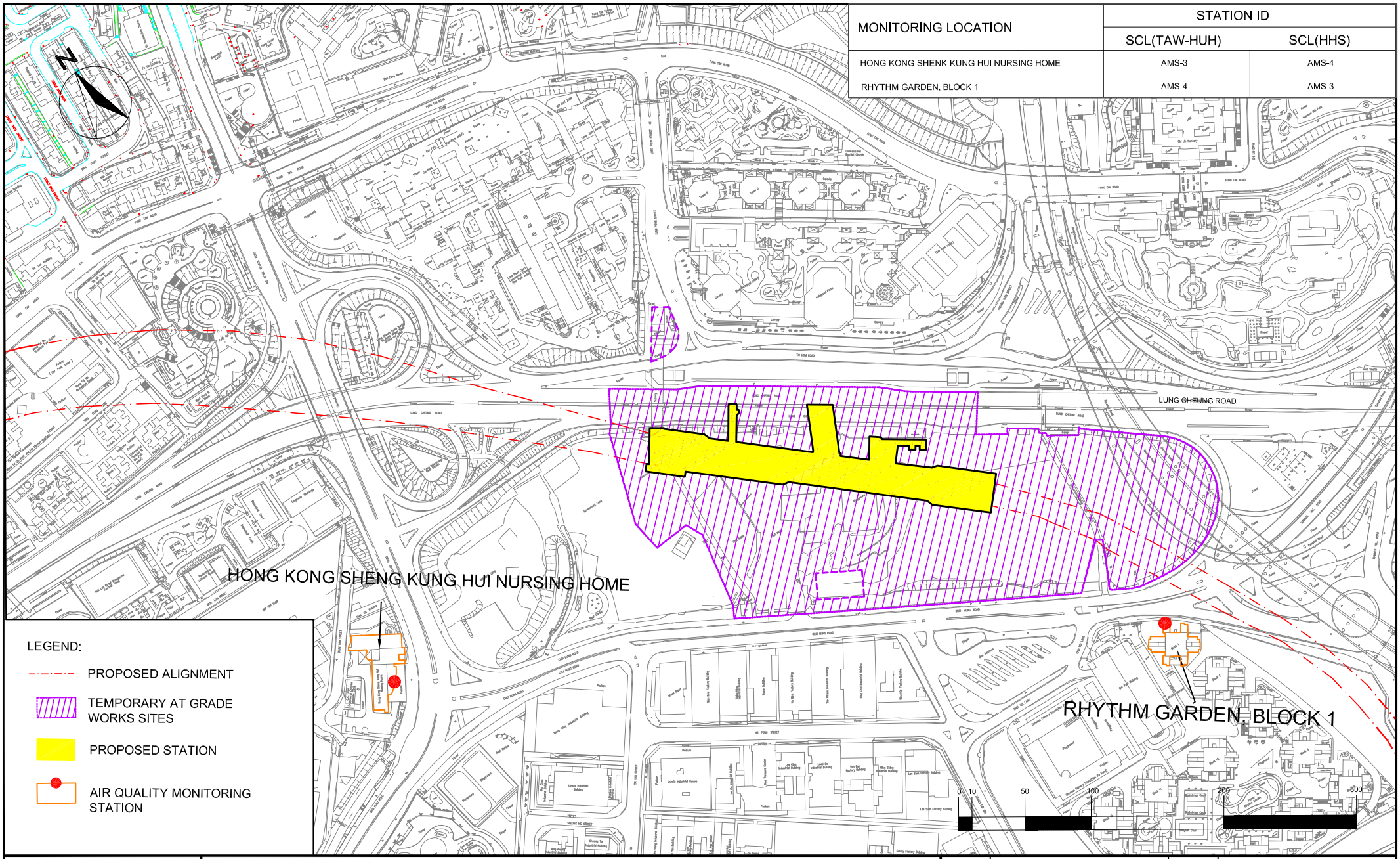


CINOTECH
Cinotech Consultants Limited

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:

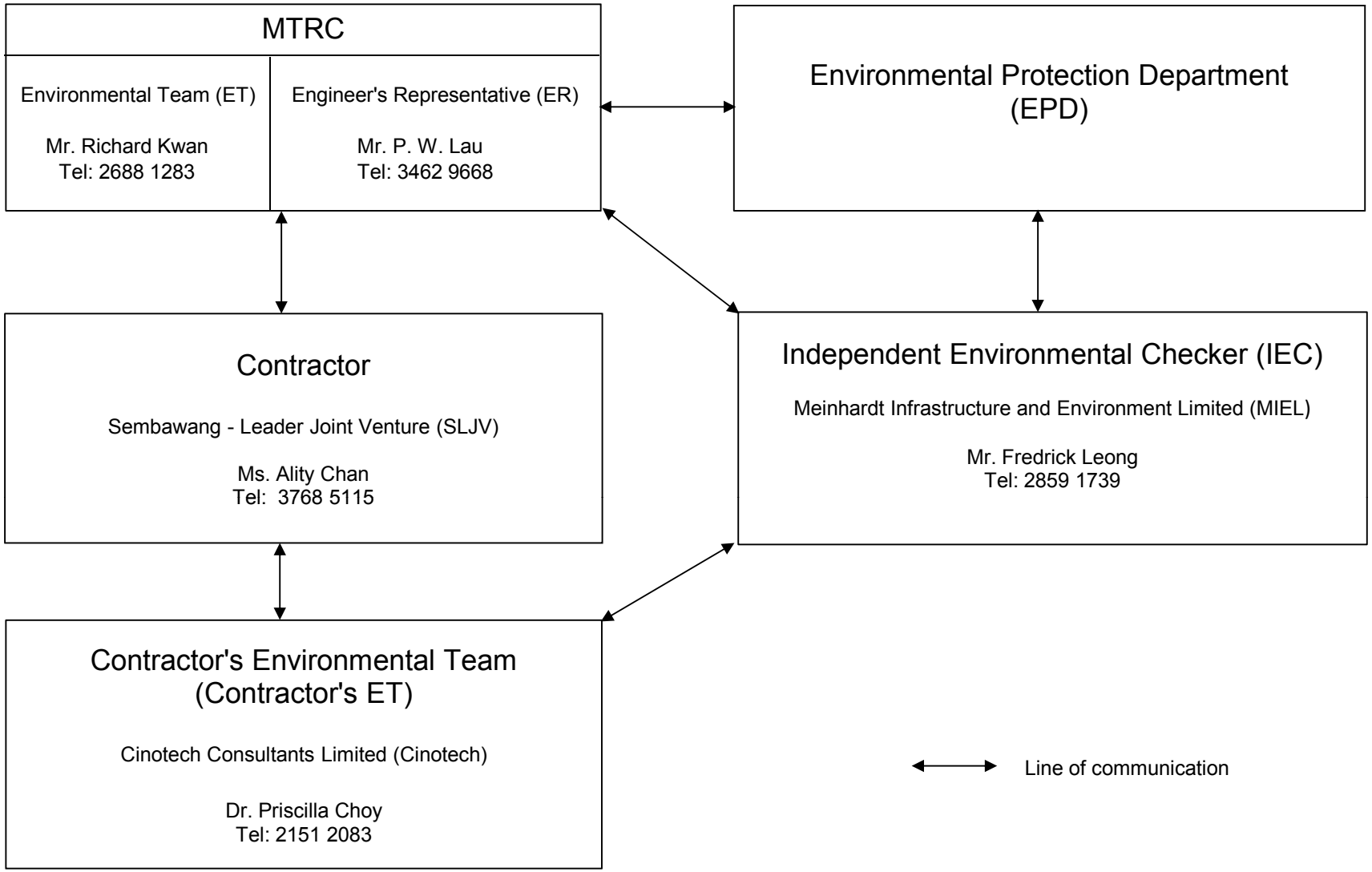
- PROPOSED ALIGNMENT
- TEMPORARY AT GRADE WORKS SITES
- PROPOSED STATION
- AIR QUALITY MONITORING STATION

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 Sep-14	Figure 4

CINOTECH

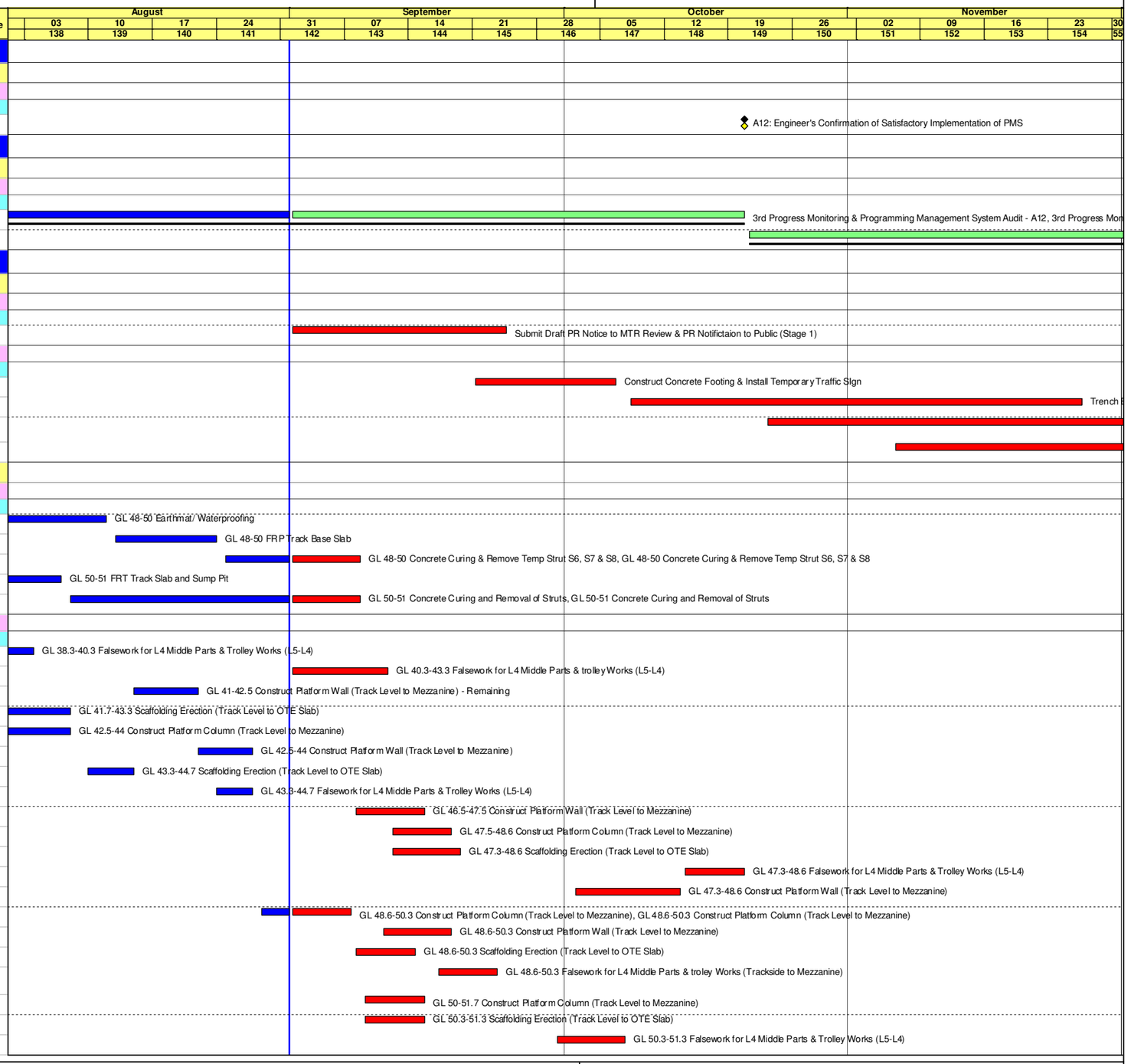
APPENDIX A
TENTATIVE CONSTRCUTION PROGRAMME

Contract 1106 - Diamond Hill Station

MTR

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.MSA12	A12: Engineer's Confirmation of Satisfactory Implementation of PMS	0		20-Oct-15	0%
Cost Centre A - Preliminaries					
General Requirements					
Submissions					
General					
C1106.GS0340	3rd Progress Monitoring & Programming Management System Audit - A12	90	23-Jul-15 A	20-Oct-15	45%
C1106.GS0345	3rd Quality Management Audit - A13	92	21-Oct-15	20-Jan-16	0%
Cost Centre B: SCL- DIH Station, Entrances and Adits					
TTMS Implementation					
Submissions					
TTM Submission					
C1106.TMS0335	Submit Draft PR Notice to MTR Review & PR Notifictaion to Public (Stage 1)	24	01-Sep-15*	24-Sep-15	0%
Lung Cheung Road					
Implement TTA for Diversion of CLP Cables					
C1106.BLC0494	Construct Concrete Footing & Install Temporary Traffic SIgn	12	21-Sep-15*	06-Oct-15	0%
C1106.BLC0496	Trench Excavation & Laying Temp. Cable & Connect Existing CLP (by CLP)	42	08-Oct-15	26-Nov-15	0%
C1106.BLC0498	Construct Temporary Drainage System outside West & Interchange Adit Areas	42	23-Oct-15	10-Dec-15	0%
C1106.BLC0500	Construct Temporary Diversion Footpath & Erect Site Hoarding	30	06-Nov-15	10-Dec-15	0%
Structural Works					
Track Slab/ Bottom Level					
Base Slab					
C1106.BBS1313	GL 48-50 Earthmat/ Waterproofing	12	28-May-15 A	12-Aug-15 A	100%
C1106.BBS1315	GL 48-50 FRP Track Base Slab	12	13-Aug-15 A	24-Aug-15 A	100%
C1106.BBS1316	GL 48-50 Concrete Curing & Remove Temp Strut S6, S7 & S8	13	25-Aug-15 A	08-Sep-15	25%
C1106.BBS1319	GL 50-51 FRT Track Slab and Sump Pit	18	30-Jun-15 A	07-Aug-15 A	100%
C1106.BBS1321	GL 50-51 Concrete Curing and Removal of Struts	12	08-Aug-15 A	08-Sep-15	60%
Platform Level (Level L5)					
Wall & Column					
C1106.BPL2122	GL 38.3-40.3 Falsework for L4 Middle Parts & Trolley Works (L5-L4)	12	18-Jun-15 A	04-Aug-15 A	100%
C1106.BPL2147	GL 40.3-43.3 Falsework for L4 Middle Parts & trolley Works (L5-L4)	10	01-Sep-15*	11-Sep-15	0%
C1106.BPL2156	GL 41-42.5 Construct Platform Wall (Track Level to Mezzanine) - Remaining	6	15-Aug-15 A	22-Aug-15 A	100%
C1106.BPL2157	GL 41.7-43.3 Scaffolding Erection (Track Level to OTE Slab)	6	29-Jul-15 A	08-Aug-15 A	100%
C1106.BPL2161	GL 42.5-44 Construct Platform Column (Track Level to Mezzanine)	8	27-Jul-15 A	08-Aug-15 A	100%
C1106.BPL2162	GL 42.5-44 Construct Platform Wall (Track Level to Mezzanine)	8	22-Aug-15 A	28-Aug-15 A	100%
C1106.BPL2163	GL 43.3-44.7 Scaffolding Erection (Track Level to OTE Slab)	6	10-Aug-15 A	15-Aug-15 A	100%
C1106.BPL2165	GL 43.3-44.7 Falsework for L4 Middle Parts & Trolley Works (L5-L4)	12	24-Aug-15 A	28-Aug-15 A	100%
C1106.BPL2186	GL 46.5-47.5 Construct Platform Wall (Track Level to Mezzanine)	7	08-Sep-15*	15-Sep-15	0%
C1106.BPL2188	GL 47.5-48.6 Construct Platform Column (Track Level to Mezzanine)	6	12-Sep-15*	18-Sep-15	0%
C1106.BPL2192	GL 47.3-48.6 Scaffolding Erection (Track Level to OTE Slab)	7	12-Sep-15	19-Sep-15	0%
C1106.BPL2194	GL 47.3-48.6 Falsework for L4 Middle Parts & Trolley Works (L5-L4)	6	14-Oct-15	20-Oct-15	0%
C1106.BPL2196	GL 47.3-48.6 Construct Platform Wall (Track Level to Mezzanine)	10	02-Oct-15*	13-Oct-15	0%
C1106.BPS2105	GL 48.6-50.3 Construct Platform Column (Track Level to Mezzanine)	7	29-Aug-15 A	07-Sep-15	10%
C1106.BPS2106	GL 48.6-50.3 Construct Platform Wall (Track Level to Mezzanine)	7	11-Sep-15	18-Sep-15	0%
C1106.BPS2107	GL 48.6-50.3 Scaffolding Erection (Track Level to OTE Slab)	6	08-Sep-15	14-Sep-15	0%
C1106.BPS2109	GL 48.6-50.3 Falsework for L4 Middle Parts & troley Works (Trackside to Mezzanine)	6	17-Sep-15	23-Sep-15	0%
C1106.BPS2125	GL 50-51.7 Construct Platform Column (Track Level to Mezzanine)	6	09-Sep-15*	15-Sep-15	0%
C1106.BPS2127	GL 50.3-51.3 Scaffolding Erection (Track Level to OTE Slab)	6	09-Sep-15	15-Sep-15	0%
C1106.BPS2129	GL 50.3-51.3 Falsework for L4 Middle Parts & Trolley Works (L5-L4)	6	30-Sep-15	07-Oct-15	0%



Remaining Work
Critical Remaining Work
Baseline (PMP)
Actual Work
Milestone
Baseline Milestone

MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 31 August 2015

3 Month Rolling Programme

Date	Revision	Checked	Approved
01-Sep-15	C-1106-3MRP/ 32		

Contract 1106 - Diamond Hill Station

MTR

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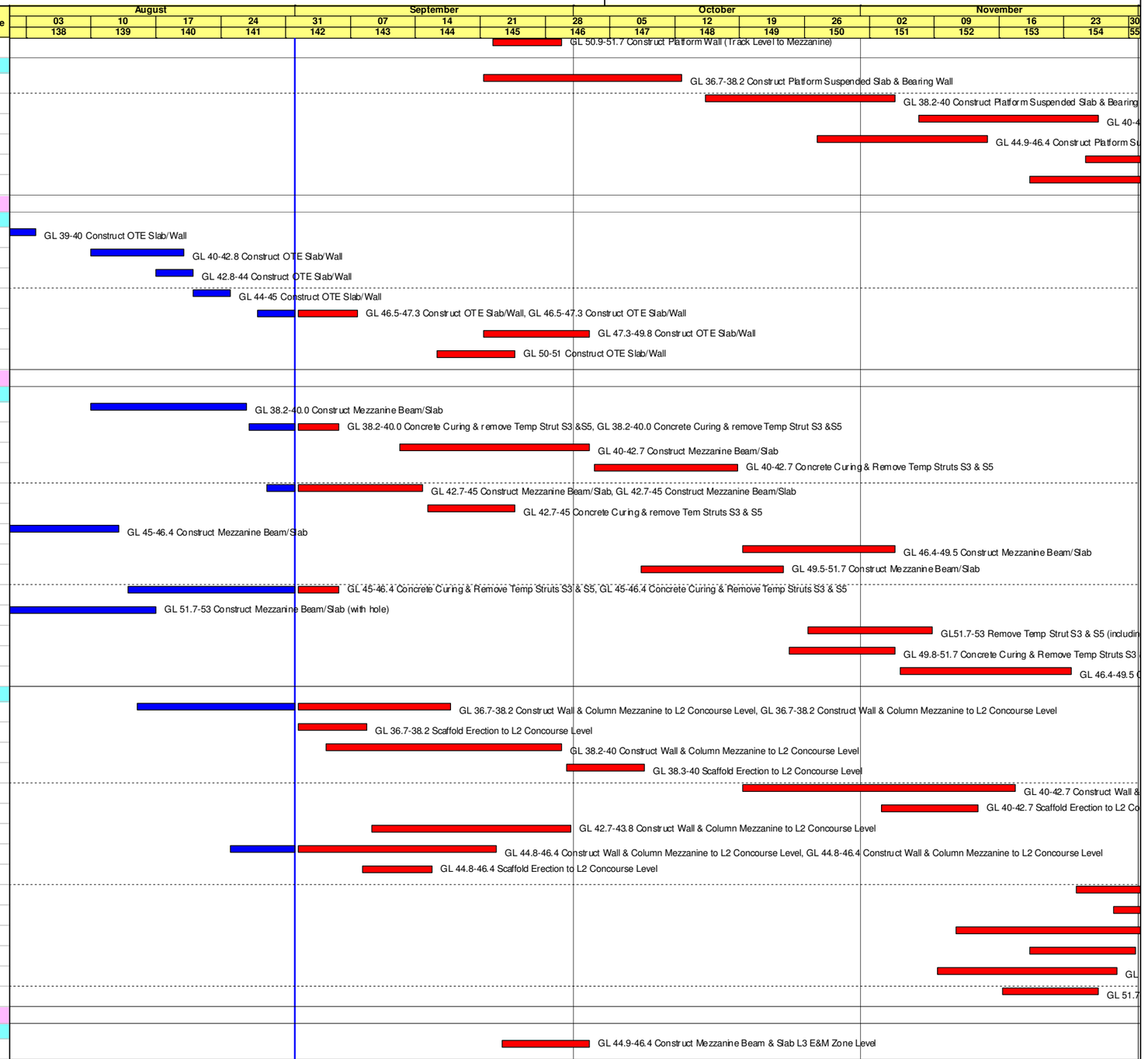
Activity ID	Activity Name	Orig Dur	Forecast Start	Forecast Finish	% Complete
C1106.BPS2133	GL 50.9-51.7 Construct Platform Wall (Track Level to Mezzanine)	6	22-Sep-15	29-Sep-15	0%
Slab					
C1106.BPS2210	GL 36.7-38.2 Construct Platform Suspended Slab & Bearing Wall	17	21-Sep-15*	12-Oct-15	0%
C1106.BPS2215	GL 38.2-40 Construct Platform Suspended Slab & Bearing Wall	17	15-Oct-15	04-Nov-15	0%
C1106.BPS2218	GL 40-42.7 Construct Platform Suspended Slab & Bearing Wall	17	07-Nov-15	26-Nov-15	0%
C1106.BPS2252	GL 44.9-46.4 Construct Platform Suspended Slab & Bearing Wall	17	27-Oct-15*	14-Nov-15	0%
C1106.BPS2257	GL 49.5-51.7 Construct Platform Suspended Slab & Bearing Wall	17	25-Nov-15	14-Dec-15	0%
C1106.BPS2266	GL 51.3-53 Construct Platform Suspended Slab (Up Track)	13	19-Nov-15*	03-Dec-15	0%
OTE Slab					
OTE Duct					
C1106.BOS4310	GL 39-40 Construct OTE Slab/Wall	7	18-Jun-15 A	04-Aug-15 A	100%
C1106.BOS4312	GL 40-42.8 Construct OTE Slab/Wall	10	10-Aug-15 A	20-Aug-15 A	100%
C1106.BOS4316	GL 42.8-44 Construct OTE Slab/Wall	7	17-Aug-15 A	21-Aug-15 A	100%
C1106.BOS4340	GL 44-45 Construct OTE Slab/Wall	7	21-Aug-15 A	25-Aug-15 A	100%
C1106.BOS4347	GL 46.5-47.3 Construct OTE Slab/Wall	9	28-Aug-15 A	07-Sep-15	30%
C1106.BOS4349	GL 47.3-49.8 Construct OTE Slab/Wall	9	21-Sep-15*	02-Oct-15	0%
C1106.BOS4352	GL 50-51 Construct OTE Slab/Wall	8	16-Sep-15*	24-Sep-15	0%
Mezzanine Level (Level L4)					
Beam & Slab					
C1106.BMZ4356	GL 38.2-40.0 Construct Mezzanine Beam/Slab	15	10-Aug-15 A	26-Aug-15 A	100%
C1106.BMZ4358	GL 38.2-40.0 Concrete Curing & remove Temp Strut S3 &S5	10	27-Aug-15 A	05-Sep-15	50%
C1106.BMZ4362	GL 40-42.7 Construct Mezzanine Beam/Slab	16	12-Sep-15	02-Oct-15	0%
C1106.BMZ4364	GL 40-42.7 Concrete Curing & Remove Temp Struts S3 & S5	16	03-Oct-15	18-Oct-15	0%
C1106.BMZ4365	GL 42.7-45 Construct Mezzanine Beam/Slab	16	29-Aug-15 A	14-Sep-15	10%
C1106.BMZ4370	GL 42.7-45 Concrete Curing & remove Tem Struts S3 & S5	9	15-Sep-15	24-Sep-15	0%
C1106.BMZ4375	GL 45-46.4 Construct Mezzanine Beam/Slab	14	31-Jul-15 A	13-Aug-15 A	100%
C1106.BMZ4378	GL 46.4-49.5 Construct Mezzanine Beam/Slab	14	19-Oct-15*	04-Nov-15	0%
C1106.BMZ4381	GL 49.5-51.7 Construct Mezzanine Beam/Slab	13	08-Oct-15	23-Oct-15	0%
C1106.BMZ4382	GL 45-46.4 Concrete Curing & Remove Temp Struts S3 & S5	12	14-Aug-15 A	05-Sep-15	60%
C1106.BMZ4383	GL 51.7-53 Construct Mezzanine Beam/Slab (with hole)	14	01-Aug-15 A	17-Aug-15 A	100%
C1106.BMZ4390	GL51.7-53 Remove Temp Strut S3 & S5 (including concrete spray)	14	26-Oct-15*	08-Nov-15	0%
C1106.BMZ4392	GL 49.8-51.7 Concrete Curing & Remove Temp Struts S3 & S5	12	24-Oct-15	04-Nov-15	0%
C1106.BMZ4394	GL 46.4-49.5 Concrete Curing & Remove Temp Struts S3 & S5	19	05-Nov-15	23-Nov-15	0%
Wall & Column					
C1106.BMZ4705	GL 36.7-38.2 Construct Wall & Column Mezzanine to L2 Concourse Level	18	15-Aug-15 A	17-Sep-15	50%
C1106.BMZ4710	GL 36.7-38.2 Scaffold Erection to L2 Concourse Level	7	01-Sep-15	08-Sep-15	0%
C1106.BMZ4720	GL 38.2-40 Construct Wall & Column Mezzanine to L2 Concourse Level	21	04-Sep-15	29-Sep-15	0%
C1106.BMZ4725	GL 38.3-40 Scaffold Erection to L2 Concourse Level	7	30-Sep-15	08-Oct-15	0%
C1106.BMZ4730	GL 40-42.7 Construct Wall & Column Mezzanine to L2 Concourse Level	25	19-Oct-15	17-Nov-15	0%
C1106.BMZ4732	GL 40-42.7 Scaffold Erection to L2 Concourse Level	10	03-Nov-15	13-Nov-15	0%
C1106.BMZ4736	GL 42.7-43.8 Construct Wall & Column Mezzanine to L2 Concourse Level	18	09-Sep-15	30-Sep-15	0%
C1106.BMZ4740	GL 44.8-46.4 Construct Wall & Column Mezzanine to L2 Concourse Level	20	25-Aug-15 A	22-Sep-15	25%
C1106.BMZ4742	GL 44.8-46.4 Scaffold Erection to L2 Concourse Level	7	08-Sep-15*	15-Sep-15	0%
C1106.BMZ4745	GL 47.3-49.5 Construct Wall & Column Mezzanine to L3 E&M Zone Level	15	24-Nov-15	10-Dec-15	0%
C1106.BMZ4746	GL 47.3-49.5 Scaffold Erection to L3 E&M Zone Level	8	28-Nov-15	07-Dec-15	0%
C1106.BMZ4747	GL 49.5-51.7 Construct Wall & Column Mezzanine to L2 Concourse Level	20	11-Nov-15*	03-Dec-15	0%
C1106.BMZ4749	GL 49.5-51.7 Scaffold Erection to L2 Concourse Level	10	19-Nov-15	30-Nov-15	0%
C1106.BMZ4755	GL 51.7-53 Construct Wall & Column Mezzanine to L2 Concourse Level	18	09-Nov-15	28-Nov-15	0%
C1106.BMZ4760	GL 51.7-53 Scaffold Erection to L2 Concourse Level	10	16-Nov-15	26-Nov-15	0%
Mezzanine Level (Level L3)					
Beam & Slab					
C1106.BMZ4762	GL 44.9-46.4 Construct Mezzanine Beam & Slab L3 E&M Zone Level	7	23-Sep-15	02-Oct-15	0%



Remaining Work
Critical Remaining Work
Baseline (PMP)
Actual Work
Milestone
Baseline Milestone

MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 31 August 2015

3 Month Rolling Programme

Date	Revision	Checked	Approved
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Contract 1106 - Diamond Hill Station

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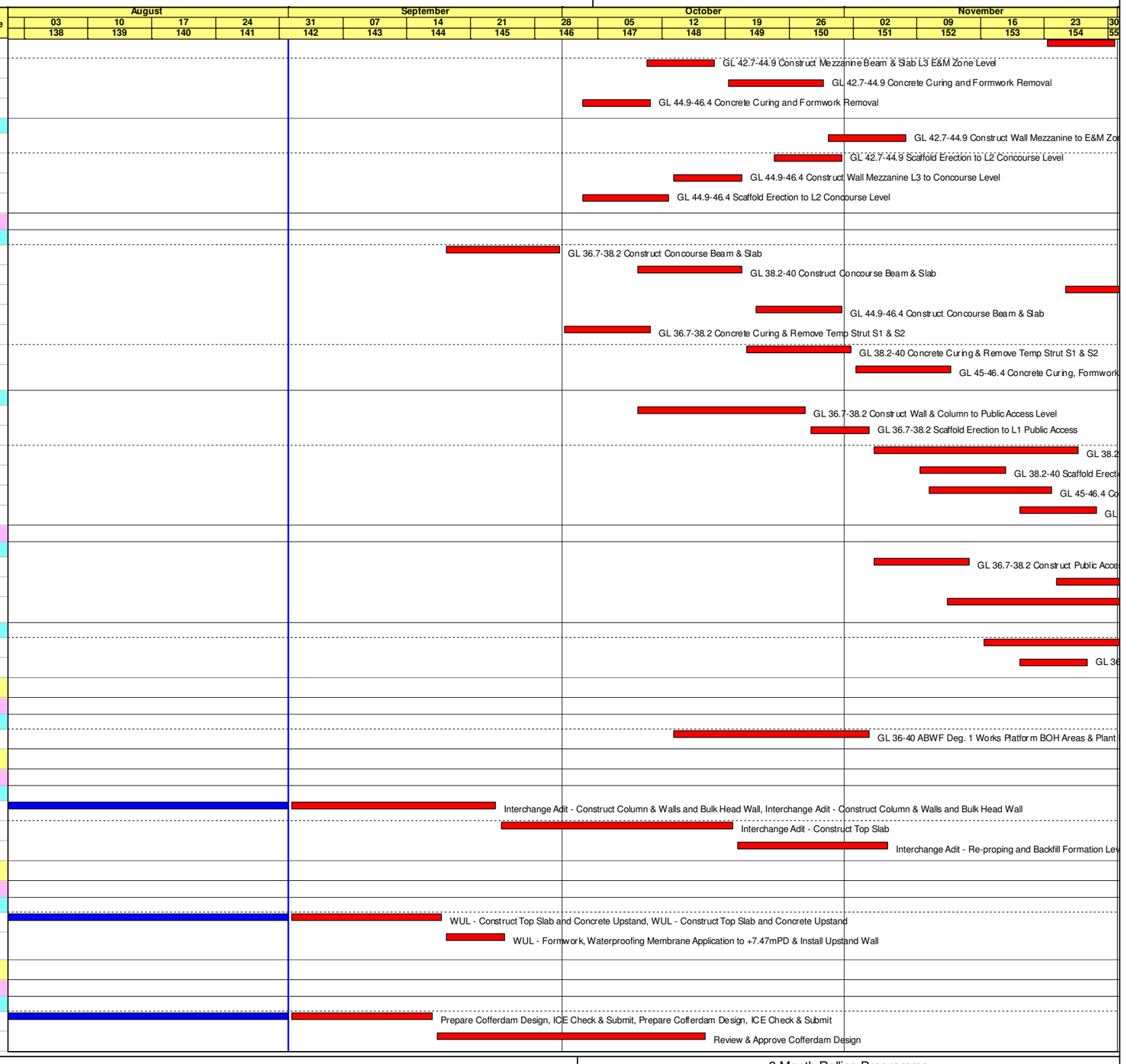
Activity ID	Activity Name	Orig Dur	Forecast Start	Forecast Finish	% Complete
C1106.BMZ4764	GL 39.9-42.7 Construct Mezzanine Beam & Slab L3 E&M Zone Level	7	23-Nov-15	30-Nov-15	0%
C1106.BMZ4766	GL 42.7-44.9 Construct Mezzanine Beam & Slab L3 E&M Zone Level	7	10-Oct-15	17-Oct-15	0%
C1106.BMZ4768	GL 42.7-44.9 Concrete Curing and Formwork Removal	9	19-Oct-15	29-Oct-15	0%
C1106.BMZ4772	GL 44.9-46.4 Concrete Curing and Formwork Removal	7	03-Oct-15	10-Oct-15	0%
Wall & Column					
C1106.BMZ4774	GL 42.7-44.9 Construct Wall Mezzanine to E&M Zone Level L2	8	30-Oct-15	07-Nov-15	0%
C1106.BMZ4776	GL 42.7-44.9 Scaffold Erection to L2 Concourse Level	7	24-Oct-15	31-Oct-15	0%
C1106.BMZ4778	GL 44.9-46.4 Construct Wall Mezzanine L3 to Concourse Level	7	13-Oct-15	20-Oct-15	0%
C1106.BMZ4780	GL 44.9-46.4 Scaffold Erection to L2 Concourse Level	8	03-Oct-15	12-Oct-15	0%
Concourse Level (Level L2)					
Beam & Slab					
C1106.BCS4302	GL 36.7-38.2 Construct Concourse Beam & Slab	10	18-Sep-15	30-Sep-15	0%
C1106.BCS4308	GL 38.2-40 Construct Concourse Beam & Slab	10	09-Oct-15	20-Oct-15	0%
C1106.BCS4310	GL 42.7-44.9 Construct Concourse Beam & Slab	10	25-Nov-15*	05-Dec-15	0%
C1106.BCS4312	GL 44.9-46.4 Construct Concourse Beam & Slab	9	22-Oct-15	31-Oct-15	0%
C1106.BCS4317	GL 36.7-38.2 Concrete Curing & Remove Temp Strut S1 & S2	10	01-Oct-15	10-Oct-15	0%
C1106.BCS4320	GL 38.2-40 Concrete Curing & Remove Temp Strut S1 & S2	12	21-Oct-15	01-Nov-15	0%
C1106.BCS4392	GL 45-46.4 Concrete Curing, Formwork Removal & Remove Temp Strut S1 & S2	10	02-Nov-15	12-Nov-15	0%
Wall & Column					
C1106.BCW4407	GL 36.7-38.2 Construct Wall & Column to Public Access Level	15	09-Oct-15	27-Oct-15	0%
C1106.BCW4409	GL 36.7-38.2 Scaffold Erection to L1 Public Access	6	28-Oct-15	03-Nov-15	0%
C1106.BCW4415	GL 38.2-40 Construct Wall & Column to Public ACcess Level	20	04-Nov-15	26-Nov-15	0%
C1106.BCW4425	GL 38.2-40 Scaffold Erection to L1 Public Access Level	9	09-Nov-15*	18-Nov-15	0%
C1106.BCW4440	GL 45-46.4 Construct Wall & Column to Public Access Level	12	10-Nov-15	23-Nov-15	0%
C1106.BCW4445	GL 45-46.4 Scaffold Erection to L1 Public Access Level	8	20-Nov-15	28-Nov-15	0%
Public Access Level (Level L1)					
Beam & Slab					
C1106.PLS5026	GL 36.7-38.2 Construct Public Access Level Beam/Slab	10	04-Nov-15	14-Nov-15	0%
C1106.PLS5033	GL 38.2-39.9 Construct Public Access Level Beam/Slab	10	24-Nov-15	04-Dec-15	0%
C1106.PLS6025	GL 36.7-38.2 Concrete Curing Public Access Level Beam/Slab & Formwork Removal	28	12-Nov-15	09-Dec-15	0%
Wall & Column					
C1106.PLW6330	GL 36.7-38.2 Construct Wall & Column to Ground Level GL	15	16-Nov-15	02-Dec-15	0%
C1106.PLW6332	GL 36.7-38.2 Scaffold Erection to GL Ground Level GL	7	20-Nov-15	27-Nov-15	0%
ABWF & Miscellaneous Works					
Platform Level (Level L5)					
Passenger Areas					
C1106.BAF1110	GL 36-40 ABWF Deg. 1 Works Platform BOH Areas & Plant Rooms	18	13-Oct-15	03-Nov-15	0%
Construction of Interchange Adit					
Construction of Interchange Adit					
Gridline U-V					
C1106.BIA7055	Interchange Adit - Construct Column & Walls and Bulk Head Wall	20	27-Jul-15 A	23-Sep-15	60%
C1106.BIA7060	Interchange Adit - Construct Top Slab	20	24-Sep-15	19-Oct-15	0%
C1106.BIA7070	Interchange Adit - Re-proping and Backfill Formation Level at LCR - Stage 1	14	20-Oct-15	05-Nov-15	0%
Construction of West Unpaid Link Adit					
West Adit Link - South Section					
Civil & Structural Works					
C1106.BWA8340	WUL - Construct Top Slab and Concrete Upstand	25	28-Jul-15 A	17-Sep-15	80%
C1106.BWA8345	WUL - Formwork, Waterproofing Membrane Application to +7.47mPD & Install Upstand Wall	6	18-Sep-15	24-Sep-15	0%
Construction of East MOE (Entrance B)					
Submissions					
General					
C1106.BEB8700	Prepare Cofferdam Design, ICE Check & Submit	25	15-Apr-15 A	16-Sep-15	82%
C1106.BEB8710	Review & Approve Cofferdam Design	30	17-Sep-15	16-Oct-15	0%



Remaining Work ◆ Milestone

Critical Remaining Work

Baseline (PMP)

Actual Work

◇ Baseline Milestone

3 of 4

MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 31 August 2015

3 Month Rolling Programme

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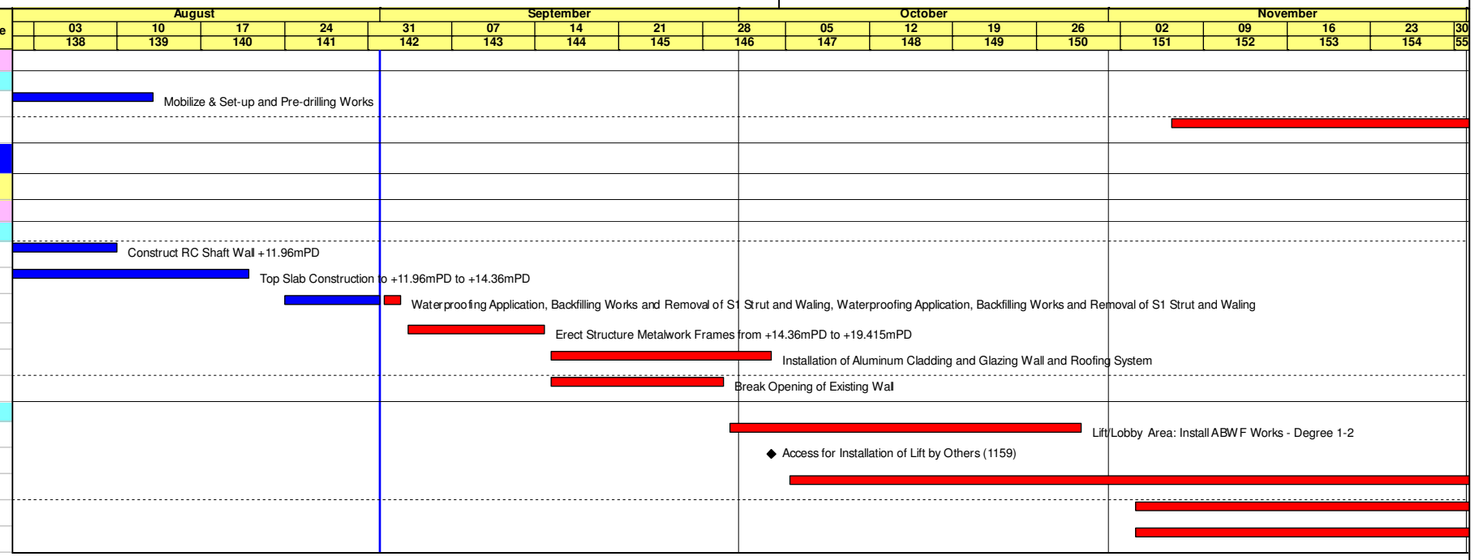
Contract 1106 - Diamond Hill Station

MTR

Sembawang - Leader Joint Venture

Activity ID	Activity Name	Orig Dur	Forecast Start	Forecast Finish	% Complete
East MOE					
Piling Works					
C1106.BEB8730	Mobilize & Set-up and Pre-drilling Works	24	02-May-15 A	13-Aug-15 A	100%
C1106.BEB8735	East MOE - Construct Pre-bored socket H-Piles 610mm (10 nos.)	25	06-Nov-15	04-Dec-15	0%
Cost Centre C: KTL - DIH Entrance A1 Works					
Entrance A1 (24 hr Walkway and New Lift)					
Structural Works					
Excavation & Structural Works					
C1106.CEA3330	Construct RC Shaft Wall +11.96mPD	10	10-Jul-15 A	10-Aug-15 A	100%
C1106.CEA3333	Top Slab Construction to +11.96mPD to +14.36mPD	11	18-Jul-15 A	21-Aug-15 A	100%
C1106.CEA3338	Waterproofing Application, Backfilling Works and Removal of S1 Strut and Waling	12	24-Aug-15 A	02-Sep-15	80%
C1106.CEA3344	Erect Structure Metalwork Frames from +14.36mPD to +19.415mPD	10	03-Sep-15	14-Sep-15	0%
C1106.CEA3348	Installation of Aluminum Cladding and Glazing Wall and Roofing System	15	15-Sep-15	03-Oct-15	0%
C1106.CEA3355	Break Opening of Existing Wall	12	15-Sep-15	29-Sep-15	0%
ABWF Works					
C1106.CEA4210	Lift/Lobby Area: Install ABWF Works - Degree 1-2	24	30-Sep-15	29-Oct-15	0%
C1106.CEA4212	Access for Installation of Lift by Others (1159)	0		03-Oct-15	0%
C1106.CEA4223	Access for Installation of Lift by Others (1159)	75	05-Oct-15	04-Jan-16	0%
C1106.CEA4225	Lobby Area: Install ABWF Works - Degree 3	30	03-Nov-15	07-Dec-15	0%
C1106.CEA4240	Lift Area: Install ABWF Works - Degree 3	30	03-Nov-15	07-Dec-15	0%



Remaining Work
Critical Remaining Work
Baseline (PMP)
Actual Work
Baseline Milestone
Milestone

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3 Month Rolling Programme			
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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. MA12051/57/0015

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

Date: 5-Aug-15 Next Due Date: 4-Oct-15

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

Ambient Condition			
Temperature, Ta (K)	303	Pressure, Pa (mmHg)	757.9

Orifice Transfer Standard Information					
Equipment No.:	A-04-06	Slope, mc (CFM)	0.0593	Intercept, bc	-0.02195
Last Calibration Date:	4-Feb-15	**mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$**			
Next Calibration Date:	3-Feb-16	**Qstd = $\{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.9	3.42	58.02	8.0	2.80
2	9.8	3.10	52.68	6.5	2.52
3	7.6	2.73	46.44	5.0	2.21
4	5.2	2.26	38.48	3.2	1.77
5	3.3	1.80	30.73	2.1	1.44

By Linear Regression of Y on X

Slope , mw = 0.0506 **Intercept, bw =** -0.1424

Correlation coefficient* = 0.9993

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.22**

Remarks:

Conducted by: Kei Signature: Kei Date: 5/8/15

Checked by: W.K. Tang Signature: Kwai Date: 5/8/15

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

Equipment No. A-04-06

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 04, 2015 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 2896 Pa (mm) - 756.92

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	1.4590	3.2	2.00
2	NA	NA	1.00	1.0330	6.4	4.00
3	NA	NA	1.00	0.9250	7.9	5.00
4	NA	NA	1.00	0.8800	8.8	5.50
5	NA	NA	1.00	0.7260	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0086	0.6913	1.4233		0.9958	0.6825	0.8799
1.0044	0.9723	2.0129		0.9916	0.9599	1.2443
1.0023	1.0835	2.2505		0.9895	1.0697	1.3912
1.0011	1.1377	2.3603		0.9884	1.1231	1.4591
0.9959	1.3718	2.8467		0.9832	1.3542	1.7598
Qstd slope (m) =		2.09317		Qa slope (m) =		1.31071
intercept (b) =		-0.02195		intercept (b) =		-0.01357
coefficient (r) =		0.99997		coefficient (r) =		0.99997
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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/140919/1
Date of Issue:	2014-09-21
Date Received:	2014-09-19
Date Tested:	2014-09-21
Date Completed:	2014-09-21
Next Due Date:	2015-09-20
Page:	1 of 1

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

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 12553
Microphone No.	: 35222
Equipment No.	: N-08-02

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 55%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

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/150103
Date of Issue:	2015-01-05
Date Received:	2015-01-03
Date Tested:	2015-01-03
Date Completed:	2015-01-05
Next Due Date:	2016-01-04

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	: 20 degree Celsius
Relative Humidity	: 54%

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

Test Report No.:	C/N/141003/2
Date of Issue:	2014-10-04
Date Received:	2014-10-03
Date Tested:	2014-10-03
Date Completed:	2014-10-04
Next Due Date:	2015-10-03

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

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 56%

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/141003/3
Date of Issue:	2014-10-04
Date Received:	2014-10-03
Date Tested:	2014-10-03
Date Completed:	2014-10-04
Next Due Date:	2015-10-03

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

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 56%

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

APPENDIX D
IMPACT MONITORING SCHEDULE

Shatin to Central Link – Contract 1106 Diamond Hill Station
Impact Air Quality and Noise Monitoring Schedule for August 2015

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

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 September 2015

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

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

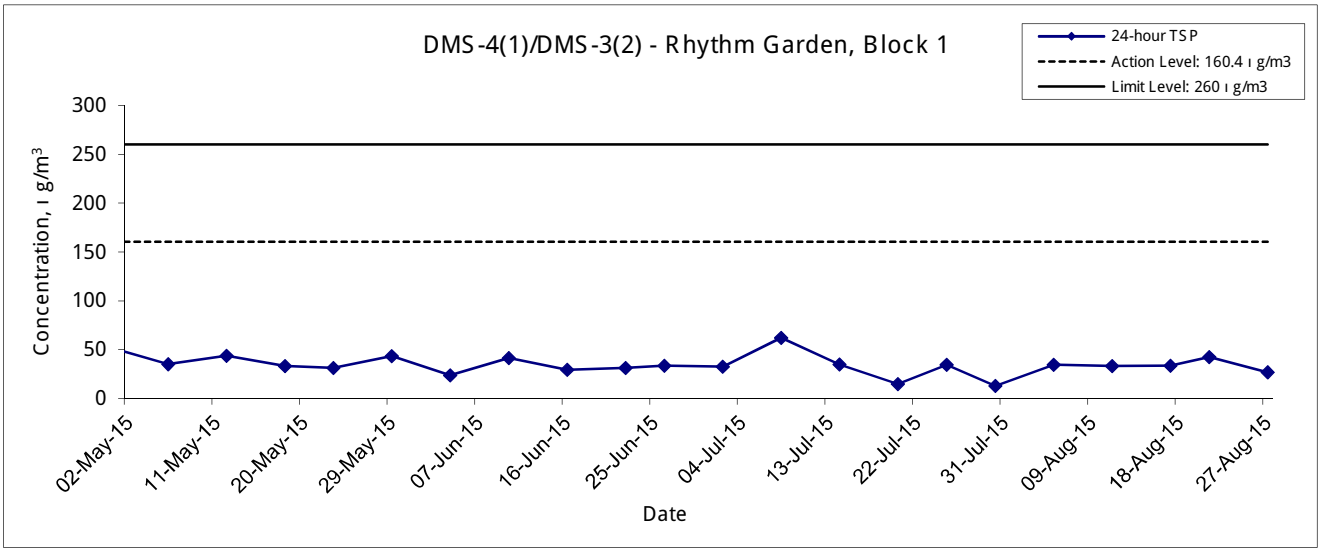
Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (ı g/m^3)
					Initial	Final		Initial	Final		Initial	Final			
5-Aug-15	11:00	Sunny	303.9	757.3	3.2605	3.3207	0.0602	4532.9	4556.9	24.0	1.21	1.21	1.21	1746.2	34.5
11-Aug-15	11:00	Sunny	300.7	757.3	3.3118	3.3702	0.0584	4556.9	4580.9	24.0	1.22	1.22	1.22	1754.9	33.3
17-Aug-15	9:00	Sunny	302.6	758.8	3.2691	3.3278	0.0587	4581.0	4605.0	24.0	1.22	1.22	1.22	1751.3	33.5
21-Aug-15	9:00	Cloudy	302.4	755.1	3.2570	3.3311	0.0741	4605.0	4629.0	24.0	1.21	1.21	1.21	1747.9	42.4
27-Aug-15	9:00	Cloudy	302.4	758.9	3.3108	3.3581	0.0473	4629.0	4653.0	24.0	1.22	1.22	1.22	1751.9	27.0
														Min	27.0
														Max	42.4
														Average	34.1

Remarks:

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

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

24-hour TSP Concentration Levels



Remarks:

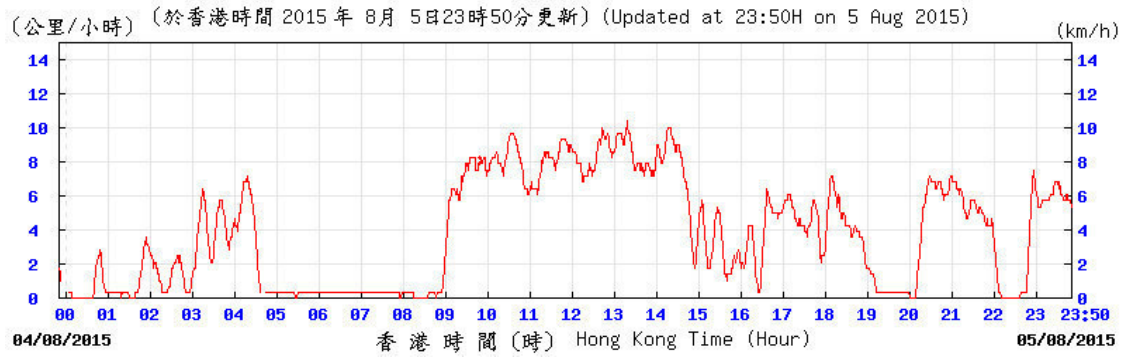
(1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

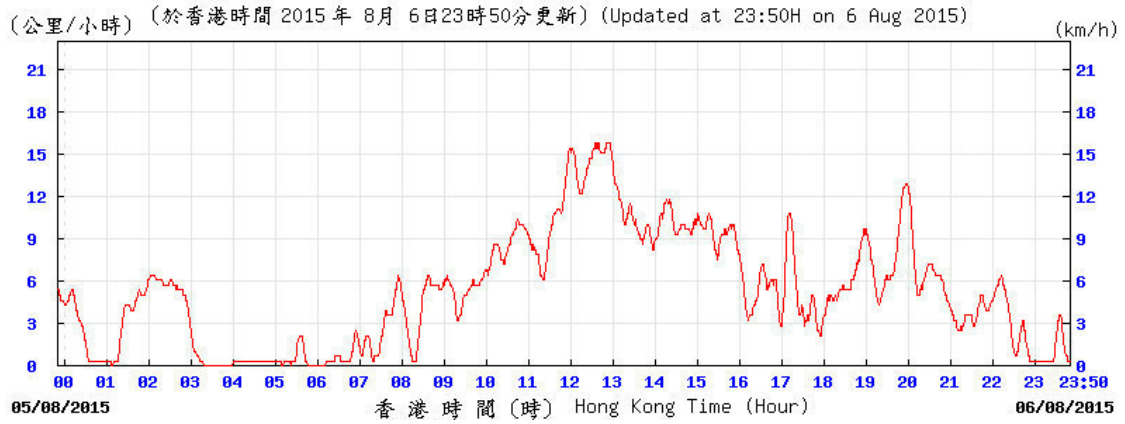
(2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

Title: Shatin to Central Link – Contract 1106 Diamond Hill Station Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Aug 15	Project No.: MA12051 Appendix: E	CINOTECH

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

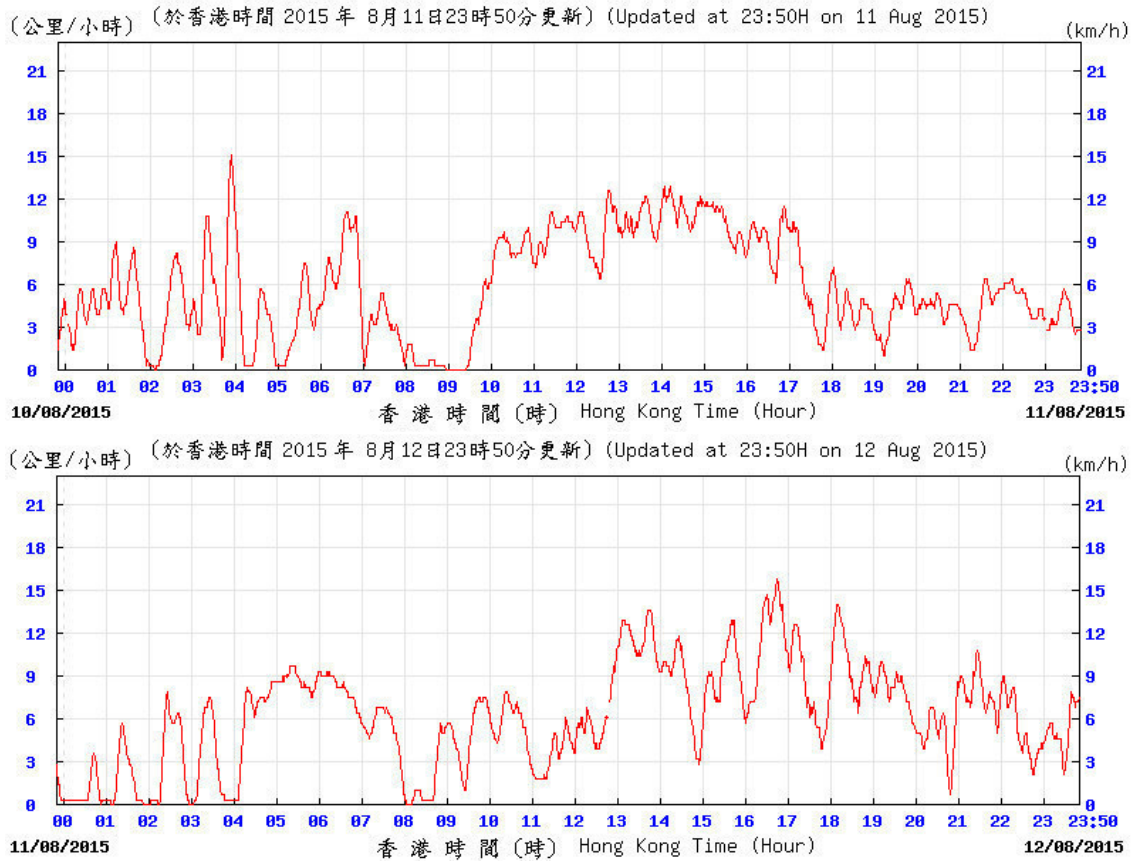
5-6 August 2015





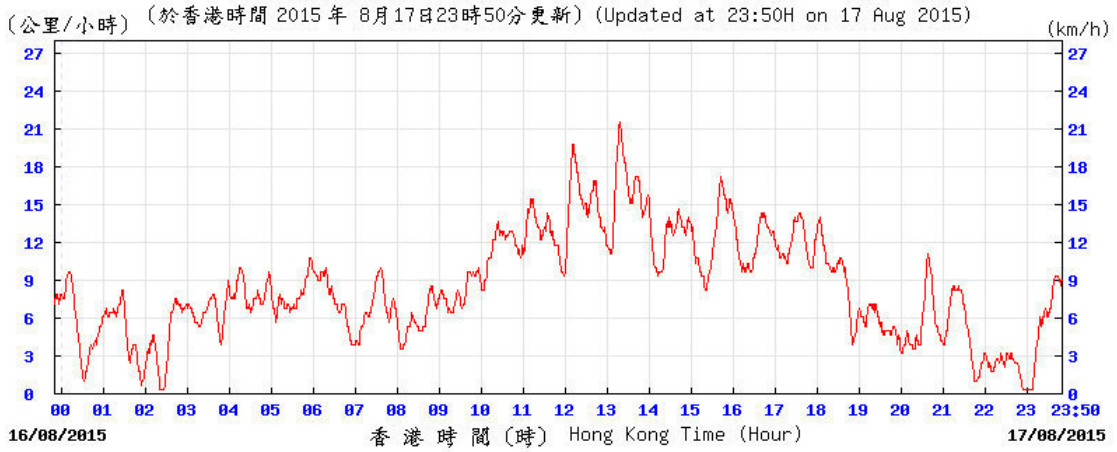
Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

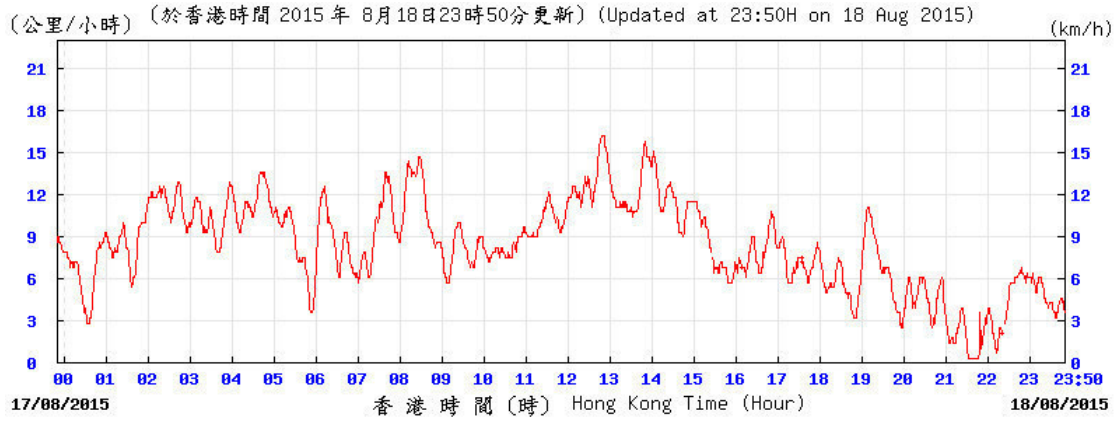
11-12 August 2015



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

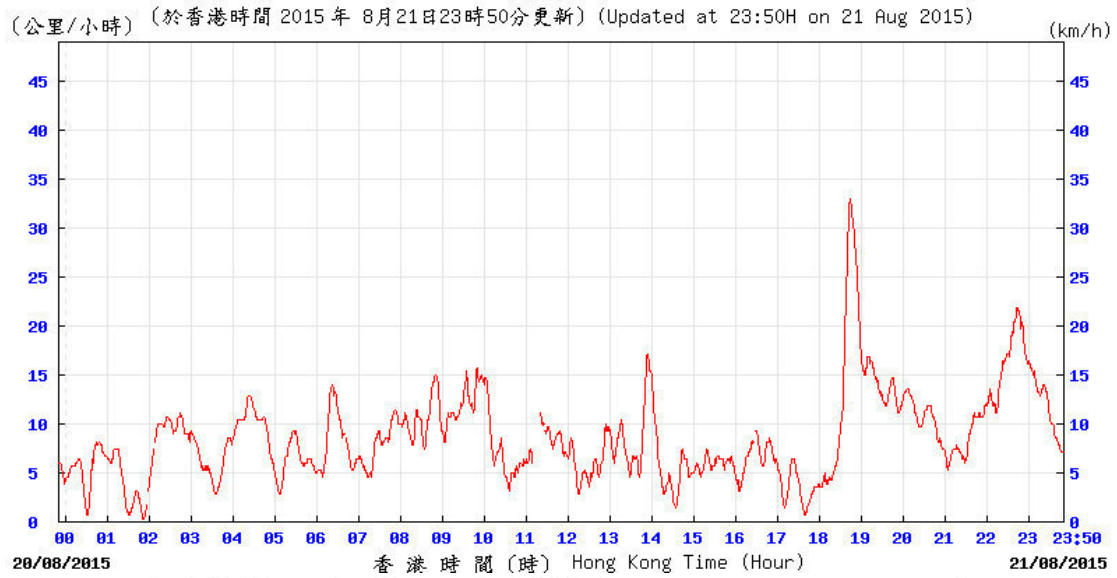
17-18 August 2015

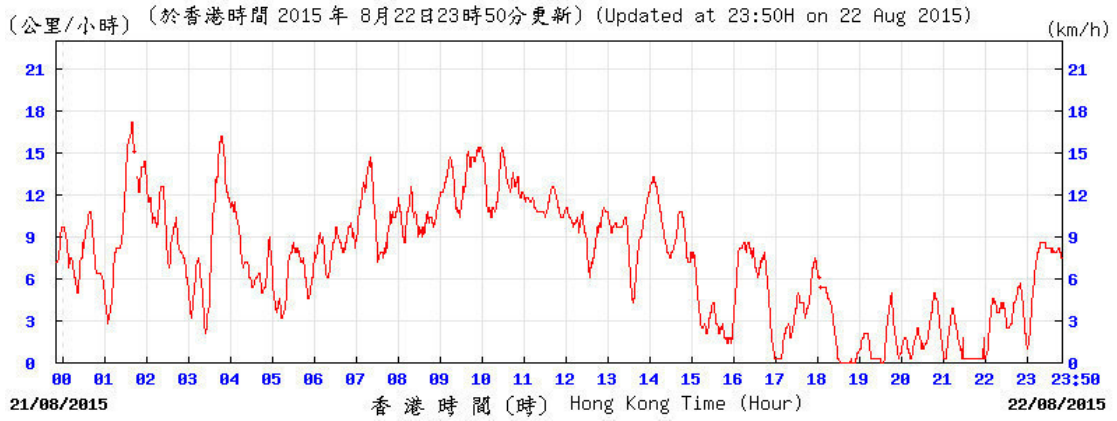




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

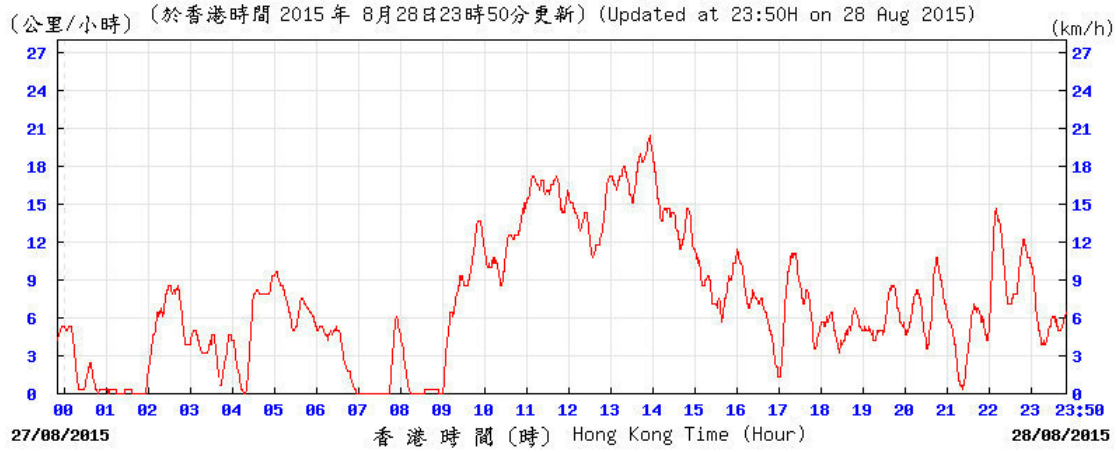
21-22 August 2015





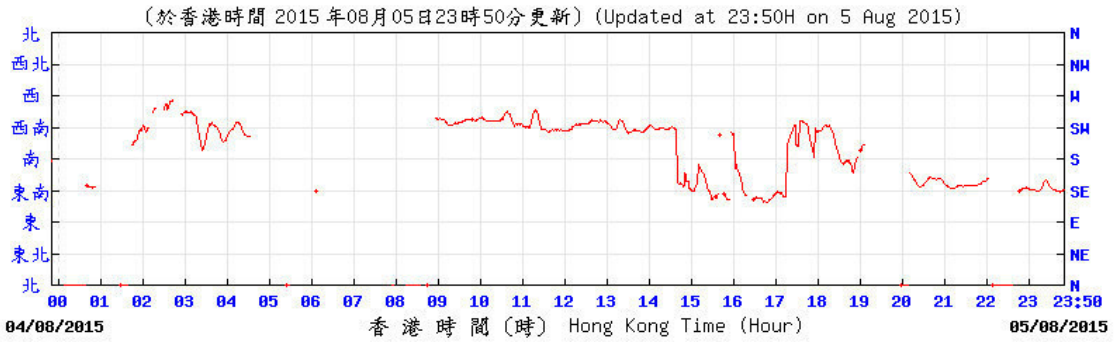
Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

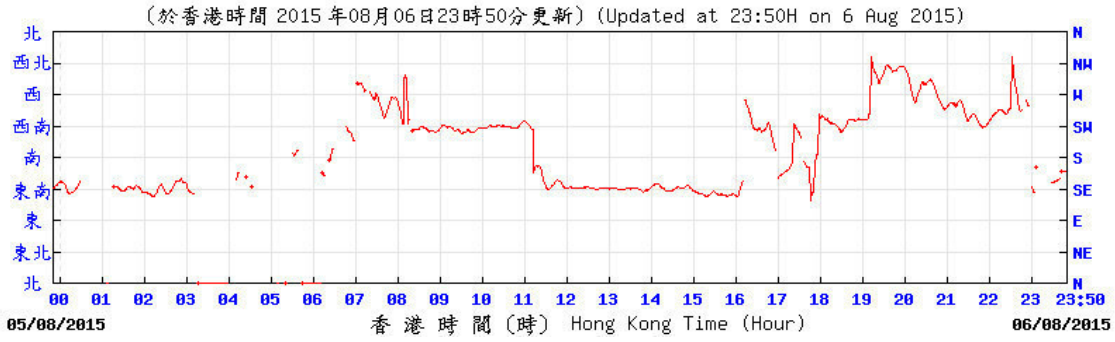
27-28 August 2015



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

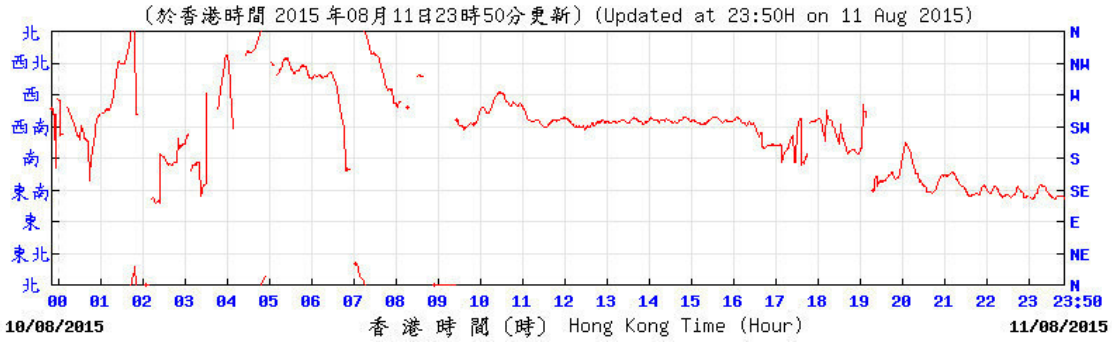
5-6 August 2015

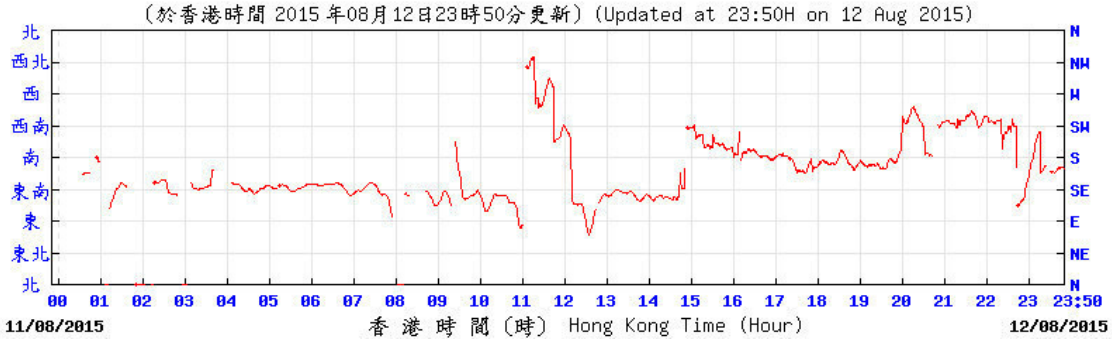




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

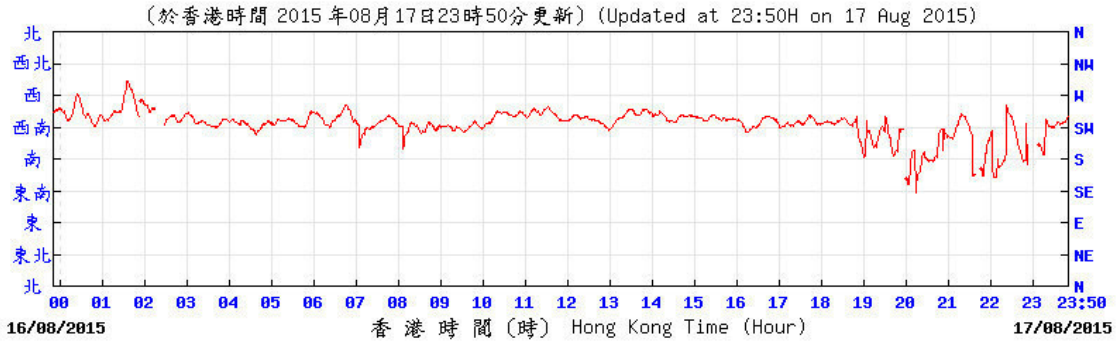
11-12 August 2015

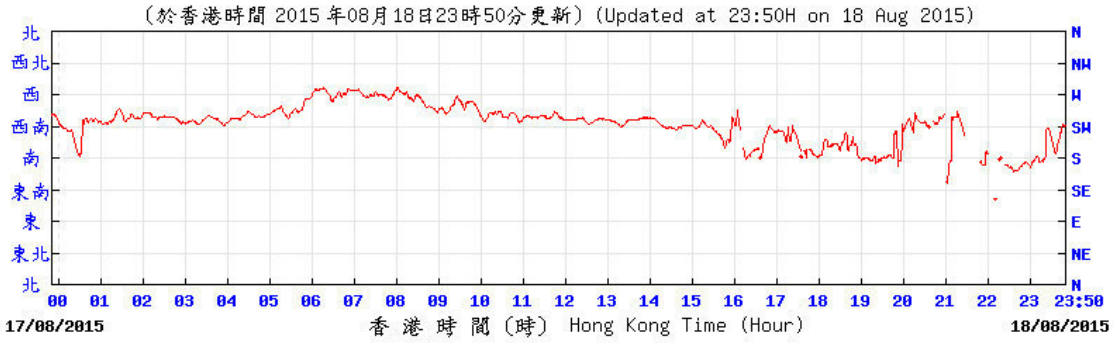




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

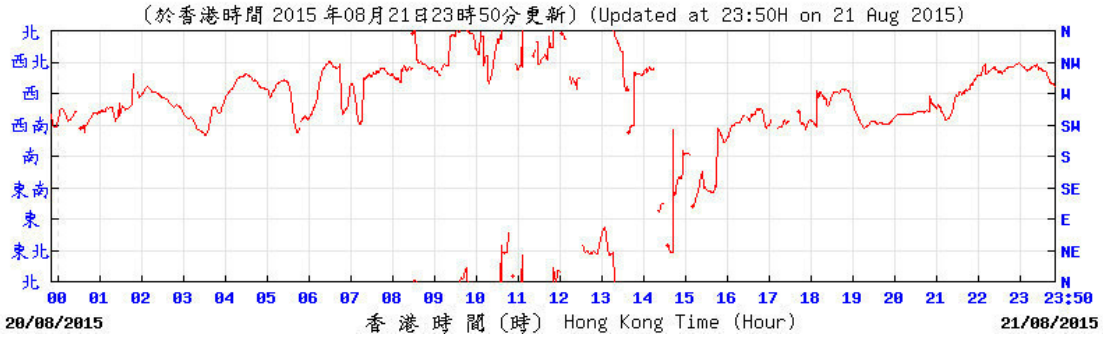
17-18 August 2015

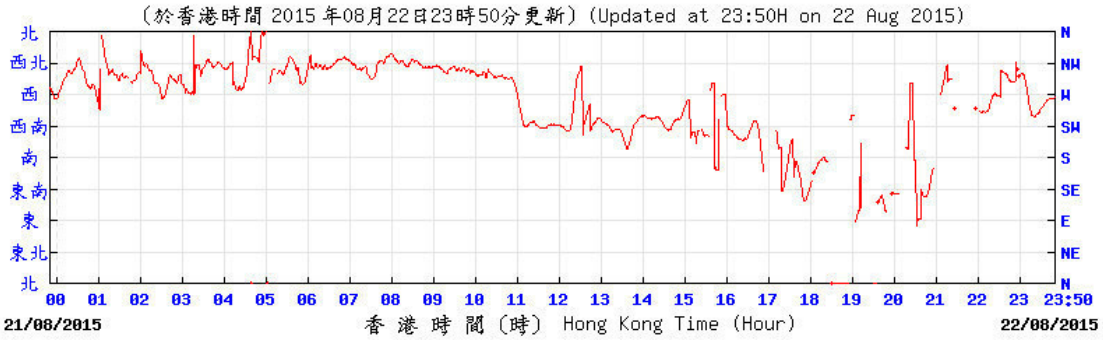




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

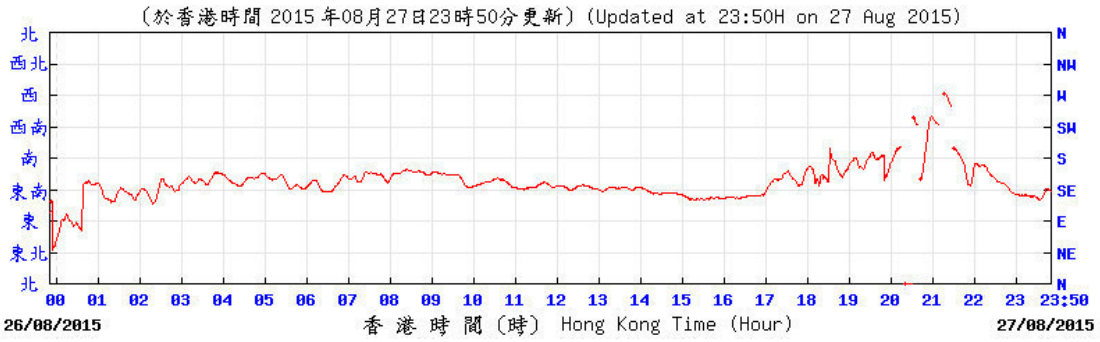
21-22 August 2015

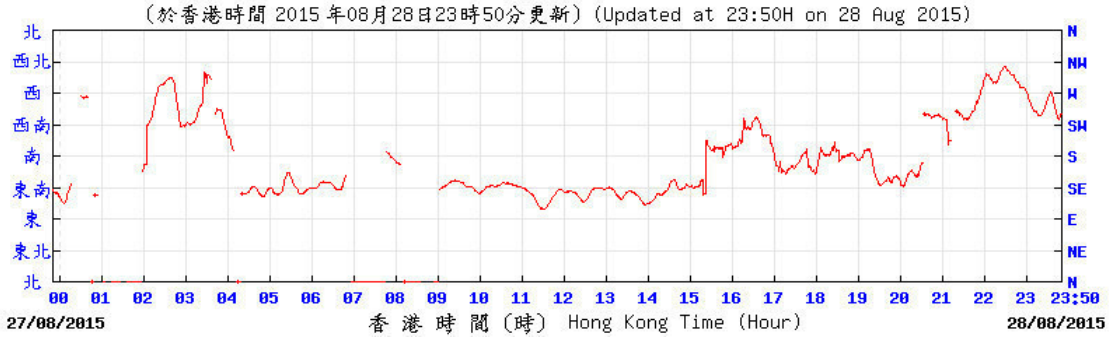




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

27-28 August 2015





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}
6-Aug-15	Sunny	15:30	71.2	72.4	69.9	71.4	71	60.8
		15:35	71.6	72.8	70.4			
		15:40	71.3	72.1	70.2			
		15:45	71.1	72.0	70.1			
		15:50	71.4	72.3	70.3			
		15:55	71.9	73.0	70.5			
12-Aug-15	Sunny	11:20	71.6	72.7	70.4	71.5		61.9
		11:25	71.4	72.8	69.9			
		11:30	71.6	72.8	70.3			
		11:35	71.4	72.6	70.1			
		11:40	71.5	72.8	70.1			
		11:45	71.4	72.7	70.3			
20-Aug-15	Sunny	13:45	61.1	62.2	60.0	61.7		61.7 Measured ≦ Baseline Level
		13:50	62.4	63.1	60.5			
		13:55	60.8	61.5	59.9			
		14:00	61.5	63.4	59.8			
		14:05	62.1	62.9	60.3			
		14:10	61.9	62.8	60.0			
24-Aug-15	Cloudy	13:35	72.1	73.4	70.7	72.2		66.0
		13:40	72.2	73.4	70.9			
		13:45	72.4	73.6	71.1			
		13:50	72.1	73.4	71.1			
		13:55	72.0	73.4	71.1			
		14:00	72.1	73.5	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}
6-Aug-15	Sunny	16:05	72.7	73.7	71.5	72.6	74	72.6 Measured ≦ Baseline Level
		16:10	72.6	73.6	71.7			
		16:15	72.5	73.7	71.1			
		16:20	72.5	73.4	71.5			
		16:25	72.2	73.2	71.1			
		16:30	72.9	74.0	71.6			
12-Aug-15	Sunny	10:45	70.1	71.4	68.9	70.2		70.2 Measured ≦ Baseline Level
		10:50	70.4	71.7	69.0			
		10:55	70.2	71.2	69.0			
		11:00	70.1	71.2	68.9			
		11:05	70.4	71.5	68.9			
		11:10	70.2	71.6	68.9			
20-Aug-15	Sunny	14:20	63.4	65.2	61.3	63.1		63.1 Measured ≦ Baseline Level
		14:25	64.5	66.4	60.8			
		14:30	63.7	64.8	62.2			
		14:35	61.9	63.4	61.1			
		14:40	61.6	62.6	59.2			
		14:45	62.5	63.7	61.6			
24-Aug-15	Cloudy	13:00	71.2	72.5	69.9	71.2		71.2 Measured ≦ Baseline Level
		13:05	71.5	72.5	69.9			
		13:10	71.4	72.8	69.9			
		13:15	71.2	72.0	70.0			
		13:20	70.9	71.7	70.0			
		13:25	71.1	72.0	70.0			

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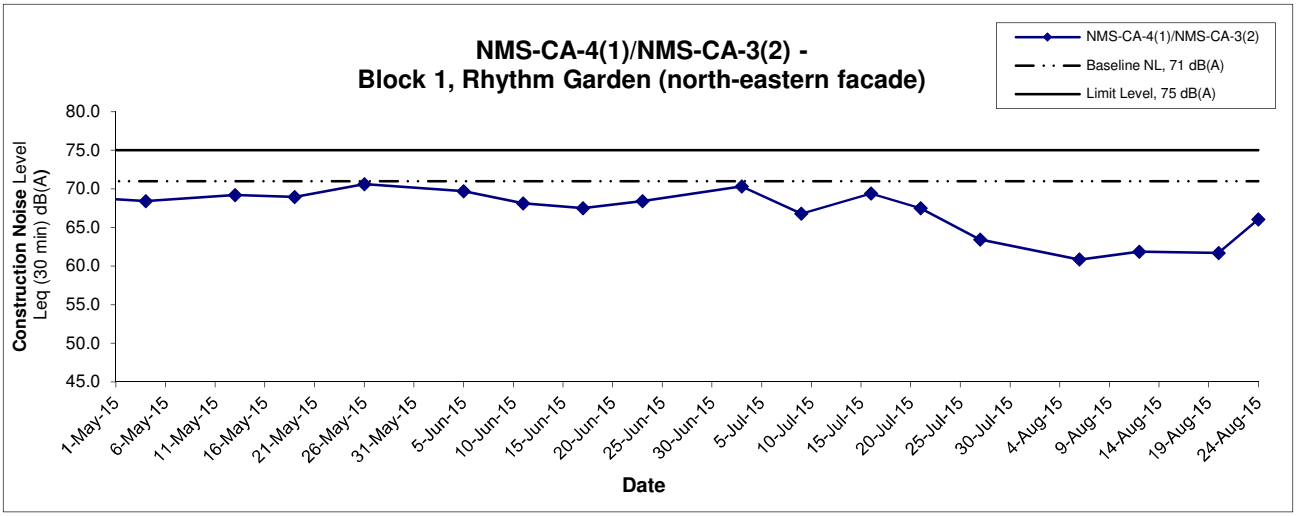
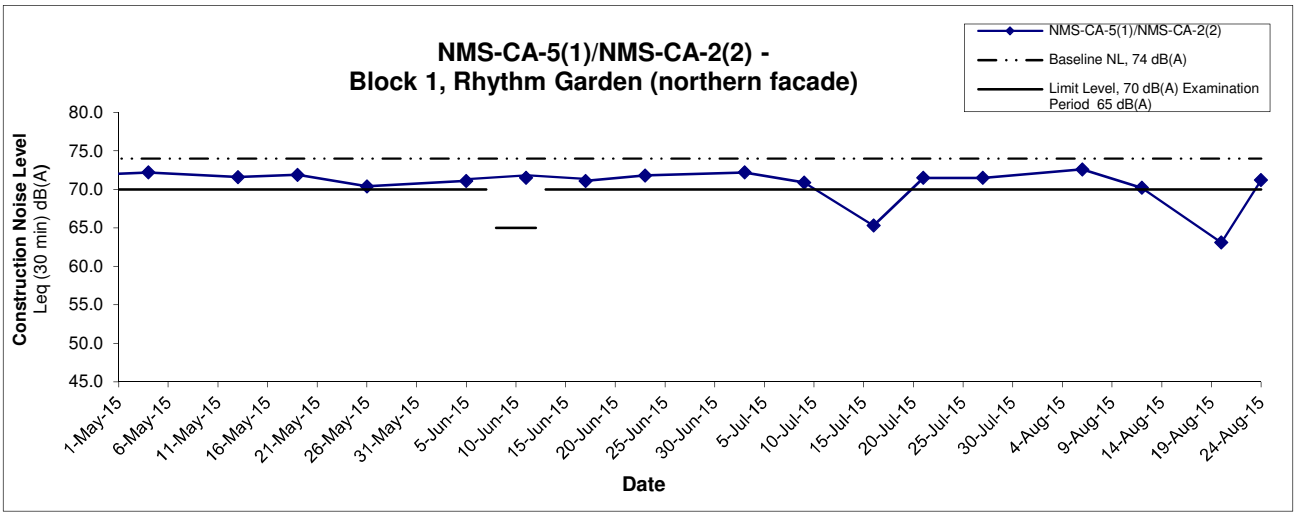
Remarks:
(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

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: Aug 15	Project No.: MA12051 Appendix: F	CINOTECH

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: August 2015

a) Exceedance Report for Dust Monitoring (NIL)

b) Exceedance Report for Noise Monitoring (NIL)

APPENDIX H
SITE AUDIT SUMMARY

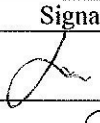
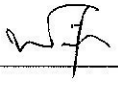
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150806
Date	6 August 2015 (Thursday)
Time	13:30 – 14:30

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

Ref. No.	Remarks/Observations	Related Item No.
150806-R02	*Part B – Water Quality* • Sand bags or bund should be provided to surround stockpile in A1 work area to prevent any potential runoff leakage. *Part C – Ecology* • No environmental deficiency was identified during the site inspection.	B 20
150806-O01	*Part D – Landscape & Visual* • Construction materials placed near retained trees in A1 work area should be removed to prevent damage to planter. The Contractor was reminded to enlarge the tree protection zone as soon as possible. *Part E – Air Quality* • No environmental deficiency was identified during the site inspection. *Part F – Cultural Heritage* • No environmental deficiency was identified during the site inspection. *Part G – Construction Noise Impact* • No environmental deficiency was identified during the site inspection. *Part H – Waste/Chemical Management* • No environmental deficiency was identified during the site inspection. *Part I – Permits/Licenses* • No environmental deficiency was identified during the site inspection. *Part J – Others* • Follow-up on previous audit section (Ref. No.: 150730), item 150730-O01 was remarked as 150806-O01 and follow up action is needed to be reviewed.	D 3

	Name	Signature	Date
Recorded by	Jason Lai		6 August 2015
Checked by	Dr. Priscilla Choy		6 August 2015

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150813
Date	13 August 2015 (Thursday)
Time	13:30 – 14:15

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

Ref. No.	Remarks/Observations	Related Item No.
150813-R02	***Part B – Water Quality*** • The pH value of the effluent in aquased near site entrance should be properly improved. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection.	B 6
150813-O01	***Part D – Landscape & Visual*** • Retained trees in bar bending area at W8 should be properly protected and fenced off by tree protection zone. ***Part E – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part F – Cultural Heritage*** • No environmental deficiency was identified during the site inspection. ***Part G – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part H – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part I – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part J – Others*** • Follow-up on previous audit section (Ref. No.: 150806), all items were observed to be improved/rectified by the Contractor.	D 2 and D 3

	Name	Signature	Date
Recorded by	Jason Lai		13 August 2015
Checked by	Dr. Priscilla Choy		13 August 2015

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150820
Date	20 August 2015 (Thursday)
Time	09:30 – 10:15

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

Ref. No.	Remarks/Observations	Related Item No.
150820-O01	***Part B – Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part F – 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*** • Drip tray should be provided to the chemical containers near ramp to prevent leakage. ***Part I – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part J – Others*** • Follow-up on previous audit section (Ref. No.: 150813), all items were observed to be improved/rectified by the Contractor.	H 10

	Name	Signature	Date
Recorded by	Jason Lai		20 August 2015
Checked by	Dr. Priscilla Choy		20 August 2015

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150827
Date	27 August 2015 (Thursday)
Time	13:30 – 14:30

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

Ref. No.	Remarks/Observations	Related Item No.
150827-R01	***Part B – Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality*** • The Contractor was reminded to cover dusty stockpile in Interchange Adit work area to suppress 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*** • No environmental deficiency was identified during the site inspection. ***Part I – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part J – Others*** • Follow-up on previous audit section (Ref. No.: 150820), all items were observed to be improved/rectified by the Contractor.	E 6

	Name	Signature	Date
Recorded by	Jason Lai		27 August 2015
Checked by	Dr. Priscilla Choy		27 August 2015

APPENDIX I
EVENT AND ACTION PLANS

Event and Action Plan for Air Quality Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1106 ET	**IEC**	**ER**	**CONTRACTOR**
ACTION LEVEL				
1. Exceedance for one sample	1. Inform the IEC, Contractor and ER; 2. Discuss with the Contractor, IEC and ER on the remedial measures required; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing;	1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; 3. Amend working methods agreed with the ER as appropriate.
2.Exceedance for two or more consecutive samples	1. Inform the IEC, Contractor and ER; 2. Discuss with the ER, IEC and Contractor on the remedial measures required; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. If exceedance continues, arrange meeting with the IEC, ER and Contractor; 6. If exceedance stops, cease addtional monitoring	1. Check monitoring data submitted by the ET; 2. Check Contractor's working method; 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify the Contractor, IEC and ET; 3. Review and agree on the remedial measures proposed by the Contractor; 4. Supervise Implementation of remedial measures.	1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal as appropriate.

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

Event and Action Plan for Noise Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1106 ET	**IEC**	**ER**	**CONTRACTOR**
Action Level	1. Notify the IEC, Contractor and ER 2. Discuss with the ER, IEC and Contractor on the remedial measures required 3. Increase monitoring frequency to check mitigation effectiveness	1. Review the investigation results submitted by the contractor; 2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor. .	1. Confirm receipt of notification of complaint in writing 2. Notify the Contractor, IEC and ET 3. Review and agree on the remedial measures proposed by the Contractor; 4. Supervise implementation of remedial measures	1. Investigate the complaint and propose remedial measures 2. Report the results of investigation to the IEC, ET and ER 3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification. 4. Implement noise mitigation proposals
Limit Level	1. Notify the IEC, Contractor and EPD 2. Repeat measurement to confirm findings 3. Increase monitoring frequency 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances 7. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET and Contractor on the potential remedial measures 4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of exceedance in writing 2. Notify the Contractor, IEC and ET 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 4. Supervise the implementation of remedial measures 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Identify source and investigate the causes of exceedance 2. Take immediate action to avoid further exceedance 3. Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification. 4. Implement the agreed proposals 5. Revise and resubmit proposals if problem still not under control 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Event and Action Plan for Landscape and Visual during Construction Phase

Action Level	Works Contract 1106 ET	IEC	ER	Contractor
Non-conformity on one occasion	1. Inform the Contractor, the IEC and the ER 2. Discuss remedial actions with the IEC, the ER and the Contractor 3. Monitor remedial actions until rectification has been completed	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET, ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures.	1. Confirm receipt of notification of non-conformity in writing 2. Review and agree on the remedial measures proposed by the Contractor 3. Supervise implementation of remedial measures	1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source 2. Inform the Contractor, the IEC and the ER 3. Increase inspection frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If non-conformity stops, cease additional monitoring	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 3. Supervise implementation of remedial measures.	1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.

APPENDIX J
UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
Cultural Heritage Impact (Construction Phase)								
S4.8.1	CH1	Submit an Archaeological Action Plan. Survey-cum-excavation shall be conducted prior to the construction works at the former Tai Hom Village site.	Salvage cultural remains at the Former Tai Hom Village Site	Contractor	Former Tai Hom Village Site	Prior to the Construction Phase of DIH site	• AMO's requirements	^ ^
S4.8.2	CH2	Submit a Conservation Plan for the Former Royal Air Force Hangar and the Old Pillbox to AMO for agreement.	Proposal for conservation of 2 historical buildings	Contractor	Former Tai Hom Village Site	Prior to the Construction Phase of DIH site	• AMO's requirements • Principles for the Conservation of Heritage Sites in China • Burra Charter, the Australia's ICOMOS Charter for Places of Cultural Significance	^
Ecology (Construction Phase)								
S5.7	E1	<u>Good Site Practices</u> Impact to any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, appropriate storage of chemicals and chemical waste away from sites of ecological value and the provision of sanitary facilities for	Minimise ecological impacts	Contractor	All construction sites	During Construction	• ProPECC PN 1/94	*

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		on-site workers. Adoption of such measures should permit waste to be suitably contained within the site for subsequent removal and appropriate disposal. The following good site practices should also be implemented: • No on-site burning of waste; • Waste and refuse in appropriate receptacles.						^ ^
Landscape & Visual (Construction Phase)								
S6.12	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u> • For soil conservation, existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing ground may be set up on-site as necessary. <u>No-intrusion Zone</u> • To maximize protection to existing trees, ground vegetation and the associated under storey habitats, construction contracts may designate “No-intrusion Zone” to various areas within the site boundary with rigid and durable fencing for each individual	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	•TM-EIAO	^ *

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		no-intrusion zone. The contractor should closely monitor and restrict the site working staff from entering the "no-intrusion zone", even for indirect construction activities and storage of equipment. <u>Protection of Retained Trees</u> • All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period. Detailed tree protection specification shall be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and the tree monitoring system. • The Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works sites.						* ^
Table 6.9	LV2	<u>Decorative Hoarding</u> • Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas. Hoarding should be designed to be compatible with the existing urban context. <u>Management of facilities on work sites</u> • To provide proper management of the facilities on the sites, give	Minimize the visual and landscape impact of the Project during construction phase	Contractor	Within Project Site	Detailed design and construction stage	• EIAO – TM •ETWB TCW 2/2004 • ETWB TCW 3/2006	^ ^

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs. <u>Tree Transplanting</u> • Trees of medium to high survival rate that would be affected by the works shall be transplanted where possible and practicable. Tree transplanting proposal including final location for transplanted trees shall be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006.						^
Air Quality (Construction Phase)								
/	A1	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^ ^ ^
/	A2	Open burning shall be prohibited	Reduce air pollution emission from work site	Contractor	All construction sites	Construction stage	APCO	^
Construction Dust Impact								
S7.6.6	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	• APCO • To control the dust	*

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
							impact to meet HKAQO and TM-EIA criteria	
S7.6.6	D2	Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road in the Kowloon area should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.8 L/m^2 to achieve the dust removal efficiency	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	^
S7.6.6	D3	• Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	* ^ ^ ^

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

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
		• Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;						^
		• Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;						N/A
		• Any skip hoist for material transport should be totally enclosed by impervious sheeting;						^
		• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;						^
		• Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked 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						^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						N/A
S7.6.6	D4	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected representative dust monitoring station	Construction stage	• TM-EIA	^
Construction Airborne Noise								
S8.5.6	AN1	Implement the following good site practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible	Control construction airborne noise	Contractor	All Construction Sites where practicable	Construction stage	• Annex 5, TM-EIA	^ ^ ^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		and practicable; • material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.						^
S8.5.6	AN2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All Construction Sites	Construction stage	• Annex 5, TM-EIA	^
S8.5.6	AN3	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressor, generators and saw.	Screen the noisy plant items to be used at all construction sites	Contractor	All Construction Sites	Construction stage	• Annex 5, TM-EIA	^
S8.5.6	AN4	Use “Quiet” plant	Reduce the noise levels of plant items	Contractor	All Construction Sites where practicable	Construction stage	• Annex 5, TM-EIA	^
S8.5.6	AN5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne	Contractor	All Construction Sites where practicable	Construction stage	• Annex 5, TM-EIA	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
			noise					
S8.5.6	AN6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction stage	•TM-EIA	^
Water Quality (Construction Phase)								
S10.7.1	W1	In accordance with the Practice Noise for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>Construction Runoff and Site Drainage</u> • At the start of site establishment (including the barging facilities), perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct site runoff and stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction. • The dikes or embankments for flood protection should be	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	^ ^

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

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

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

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain. • Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts. • All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby • All the earth works involving should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable. • Adopt best management practices.						^ ^ ^ ^
S10.7.1	W3	<u>Sewage Effluent</u> • Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • TM-water	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		appropriate disposal and maintenance.						
S10.7.1	W5	Accidental Spillage In order to prevent accidental spillage of chemicals, the following is recommended: • Proper storage and handling facilities should be provided; • All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains; • The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings; and • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	* ^ ^ ^
Waste Management (Construction Waste)								
S11.4.1.1	WM1	On-site sorting of C&D material • Geological assessment should be carried out by competent persons on site during excavation to identify materials which are not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc.). Volcanic rock and Aplite dyke rock	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	Contractor	All construction sites	Construction stage	• DEVB TC(W) No. 6/2010	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		should be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use. Details regarding control measures at source site and crushing facilities should be submitted by the Contractors for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc. should also be explored.						
S11.5.1	WM2	<u>Construction and Demolition Material</u> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance	^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and EPD and get their approval before implementation	disposal				• ETWB TCW No. 19/2005	N/A ^ ^ ^
S11.5.1	WM3	<u>C&D Waste</u> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		materials will be carefully planned in order to avoid over ordering and wastage. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.					No.19/2005	^
S11.5.1	WM4	<u>General Refuse</u> • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		provided if feasible. • Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor.						^
S11.5.1	WM6	<u>Chemical Waste</u> • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450L unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; be enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; be covered to	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All Construction Sites	Construction Stage	• Waste Disposal (Chemical Waste) (General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	^ ^ ^

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		prevent rainfall entering; and be arranged so that incompatible materials are adequately separated. • Disposal of chemical waste should be via a licensed waste collector; and be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.						^

Remarks: ^ Compliance of mitigation measure X Non-compliance of mitigation measure

• Non-compliance but rectified by the contractor

* Recommendation was made during site audit but improved/rectified by the contractor.

N/A Not Applicable

APPENDIX K
WASTE GENERATION IN THE REPORTING MONTH

Contract No: **MTR SCL 1106 - Diamond Hill Station**
Date of Report: **August,2015**

Monthly Summary Waste Flow Table for 2015

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	26.502	0.000	0.000	25.020	1.482	0.000	0.000	0.389	0.000	0.000	0.062	
Feb	17.022	0.000	0.000	14.903	2.119	0.000	0.000	0.000	0.000	0.000	0.085	
Mar	17.378	0.000	0.000	14.941	2.437	0.000	0.000	0.300	0.000	0.000	0.133	
Apr	4.879	0.000	0.000	4.129	0.750	0.000	0.000	0.400	0.000	0.000	0.041	
May	2.802	0.000	0.000	1.613	1.189	0.000	0.000	0.200	0.000	0.000	0.067	
Jun	0.336	0.000	0.000	0.000	0.336	0.000	0.000	0.420	0.000	0.000	0.069	
Sub-total	68.919	0.000	0.000	60.606	8.313	0.000	0.000	1.709	0.000	0.000	0.457	
Jul	0.239	0.000	0.000	0.000	0.239	0.000	0.000	0.240	0.000	0.000	0.114	
Aug	0.310	0.000	0.000	0.000	0.310	0.000	0.000	0.420	0.000	0.000	0.102	
Sept												
Oct												
Nov												
Dec												
Total	69.468	0.000	0.000	60.606	8.862	0.000	0.000	2.369	0.000	0.000	0.673	

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) & Contract 1108.
3) Chemical waste includes waste diesel oil. It is assumed density of diesel oil to be 0.8kg/L.
4) figures are rounded up to 3 decimal places

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

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

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
March 2013	0	0	0
April 2013	0	0	0
May 2013	0	0	0
June 2013	0	0	0
July 2013	0	0	0
August 2013	0	0	0
September 2013	0	0	0
October 2013	0	0	0
November 2013	0	0	0
December 2013	0	0	0
January 2014	0	0	0
February 2014	0	0	0
March 2014	0	0	0
April 2014	0	0	0
May 2014	0	0	0
June 2014	0	0	0
July 2014	0	0	0
August 2014	0	0	0
September 2014	0	0	0
October 2014	0	0	0
November 2014	0	0	0
December 2014	0	0	0
January 2015	0	0	0
February 2015	3	0	0
March 2015	0	0	0
April 2015	0	0	0
May 2015	0	0	0
June 2015	0	0	0
July 2015	1	0	0
August 2015	0	0	0
Total	**4**	**0**	**0**

Environmental Complaint Log (August 2015)

Contractor Log Ref.	Complaint Location/ Nature	Incoming Complaint Reference no.	Complainant/ Date or Period of Complaint Received	Date of Complaint received from EPD	Details of Complaint	Investigation/ Mitigation Action	Status
--	--	--	--	--	--	--	--

Log for Notifications of Summons (August 2015)

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

Log for Successful Prosecutions (August 2015)

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

Appendix G

28th 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.27

[Period from 1 to 31 August 2015]

Works Contract 1107 – Diamond Hill to Kai Tak Tunnels

(September 2015)

Certified by: Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 8th September 2015

Chun Wo – SELI Joint Venture

Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels

Monthly Environmental Monitoring and Audit Report For August 2015

(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.

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EXECUTIVE SUMMARY

Introduction

1. This is the 28th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for **MTR Shatin to Central Link (SCL) Works Contract 1107 – Diamond Hill to Kai Tak Tunnels**. This report documents the findings of EM&A Works conducted from 1st to 31st August 2015.

Summary of Construction Works undertaken during Reporting Month

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

- Tunnel construction at cut and cover tunnels;
- Backfilling works at cut and cover tunnels;
- TBM excavation; and
- Reprovision of Box culvert.

Variation in Construction Method

3. Environmental Monitoring and Audit Progress:

As of the reporting month, an alignment section of approximately 90m long between DIH and KAT under this Works Contract 1107 will be constructed by the cut-and-cover method, instead of bored tunnelling method as assessed in the approved Environmental Impact Assessment (EIA) Report of Shatin to Central Link - Stabling Sidings at Hung Hom Freight Yard (hereafter referred to as SCL (HHS)) [Register No.: AEIAR-164/2012] due to increased construction risk caused by potential left-in piles. Also, pile removal works would be conducted if reinforced bored piles are identified along the bored tunnelling section. Application for variation of Environmental Permit (VEP) was approved by the EPD for the varied construction method. The updated EP (EP No.: EP-438/2012/F) was issued by EPD on 15 July 2014. Application for variation of Environmental Permit (VEP) was approved by the EPD for including the installation and operation of a Mobile Batching Machinery Equipment at Diamond Hill during the construction of SCL (TAW-HUH). The updated EP (EP No.: EP-438/2012/G) was issued by EPD on 14 August 2014. Application for variation of Environmental Permit (VEP) was approved by the EPD for varying Figure 11 of the previous Environment Permit. The updated EP (EP No.: EP-438/2012/H) was issued by EPD on 10 September 2014.

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

Regular Construction Noise and Construction Dust Monitoring

- Regular construction noise monitoring during normal working hours
  Noise Monitoring Station ID
  - NMS-CA-4(1)(3)/NMS-CA-3(2)(3) (Block 1, Rhythm Garden (north-eastern façade)) 4 times
  - NMS-CA-5(1)(4)/NMS-CA-2(2)(4) (Block 1, Rhythm Garden (northern façade)) 4 times
- Construction Dust (24-hour TSP) Monitoring
  Dust Monitoring Station ID
  - DMS-4(1)(5)/ DMS-3(2)(5) (Block 1, Rhythm Garden) 5 times

Remarks:

(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) Noise monitoring on NMS-CA-4[(1)]/ NMS-CA-3[(2)] (Block 1, Rhythm Garden (north-eastern façade) is carried out by Environmental Team of SCL Works Contract 1106.
(4) Noise monitoring on NMS-CA-5[(1)]/ NMS-CA-2[(2)] (Block 1, Rhythm Garden (northern façade) is carried out by Environmental Team of SCL Works Contract 1106.
(5) Dust monitoring on DMS-4[(1)]/ DMS-3[(2)] (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.

Waste Management

5. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. Details of waste management data is presented in Section 5 and **Appendix K**.

Landscape and Visual

6. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 13th and 25th August 2015. 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 6th, 13th, 20th and 25th August 2015. The representative of the IEC joined the site inspection on 13th August 2015. Details of the audit findings and implementation status are presented in Section 6.

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

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

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

10. No Project related environmental complaint and notification of summons/successful prosecution was received in this reporting period.

Future Key Issues

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

- Tunnel construction at cut and cover tunnels;
- Backfilling works at cut and cover tunnels; and
- TBM excavation.

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 28th EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period from 1st to 31st August 2015. The major construction works for Contract 1107 commenced on 27th May 2013.

Structure of the Report

1.3 The structure of the report is as follows:

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

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

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

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

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

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

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

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

Section 9: **Conclusions and Recommendations**

2 PROJECT INFORMATION

Background

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

2.2 The construction of the SCL (TAW-HUH) and SCL (HHS) have been divided into a series of civil construction works contracts. This Works Contract 1107 covers the construction of running tunnel from Kai Tak (KAT) North to SCL Diamond Hill (DIH) Station which is under the approved SCL (HHS) EIA Report. This construction contract was awarded to Chun Wo - SELI Joint Venture (CSJV) in March 2013.

General Site Description

2.3 The construction of tunnel from KAT to DIH will employ either cut-and-cover method or bored tunneling. The alignment and works area for the Works Contract 1107 are shown in **Figure 1**.

Construction Programme and Activities

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

- Tunnel construction at cut and cover tunnels;
- Backfilling works at cut and cover tunnels;
- TBM excavation; and
- Reprovision of Box culvert.

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**. Two Construction Noise Permits (CNP): GW- RE0890-15 and GW-RE0893-15 was granted in the reporting month for construction works in restricted hours.

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/H	10/09/2014	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-RE0364-15	16/04/2015	13/09/2015	Valid
GW-RE0645-15	01/07/2015	30/09/2015	Valid
GW-RE0750-15	31/07/2015	30/01/2016	Valid
GW-RE0890-15	30/08/2015	06/09/2015	Valid
GW-RE0893-15	28/08/2015	04/09/2015	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 (Serial no.: 12553 and 14303)
Calibrator	SV30A (Serial no.: 24780 and 24791)

Maintenance and Calibration

3.6 Maintenance and Calibration procedures were as follows:

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

Action & Limit Level for Construction Noise Monitoring

3.7 The Action and Limit Levels are presented in **Appendix B** and the Event / Action Plan (EAP) for noise monitoring is presented in **Appendix I.**

Continuous Noise Monitoring

3.8 With reference to the latest Continuous Noise Monitoring Plan (CNMP) and Construction Noise Mitigation Measures Plan (CNMMP) prepared submitted under EP Condition 2.9 and Condition 2.10 respectively, it is predicted that no residual air-borne construction noise impacts exceeding the relevant noise criteria will be anticipated. Therefore, no continuous noise monitoring is required during the construction of the SCL (TAW-HUH) under Works Contract 1107.

Regular Construction Dust Monitoring

3.9 The proposed dust monitoring stations for the construction phase of the Project, as recommended in the approved EM&A Manual, are listed in **Table 3.3** and shown in **Figure 3**. The proposed locations have been agreed with the ER, EPD and IEC.

Table 3.3 Dust Monitoring Location

Regular Dust Monitoring Location	Description
DMS-4(1)(3)/ DMS-3(2)(3)	Block 1, Rhythm Garden

Note:
(1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) Dust monitoring on DMS-4(1)/DMS-3(2) (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.

Monitoring Parameter and Frequency

3.10 The dust monitoring (in terms of Total Suspended Particulates (TSP)) was conducted at the designated monitoring stations in accordance with the requirements stipulated in the EM&A Manual. The 24-hour TSP levels were monitored at the frequency and duration stated in **Table 3.4**. The TSP monitoring at Rhythm Garden was conducted as per the schedule presented in **Appendix D**.

Table 3.4 Dust Monitoring Parameters and Frequency

Monitoring Period	Duration	Parameter	Frequency
Impact Monitoring(1)	Throughout the construction period	24-hour TSP	Once per 6 days

Note:
(1) 1- hour TSP shall be conducted when one documented valid complaint is received.

Monitoring Equipment

3.11 **Table 3.5** summarizes the equipment used for the dust monitoring.

Table 3.5 Dust Monitoring Equipment

Equipment	Model and Make	Qty.
HVS	Tisch Environmental, Inc.; Model no. TE-5170, Serial no.: 2352	1
Calibration Orifice	Tisch Environmental, Inc.; Model no. TE – 5025A Orifice ID: 2896	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 (July 2015)	14th August 2015

5 MONITORING RESULTS

Regular Construction Noise Monitoring

5.1 A total of 8 sets of 30-minute construction noise measurements were carried out at the monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. No exceedance of the limit level was recorded at designated monitoring stations.

5.2 The noise monitoring results recorded at NMS-CA-5(1)/NMS-CA-2(2) (Block 1, Rhythm Garden (northern façade)) on 6th, 12th and 24th August 2015 exceeded the daytime construction noise criterion. However, the results are not considered as exceedance since the results were below the baseline noise level. The noise monitoring results recorded at NMS-CA-4(1)/NMS-CA-3(2) (Block 1, Rhythm Garden (north-eastern façade)) in August did not exceed the daytime construction noise criterion.

5.3 Based on observation during the on-site monitoring, road traffic nearby and breaking works in other construction site at 210-212 Choi Hung Road are considered as 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 A total of 5 sets of 24-hour TSP monitoring were carried out at the designated monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. The monitoring results together with their graphical presentations are presented in **Appendix E** and a summary of the dust monitoring results in this reporting month is given in **Table 5.1**.

Table 5.1 Summary Table of Dust Monitoring Results during the reporting month

Parameter	Minimum µg/m³	Maximum µg/m³	Average µg/m³	Action Level, µg/m³	Limit Level, µg/m³
24-hr TSP (DMS-4(1)(3)/ DMS-3(2)(3))	27.0	42.4	34.1	160.4	260

Remarks:
(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) Dust monitoring on DMS-4(1)/DMS-3(2) (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.

5.7 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.

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**. 4,875m^3 of C&D materials, 45m^3 of general refuse, and no chemical waste were generated and disposed; 7,600kg of metals, 116kg of paper/cardboard packaging and no plastics were generated and recycled 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
August 2015	*4,875 m^3*	*45 m^3*	*0 kg*	*116 kg*	*0 kg*	*7,600 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 13th and 25th August 2015. 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 6th, 13th, 20th and 25th August 2015 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 13th August 2015. No site inspection was conducted by EPD in 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	13th August 2015	Observation: Stockpile was observed not covered under heavy rain. The Contractor was reminded to cover the stockpile properly and provide mitigation measures to prevent stockpile runoff.	As observed on 20th August 2015, no runoff from the stockpile was observed. Stockpile was kept wet by water sprinkler during backfilling works.
	13th August 2015	Observation: Muddy water was observed leaking into Kai Tak Nullah near west gate. The Contractor was reminded to direct muddy water to treatment facilities to prevent untreated discharge.	As observed on 20th August 2015, no muddy water was discharged.
Noise	---	---	---
Landscape and Visual	---	---	---
Air Quality	6th August 2015	Observation: Stockpile of dusty material was observed not covered. The Contractor was reminded to cover the dusty stockpile by dust protective screen and keep the stockpile wet during backfilling works..	As observed on 13th August 2015, the stockpile of material was observed wet during the site inspection.
Waste / Chemical Management	---	---	---
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:

- Tunnel construction at cut and cover tunnels;
- Backfilling works at cut and cover tunnels; and
- TBM excavation.

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 shaft excavation works;
- To ensure the performance of sorting of C&D materials at source (during generation); and
- To carry out inspection of dump truck at site exit to ensure inert and non-inert C&D materials are properly segregated before removing off site.

Monitoring Schedule in the Next Month

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

9 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

9.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1st to 31st August 2015 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

- Muddy runoff should be directed to desilting facilities prior to disposal. Drainage system and sediment control measures shall be inspected and maintained after rain storms.

Landscape and Visual

- N/A

Noise

- N/A

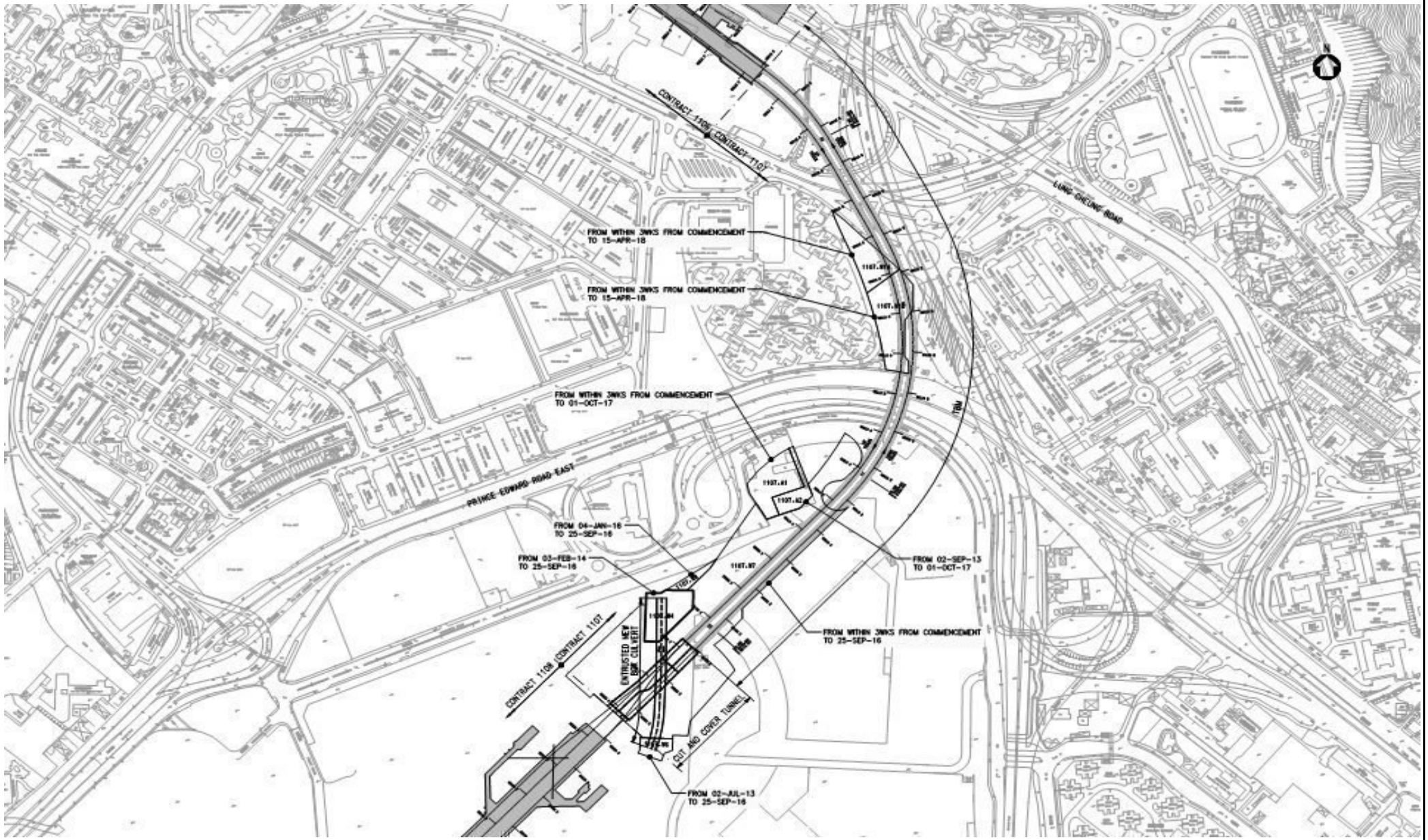
Air Quality

- Any excavated or stockpile of dusty material should be covered entirely by dust protective screen or sprayed with water to maintain the entire surface wet.

Waste/Chemical Management

- N/A

FIGURES



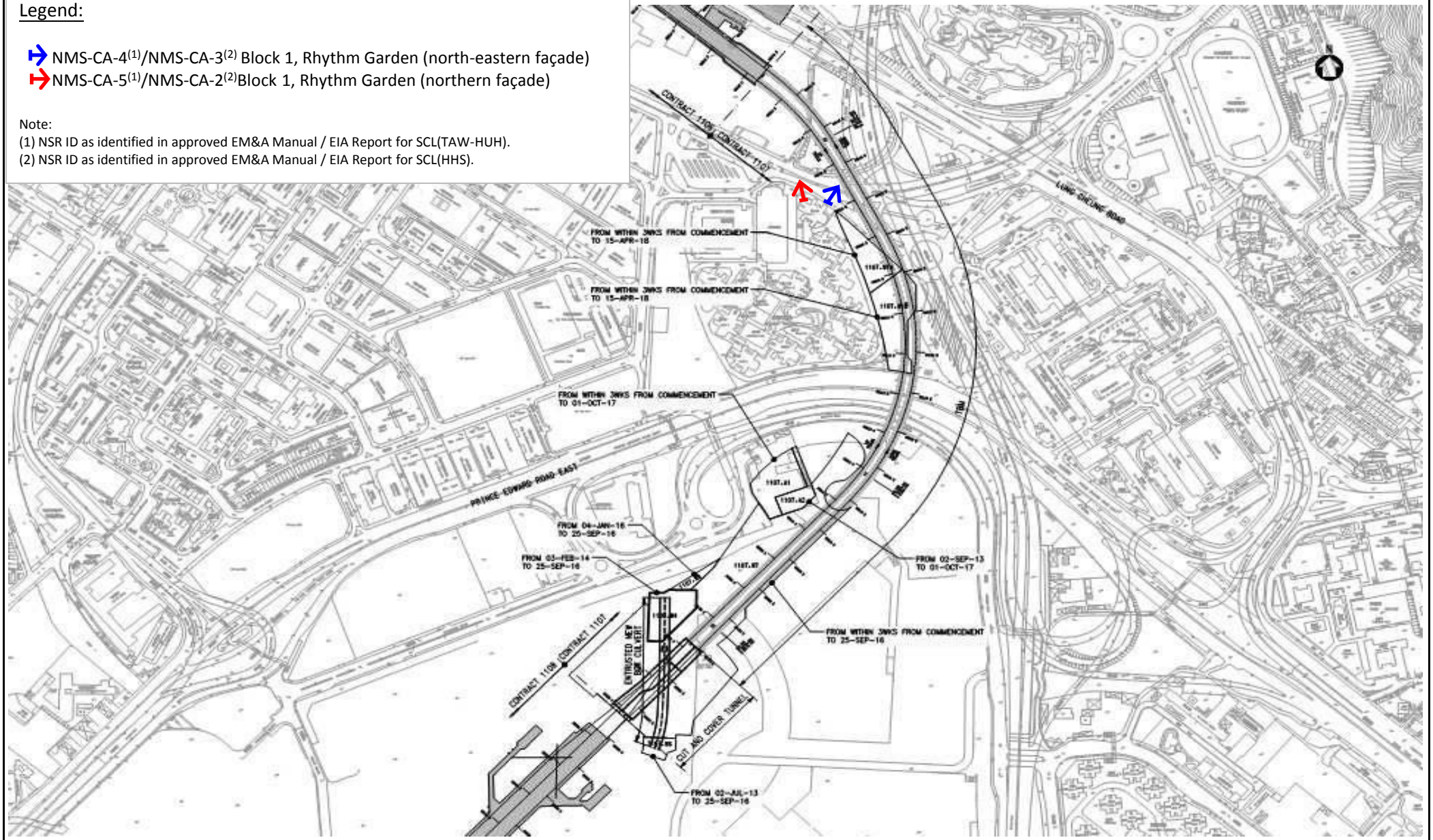
Title	MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Site Layout Plan	Scale N.T.S Date May-13	Project No. MA13018 Figure 1

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).

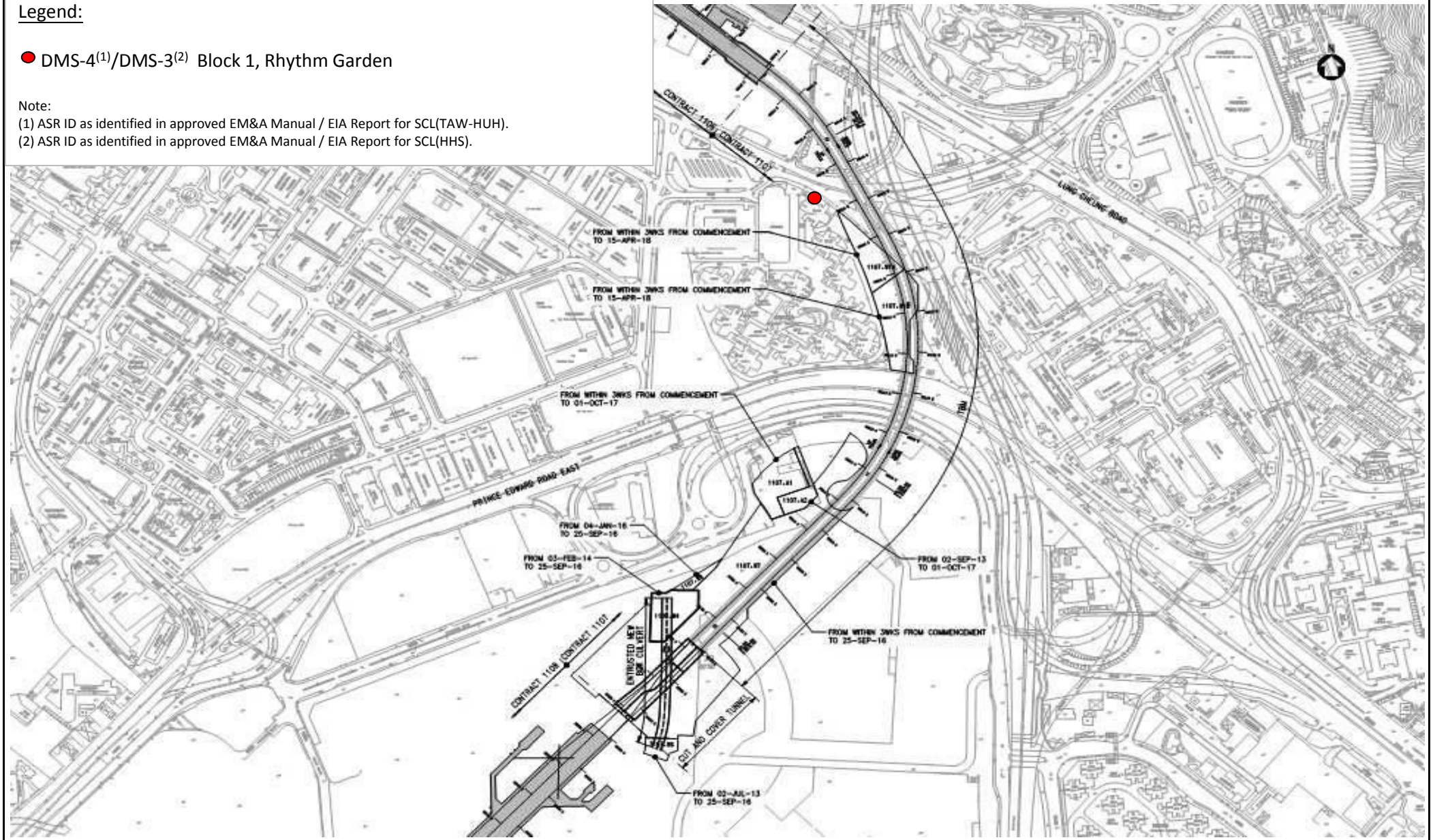


Title	MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Locations of Constrcution Noise Monitoring	Scale N.T.S	Project No. MA13018	CINOTECH
		Date May-13	Figure 2	

Legend:

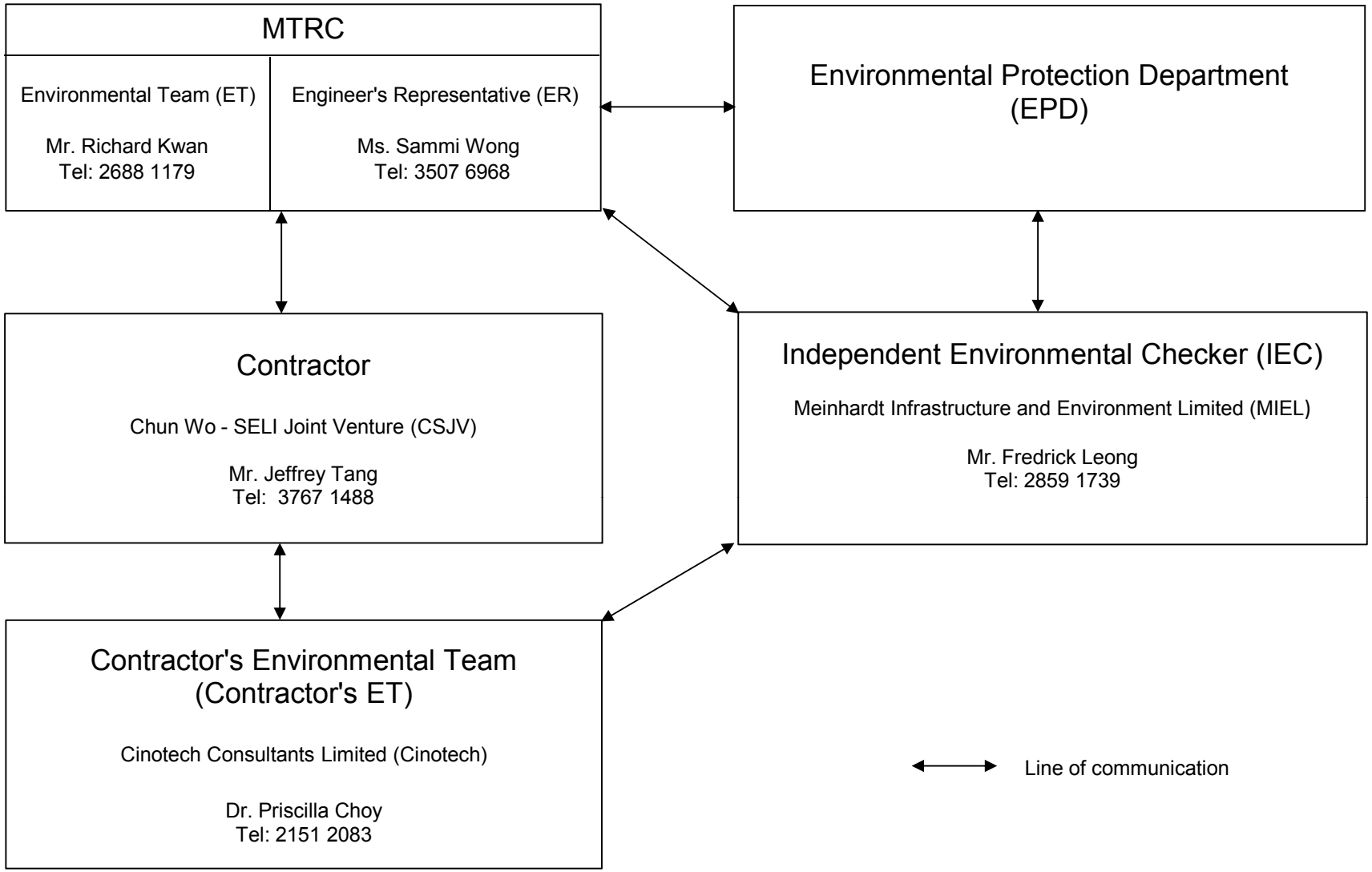
● DMS-4(1)/DMS-3(2) Block 1, Rhythm Garden

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

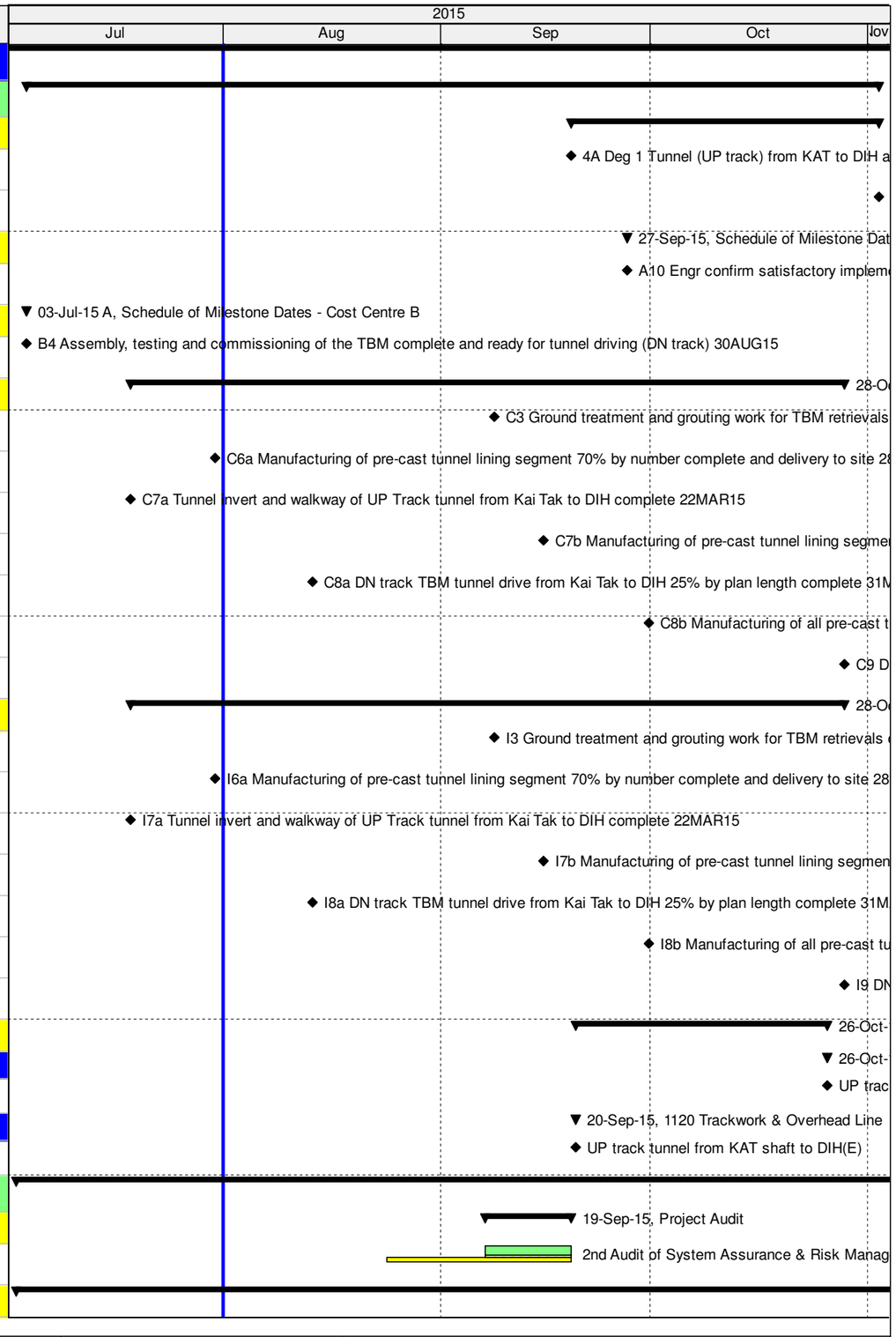


Title	Scale	Proposal
MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Organisation Chart and Key Contact of the Project	N.T.S	No. MA13018
	Date Jul 2014	Figure 4

CINOTECH

APPENDIX A
TENTATIVE CONSTRUCTION PROGRAMME

Activity ID	Activity Name	O Dur	MP Start	MP Finish	Last Mth Start	Last Mth Finish	Start	Finish
MTRC SCL 1107 DIH to KAT Tunnels 3 M		139	22-Mar-14	31-Dec-15	18-Jun-15	10-Dec-15	18-Jun-15 A	02-Dec-15
Shedule of Completion Obligation & Ot		122	22-Mar-14	26-Oct-15	03-Jul-15	05-Nov-15	03-Jul-15 A	02-Nov-15
Table 4 Specified Degrees of Completion		44	21-Mar-15	21-Mar-15	19-Sep-15	17-Oct-15	19-Sep-15	02-Nov-15
1107.CD10090	4A Deg 1 Tunnel (UP track) from KAT to DIH and Box 2A with Pway access opening 22MAR15	0		21-Mar-15		19-Sep-15		19-Sep-15*
1107.CD10120	4D Deg 1 KAT cut and cover tunnel (DN Track) Box 1B 24MAY15	0		21-Mar-15		17-Oct-15		02-Nov-15*
Schedule of Milestone Dates - Cost Centre A		0	27-Sep-15	27-Sep-15	27-Sep-15	27-Sep-15	27-Sep-15	27-Sep-15
1107.MS10250	A10 Engr confirm satisfactory implementation of Sys Assur & Risk Manag't Req's in accordance with Appr Spec'd Plans	0		27-Sep-15		27-Sep-15		27-Sep-15*
Schedule of Milestone Dates - Cost Centre B		0	27-Jan-15	27-Jan-15	03-Jul-15	03-Jul-15	03-Jul-15 A	03-Jul-15 A
1107.MS10370	B4 Assembly, testing and commissioning of the TBM complete and ready for tunnel driving (DN track) 30AUG15	0		27-Jan-15		03-Jul-15		03-Jul-15 A
Schedule of Milestone Dates - Cost Centre C		102	22-Mar-14	08-May-15	18-Jul-15	05-Nov-15	18-Jul-15 A	28-Oct-15
1107.MS10400	C3 Ground treatment and grouting work for TBM retrievals complete 30MAR14	0		22-Mar-14		08-Sep-15		08-Sep-15*
1107.MS10440	C6a Manufacturing of pre-cast tunnel lining segment 70% by number complete and delivery to site 28DEC14	0		19-Dec-14		30-Jul-15		30-Jul-15 A
1107.MS10470	C7a Tunnel invert and walkway of UP Track tunnel from Kai Tak to DIH complete 22MAR15	0		09-Dec-14		18-Jul-15		18-Jul-15 A
1107.MS10480	C7b Manufacturing of pre-cast tunnel lining segment 90% by number complete and delivery to site 22MAR15	0		11-Mar-15		05-Sep-15		15-Sep-15*
1107.MS10490	C8a DN track TBM tunnel drive from Kai Tak to DIH 25% by plan length complete 31MAY15	0		14-Feb-15		20-Aug-15		13-Aug-15*
1107.MS10500	C8b Manufacturing of all pre-cast tunnel lining segment complete and delivery to site 31MAY15	0		21-Apr-15		24-Sep-15		30-Sep-15*
1107.MS10510	C9 DN track TBM tunnel drive from Kai Tak to DIH complete 30AUG15	0		08-May-15		05-Nov-15		28-Oct-15*
Schedule of Milestone Dates - Cost Centre I (f		102	22-Mar-14	08-May-15	18-Jul-15	05-Nov-15	18-Jul-15 A	28-Oct-15
1107.MS10770	I3 Ground treatment and grouting work for TBM retrievals complete 30MAR14	0		22-Mar-14		08-Sep-15		08-Sep-15*
1107.MS10810	I6a Manufacturing of pre-cast tunnel lining segment 70% by number complete and delivery to site 28DEC14	0		19-Dec-14		30-Jul-15		30-Jul-15 A
1107.MS10840	I7a Tunnel invert and walkway of UP Track tunnel from Kai Tak to DIH complete 22MAR15	0		09-Dec-14		18-Jul-15		18-Jul-15 A
1107.MS10850	I7b Manufacturing of pre-cast tunnel lining segment 90% by number complete and delivery to site 22MAR15	0		11-Mar-15		05-Sep-15		15-Sep-15*
1107.MS10860	I8a DN track TBM tunnel drive from Kai Tak to DIH 25% by plan length complete 31MAY15	0		14-Feb-15		20-Aug-15		13-Aug-15*
1107.MS10870	I8b Manufacturing of all pre-cast tunnel lining segment complete and delivery to site 31MAY15	0		21-Apr-15		24-Sep-15		30-Sep-15*
1107.MS10880	I9 DN track TBM tunnel drive from Kai Tak to DIH complete 30AUG15	0		08-May-15		05-Nov-15		28-Oct-15*
Schedule of Access Dates for Designated Cor		36	30-Mar-15	26-Oct-15	20-Sep-15	26-Oct-15	20-Sep-15	26-Oct-15
1152(Signalling) 1162B(Radio) 1155(Power Supply) 1		0	26-Oct-15	26-Oct-15	26-Oct-15	26-Oct-15	26-Oct-15	26-Oct-15
1107.AD11160	UP track tunnel from KAT shaft to DIH(E)	0	26-Oct-15		26-Oct-15		26-Oct-15*	
1120 Trackwork & Overhead Line		0	30-Mar-15	30-Mar-15	20-Sep-15	20-Sep-15	20-Sep-15	20-Sep-15
1107.AD11180	UP track tunnel from KAT shaft to DIH(E)	0	30-Mar-15		20-Sep-15		20-Sep-15*	
Cost Centre A - Preliminaries		107	02-Jul-15	31-Dec-15	02-Jul-15	06-Nov-15	02-Jul-15 A	06-Nov-15
Project Audit		12	24-Aug-15	19-Sep-15	07-Sep-15	19-Sep-15	07-Sep-15	19-Sep-15
1107.12510	2nd Audit of System Assurance & Risk Management & Design for Safety & Constructability plans	12	24-Aug-15	19-Sep-15	07-Sep-15	19-Sep-15	07-Sep-15*	19-Sep-15
Site Enabling Works		107	02-Jul-15	31-Dec-15	02-Jul-15	06-Nov-15	02-Jul-15 A	06-Nov-15



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Remaining Work
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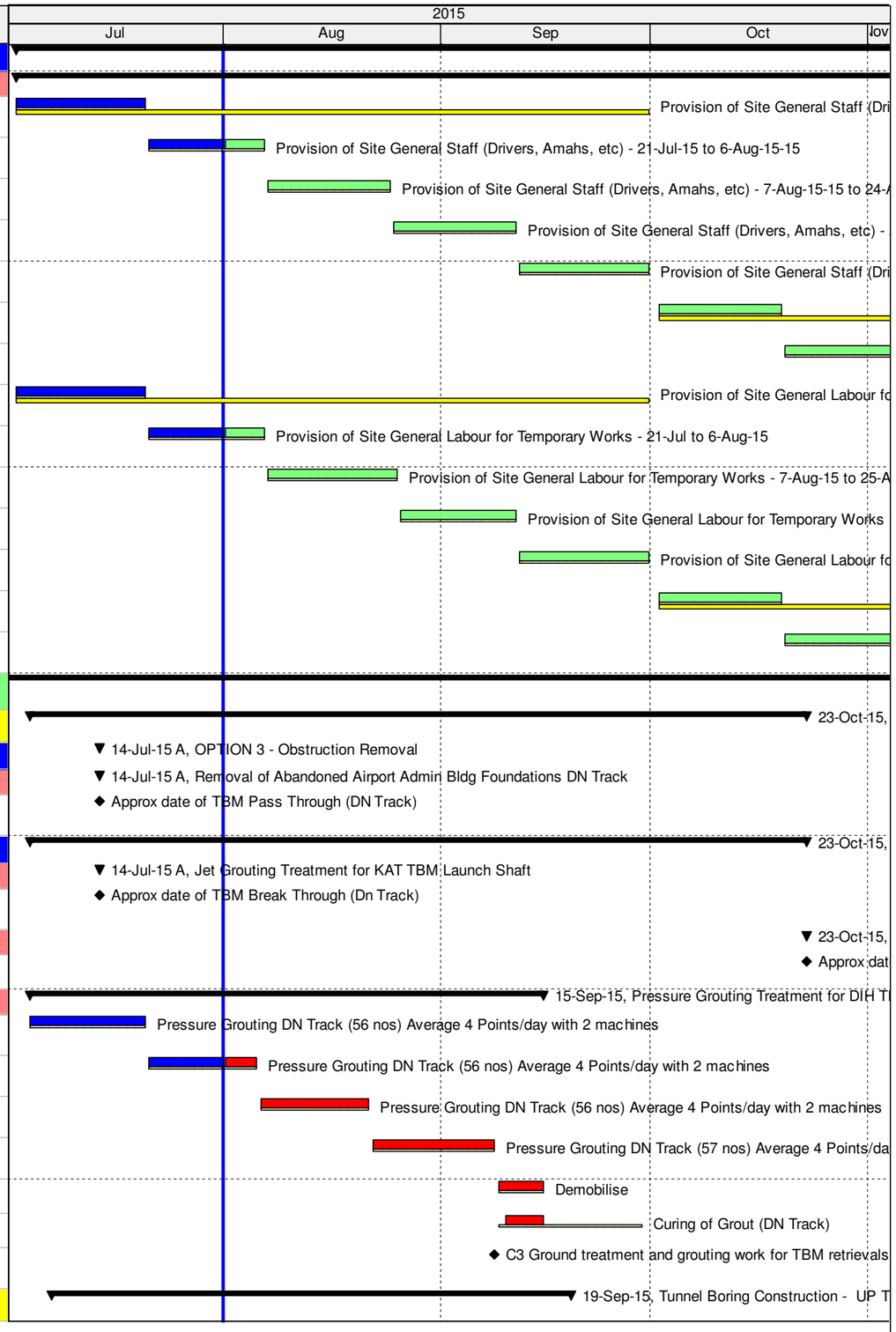
Activity ID	Activity Name	O Dur	MP Start	MP Finish	Last Mth Start	Last Mth Finish	Start	Finish
Site Setup		107	02-Jul-15	31-Dec-15	02-Jul-15	06-Nov-15	02-Jul-15 A	06-Nov-15
Misc Items		107	02-Jul-15	31-Dec-15	02-Jul-15	06-Nov-15	02-Jul-15 A	06-Nov-15
1107.19040	Provision of Site General Staff (Drivers, Amahs, etc) - 2-Jul to 20-Jul-15	16	02-Jul-15	30-Sep-15	02-Jul-15	20-Jul-15	02-Jul-15 A	20-Jul-15 A
1107.19041	Provision of Site General Staff (Drivers, Amahs, etc) - 21-Jul-15 to 6-Aug-15-15	15			21-Jul-15	06-Aug-15	21-Jul-15 A	06-Aug-15
1107.19042	Provision of Site General Staff (Drivers, Amahs, etc) - 7-Aug-15-15 to 24-Aug-15	15			07-Aug-15	24-Aug-15	07-Aug-15	24-Aug-15
1107.19043	Provision of Site General Staff (Drivers, Amahs, etc) - 26-Aug-15 to 11-Sep-15	16			25-Aug-15	11-Sep-15	25-Aug-15	11-Sep-15
1107.19044	Provision of Site General Staff (Drivers, Amahs, etc) - 12-Sep-15 to 30-Sep-15	15			12-Sep-15	30-Sep-15	12-Sep-15	30-Sep-15
1107.19050	Provision of Site General Staff (Drivers, Amahs, etc) - 2-Oct-15 to 19-Oct-15	15	02-Oct-15	31-Dec-15	02-Oct-15	19-Oct-15	02-Oct-15	19-Oct-15
1107.19051	Provision of Site General Staff (Drivers, Amahs, etc) - 20-Oct-15 to 6-Nov-15	15			20-Oct-15	06-Nov-15	20-Oct-15	06-Nov-15
1107.19230	Provision of Site General Labour for Temporary Works - 2-Jul-15 to 20-Jul-15	16	02-Jul-15	30-Sep-15	02-Jul-15	20-Jul-15	02-Jul-15 A	20-Jul-15 A
1107.19231	Provision of Site General Labour for Temporary Works - 21-Jul to 6-Aug-15	15			21-Jul-15	06-Aug-15	21-Jul-15 A	06-Aug-15
1107.19232	Provision of Site General Labour for Temporary Works - 7-Aug-15 to 25-Aug-15	16			07-Aug-15	25-Aug-15	07-Aug-15	25-Aug-15
1107.19233	Provision of Site General Labour for Temporary Works -26-Aug-15 to 11-Sep--15	15			26-Aug-15	11-Sep-15	26-Aug-15	11-Sep-15
1107.19234	Provision of Site General Labour for Temporary Works - 12-Sep--15 to 30-Sep-15	15			12-Sep-15	30-Sep-15	12-Sep-15	30-Sep-15
1107.19240	Provision of Site General Labour for Temporary Works - Fourth Quarter of 2015	15	02-Oct-15	31-Dec-15	02-Oct-15	19-Oct-15	02-Oct-15	19-Oct-15
1107.19241	Provision of Site General Labour for Temporary Works - 20-Oct-15 to 6-Nov-15	15			20-Oct-15	06-Nov-15	20-Oct-15	06-Nov-15
Cost Centre C - Tunnel Construction by		139	23-Mar-14	30-Aug-15	18-Jun-15	10-Dec-15	18-Jun-15 A	02-Dec-15
Site Enabling Works for TBM		92	23-Mar-14	15-Apr-15	04-Jul-15	13-Oct-15	04-Jul-15 A	23-Oct-15
OPTION 3 - Obstruction Removal		0	22-Apr-14	22-Apr-14	14-Jul-15	14-Jul-15	14-Jul-15 A	14-Jul-15 A
Removal of Abandoned Airport Admin Bldg Foundations [		0	22-Apr-14	22-Apr-14	14-Jul-15	14-Jul-15	14-Jul-15 A	14-Jul-15 A
1107.13580	Approx date of TBM Pass Through (DN Track)	0	22-Apr-14		14-Jul-15		14-Jul-15 A	
Ground Treatment		92	23-Mar-14	15-Apr-15	04-Jul-15	13-Oct-15	04-Jul-15 A	23-Oct-15
Jet Grouting Treatment for KAT TBM Launch Shaft		0			14-Jul-15	14-Jul-15	14-Jul-15 A	14-Jul-15 A
1107.20670	Approx date of TBM Break Through (Dn Track)	0			14-Jul-15		14-Jul-15 A	
Pressure Grouting Treatment to Pier Z5 Foundation		0	15-Apr-15	15-Apr-15	13-Oct-15	13-Oct-15	23-Oct-15	23-Oct-15
1107.13370	Approx date of TBM Pass Through (Dn Track)	0	15-Apr-15		13-Oct-15		23-Oct-15*	
Pressure Grouting Treatment for DIH TBM Retrieval Shaft		63	23-Mar-14	12-Apr-14	04-Jul-15	29-Sep-15	04-Jul-15 A	15-Sep-15
1107.13431a	Pressure Grouting DN Track (56 nos) Average 4 Points/day with 2 machines	14			04-Jul-15	20-Jul-15	04-Jul-15 A	20-Jul-15 A
1107.13431a10	Pressure Grouting DN Track (56 nos) Average 4 Points/day with 2 machines	14			21-Jul-15	05-Aug-15	21-Jul-15 A	05-Aug-15
1107.13431a20	Pressure Grouting DN Track (56 nos) Average 4 Points/day with 2 machines	14			06-Aug-15	21-Aug-15	06-Aug-15	21-Aug-15
1107.13431a30	Pressure Grouting DN Track (57 nos) Average 4 Points/day with 2 machines	15			22-Aug-15	08-Sep-15	22-Aug-15	08-Sep-15
1107.13450	Demobilise	6	24-Mar-14	29-Mar-14	09-Sep-15	15-Sep-15	09-Sep-15	15-Sep-15
1107.13460	Curing of Grout (DN Track)	6	23-Mar-14	12-Apr-14	09-Sep-15	29-Sep-15	10-Sep-15	15-Sep-15
1107.13480	C3 Ground treatment and grouting work for TBM retrievals complete	0		30-Mar-14		08-Sep-15		08-Sep-15*
Tunnel Boring Construction - UP Track		65	22-Mar-15	22-Mar-15	07-Jul-15	19-Sep-15	07-Jul-15 A	19-Sep-15



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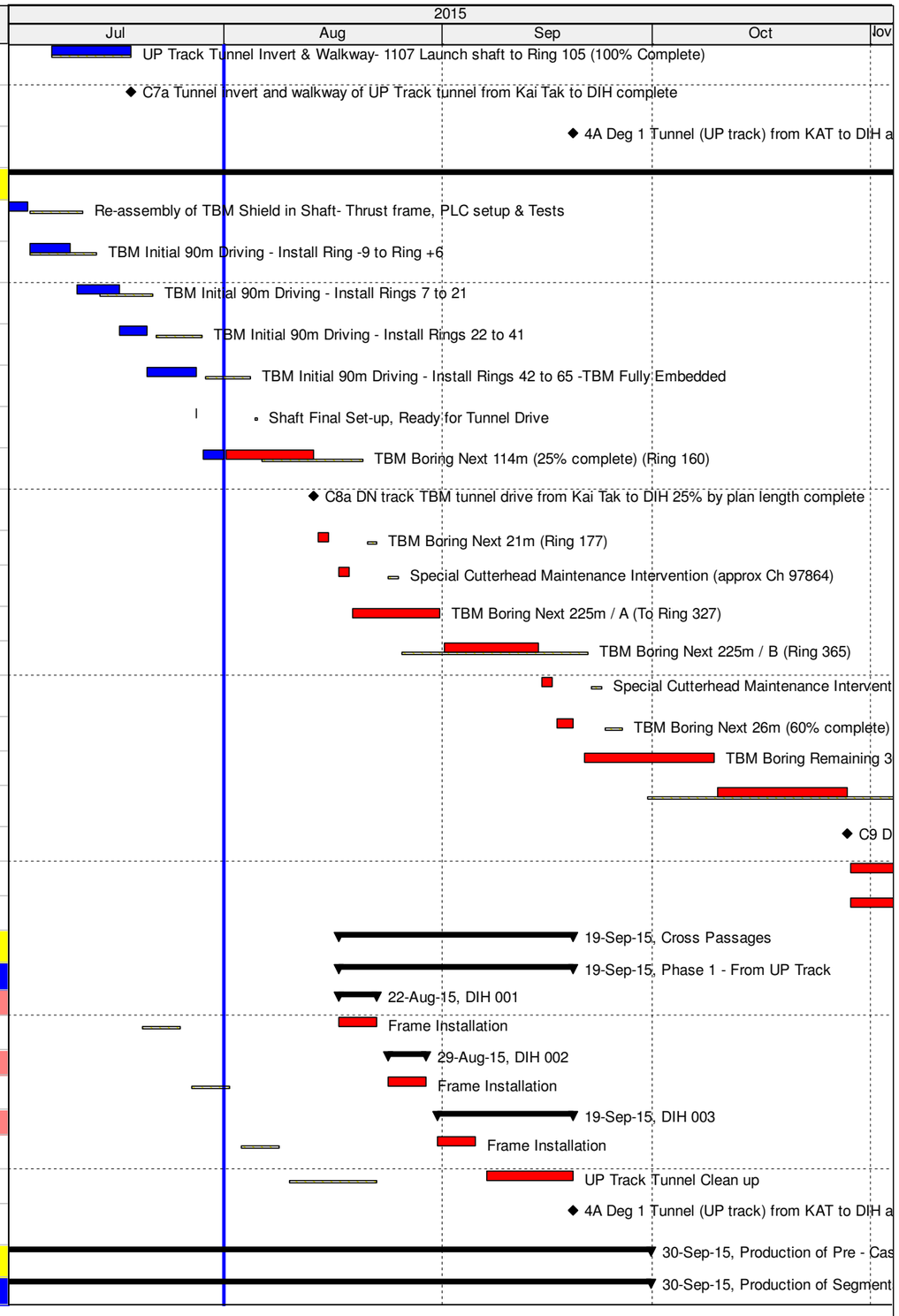
1107.14102	UP Track Tunnel Invert & Walkway- 1107 Launch shaft to Ring 105 (100% Complete)	11			07-Jul-15	18-Jul-15	07-Jul-15 A	18-Jul-15 A
1107.14110	C7a Tunnel invert and walkway of UP Track tunnel from Kai Tak to DIH complete	0		22-Mar-15		18-Jul-15		18-Jul-15 A
1107.14120	4A Deg 1 Tunnel (UP track) from KAT to DIH and Box 2A with Pway access opening	0		22-Mar-15		19-Sep-15		19-Sep-15*
Tunnel Boring Construction - DN Track		127	11-Nov-14	30-Aug-15	04-Jul-15	10-Dec-15	29-Jun-15 A	02-Dec-15
1107.14143	Re-assembly of TBM Shield in Shaft- Thrust frame, PLC setup & Tests	7			04-Jul-15	11-Jul-15	29-Jun-15 A	04-Jul-15 A
1107.14160	TBM Initial 90m Driving - Install Ring -9 to Ring +6	8	11-Nov-14	20-Jan-15	04-Jul-15	13-Jul-15	04-Jul-15 A	10-Jul-15 A
1107.14161	TBM Initial 90m Driving - Install Rings 7 to 21	7			14-Jul-15	21-Jul-15	11-Jul-15 A	17-Jul-15 A
1107.14162	TBM Initial 90m Driving - Install Rings 22 to 41	6			22-Jul-15	28-Jul-15	17-Jul-15 A	21-Jul-15 A
1107.14163	TBM Initial 90m Driving - Install Rings 42 to 65 -TBM Fully Embedded	6			29-Jul-15	04-Aug-15	21-Jul-15 A	28-Jul-15 A
1107.14170	Shaft Final Set-up, Ready for Tunnel Drive	1	21-Jan-15	27-Jan-15	05-Aug-15	05-Aug-15	28-Jul-15 A	28-Jul-15 A
1107.14180	TBM Boring Next 114m (25% complete) (Ring 160)	13	28-Jan-15	14-Feb-15	06-Aug-15	20-Aug-15	29-Jul-15 A	13-Aug-15
1107.14190	C8a DN track TBM tunnel drive from Kai Tak to DIH 25% by plan length complete	0		31-May-15		20-Aug-15		13-Aug-15*
1107.14200	TBM Boring Next 21m (Ring 177)	2	16-Feb-15	17-Feb-15	21-Aug-15	22-Aug-15	14-Aug-15	15-Aug-15
1107.14210	Special Cutterhead Maintenance Intervention (approx Ch 97864)	2	18-Feb-15	23-Feb-15	24-Aug-15	25-Aug-15	17-Aug-15	18-Aug-15
1107.14219	TBM Boring Next 225m / A (To Ring 327)	11					19-Aug-15	31-Aug-15
1107.14220	TBM Boring Next 225m / B (Ring 365)	12	24-Feb-15	23-Mar-15	26-Aug-15	21-Sep-15	01-Sep-15	14-Sep-15
1107.14230	Special Cutterhead Maintenance Intervention (approx Ch 97639)	2	24-Mar-15	25-Mar-15	22-Sep-15	23-Sep-15	15-Sep-15	16-Sep-15
1107.14240	TBM Boring Next 26m (60% complete) (Ring 387)	3	26-Mar-15	30-Mar-15	24-Sep-15	26-Sep-15	17-Sep-15	19-Sep-15
1107.14249	TBM Boring Remaining 308m / A (To Ring 516)	15					21-Sep-15	09-Oct-15
1107.14250	TBM Boring Remaining 308m / B (100% complete) - TBM Break Through (Ring 644)	15	31-Mar-15	08-May-15	30-Sep-15	05-Nov-15	10-Oct-15	28-Oct-15
1107.14270	C9 DN track TBM tunnel drive from Kai Tak to DIH complete	0		30-Aug-15		05-Nov-15		28-Oct-15*
1107.14280	TBM Shield Retrieval at 1106/DIH (Ring 655)	30	09-May-15	13-Jun-15	06-Nov-15	10-Dec-15	29-Oct-15	02-Dec-15
1107.14290	TBM Back up Pull out Kai Tak Shaft	30	09-May-15	13-Jun-15	06-Nov-15	10-Dec-15	29-Oct-15	02-Dec-15
Cross Passages		30	11-Oct-14	22-Mar-15	20-Jul-15	19-Sep-15	17-Aug-15	19-Sep-15
Phase 1 - From UP Track		30	11-Oct-14	22-Mar-15	20-Jul-15	19-Sep-15	17-Aug-15	19-Sep-15
DIH 001		6	11-Oct-14	14-Oct-14	20-Jul-15	25-Jul-15	17-Aug-15	22-Aug-15
1107.14360	Frame Installation	6	11-Oct-14	14-Oct-14	20-Jul-15	25-Jul-15	17-Aug-15*	22-Aug-15
DIH 002		6	11-Oct-14	14-Oct-14	27-Jul-15	01-Aug-15	24-Aug-15	29-Aug-15
1107.14410	Frame Installation	6	11-Oct-14	14-Oct-14	27-Jul-15	01-Aug-15	24-Aug-15	29-Aug-15
DIH 003		18	03-Nov-14	22-Mar-15	03-Aug-15	19-Sep-15	31-Aug-15	19-Sep-15
1107.14460	Frame Installation	6	03-Nov-14	05-Nov-14	03-Aug-15	08-Aug-15	31-Aug-15	05-Sep-15
1107.14500	UP Track Tunnel Clean up	12	25-Nov-14	08-Dec-14	10-Aug-15	22-Aug-15	07-Sep-15	19-Sep-15
1107.14510	4A Deg 1 Tunnel (UP track) from KAT to DIH and Box 2A with Pway access opening	0		22-Mar-15		19-Sep-15		19-Sep-15*
Production of Pre - Cast Tunnel Lining		87	28-Dec-14	31-May-15	18-Jun-15	24-Sep-15	18-Jun-15 A	30-Sep-15
Production of Segments		87	28-Dec-14	31-May-15	18-Jun-15	24-Sep-15	18-Jun-15 A	30-Sep-15



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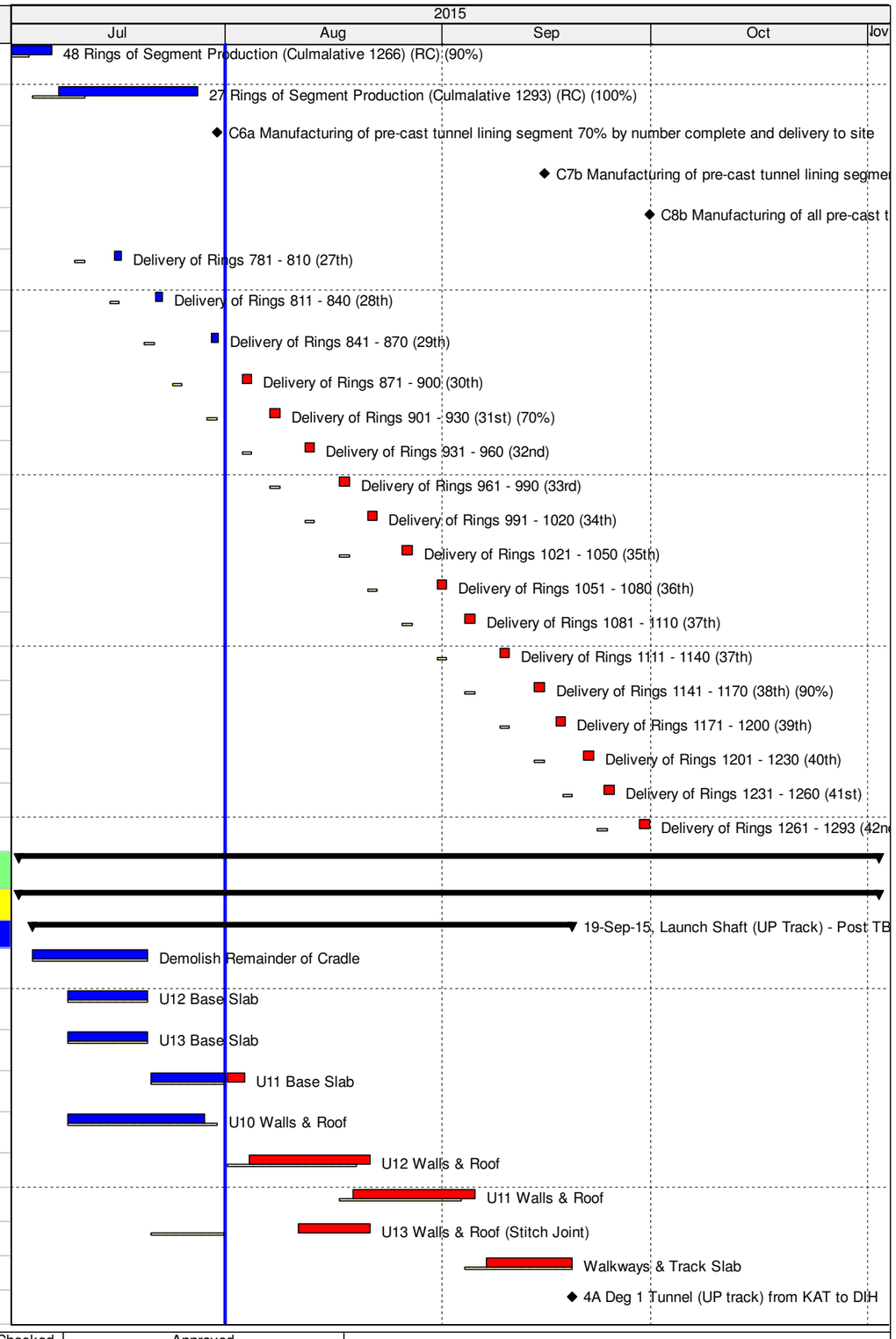
1107.14750b	48 Rings of Segment Production (Culmalative 1266) (RC) (90%)	12			18-Jun-15	03-Jul-15	18-Jun-15 A	07-Jul-15 A
1107.14750c	27 Rings of Segment Production (Culmalative 1293) (RC) (100%)	7			04-Jul-15	11-Jul-15	08-Jul-15 A	28-Jul-15 A
1107.14800	C6a Manufacturing of pre-cast tunnel lining segment 70% by number complete and delivery to site	0		28-Dec-14		30-Jul-15		30-Jul-15 A
1107.14810	C7b Manufacturing of pre-cast tunnel lining segment 90% by number complete and delivery to site	0		22-Mar-15		05-Sep-15		15-Sep-15*
1107.14820	C8b Manufacturing of all pre-cast tunnel lining segment complete and delivery to site	0		31-May-15		24-Sep-15		30-Sep-15*
1107.20950	Delivery of Rings 781 - 810 (27th)	2			10-Jul-15	11-Jul-15	16-Jul-15 A	17-Jul-15 A
1107.20960	Delivery of Rings 811 - 840 (28th)	2			15-Jul-15	16-Jul-15	22-Jul-15 A	23-Jul-15 A
1107.20970	Delivery of Rings 841 - 870 (29th)	2			20-Jul-15	21-Jul-15	30-Jul-15 A	31-Jul-15 A
1107.20980	Delivery of Rings 871 - 900 (30th)	2			24-Jul-15	25-Jul-15	03-Aug-15	04-Aug-15
1107.20990	Delivery of Rings 901 - 930 (31st) (70%)	2			29-Jul-15	30-Jul-15	07-Aug-15	08-Aug-15
1107.21000	Delivery of Rings 931 - 960 (32nd)	2			03-Aug-15	04-Aug-15	12-Aug-15	13-Aug-15
1107.21010	Delivery of Rings 961 - 990 (33rd)	2			07-Aug-15	08-Aug-15	17-Aug-15	18-Aug-15
1107.21020	Delivery of Rings 991 - 1020 (34th)	2			12-Aug-15	13-Aug-15	21-Aug-15	22-Aug-15
1107.21030	Delivery of Rings 1021 - 1050 (35th)	2			17-Aug-15	18-Aug-15	26-Aug-15	27-Aug-15
1107.21040	Delivery of Rings 1051 - 1080 (36th)	2			21-Aug-15	22-Aug-15	31-Aug-15	01-Sep-15
1107.21050	Delivery of Rings 1081 - 1110 (37th)	2			26-Aug-15	27-Aug-15	04-Sep-15	05-Sep-15
1107.21060	Delivery of Rings 1111 - 1140 (37th)	2			31-Aug-15	01-Sep-15	09-Sep-15	10-Sep-15
1107.21070	Delivery of Rings 1141 - 1170 (38th) (90%)	2			04-Sep-15	05-Sep-15	14-Sep-15	15-Sep-15
1107.21080	Delivery of Rings 1171 - 1200 (39th)	2			09-Sep-15	10-Sep-15	17-Sep-15	18-Sep-15
1107.21090	Delivery of Rings 1201 - 1230 (40th)	2			14-Sep-15	15-Sep-15	21-Sep-15	22-Sep-15
1107.21100	Delivery of Rings 1231 - 1260 (41st)	2			18-Sep-15	19-Sep-15	24-Sep-15	25-Sep-15
1107.21110	Delivery of Rings 1261 - 1293 (42nd) (100%)	2			23-Sep-15	24-Sep-15	29-Sep-15	30-Sep-15
Cost Centre D - KAT Cut & Cover Tunne		103	24-Dec-14	24-May-15	02-Jul-15	17-Oct-15	02-Jul-15 A	02-Nov-15
Excavation & C&C Tunnel Structure		103	24-Dec-14	24-May-15	02-Jul-15	17-Oct-15	02-Jul-15 A	02-Nov-15
Launch Shaft (UP Track) - Post TBM Works		67	10-Jan-15	22-Mar-15	04-Jul-15	19-Sep-15	04-Jul-15 A	19-Sep-15
1107.16180	Demolish Remainder of Cradle	14	10-Jan-15	23-Jan-15	04-Jul-15	20-Jul-15	04-Jul-15 A	20-Jul-15 A
1107.16181	U12 Base Slab	10			09-Jul-15	20-Jul-15	09-Jul-15 A	20-Jul-15 A
1107.16182	U13 Base Slab	10			09-Jul-15	20-Jul-15	09-Jul-15 A	20-Jul-15 A
1107.16190	U11 Base Slab	10	24-Jan-15	13-Feb-15	21-Jul-15	31-Jul-15	21-Jul-15 A	03-Aug-15
1107.16191	U10 Walls & Roof	19			09-Jul-15	30-Jul-15	09-Jul-15 A	29-Jul-15 A
1107.16200	U12 Walls & Roof	16	14-Feb-15	24-Feb-15	01-Aug-15	19-Aug-15	04-Aug-15	21-Aug-15
1107.16220	U11 Walls & Roof	16	04-Mar-15	14-Mar-15	17-Aug-15	03-Sep-15	19-Aug-15	05-Sep-15
1107.16224	U13 Walls & Roof (Stitch Joint)	10			21-Jul-15	31-Jul-15	11-Aug-15	21-Aug-15
1107.16226	Walkways & Track Slab	12			04-Sep-15	19-Sep-15	07-Sep-15	19-Sep-15
1107.16240	4A Deg 1 Tunnel (UP track) from KAT to DIH	0		22-Mar-15		19-Sep-15		19-Sep-15*



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C&C Tunnel Structure (Previously Boxes 2B & 1B)		103	24-Dec-14	24-May-15	02-Jul-15	17-Oct-15	02-Jul-15 A	02-Nov-15
Tunnel Structure		103	24-Dec-14	24-May-15	02-Jul-15	17-Oct-15	02-Jul-15 A	02-Nov-15
1107.16230	4C Deg 1 KAT cut and cover tunnel (UP Track) Box 2B (With P-Way Opening)	0		22-Mar-15		26-Aug-15		15-Sep-15*
1107.17210	Waterproofing, Backfill & Remove Strut S2 Section 2	12	24-Dec-14	03-Jan-15	02-Jul-15	15-Jul-15	02-Jul-15 A	12-Aug-15
1107.17220	Waterproofing, Backfill & Remove Strut S2 Section 3	12	06-Jan-15	13-Jan-15	07-Jul-15	20-Jul-15	07-Jul-15 A	12-Aug-15
1107.17230	Waterproofing, Backfill & Remove Strut S2 Section 4 (Bays 5,6)	12	15-Jan-15	22-Jan-15	26-Aug-15	08-Sep-15	09-Oct-15	23-Oct-15
1107.17240	Waterproofing, Backfill & Remove Strut S2 Section 5 (Bay 7)	20	24-Jan-15	31-Jan-15	31-Aug-15	12-Sep-15	04-Aug-15	26-Aug-15
1107.17250	Waterproofing, Backfill & Remove Strut S2 Section 6 (Bay 8)	20	03-Feb-15	10-Feb-15	04-Sep-15	17-Sep-15	04-Aug-15	26-Aug-15
1107.17260	Waterproofing, Backfill & Remove Strut S2 Section 7 (Bay 9)	20	12-Feb-15	23-Feb-15	09-Sep-15	22-Sep-15	04-Aug-15	26-Aug-15
1107.17380	P-Way Opening Retaining Walls to S1 Level	9	05-Jan-15	17-Jan-15	02-Jul-15	11-Jul-15	02-Jul-15 A	11-Jul-15 A
1107.17390	Waterproofing & Backfill to S1 Level & Remove Strut S1 Section 1 - 3	15	23-Jan-15	05-Feb-15	21-Jul-15	29-Jul-15	13-Aug-15	29-Aug-15
1107.17391	Backfill to S1 Level & Remove Strut S1 Section 5 - 7	12	24-Feb-15	09-Mar-15	23-Sep-15	08-Oct-15	27-Aug-15	09-Sep-15
1107.17400	P-Way Opening Retaining Walls to OGL	10	06-Feb-15	23-Feb-15	30-Jul-15	10-Aug-15	11-Jul-15 A	20-Jul-15 A
1107.17408	Backfill to Original Ground Level Section 1 - 3, 5 - 7	14	24-Feb-15	04-Mar-15	11-Aug-15	26-Aug-15	31-Aug-15	15-Sep-15
1107.17410	Backfill to Original Ground Level Section 4 (Bays 5,6)	8	10-Mar-15	18-Mar-15	09-Oct-15	17-Oct-15	24-Oct-15	02-Nov-15
1107.17440	4D Deg 1 KAT cut and cover tunnel (DN Track) Box 1B	0		24-May-15		17-Oct-15		02-Nov-15*
1107.21150	Construct Walls & Roof of Bay D5 after TBM DN track Initial Drive & Shaft A C&C tunnel	14			10-Aug-15	25-Aug-15	21-Sep-15	08-Oct-15
Cost Centre G CEDD Entrusted Works		113	21-Jun-14	02-Nov-15	29-Jun-15	02-Nov-15	29-Jun-15 A	11-Nov-15
New Reprovisioned Culvert		113	21-Jun-14	02-Nov-15	29-Jun-15	02-Nov-15	29-Jun-15 A	11-Nov-15
Mid Section of Culvert (Over C&C Tunnel)		8	19-Mar-15	27-Mar-15	27-Aug-15	04-Sep-15	03-Nov-15	11-Nov-15
1107.18129	Excavation for Mid Section of New Culvert	8	19-Mar-15	27-Mar-15	27-Aug-15	04-Sep-15	03-Nov-15	11-Nov-15
North Section of Culvert		12	21-Jun-14	08-Jul-14	29-Jun-15	13-Jul-15	29-Jun-15 A	13-Jul-15 A
1107.18320	Bay 4 Roof Slab	12	21-Jun-14	08-Jul-14	29-Jun-15	13-Jul-15	29-Jun-15 A	13-Jul-15 A
South Section of Culvert		8	23-Aug-14	01-Sep-14	06-Aug-15	14-Aug-15	03-Nov-15	11-Nov-15
1107.18440	Excavation for South Section of New Culvert	8	23-Aug-14	01-Sep-14	06-Aug-15	14-Aug-15	03-Nov-15	11-Nov-15
Final Connection		0	02-Nov-15	02-Nov-15	02-Nov-15	02-Nov-15	02-Nov-15	02-Nov-15
1107.18590	(Predicted) Commencement of 2015/2016 Dry Season	0	02-Nov-15		02-Nov-15		02-Nov-15*	

MTRC SCL 1107 DIH to KAT Tunnels 3 Month Rolling Programme 029 with Phase1 DRM

Data Date 01-Aug-15

Date	Revision	Checked	Approved
See 2nd Col	0	KCL	KCL

Master Prog Baseline Bar ◆ Milestone
Last Month Forecast Bar ▼ Summary
Actual Work
Remaining Work
Critical Remaining Work

APPENDIX B
ACTION AND LIMIT LEVELS

APPENDIX B – Action and Limit Levels

24-Hour TSP

Regular Dust Monitoring Location	Description	Action Level, µg/m^3	Limit Level, µg/m^3
DMS-4[(1)(3)]/ DMS-3[(2)(3)]	Block 1, Rhythm Garden	160.4	260

Note:
(1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) Dust monitoring on DMS-3[(1)]/DMS-4[(2)] is carried out by Environmental Team of SCL Works Contract 1106.

Construction Noise

Regular Construction Noise Monitoring Location[(1)]	Description	Time Period	Action Level	Limit Level
NMS-CA-4[(1)(5)]/ NMS-CA-3[(2)(5)]	Block 1, Rhythm Garden (north-eastern façade)	0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A)
NMS-CA-5 [(1) (3)(5)]/ NMS-CA-2[(2)(3)(5)]	Block 1, Rhythm Garden (northern façade)			65 / 70 dB(A) [(4)]

Note:
(1) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
(3) Access to the monitoring location at Canossa Primary School (San Po Kong) (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Block 1, Rhythm Garden (northern façade)) was proposed and approved by the ER and agreed by the IEC and EPD.
(4) Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period.
(5) Noise monitoring on Block 1, Rhythm Garden are carried out by Environmental Team of SCL Works Contract 1106.

APPENDIX C
CALIBRATION CERTIFICATES FOR MONITORING EQUIPEMENT

CINOTECH

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA12051/57/0015

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

Date: 5-Aug-15 Next Due Date: 4-Oct-15

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

Ambient Condition			
Temperature, Ta (K)	303	Pressure, Pa (mmHg)	757.9

Orifice Transfer Standard Information					
Equipment No.:	A-04-06	Slope, mc (CFM)	0.0593	Intercept, bc	-0.02195
Last Calibration Date:	4-Feb-15	**mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$**			
Next Calibration Date:	3-Feb-16	**Qstd = $\{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.9	3.42	58.02	8.0	2.80
2	9.8	3.10	52.68	6.5	2.52
3	7.6	2.73	46.44	5.0	2.21
4	5.2	2.26	38.48	3.2	1.77
5	3.3	1.80	30.73	2.1	1.44

By Linear Regression of Y on X

Slope , mw = 0.0506 **Intercept, bw =** -0.1424

Correlation coefficient* = 0.9993

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.22**

Remarks:

Conducted by: Kei Signature: Kei Date: 5/8/15

Checked by: W.K. Tang Signature: Kwai Date: 5/8/15

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

Equipment No. A-04-06

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 04, 2015 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 2896 Pa (mm) - 756.92

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	1.4590	3.2	2.00
2	NA	NA	1.00	1.0330	6.4	4.00
3	NA	NA	1.00	0.9250	7.9	5.00
4	NA	NA	1.00	0.8800	8.8	5.50
5	NA	NA	1.00	0.7260	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0086	0.6913	1.4233		0.9958	0.6825	0.8799
1.0044	0.9723	2.0129		0.9916	0.9599	1.2443
1.0023	1.0835	2.2505		0.9895	1.0697	1.3912
1.0011	1.1377	2.3603		0.9884	1.1231	1.4591
0.9959	1.3718	2.8467		0.9832	1.3542	1.7598
Qstd slope (m) =		2.09317		Qa slope (m) =		1.31071
intercept (b) =		-0.02195		intercept (b) =		-0.01357
coefficient (r) =		0.99997		coefficient (r) =		0.99997
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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/140919/1
Date of Issue:	2014-09-21
Date Received:	2014-09-19
Date Tested:	2014-09-21
Date Completed:	2014-09-21
Next Due Date:	2015-09-20
Page:	1 of 1

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

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 12553
Microphone No.	: 35222
Equipment No.	: N-08-02

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 55%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

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/150103
Date of Issue:	2015-01-05
Date Received:	2015-01-03
Date Tested:	2015-01-03
Date Completed:	2015-01-05
Next Due Date:	2016-01-04

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	: 20 degree Celsius
Relative Humidity	: 54%

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

Test Report No.:	C/N/141003/3
Date of Issue:	2014-10-04
Date Received:	2014-10-03
Date Tested:	2014-10-03
Date Completed:	2014-10-04
Next Due Date:	2015-10-03

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

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 56%

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 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/141003/2
Date of Issue:	2014-10-04
Date Received:	2014-10-03
Date Tested:	2014-10-03
Date Completed:	2014-10-04
Next Due Date:	2015-10-03

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

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 56%

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 August 2015

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

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

Air Quality Monitoring Station

DMS-4: - Rhythm Garden, Block 1

Noise Monitoring Station

NMS-CA-4: - Block 1, Rhythm Garden (north-eastern façade)
NMS-CA-5: - Block 1, Rhythm Garden (northern façade)

Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels
Tentative Impact Air Quality and Noise Monitoring Schedule for September 2015

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

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

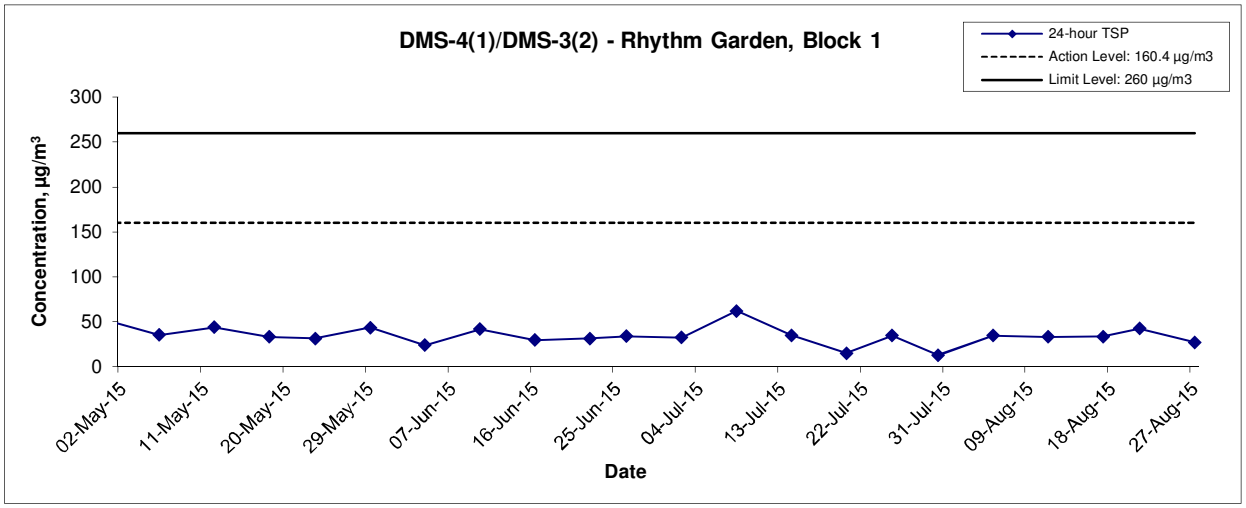
Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
					Initial	Final		Initial	Final		Initial	Final			
5-Aug-15	11:00	Sunny	303.9	757.3	3.2605	3.3207	0.0602	4532.9	4556.9	24.0	1.21	1.21	1.21	1746.2	34.5
11-Aug-15	11:00	Sunny	300.7	757.3	3.3118	3.3702	0.0584	4556.9	4580.9	24.0	1.22	1.22	1.22	1754.9	33.3
17-Aug-15	9:00	Sunny	302.6	758.8	3.2691	3.3278	0.0587	4581.0	4605.0	24.0	1.22	1.22	1.22	1751.3	33.5
21-Aug-15	9:00	Cloudy	302.4	755.1	3.2570	3.3311	0.0741	4605.0	4629.0	24.0	1.21	1.21	1.21	1747.9	42.4
27-Aug-15	9:00	Cloudy	302.4	758.9	3.3108	3.3581	0.0473	4629.0	4653.0	24.0	1.22	1.22	1.22	1751.9	27.0
														Min	27.0
														Max	42.4
														Average	34.1

Remarks:

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

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

24-hour TSP Concentration Levels



Remarks:

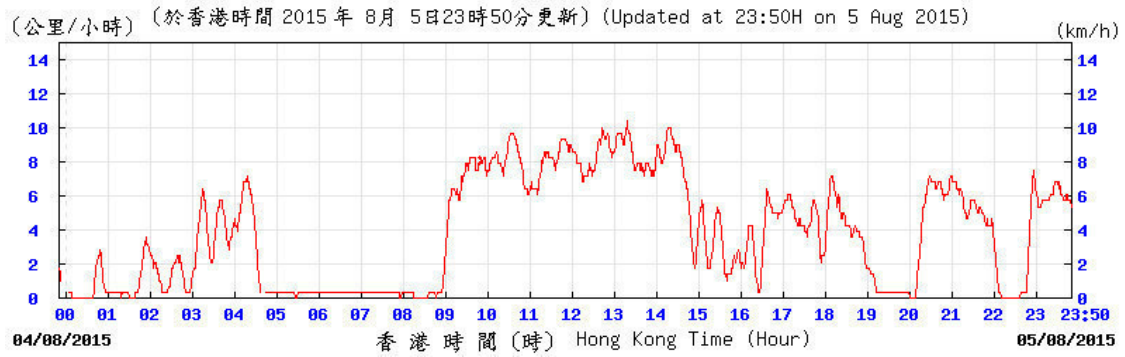
(1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).

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

Title	Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S	Project No. MA13018	CINOTECH
		Date Aug 15	Appendix E	

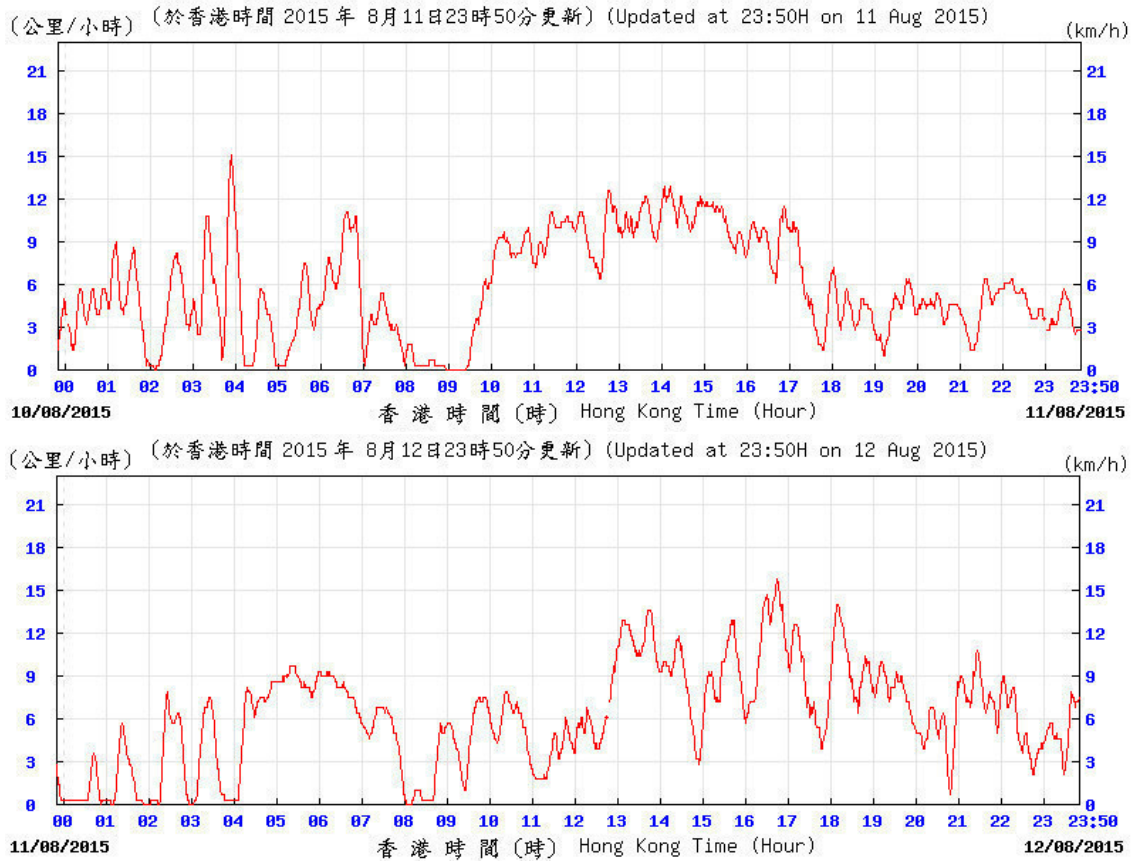
Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

5-6 August 2015



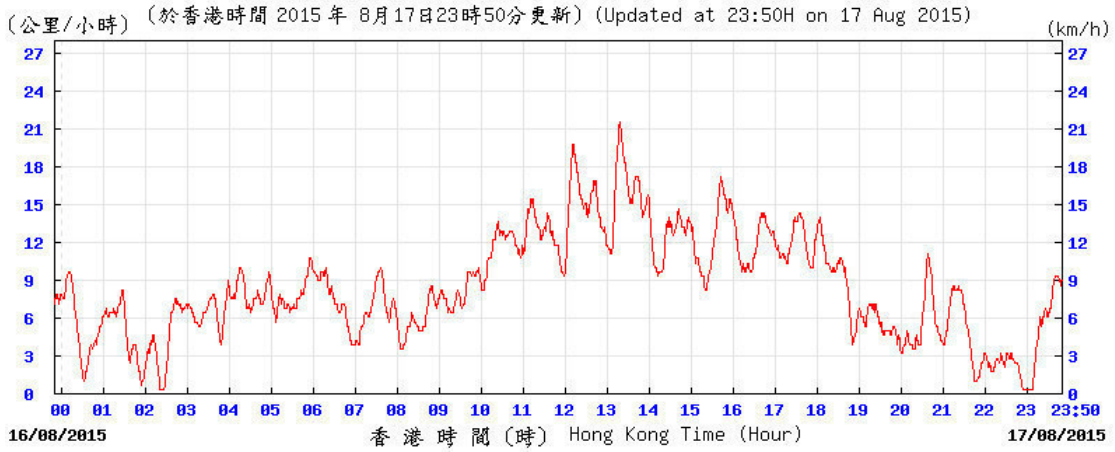
Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

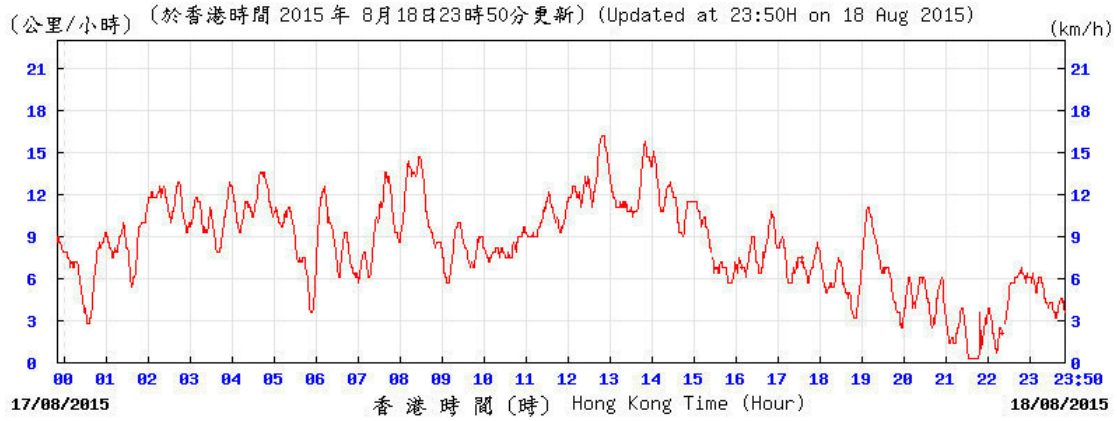
11-12 August 2015



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

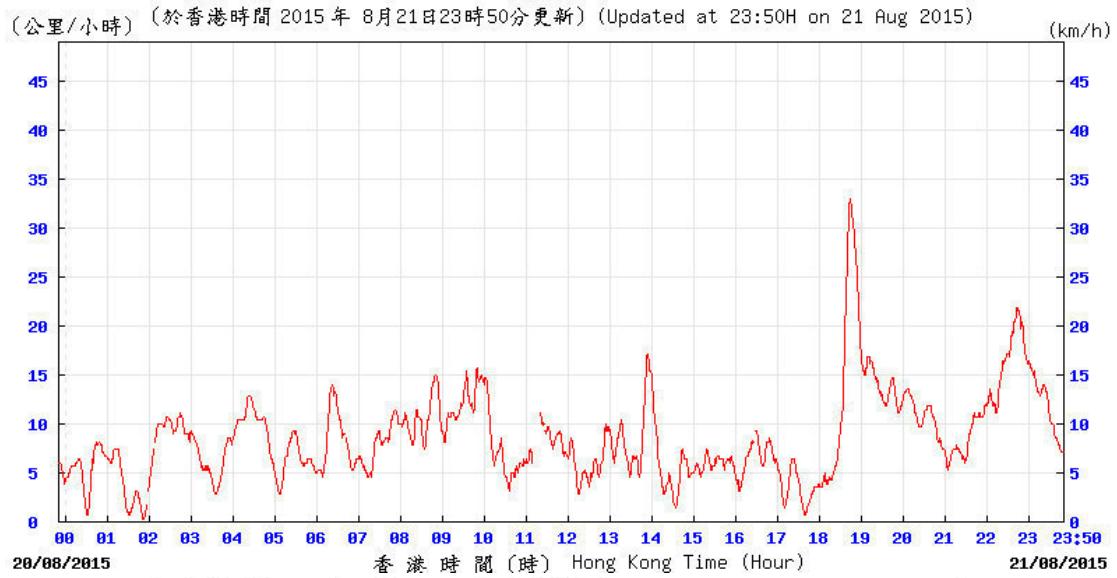
17-18 August 2015

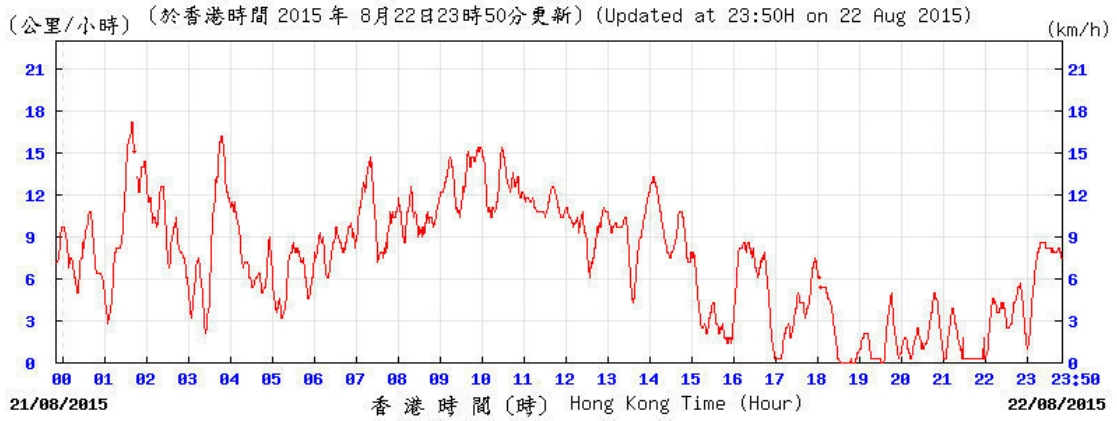




Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

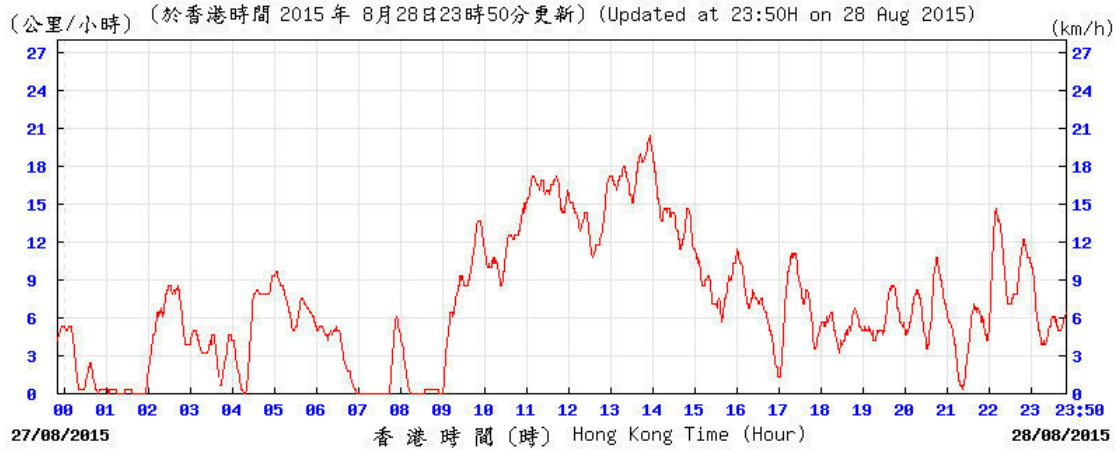
21-22 August 2015





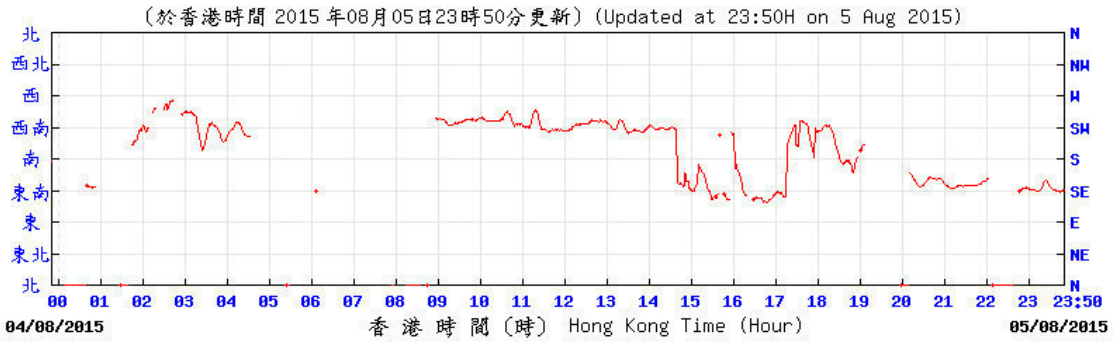
Average wind speed obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

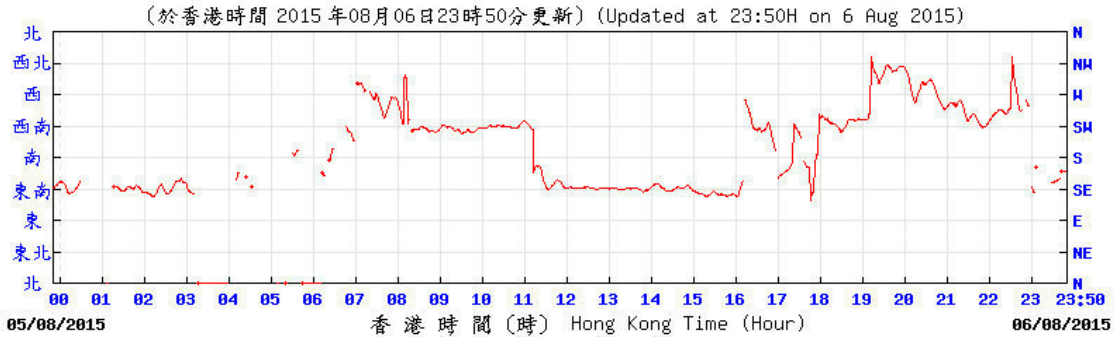
27-28 August 2015



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

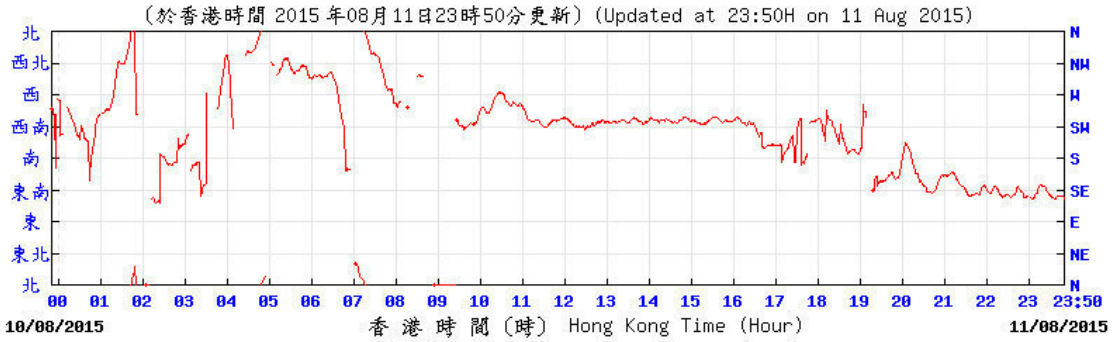
5-6 August 2015

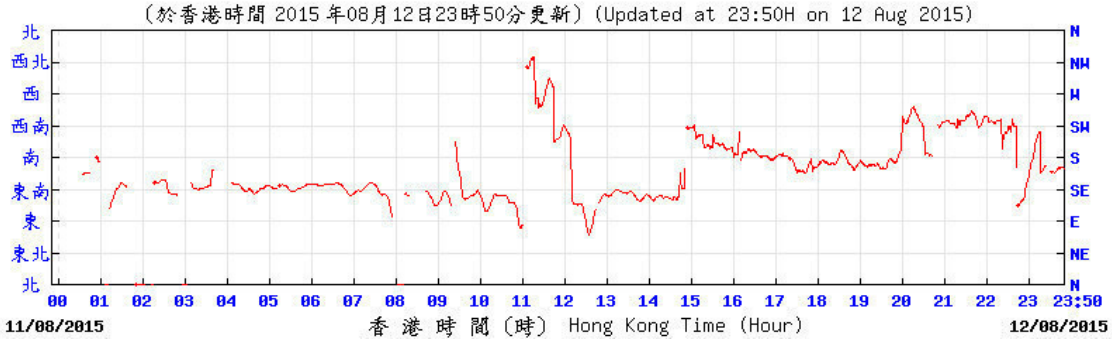




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

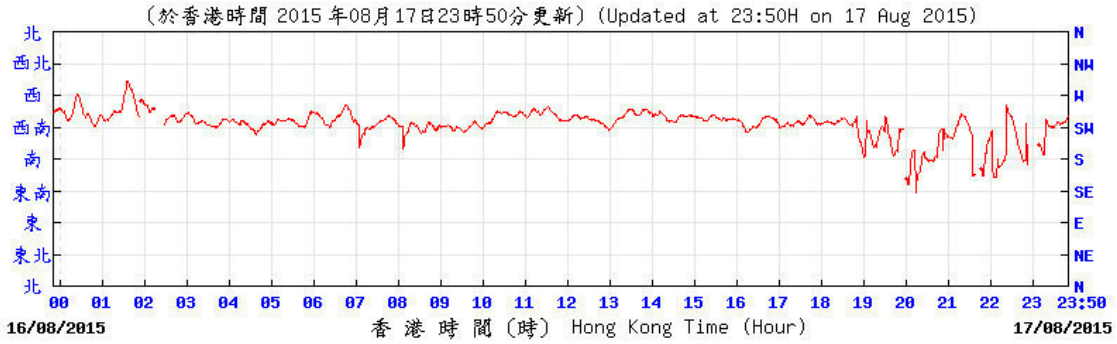
11-12 August 2015

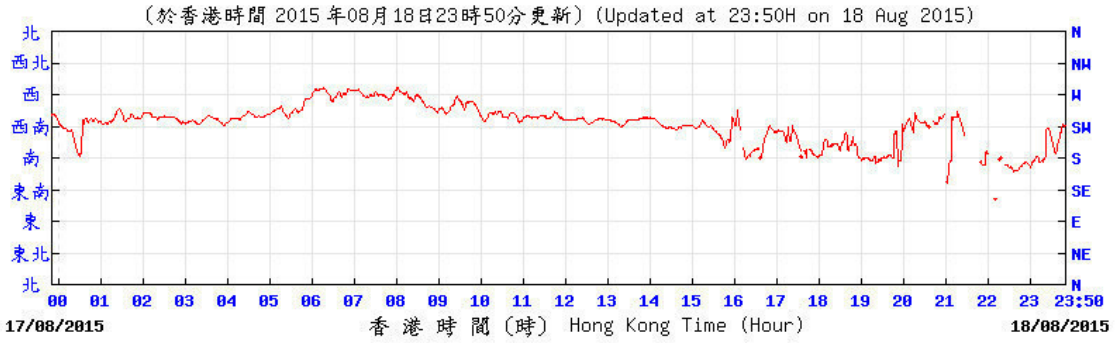




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

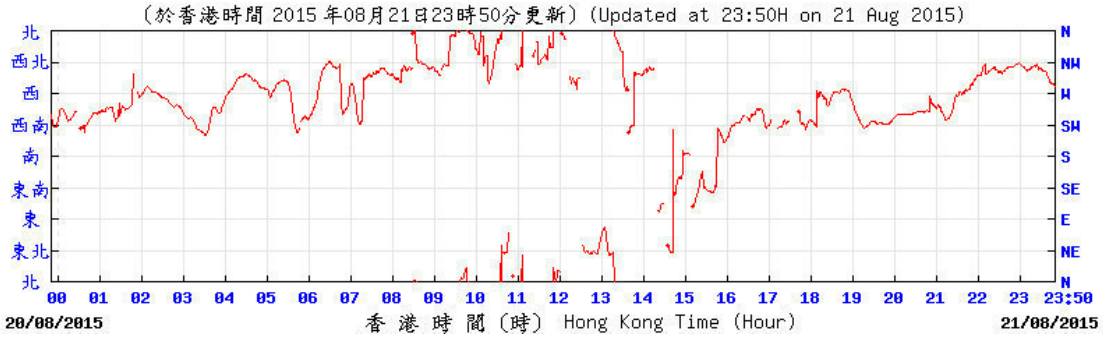
17-18 August 2015

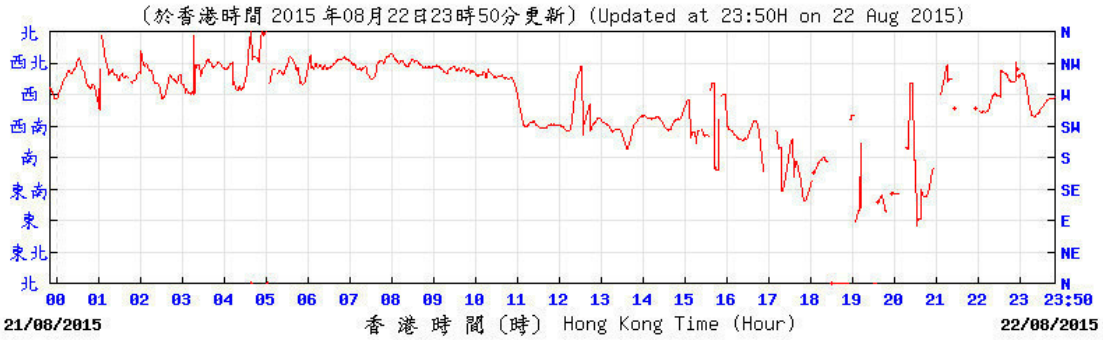




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

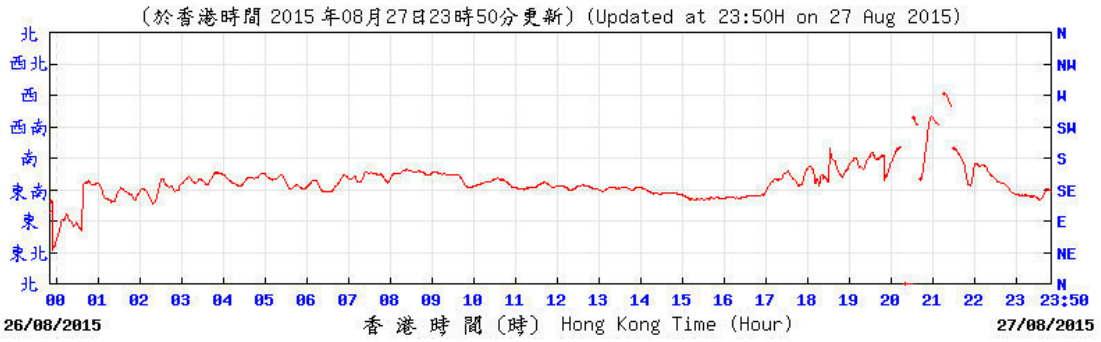
21-22 August 2015

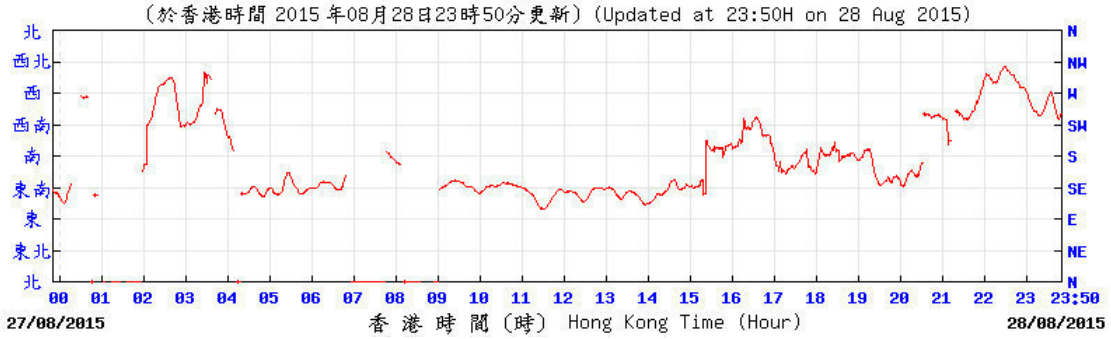




Wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO)

27-28 August 2015





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}
6-Aug-15	Sunny	15:30	71.2	72.4	69.9	71.4	71	60.8
		15:35	71.6	72.8	70.4			
		15:40	71.3	72.1	70.2			
		15:45	71.1	72.0	70.1			
		15:50	71.4	72.3	70.3			
		15:55	71.9	73.0	70.5			
12-Aug-15	Sunny	11:20	71.6	72.7	70.4	71.5		61.9
		11:25	71.4	72.8	69.9			
		11:30	71.6	72.8	70.3			
		11:35	71.4	72.6	70.1			
		11:40	71.5	72.8	70.1			
		11:45	71.4	72.7	70.3			
20-Aug-15	Sunny	13:45	61.1	62.2	60.0	61.7		61.7 Measured ≦ Baseline Level
		13:50	62.4	63.1	60.5			
		13:55	60.8	61.5	59.9			
		14:00	61.5	63.4	59.8			
		14:05	62.1	62.9	60.3			
		14:10	61.9	62.8	60.0			
24-Aug-15	Cloudy	13:35	72.1	73.4	70.7	72.2		66.0
		13:40	72.2	73.4	70.9			
		13:45	72.4	73.6	71.1			
		13:50	72.1	73.4	71.1			
		13:55	72.0	73.4	71.1			
		14:00	72.1	73.5	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}
6-Aug-15	Sunny	16:05	72.7	73.7	71.5	72.6	74	72.6 Measured ≦ Baseline Level
		16:10	72.6	73.6	71.7			
		16:15	72.5	73.7	71.1			
		16:20	72.5	73.4	71.5			
		16:25	72.2	73.2	71.1			
		16:30	72.9	74.0	71.6			
12-Aug-15	Sunny	10:45	70.1	71.4	68.9	70.2		70.2 Measured ≦ Baseline Level
		10:50	70.4	71.7	69.0			
		10:55	70.2	71.2	69.0			
		11:00	70.1	71.2	68.9			
		11:05	70.4	71.5	68.9			
		11:10	70.2	71.6	68.9			
20-Aug-15	Sunny	14:20	63.4	65.2	61.3	63.1		63.1 Measured ≦ Baseline Level
		14:25	64.5	66.4	60.8			
		14:30	63.7	64.8	62.2			
		14:35	61.9	63.4	61.1			
		14:40	61.6	62.6	59.2			
		14:45	62.5	63.7	61.6			
24-Aug-15	Cloudy	13:00	71.2	72.5	69.9	71.2		71.2 Measured ≦ Baseline Level
		13:05	71.5	72.5	69.9			
		13:10	71.4	72.8	69.9			
		13:15	71.2	72.0	70.0			
		13:20	70.9	71.7	70.0			
		13:25	71.1	72.0	70.0			

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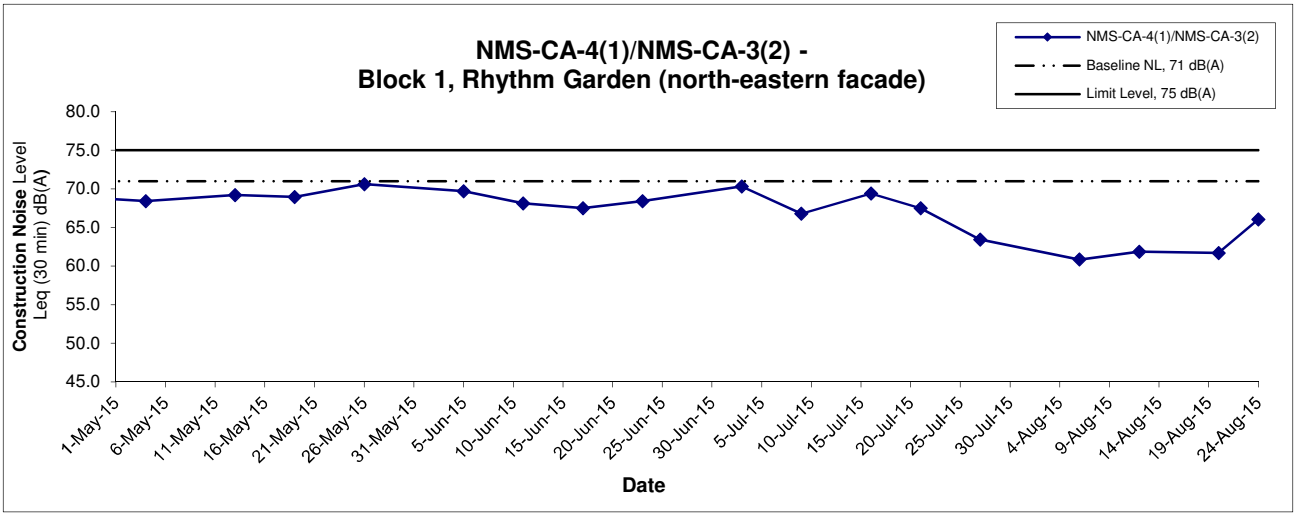
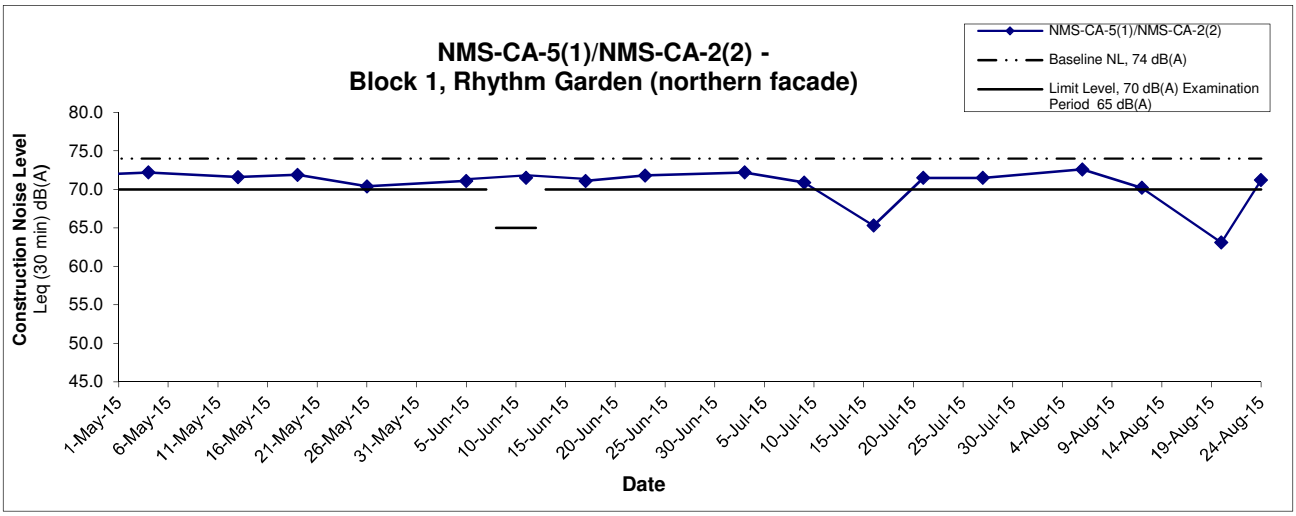
Remarks:
(1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
(2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).

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: Aug 15	Project No.: MA12051 Appendix: F	CINOTECH

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENIDX G – SUMMARY OF EXCEEDANCE

Reporting Month: August 2015

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	150806
Date	6 August 2015 (Thursday)
Time	09:00 – 10:00

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

Ref. No.	Remarks/Observations	Related Item No.
150806-O01	***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*** • Stockpile of dusty material was observed not covered. The Contractor was reminded to cover the dusty stockpile by dust protective screen and keep the stockpile wet during backfilling works. ***Part E – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part F – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H - Others*** • Follow-up action on previous audit section (Ref. No.: 150730), no major environmental deficiencies were identified during the inspection.	D 6

	Name	Signature	Date
Recorded by	Kevin Lam		6 August 2015
Checked by	Dr. Priscilla Choy		6 August 2015

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150813
Date	13 August 2015 (Thursday)
Time	09:00 – 10:30

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality	
150813-O01	• Stockpile was observed not covered under heavy rain. The Contractor was reminded to cover the stockpile properly and provide mitigation measures to prevent stockpile runoff.	B 10
150813-O02	• Muddy water was observed leaking into Kai Tak Nullah near west gate. The Contractor was reminded to direct muddy water to treatment facilities to prevent untreated discharge.	B 15i
	Part C - Landscape & Visual	
	• No environmental deficiency was identified during the site inspection.	
	Part D – Air Quality	
	• No environmental deficiency was identified during the site inspection.	
	Part E – Construction Noise Impact	
	• No environmental deficiency was identified during the site inspection.	
	Part F – Waste/Chemical Management	
	• No environmental deficiency was identified during the site inspection.	
	Part G - Permit / Licenses	
	• No environmental deficiency was identified during the site inspection.	
	Part H - Others	
	• Follow-up action on previous audit section (Ref. No.: 150806), all environmental deficiencies were observed mitigated/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kevin Lam		13 August 2015
Checked by	Dr. Priscilla Choy		13 August 2015

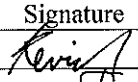
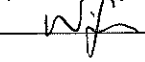
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150820
Date	20 August 2015 (Thursday)
Time	09:00 – 10:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality • No environmental deficiency was identified during the site inspection. ***Part C - Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part D – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part F – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H - Others*** • Follow-up action on previous audit section (Ref. No.: 150813), all environmental deficiencies were observed mitigated/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kevin Lam		20 August 2015
Checked by	Dr. Priscilla Choy		20 August 2015

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150825
Date	25 August 2015 (Tuesday)
Time	09:00 – 10:00

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B - Water Quality • No environmental deficiency was identified during the site inspection. ***Part C - Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part D – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part E – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part F – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part G - Permit / Licenses*** • No environmental deficiency was identified during the site inspection. ***Part H - Others*** • Follow-up action on previous audit section (Ref. No.: 150820), no major environmental deficiencies were identified during last site inspection.	

	Name	Signature	Date
Recorded by	Kevin Lam		25 August 2015
Checked by	Dr. Priscilla Choy		25 August 2015

APPENDIX I
EVENT AND ACTION PLANS

Appendix I - Event and Action Plan for Noise Monitoring during Construction Phase

EVENT	ACTION			
	Works Contract 1107 ET	**IEC**	**ER**	**CONTRACTOR**
Action Level	1. Notify the IEC, Contractor and ER 2. Discuss with the ER, IEC and Contractor on the remedial measures required 3. Increase monitoring frequency to check mitigation effectiveness	1. Review the investigation results submitted by the contractor; 2. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor. .	1. Confirm receipt of notification of complaint in writing 2. Notify the Contractor, IEC and ET 3. Review and agree on the remedial measures proposed by the Contractor; 4. Supervise implementation of remedial measures	1. Investigate the complaint and propose remedial measures 2. Report the results of investigation to the IEC, ET and ER 3. Submit noise mitigation proposals to the ER with copy to the IEC and ET within 3 working days of notification. 4. Implement noise mitigation proposals
Limit Level	1. Notify the IEC, Contractor and EPD 2. Repeat measurement to confirm findings 3. Increase monitoring frequency 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances 7. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results	1. Check monitoring data submitted by the ET; 2. Check the Contractor's working method; 3. Discuss with the ER, ET and Contractor on the potential remedial measures 4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.	1. Confirm receipt of notification of exceedance in writing 2. Notify the Contractor, IEC and ET 3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 4. Supervise the implementation of remedial measures 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Identify source and investigate the causes of exceedance 2. Take immediate action to avoid further exceedance 3. Submit proposals for remedial measures to the ER with copy to the IEC and ET within 3 working days of notification. 4. Implement the agreed proposals 5. Revise and resubmit proposals if problem still not under control 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Appendix I - Event and Action Plan for Air Quality Monitoring during Construction Phase

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

Appendix I - Event and Action Plan for Air Quality Monitoring during Construction Phase

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

Appendix I - Event and Action Plan for Landscape and Visual during Construction Phase

EVENT	ACTION			
	Works Contract 1107 ET	**IEC**	**ER**	**CONTRACTOR**
Non-conformity on one occasion	1. Inform the Contractor, the IEC and the ER 2. Discuss remedial actions with the IEC, the ER and the Contractor 3. Monitor remedial actions until rectification has been completed	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET, ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures.	1. Confirm receipt of notification of non-conformity in writing 2. Review and agree on the remedial measures proposed by the Contractor; 3. Supervise implementation of remedial measures	1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source 2. Inform the Contractor, the IEC and the ER 3. Increase inspection frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If non-conformity stops, cease additional monitoring	1. Check inspection report 2. Check the Contractor's working method 3. Discuss with the ET and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented 3. Supervise implementation of remedial measures.	1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.

APPENDIX J
UPDATED ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE

SCL Works Contract 1107 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
Landscape & Visual (Construction Phase)								
S6.12	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u> • For soil conservation, existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing ground may be set up on-site as necessary. <u>No-intrusion Zone</u> • To maximize protection to existing trees, ground vegetation and the associated under storey habitats, construction contracts may designate "No-intrusion Zone" to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone. The contractor should closely monitor and restrict the site working staff from entering the "no-intrusion zone", even for indirect construction activities and storage of equipment. <u>Protection of Retained Trees</u> • All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period. Detailed tree protection specification shall	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	•TM-EIAO	N/A ^ ^

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
		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

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
		TCW No 3/2006.						
Air Quality (Construction Phase)								
/	A1	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^
/	A2	Open burning shall be prohibited	Reduce air pollution emission from work site	Contractor	All construction sites	Construction stage	• APCO	^
Construction Dust Impact								
S7.6.6	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	*
S7.6.6	D2	Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road in the Kowloon area should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		an equivalent intensity of no less than 1.8 L/m^2 to achieve the dust removal efficiency						
S7.6.6	D3	• Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided and properly maintained as far as practicable along the site boundary	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	* ^ ^ N/A ^ N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		with provision for public crossing; Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;						
		• The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;						^
		• Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;						^
		• Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;						^
		• Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;						N/A
		• Any skip hoist for material transport should be totally enclosed by impervious sheeting;						N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						^ ^ ^ N/A
S7.6.6	D4	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected representative dust monitoring station	Construction stage	• TM-EIA	^
Construction Airborne Noise								
S8.5.6	AN1	Implement the following good site practices: • only well-maintained plant should be operated on-site and plant	Control construction airborne	Contractor	All Construction Sites where	Construction stage	• Annex 5, TM-EIA	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	noise		practicable			^ ^ ^ ^ N/A
S8.5.6	AN2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All Construction Sites	Construction stage	• Annex 5, TM-EIA	^
S8.5.6	AN3	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy	Screen the noisy plant items to be used at all	Contractor	All Construction Sites	Construction stage	• Annex 5, TM-EIA	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		plants including air compressor, generators and saw.	construction sites					
S8.5.6	AN4	Use "Quiet" plant	Reduce the noise levels of plant items	Contractor	All Construction Sites where practicable	Construction stage	• Annex 5, TM-EIA	N/A
S8.5.6	AN5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All Construction Sites where practicable	Construction stage	• Annex 5, TM-EIA	^
S8.5.6	AN6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction stage	•TM-EIA	^
Water Quality (Construction Phase)								
S10.7.1	W1	In accordance with the Practice Noise for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>Construction Runoff and Site Drainage</u> • At the start of site establishment (including the barging facilities), perimeter cut-off drains to direct off-site water around the site	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction. • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m^3/s a sedimentation basin of $30m^3$ would be required and for a flow rate of 0.5 m^3/s the basin would be 150 m^3. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction.						^

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
		• 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						* * ^ ^

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
		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 ^

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
		• Adopt best management practices.						^
S10.7.1	W2	<u>Tunneling Works</u> • Cut-&-cover/ open cut tunnelling work should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable. • Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge • The wastewater with a high concentration of SS should be treated (e.g. by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater. • Direct discharge of the bentonite slurry (as a result of D-wall and bored tunnelling construction) is not allowed. It should be reconditioned and reused wherever practicable. Temporary storage locations (typically a properly closed warehouse) should be provided on site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.	To minimize construction water quality impact from tunneling works	Contractor	All tunneling portion	Construction stage	• Water Pollution Control Ordinance • ProPECC PN 1/94 • TM-water • TM-EIAO	^ ^ ^ ^
S10.7.1	W3	<u>Sewage Effluent</u> • Portable chemical toilets and sewage holding tanks are	To minimize water quality from sewage effluent	Contractor	All construction sites where	Construction stage	• Water Pollution Control Ordinance	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.			practicable		• TM-water	
S10.7.1	W5	Accidental Spillage In order to prevent accidental spillage of chemicals, the following is recommended: • Proper storage and handling facilities should be provided; • All the tanks, containers, storage area should be bunded and thelocations should be locked as far as possible from the sensitive watercourse and stormwater drains; • The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings; and • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water	^ ^ ^ N/A
Waste Management (Construction Waste)								
S11.4.1.1	WM1	On-site sorting of C&D material • Geological assessment should be carried out by competent persons on site during excavation to identify materials which are	Separation of unsuitable rock from ending up at concrete batching plants	Contractor	All construction sites	Construction stage	• DEVB TC(W) No. 6/2010	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc). Volcanic rock and Aplite dyke rock should be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use. Details regarding control measures at source site and crushing facilities should be submitted by the Contractors for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc should also be explored.	and be turned into concrete for structural use					
S11.5.1	WM2	<u>Construction and Demolition Material</u> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting;	Good site practice to minimize the waste generation and recycle the C&D materials as far as	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance	^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		• Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and EPD and get their approval before implementation	practicable so as to reduce the amount for final disposal				• Waste Disposal Ordinance • ETWB TCW No. 19/2005	^ N/A ^ ^ ^
S11.5.1	WM3	<u>C&D Waste</u> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden	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	^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	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 2015

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 3)		Chemical Waste		Others, e.g. general refuse	
	(a)		(b)		(c)		(d)		(e=a-b-c-d)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000litre)		(in '000m3)	
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.
January	10.400	9.730	0.000	0.000	0.000	0.000	6.000	8.515	4.400	1.215	0.000	0.000	0.100	0.168	1.000	1.600	0.000	0.000	0.100	0.060
February	6.400	2.295	0.000	0.000	0.000	0.000	2.000	1.700	4.400	0.595	0.000	7.370	0.100	0.120	0.000	0.000	0.000	0.000	0.100	0.045
March	4.000	2.005	0.000	0.000	0.000	0.000	2.000	1.780	2.000	0.225	0.000	0.000	0.100	0.000	0.000	0.000	0.000	2.415	0.100	0.070
April	4.000	0.645	0.000	0.000	0.000	0.000	2.000	0.625	2.000	0.020	0.000	0.000	0.100	0.283	0.000	0.000	0.100	0.000	0.100	0.070
May	4.000	1.110	0.000	0.000	0.000	0.000	2.000	0.640	2.000	0.470	0.000	0.000	0.100	0.232	0.000	0.000	0.000	0.000	0.100	0.045
June	4.000	3.240	0.000	0.000	0.000	0.000	2.000	1.610	2.000	1.630	0.000	8.590	0.100	0.000	0.000	0.000	0.000	0.000	0.100	0.065
July	9.000	1.995	0.000	0.000	0.000	0.000	7.000	0.110	2.000	1.885	0.000	0.000	0.100	0.281	0.100	0.000	0.000	0.000	0.100	0.055
August	9.000	4.875	0.000	0.000	0.000	0.000	7.000	3.055	2.000	1.820	0.000	7.600	0.100	0.116	0.000	0.000	0.000	0.000	0.100	0.045
September	9.000		0.000		0.000		7.000		2.000		1.000		0.100		0.000		0.000		0.100	
October	9.000		0.000		0.000		7.000		2.000		1.000		0.100		0.000		0.000		0.100	
November	9.000		0.000		0.000		7.000		2.000		0.000		0.100		0.000		0.100		0.100	
December	9.000		0.000		0.000		7.000		2.000		0.000		0.100		0.100		0.000		0.100	
Total	**86.800**	**25.895**	**0.000**	**0.000**	**0.000**	**0.000**	**58.000**	**18.035**	**28.800**	**7.860**	**2.000**	**23.560**	**1.200**	**1.200**	**1.200**	**1.600**	**0.200**	**2.415**	**1.200**	**0.455**

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material

(3) The quantitles of C&D Materials, in m^3, was calculated by multiply the no. of truck with the volume of truck, which is 5m^3.

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

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

Cumulative Complaint Log

Complaint Location/ Nature	Incoming Complaint Reference no.	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	Status
SCL Contract 1107's Construction Site near Shaft A/ Construction Noise	14-29958	A resident living in Kai Ching Estate/ 8 December 2014	A resident of Kai Ching Estate complained about an incident of construction noise disturbance generated from operation of equipment, at the area adjacent to Shaft A in the night.	The Contractor had taken the following mitigation measures: • Hoardings and noise absorption blankets were erected along the site boundary to shield residents of Kai Ching Estate from noisy works during the time of the complaint; • The equipment involved in this complaint: the water pump, was removed immediately after the complaint was received to reduce noise nuisance to nearby noise sensitive receivers; • The low area near shaft A enclosure was backfilled to eliminate the flooding issue, thus the need of the water pump;	Closed

SCL Contract 1107's Construction Site near Site Entrance/ Construction Noise and Dust	14-31154	A resident living in Kai Ching Estate/ 15 December 2014	A resident of Kai Ching Estate complained about the noise disturbance generated from some sort of alarm noise at night from the construction site entrance; and dust nuisance from the construction site in general.	The alarm bell was installed to alert pedestrians of moving vehicles. During the time of complaint, vehicles might had moved in or out of the site, thus triggering the alarm. To avoid the same incident from happening again, the Contractor has agreed to permanently terminate the alarm bell. The Contractor has provided sufficient measures to minimize the smoke and dust emission. These measures include: • Covering stockpile of bagged cements and other dusty material with impervious material. • Regularly conducting water spray on work sites and major haul road. • Washing every vehicle leaving the construction site. The 24-hr TSP level monitoring conducted in December showed that the dust levels at Block 1, Rhythm Garden were under the Action and Limit Levels.	Closed

SCL Contract 1107's Construction Site/ Construction Noise and Dust	15-04622	N/A / 12 March 2015	A public complaint about noise and dust nuisance from the Kai Tak Development Area was received. Since this Project is within the development area, the complaint was referred to the Contractor of SCL Contract 1107.	The Contractor had implemented appropriate and sufficient measures to minimise the noise and dust nuisance to adjacent sensitive receivers. The noise mitigation measures include: • Installing noise absorption blankets on the hoarding at the site boundary near Kai Ching Estate; • Erecting acoustic enclosures to seal up the noisy PME and construction works (see Photo 2) in the shaft. The dust mitigation measures include: • Covering of stockpile of bagged cement and other dusty materials to reduce dust generation. • Water spraying stockpile of dusty materials as well as major haul roads and work sites to keep the surface wet. • Washing every vehicle leaving the construction site. • Regular cleaning of the access roads connecting public roads to vehicle washing areas. There was also no non-compliance on construction noise and air quality recorded during the site inspections in March. The construction noise and 24-hr TSP level monitoring conducted in March also showed that the noise and dust levels at the monitoring stations were under the Action and Limit Levels.	Closed

SCL Contract 1107's Construction Site/ Construction Noise and Dust	15-13442	N/A / 9 June 2015	A public complaint about noise and dust nuisance from the Kai Tak Development Area was received. Since this Project is within the development area, the complaint was referred to the Contractor of SCL Contract 1107.	Investigation conducted by the Contract ET and the results showed that sufficient mitigation measures were provided by the Contractor to minimize the noise and dust nuisance to adjacent sensitive receivers. The noise mitigation measures include: • Noise absorption blankets were installed on the hoarding at the site boundary near Kai Ching Estate; • Acoustic enclosures were erected to seal up the noisy PME and construction works in the shaft; • The formwork erection was conducted inside the shaft which shield off the noisy operation. The dust mitigation measures include: • The stockpiles of dusty materials were covered by dust protective screens to reduce dust generation. Uncovered parts of the stockpile were provided with water spray to keep the dusty surface wet to reduce dust emission during stockpiling/backfilling work. • Watering on work sites and major haul roads was implemented regularly as stipulated in the Air Pollution Control Regulation and the Environmental Permit. Watering record is kept at the site entrance for easy inspection; • Vehicle movements were confined to designated haul roads. Automatic sprinkler system was installed at major haul roads to provide regular water spraying to reduce dust emission from vehicle movements;	Closed

				• Hoarding was provided along the entire length of the site boundary and beside roads or areas with public access; • Wheel washing facilities was provided at all vehicle exits and vehicle washing was provided for vehicles leaving the site. Access road leading to and exiting from vehicle washing areas were kept clean to ensure the public roads around site entrances were free from dust; The construction noise and 24-hr TSP level monitoring conducted in May 2015 also showed that the noise and dust levels at the monitoring stations were under the Action and Limit Levels.	
SCL Contract 1107's Construction Site/ Construction Noise and Dust	15-12472	N/A / 30 June 2015	A public complaint about dust nuisance and muddy water discharge in the Kai Tak Development Area. Complainant alleged that uncovered dusty materials were found in Kai Tak development area and muddy water was found discharged into Kai Tak nullah. Since this Project is within the development area, the complaint was referred to the Contractor of SCL Contract 1107.	Investigation was conducted by the Contract ET. According to investigation results, the coverage for the stockpile was removed during the backfilling works, while the other parts of the stockpile were covered by dust protective screen. Mitigation measures including providing water spray and installation of waster sprinkler were implemented to keep the uncovered part wet during backfilling. The stockpile was completely covered after work. Wastewater was treated by sedimentation tanks with sufficient retention time before discharge into Kai Tak Nullah. All drainage facilities and erosion and sediment control structures were regularly inspected and maintained to ensure normal operation at	Closed

				all times and during rainstorms. Water sampling was conducted monthly in accordance with the requirement of Effluent Discharge License (License No. WT00015861-2013). The lab test results complied with the conditions set in the Effluent Discharge License during the complaint period.	

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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Appendix H

27th Monthly EM&A Report for Works Contract 1112 – Hung Hom Station and Stabling Sidings

MTR Corporation Limited

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

Monthly EM&A Report

[Period from 1 to 31 August 2015]

(September 2015)

Certified by: Vivian Chan

Position: Environmental Team Leader

Date: 14 September 2015

27th Monthly EM&A Report for August 2015

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

September 2015

Project/Deliverable No.	7076187 | D62/03
Project Name	Shatin to Central Link – Works Contract 1112 Hung Hom Station and Stabling Sidings
Report Name	27th Monthly EM&A Report for August 2015
Report Date	September 2015
Report for	Leighton Contractors (Asia) Limited

PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved by
1.0 (Draft)	September 2015	Samantha KONG	Vivian CHAN	Alexi BHANJA
2.0 (Draft)	September 2015	Samantha KONG	Vivian CHAN	Alexi BHANJA
3.0 (Final)	September 2015	Samantha KONG	Vivian CHAN	Alexi BHANJA

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EXECUTIVE SUMMARY

Introduction

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

Construction works of the Project commenced on 3 June 2013. This is the 27th Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 August 2015 in accordance with the EM&A manual.

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

- Piling for HUH, NAT and SAT
- Initial excavation at HUH and HHS
- Operation of Material Receiving Hopper at Hung Hom Freight Pier
- Underpinning works at HUH
- ABWF work at HHS and concourse

On 3 August 2015, part of the SAT area has been handed over to SCL1121, the handover location is shown in ***Appendix A***.

Landscape and Visual Monitoring

Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 4 and 18 August 2015. All necessary mitigation measures have been implemented by the Contractor.

Air Quality Monitoring

Air quality (24-hour TSP) monitoring was carried out on 1, 7, 13, 19, 25 and 29 August 2015. No exceedance of Action and Limit Level of 24-hour TSP monitoring was recorded at the monitoring location in the reporting month.

Noise Quality Monitoring

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

Waste Management

Receptacles for collection of general refuse were provided at the site. As advised by the Contractor, 261,040 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 26,430 m^3 inert construction and demolition (C&D) materials were generated from the

Project, where 400 m^3 was imported from SCL 1111, 19,293 m^3 was reused in other projects, 7,137 m^3 was disposed of at TM38 Public Fill. No chemical waste was disposed.

573 kg of paper/cardboard packaging and 45,530 kg of metals were recycled. No asphalt or plastic was recycled from the Project.

Environmental Auditing

A total of 5 weekly environmental site audits were conducted on 6, 13, 20 and 27 August 2015. The IEC joint site audit was undertaken on 20 August 2015.

Compliant, Notification of Summons and Successful Prosecution

No environmental complaints were reported during the reporting month.

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

Future Key Issues

Major site activities for the coming reporting month will include:

- Piling for HUH, NAT and SAT
- Initial excavation at HUH and HHS
- Operation of Material Receiving Hopper at Hung Hom Freight Pier
- Underpinning works at HUH
- ABWF work at HHS and concourse

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 March2012. 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/H) was issued by Director of Environmental Protection (DEP) on 10 September 2014.

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 27th EM&A report which summarizes the monitoring results and audit findings during the reporting period from 1 to 31 August 2015.

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:

- Piling for HUH, NAT and SAT
- Initial excavation at HUH and HHS
- Operation of Material Receiving Hopper at Hung Hom Freight Pier
- Underpinning works at HUH
- ABWF work at HHS and concourse

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 Kit CHAN	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/H	10 Sep 2014	-	Valid	EP for SCL (TAW-HUH)
Construction Noise Permit				
PP-RE0001	9 Feb 2015	8 Aug 2015	Valid until cancellation on 8 Aug 2015	Piling works
GW-RE0419-15	06 May 2015	05 Nov 2015	Valid	Works in concourse and mid-level walkway
GW-RE0488-15	19 May 2015	18 Nov 2015	Valid until cancellation on 10 Aug 2015	Modification works at concourse
GW-RE0614-15	20 Jun 2015	18 Dec 2015	Valid until cancellation on 10 Aug 2015	Combined CNP for all area
GW-RE0697-15	23 Jul 2015	30 Sep 2015	Valid	Modification works at concourse
GW-RE0793-15	10 Aug 2015	2 Feb 2016	Valid	Combined CNP for all area
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	-
Marine Dumping Permit				
EP/MD/14-238	2 Apr 2015	1 Oct 2015	Valid	Marine Dumping Permit - Excavated Sediment Requiring Type 1 - Open Sea

Permit / Licence No. / Notification / Reference No.	Valid Period		Status	Remark
	From	To		
				Disposal
EP/MD/16-036	2 Jul 2015	1 Aug 2015	Valid until cancellation on 1 Aug 2015	Marine Dumping Permit - Excavated Sediment Requiring Type 2 - Confined Marine Disposal
Notification of Asbestos Abatement Works				
AX141187	11 Oct 2014 (earliest commencement date)	-	Notified	Demolition of International Mail Centre, 80 Salisbury Road, Hung Hom
AX141235	27 Oct 2014 (earliest commencement date)	-	Notified	Demolition of Freight Operation Building, MTR Hung Hom Depot
Notification of New Expiration Date of Sediment Quality Report (SQR)				
EP60/G1/12-395/Part XXVI	3 Nov 2014	22 Jan 2017	Notified	Data Reliability Review on Sediment Quality Report

3 ENVIRONMENTAL MONITORTING PARAMETERS

3.1 Landscape and Visual Impact Monitoring

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

3.2 Air Quality Monitoring

Parameter, Frequency and Duration

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

Table 3-1 Air Quality Monitoring Parameters and Frequency

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

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

Monitoring Location

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

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

Table 3-2 Air Quality Monitoring Location

ID	Location
AM2 [1]	Harbourfront Horizon [2]

Note:
1. Different IDs were used in various EM&A Manuals for dust monitoring location at Harbourfront Horizon, DMS-12 was used in EM&A Manual for SCL(TAW-HUH), AM2 were used in EM&A Manual and EIA report for SCL(MKK-HUH), and DMS-1 Works Contract 1112 were used in EM&A Manual and EIA report for HHS. For ease of future reference, AM2 will be adopted for EM&A reporting for Works Contract 1112 when referring to this monitoring location.
2. Air quality monitoring location at Harbourfront Horizon is the same as monitoring station CD6a as proposed in the EM&A Manual for "Kwun Tong Line Extension (KTE)". Access to Harbourfront Horizon was rejected by the owner during preparation for baseline

monitoring for the KTE in early 2011. A representative monitoring location at the adjacent Finger Pier, at about 25m from Harbourfront Horizon, was adopted as an alternative monitoring location for KTE. This monitoring location is considered the most appropriate alternative monitoring location for AM2 and have been adopted for dust monitoring for Contract 1112.

Monitoring Equipment

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

Table 3-3 Air Quality Monitoring Equipment

Equipment	Brand and Model	Serial Number
High Volume Sampler	GS-2310 Accu-vol	694-0665
Calibration Kit	Tisch (TE-5025A)	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 August 2015 is provided in ***Appendix G***.

3.3 Construction Noise Monitoring

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

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

4 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

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

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

Required Submission	Environmental Permit	Date of Submission	Status
EP Condition 3.4 - Monthly Environmental Monitoring & Audit (EM&A) Report	EP-437/2012	14 August 2015	Submitted
	EP-438/2012/H	14 August 2015	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 4 and 18 August 2015. 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	53.4	22.7 – 134.3	182	260

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

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

5.3 Regular Construction Noise Monitoring

5.3.1 Construction airborne noise monitoring results in the reporting month can be referred to the Monthly EM&A Report for Contract 1111.

5.4 Waste Management

5.4.1 Receptacles for collection of general refuse were provided at the site. As advised by the Contractor, 261,040 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 26,430 m^3 inert construction and demolition (C&D) materials were generated from the Project, where 400 m^3 was imported from SCL 1111, 19,293 m^3 was reused in other projects, 7,137 m^3 was disposed of at TM38 Public Fill. No chemical waste was disposed.

5.4.2 573 kg of paper/cardboard packaging and 45,530 kg of metals were recycled. No asphalt or plastic was recycled from the Project. The waste flow table and marine sediment flow table were presented in ***Appendix K***.

5.4.3 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 August 2015 during the reporting month. Representative of the IEC joined the site inspection on 20 August 2015. A summary of the implementation schedule of environmental mitigation measures is provided in ***Appendix H***.

6.1.2 No EPD inspection was conducted during the reporting month.

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

Table 6-1 Observations and Recommendations of Site Audits

Parameters	Description	Works Area	Observation Date	Status
Noise	Noise emission label was found missing at the air compressor. The Contractor should ensure all air compressors are provided with noise emission labels.	HUH (M/1-O35)	14 August 2015	The item was rectified by the Contractor on 20 August 2015.
		SAT	20 August 2015	The item was rectified by the Contractor on 27 August 2015.
	Air compressor was observed not fully enclosed during operation. The Contractor should ensure all the air compressors are fully enclosed when in operation in order to ensure acoustic performance of the enclosure.	HUH (P21)	27 August 2015	The item will be followed-up in the next reporting month.
Air Quality	Haul road was observed dry. The Contractor should provide sufficient water spraying to the haul road.	SAT	6 August 2015	The item was rectified by the Contractor on 14 August 2015.
		NAT	6 August 2015	The item was rectified by the Contractor on 14 August 2015.
	More than 20 bags of cement were observed without impervious sheeting. The Contractor should cover the cement bags entirely with impervious sheeting.	HHS (B6)	6 August 2015	The item was rectified by the Contractor on 14 August 2015.

Parameters	Description	Works Area	Observation Date	Status
	Machinery was observed emitting black smoke. The Contractor should ensure that all machineries are under regular maintenance.	NAT	20 August 2015	The item was rectified by the Contractor on 27 August 2015.
Water Quality	Muddy wheel-washing water was observed at public road and public gullies. The Contractor should provide proper protection to prevent muddy wheel-washing water from discharging into the gully and improve wheel washing system to prevent muddy water discharge to public road.	Gate 3	27 August 2015	The item will be followed-up in the next reporting month.
Waste/ Chemicals Management	Chemical containers and machineries were observed without secondary containment. The Contractor should provide secondary containment to all chemical containers to prevent land contamination.	HUH (M/N-10/11)	30 July 2015	The item was rectified by the Contractor on 20 August 2015.
		SAT	6 August 2015	The item was rectified by the Contractor on 20 August 2015.
		HUH (M42)	6 August 2015	The item was rectified by the Contractor on 14 August 2015.
		NAT	14 August 2015	The item was rectified by the Contractor on 20 August 2015.
		NAT	14 August 2015	The item was rectified by the Contractor on 20 August 2015.
		HUH (K23)	20 August 2015	The item was rectified by the Contractor on 27 August 2015.
		Gate 3	27 August 2015	The item will be followed-up in the next reporting month.
		HUH (O/P-5)	27 August 2015	The item will be followed-up in the next reporting month.

Parameters	Description	Works Area	Observation Date	Status
		HHS (E12)	27 August 2015	The item will be followed-up in the next reporting month.
		HHS (E22)	27 August 2015	The item will be followed-up in the next reporting month.
		HHS (D16)	27 August 2015	The item will be followed-up in the next reporting month.
		HHS (C27a)	27 August 2015	The item will be followed-up in the next reporting month.
	General refuse was observed on ground. The Contractor should maintain good housekeeping at the site and provide sufficient garbage bin for collection of refuse.	HUH (M31)	20 August 2015	The item was rectified by the Contractor on 27 August 2015.
	Two waste skips were observed full. The Contractor should remove the rubbish regularly to prevent accumulation.	HUH (AC-7)	27 August 2015	The item will be followed-up in the next reporting month.
Landscape and Visual	Construction materials were observed at the planter. The Contractor should clear the construction material at the planter.	Gate 3	27 August 2015	The item will be followed-up in the next reporting month.

Note:
1. HUH: Hung Hom Station
2. HHS: Hung Hom Stabling Sidings
3. NAT: North Approach Tunnels
4. SAT: South Approach Tunnels
5. N/A: Not Applicable

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

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 Summary of Monitoring Exceedances

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

7.2 Summary of Environmental Non-Compliance

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

7.3 Summary of Environmental Complaint

7.3.1 No public complaint was received during reporting month. Details and cumulative statistics on environmental complaints can be referred to ***Appendix L***.

7.4 Summary of Environmental Summons and Successful Prosecution

7.4.1 No summon was received during the reporting month.

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

8 FUTURE KEY ISSUES

8.1 Construction Programme for Next Month

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

- Piling for HUH, NAT and SAT
- Initial excavation at HUH and HHS
- Operation of Material Receiving Hopper at Hung Hom Freight Pier
- Underpinning works at HUH
- ABWF work at HHS and concourse

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 September 2015 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 27th Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 August 2015.

9.1.2 6 nos. of 24-hour TSP monitoring were carried out in the reporting month.

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

9.1.4 Two landscape and visual monitoring and 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 No environmental complaint was reported during the reporting month.

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:

Noise Impact

- Ensure all air compressors are provided with noise emission labels.
- Ensure all the air compressors are fully enclosed when in operation in order to ensure acoustic performance of the enclosure.

Air Quality Impact

- Provide sufficient water spraying to the haul road.
- Cover the cement bags entirely with impervious sheeting.
- Ensure all machineries are under regular maintenance..

Water Quality Impact

- Provide proper protection to prevent muddy water from discharging into the gully and improve wheel washing system to prevent muddy wheel-washing water discharge to public road.

Chemical and Waste Management

- Provide secondary containment with proper maintenance and usage to prevent land contamination.

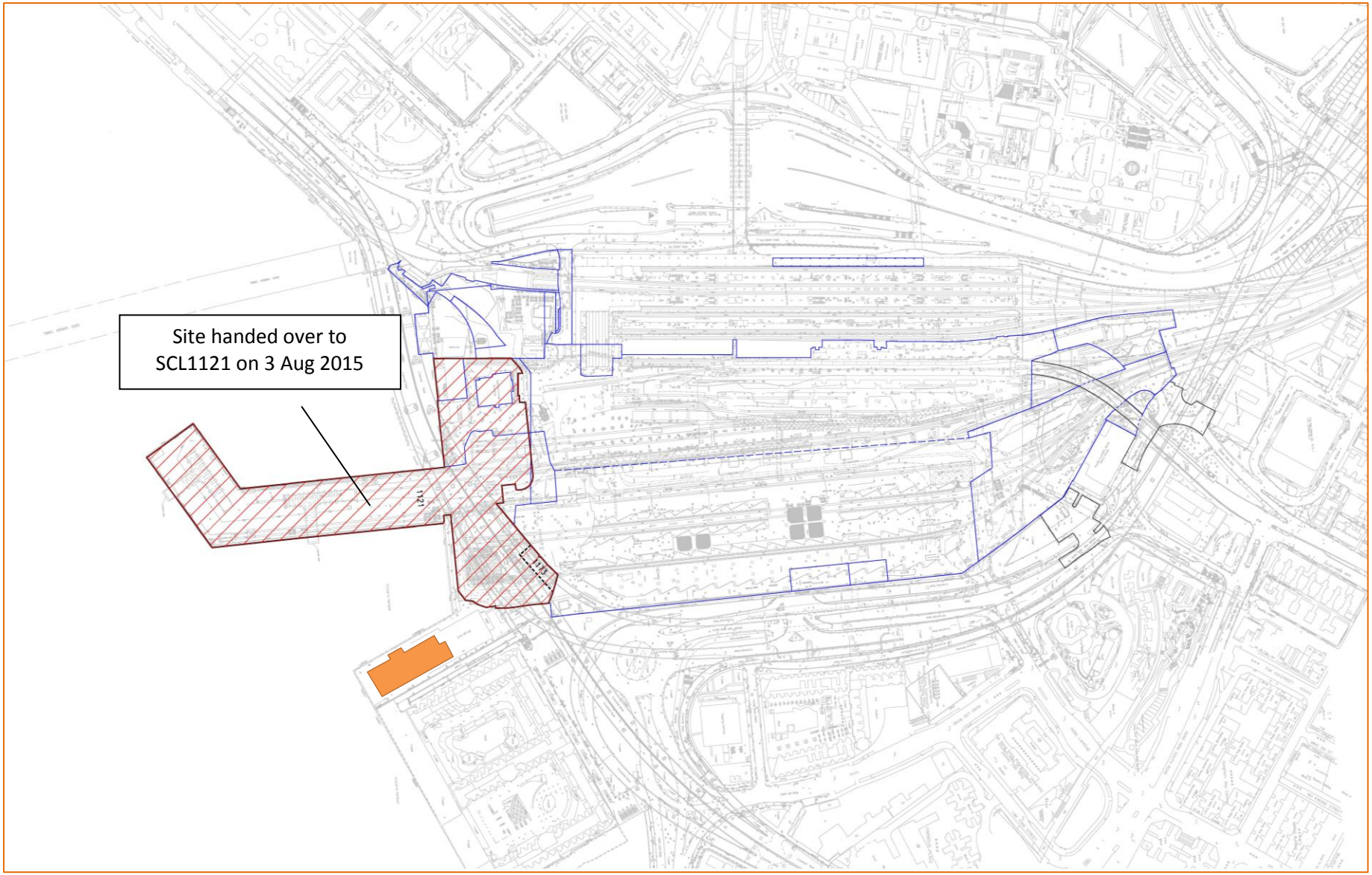
- Maintain good housekeeping at the site and provide sufficient garbage bin for collection of refuse.
- Remove rubbish from the waste skips regularly to prevent accumulation.

Landscape and Visual

- Clear the construction material at the planter.

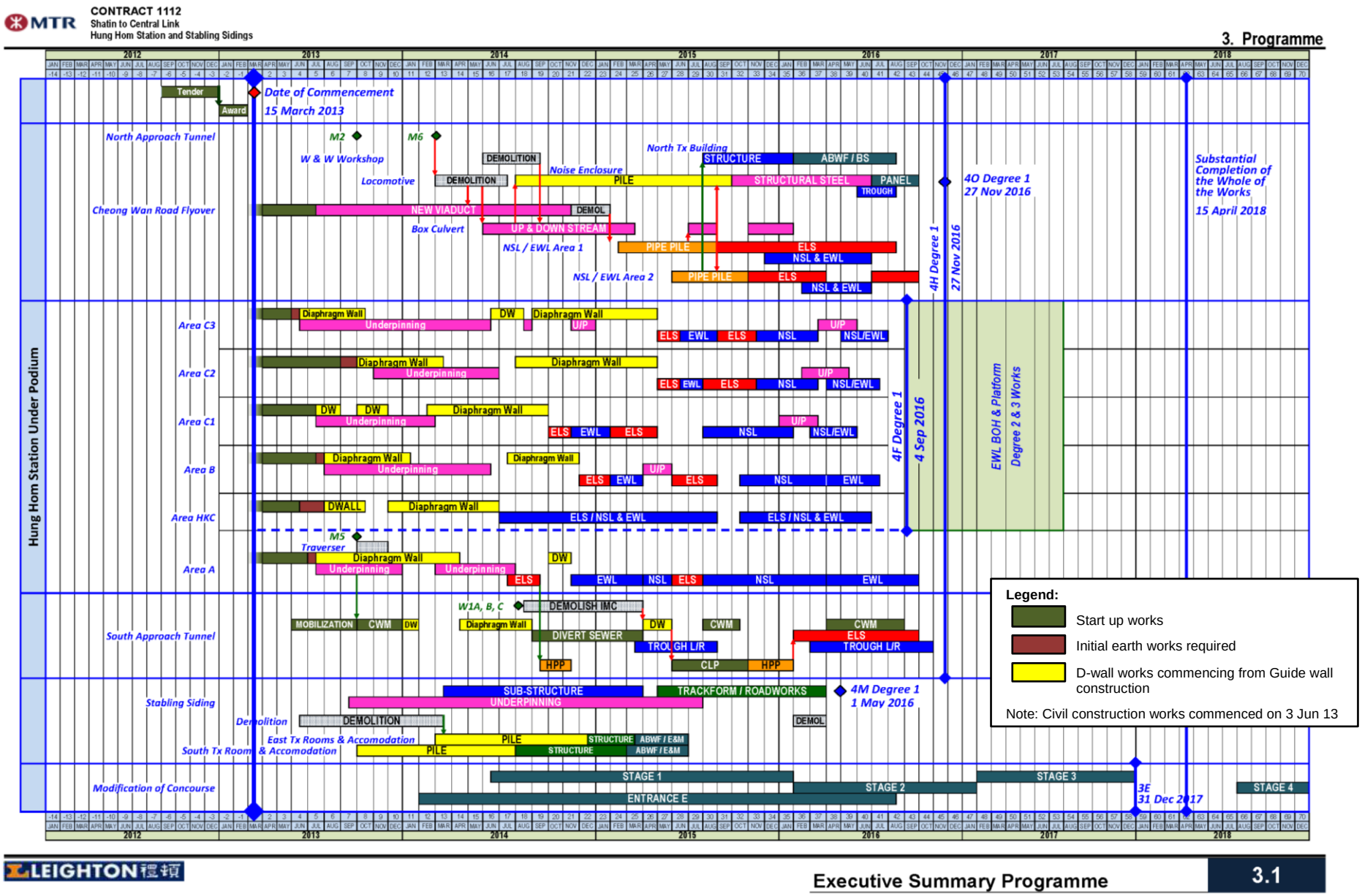
APPENDIX A

Project Works Boundary


Site handed over to
SCL1121 on 3 Aug 2015

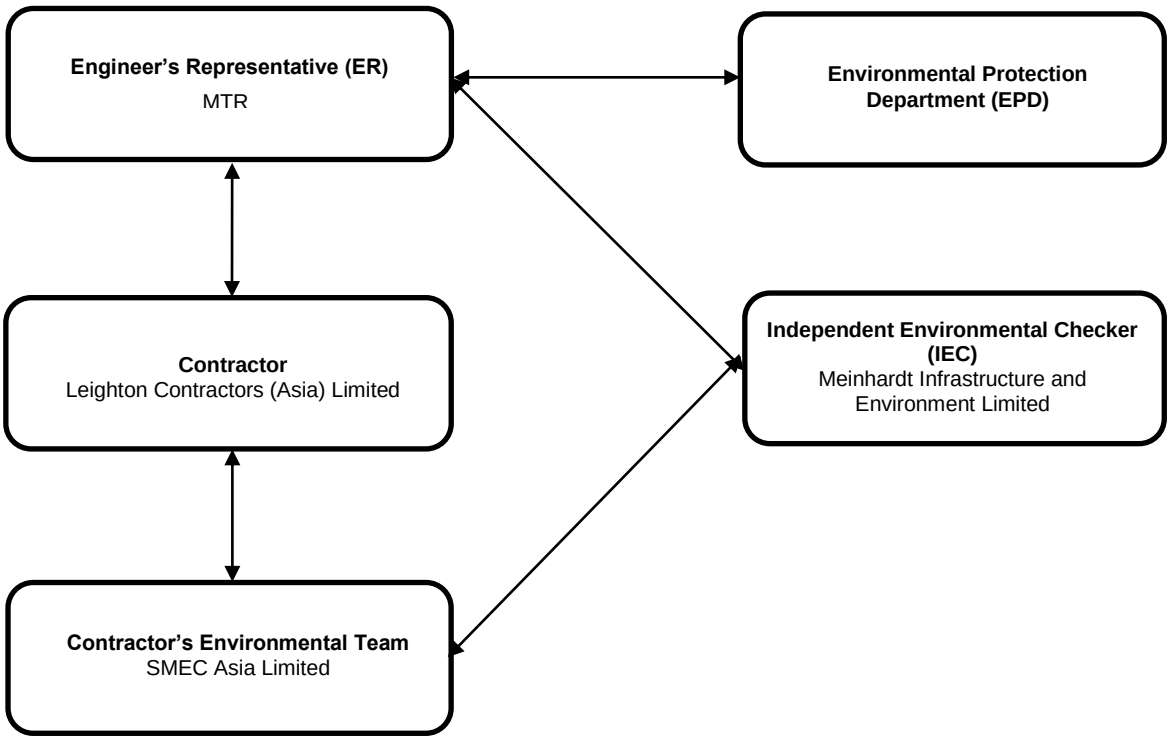
APPENDIX B

Construction Programme


MTR
CONTRACT 1112
Shatin to Central Link
Hung Hom Station and Stabling Sidings
3. Programme
2012
2013
2014
2015
2016
2017
2018
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
UNDERPINNING
TRACKFORM / ROADWORKS
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

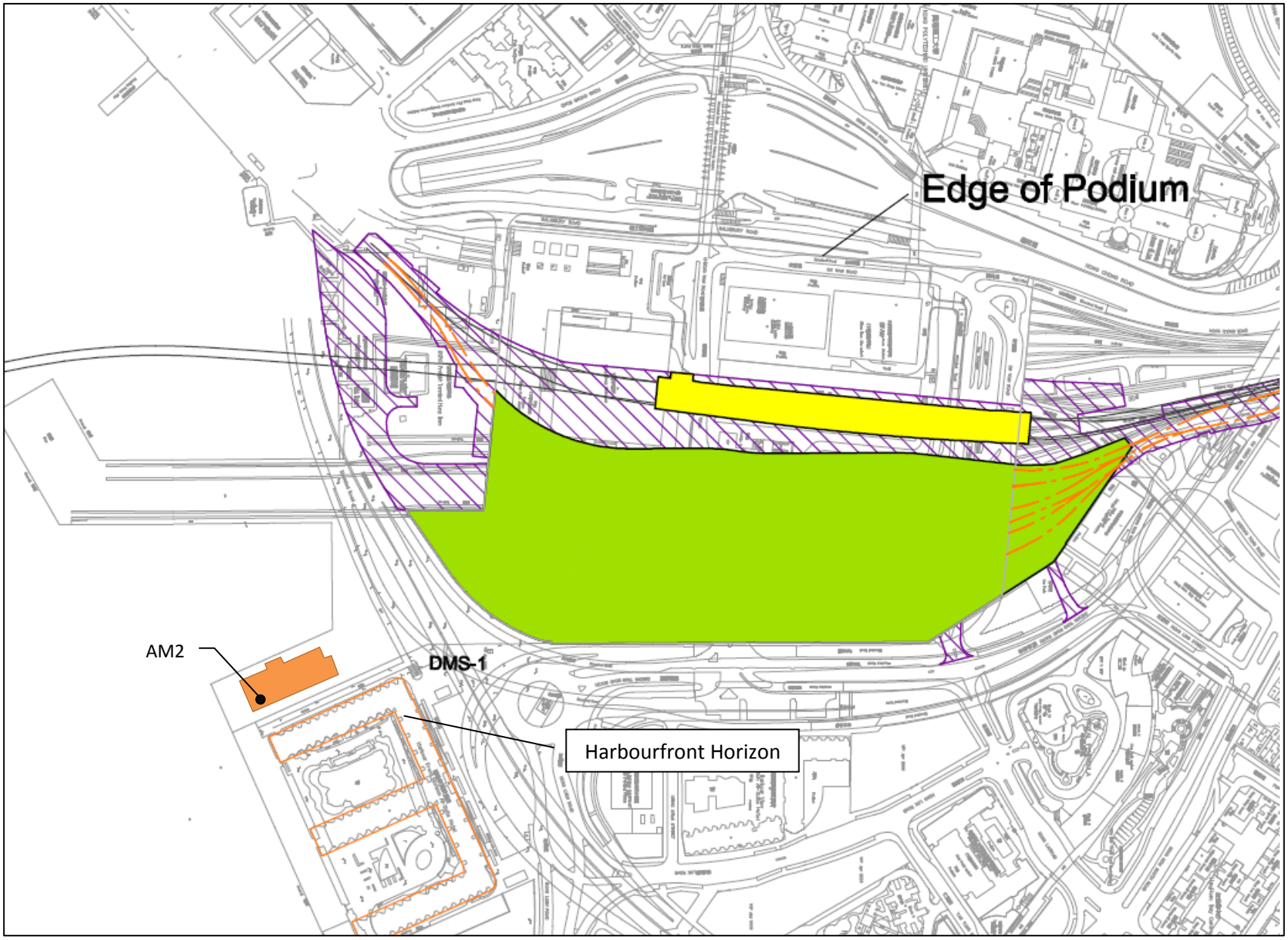
APPENDIX C

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
DMS-1
Harbourfront Horizon

APPENDIX E

Calibration Certificates for Monitoring Equipment

TSP Sampler Calibration

SITE

Location:	Hung Hom	Calibration Date:	June 10, 2015
Sampler:	Hunghom MTR TSP	Next Calibration Date:	August 10, 2015
Serial No	694-0665	Tech:	Sam Wong

CONDITIONS

Barometric Pressure (in Hg):	39.73	Corrected Pressure (mm Hg):	1009
Temperature (deg F):	93	Temperature (deg K):	307
Average Press. (in Hg):	39.73	Corrected Average (mm Hg):	1009
Average Temp. (deg F):	93	Average Temp. (deg K):	307

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.10265
Model:	TE-5025A	Qstd Intercept:	-0.00335
Serial#:	1941	Date Certified:	March 24, 2015

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	11.80	1.857	60.0	68.13	Slope =	36.7239
2	10.00	1.709	54.0	61.32	Intercept =	-0.8104
3	7.80	1.510	48.0	54.50	Corr. coeff.=	0.9991
4	5.00	1.209	38.0	43.15		
5	3.00	0.937	30.0	34.06	# of Observations:	5

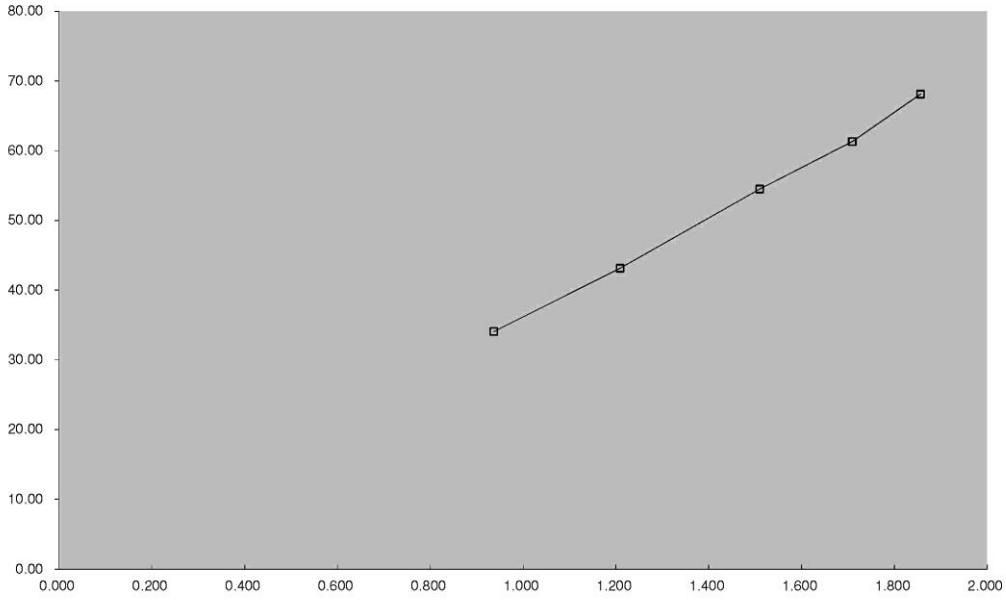
Calculations

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: June 10, 2015


80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.000
0.200
0.400
0.600
0.800
1.000
1.200
1.400
1.600
1.800
2.000

TSP Sampler Calibration

SITE

Location:	Hung Hom	Calibration Date:	August 13, 2015
Sampler:	Hunghom MTR TSP	Next Calibration Date:	October 13, 2015
Serial No	694-0665	Tech:	Sam Wong

CONDITIONS

Barometric Pressure (in Hg):	39.70	Corrected Pressure (mm Hg):	1008
Temperature (deg F):	83	Temperature (deg K):	301
Average Press. (in Hg):	39.70	Corrected Average (mm Hg):	1008
Average Temp. (deg F):	83	Average Temp. (deg K):	301

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.10265
Model:	TE-5025A	Qstd Intercept:	-0.00335
Serial#:	1941	Date Certified:	March 24, 2015

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	11.80	1.873	60.0	68.73	Slope =	36.7239
2	10.00	1.724	54.0	61.86	Intercept =	-0.8170
3	7.80	1.523	48.0	54.98	Corr. coeff.=	0.9991
4	5.00	1.220	38.0	43.53		
5	3.00	0.945	30.0	34.36	# of Observations:	5

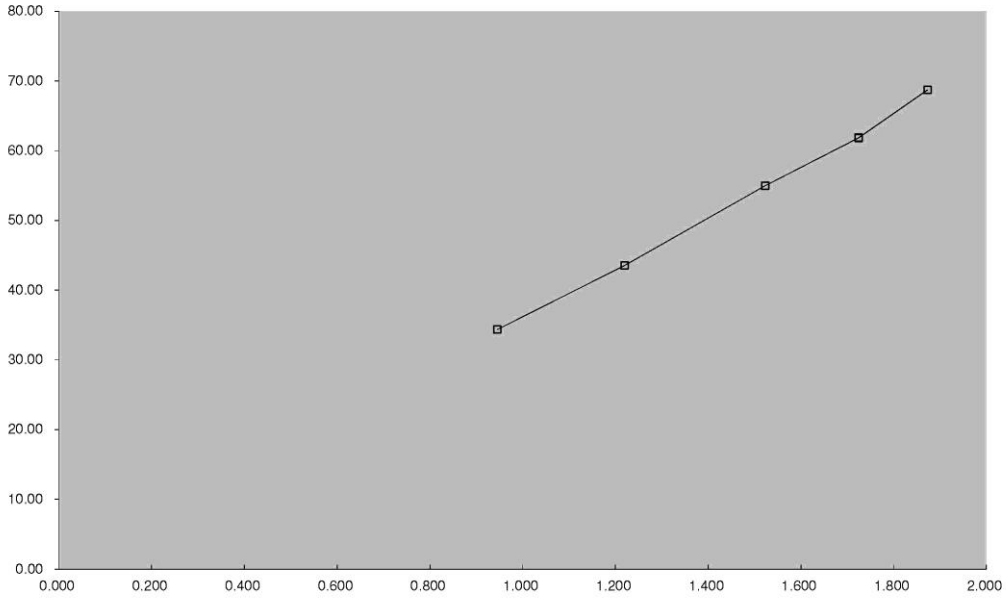
Calculations

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: August 13, 2015


80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.000
0.200
0.400
0.600
0.800
1.000
1.200
1.400
1.600
1.800
2.000

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 24, 2015 Rootsmeter S/N 0438320 Ta (K) - 292
Operator Tisch Orifice I.D. - 1941 Pa (mm) - 756.92

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	1.4880	3.2	2.00
2	NA	NA	1.00	1.0510	6.4	4.00
3	NA	NA	1.00	0.9360	7.9	5.00
4	NA	NA	1.00	0.8920	8.8	5.50
5	NA	NA	1.00	0.7360	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0121	0.6802	1.4258		0.9958	0.6692	0.8784
1.0078	0.9589	2.0163		0.9916	0.9434	1.2422
1.0057	1.0745	2.2543		0.9895	1.0571	1.3888
1.0046	1.1262	2.3644		0.9884	1.1080	1.4566
0.9993	1.3578	2.8515		0.9832	1.3358	1.7568
Qstd slope (m) =		2.10265		Qa slope (m) =		1.31664
intercept (b) =		-0.00335		intercept (b) =		-0.00206
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

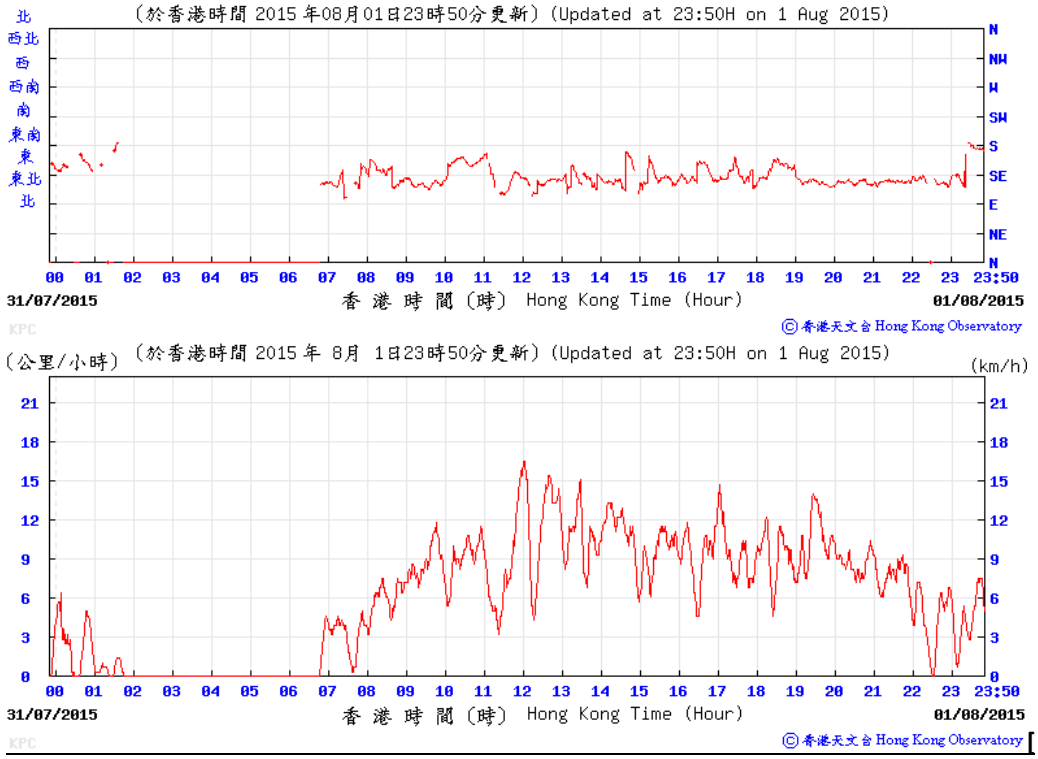
For subsequent flow rate calculations:

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

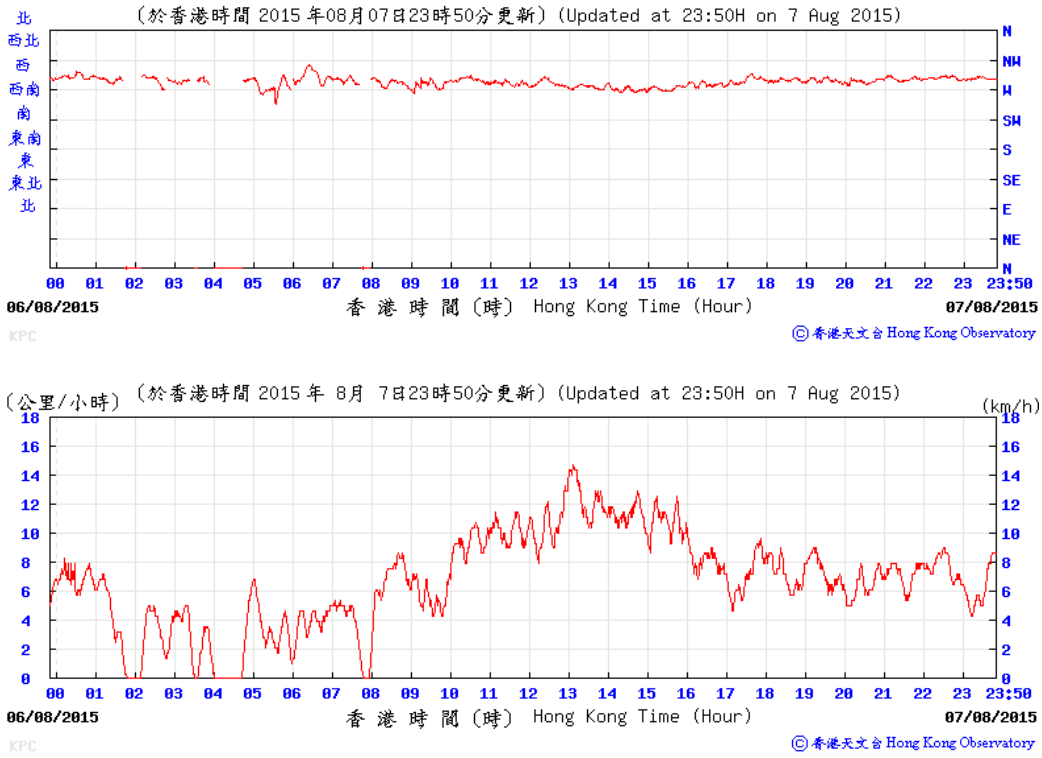
Appendix F

Wind Data

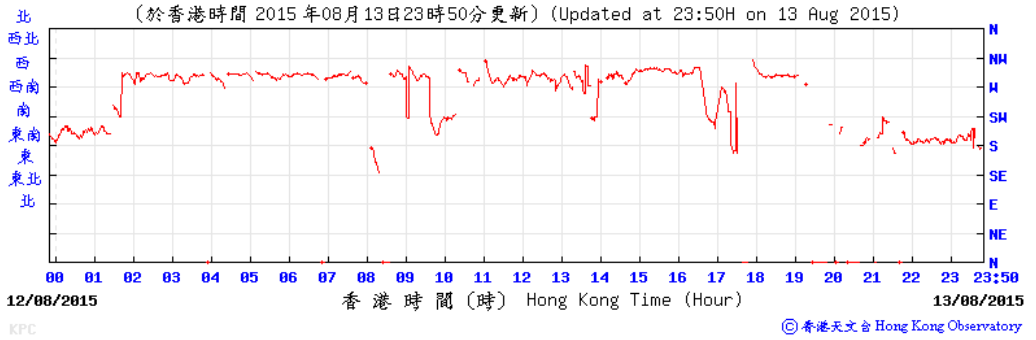
1 August 2015

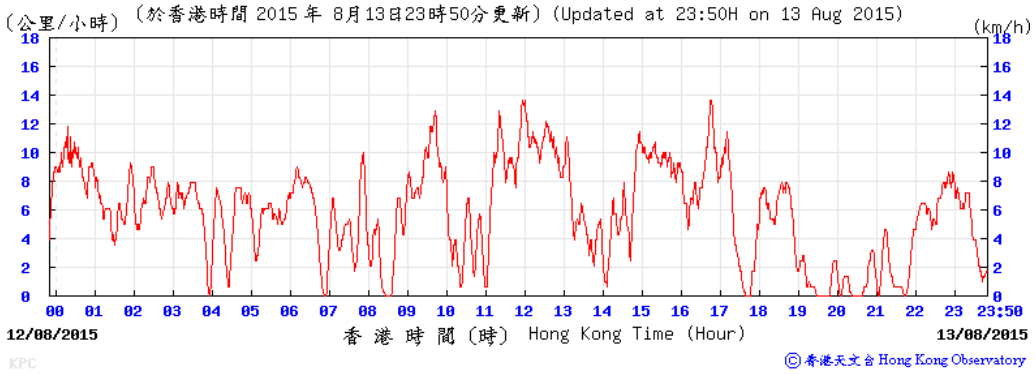


7 August 2015

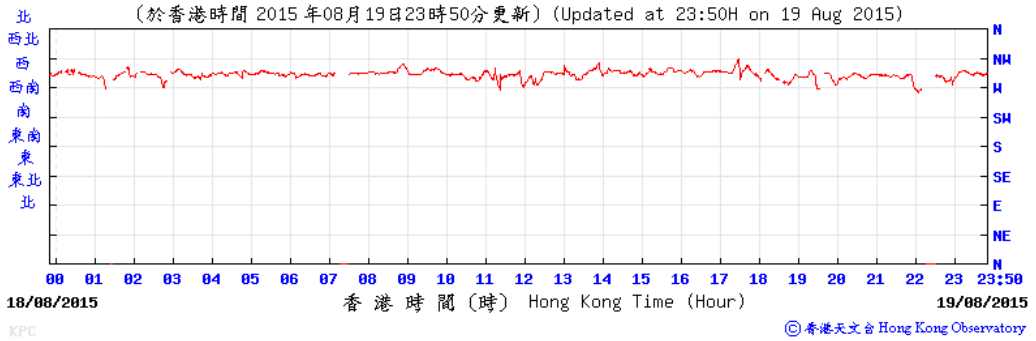


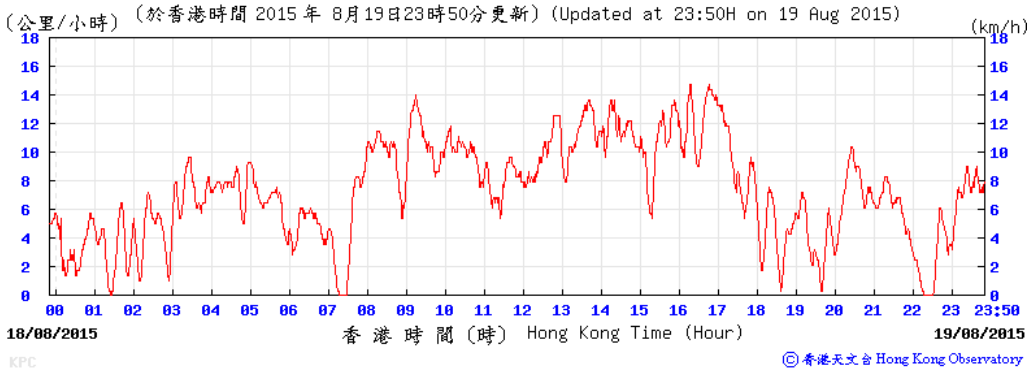
13 August 2015



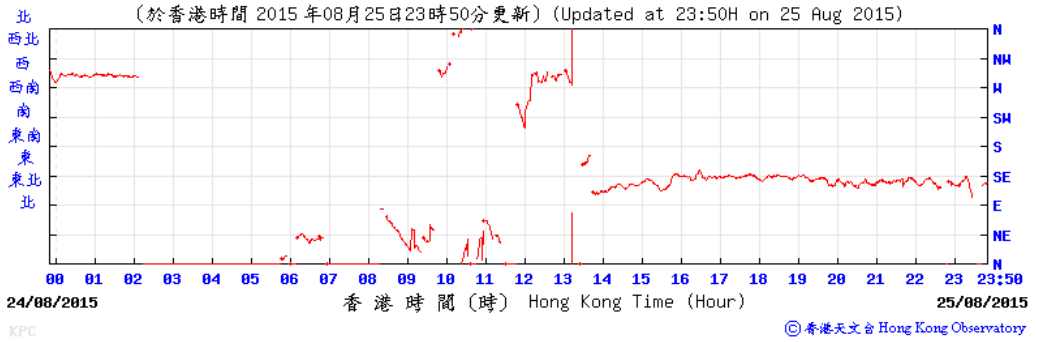


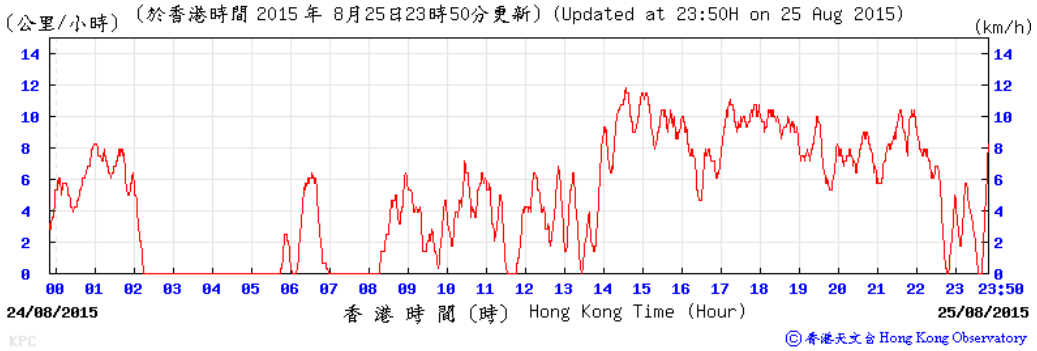
19 August 2015



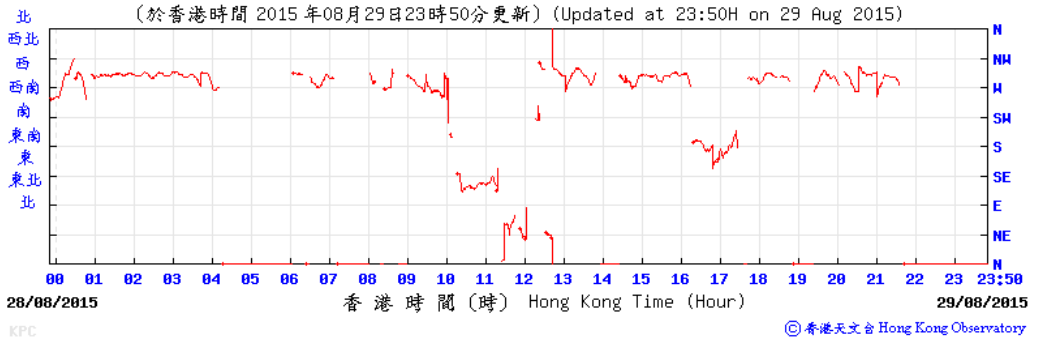


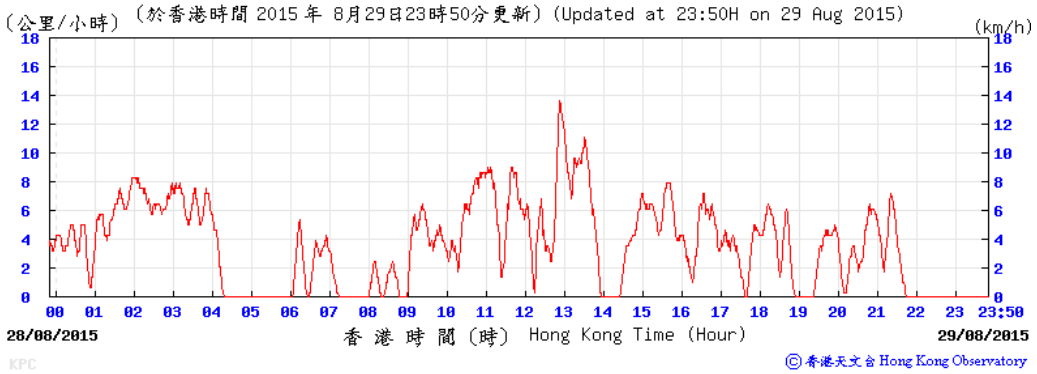
25 August 2015





29 August 2015





Appendix G

Environmental Monitoring Programme

Environmental Monitoring Schedule for SCL1112 in August 2015

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

Environmental Monitoring Schedule for SCL1112 in September 2015

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 24 hr TSP
27	28	29	30			

APPENDIX H

Implementation Schedule of Environmental Mitigation Measures

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

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	practicable. Tree transplanting proposal including final location for transplanted trees will be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006.						
Air Quality (Construction Phase)							
N.A.	Emission from Vehicles and Plants: • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD).	Reduce air pollution emission from construction vehicles and plants	Contractor	All constructions sites	Construction stage	Air Pollution Control Ordinance (APCO)	^ * ^
Construction Dust Impact							
S7.6.5 of Ref. 1; S7.6.6 of Ref. 3	The contractor will follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation.	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	APCO To control the dust impact to meet HKAQO and EIAO-TM criteria	^
S5.20, S5.21, S5.50 and Table 5.4 of Ref. 2	Barging Facility: • Unloading of spoils to barge – the unloading process should be undertaken within a 3-sided screen with top tipping hall. Water spraying and flexible dust curtains should be provided at the discharge point for dust suppression. • Transportation of the spoil from the construction sites to the Barging Point – watering once along all paved haul roads to reduce dust emission by 91.7%. This dust suppression efficiency is derived based on the average haul road traffic, average evaporation rate and an assumed application intensity of 1.7 L/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	To minimize the construction dust impacts to the nearby sensitive receivers	Contractor	Barging point at Hung Hom Freight Pier	Construction stage	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
	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.						^
S7.6.5 of Ref. 1; S5.50 of Ref. 2; S7.6.6 of Ref. 3	Mitigation measures in form of regular watering under a good site practice will be adopted. Watering once per hour on exposed worksites and haul road will be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but will be sufficient to maintain an equivalent intensity of no less than 1.8 L/m^2 to achieve the dust removal efficiency.	Minimise dust impact at the nearby sensitive receivers	Contractor	Active works areas, exposed areas and paved haul roads	Construction stage	APCO To control the dust impact to meet HKAQO and EIAO-TM criteria	*
S7.6.5 of Ref. 1; S5.51 of Ref. 2; S7.6.6 of Ref. 3	• Any excavated or stockpile of dusty material will be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading. • Any dusty materials remaining after 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,	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	APCO Air Pollution Control (Construction Dust) Regulation To control the dust impact to meet HKAQO and EIAO-TM criteria	^ ^ ^ ^ ^ ^ ^

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	cutting, polishing or other mechanical breaking operation takes place will be sprayed with water or a dust suppression chemical continuously. • Any area that involves demolition activities will be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet. • Where scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground floor level of the building, or a canopy will be provided from the first floor level up to the highest level of the scaffolding. • Any skip hoist for material transport will be totally enclosed by impervious sheeting. • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) will be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. • Cement or dry PFA delivered in bulk will be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed. • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA will be carried out in a totally enclosed system or facility, and any vent or exhaust will be fitted with an effective fabric filter or equivalent air pollution control system. • Exposed earth will be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						^ ^ N/A ^ ^ * * ^
S7.6.5 of Ref. 1; S5.57 of Ref. 2; S7.6.6 of Ref. 3	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Harbourfront Horizon	Construction stage	EIAO-TM APCO	^

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

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

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

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

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	the oil interceptors to prevent flushing during heavy rain. • Construction solid waste, debris and rubbish on site will be collected, handled and disposed of properly to avoid water quality impacts. • All fuel tanks and storage areas will be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby. • All the earth works involving will be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable. • Adopt Best Management Practices.						^ ^ ^ ^
S10.7.1 of Ref. 1; S10.7.1 of Ref. 3	<u>Tunnelling works</u> • Cut-and-cover/ open-cut tunnelling work will be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable. • Uncontaminated discharge will pass through sedimentation tanks prior to off-site discharge. • The wastewater with a high concentration of SS will be treated (eg, by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater. • Direct discharge of the bentonite slurry (as a result of D-wall and bored tunnelling construction) is not allowed. It will be reconditioned and reused wherever practicable. Temporary storage locations (typically a properly closed warehouse) will be provided on site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC PN 1/94 will be adhered to in the handling and disposal of bentonite slurries.	To minimize construction water quality impact from tunnelling works	Contractor	All tunnelling portion	Construction stage	WPCO ProPECC PN1/94 EIAO-TM TM-Water	^ ^ ^ ^

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

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

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

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

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

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

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	according to the Water Pollution Control Ordinance (WPCO). • In order to minimize the potential odour / dust emissions during excavation and transportation of the sediment, the excavated sediments should be wetted during excavation / material handling and should be properly covered when placed on trucks or barges. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. • The barge transporting the sediments to the designated disposal sites should be equipped with tight fitting seals to prevent leakage and should not be filled to a level that would cause overflow of materials or laden water during loading or transportation. • In order to minimize the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site.						N/A N/A N/A
S11.5.1 of Ref.1; S8.94 – 9.97 of Ref. 2; S11.5.1 of Ref. 3	<u>Chemical waste</u> • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, will be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Containers used for the storage of chemical wastes will be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450L unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes will be clearly labelled and used solely for the storage of chemical waste; be enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; be covered to prevent rainfall entering; and be arranged so that incompatible materials are adequately separated.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	Waste Disposal (Chemical Waste) General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	^ ^ ^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	• Disposal of chemical waste will be via a licensed waste collector; and be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.						^
S9.98 – 9.99 of Ref 2	<u>Asbestos wastes</u> • All storage of asbestos waste should be carried out properly in a secure place isolated from other substances so as to prevent any possible release of asbestos fibres into the atmosphere and contamination of other substances. The storage area should bear warning panels to alert people of the presence of asbestos waste. Collection, transportation and disposal of asbestos waste will follow the trip-ticket system. • Licensed asbestos waste collectors will be appointed to collect the asbestos waste and deliver to the designated landfill for disposal. The Project Proponent should notify to EPD in advance for disposal of asbestos waste. After processing the notification, EPD will issue specific instructions and directions for disposal. The waste producer must strictly follow these directions	To ensure the asbestos wastes are handled and disposed of in accordance with the statutory requirements	Contractor	All construction sites	Construction stage	Code of practice on the Handling, Transportation and Disposal of Asbestos Waste	^ N/A

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
Land Contamination							
S10.24 – 10.34 of Ref 2	<u>Precautionary measures</u> • Precautionary measures such as visual inspection are recommended to be undertaken during construction activities that disturb soil. The inspection process should involve a visual observation of excavated soils for discolouration and the presence of oils, together with identifying the presence of odours, which may also indicate soil and/or groundwater contamination. • If soil discolouration or the presence of oil/unnatural odour is noted during visual inspection, sampling and testing should also be undertaken to verify the presence of contamination.	To act as a general precautionary measure to screen soils for the presence contamination during construction	Contractor	All construction sites	Construction stage	"Guidance Note for Contaminated Land Assessment and Remediation" "Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management	^ ^
S10.35 of Ref 2	• Potential remediation of contaminated soil • If land contamination is identified, CAR and RAP detailing the proposed remediation works should be prepared. RR should then be prepared and submitted to EPD to demonstrate that the decontamination work is adequate and has been carried out in accordance with the endorsed CAR and RAP. Information such as soil treatment/disposal records (including trip tickets), confirmatory sampling results and photographs should be included in the RR. No construction work should be carried out prior to endorsement of the RR by EPD. • In order to minimise environmental impacts arising from the handling of potentially contaminated materials, the following environmental precautionary measures are recommended to be utilised during the course of any required site remediation: • Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety; • Excavation should be carried out during dry season as far as possible to minimise contaminated runoff from contaminated soils; • Supply of suitable clean backfill material is needed after excavation; • If proposed remediation methods employ chemical oxidation methods as the contaminant mass reduction technology, chemicals will be securely and separately stored away from	To remediate contaminated soil	Contractor	All construction sites	Construction stage	"Guidance Notes for Investigation and Remediation of Contaminated Sites of Petrol Filling Stations, Boatyards and Car Repair /Dismantling Workshop"	N/A N/A N/A N/A N/A N/A

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	sources of ignition or oxidisable items. Handling will be undertaken by personnel with appropriate training and Personal Protective Equipment • Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates should be sealed to prevent any discharge during transport or during wet conditions; • Speed control for the trucks carrying coVehicle wheel and body washing facilities at the site's exit points should be established and used; and contaminated materials should be enforced; • Pollution control measures for air emissions e.g. from biopile blower, noise emissions e.g. from blower, and water discharges e.g. runoff control should be implemented and complied with relevant regulations and guidelines.						N/A N/A N/A N/A
S10.36 of Ref 2	The Occupation Safety and Health Ordinance (OSHO) (Chapter 509) and its subsidiary Regulations should be followed by all site personnel working on the site at all times. In addition, the following basic health and safety measures should be implemented as far as possible: Set up a list of safety measures for site workers. Provide written information and training on safety for site workers. Keep a log-book and plan showing the contaminated zones and clean zones. Maintain a hygienic working environment. Avoid dust generation. Provide face and respiratory protection gear to site workers. Provide personal protective clothing (e.g. chemical resistant jackboot, liquid tight gloves) to site workers. Provide first aid training and materials to site workers.	To minimise the potentially adverse effects on health and safety of construction workers during the course of site remediation.	Contractor	All construction sites	Site remediation and prior to construction phase	"Guidance Note for Contaminated Land Assessment and Remediation" "Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management "Occupation Safety and Health Ordinance (Chapter 509)"	N/A
EM&A Project							
S14.2 – 14.4 of Ref. 1; S13.2 – 13.4 of Ref. 3 1.	• An Environmental Team needs to be employed as per this EM&A Manual. • Prepare a systematic EMP to ensure effective implementation of the mitigation measures. • An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in this	Perform environmental monitoring & auditing	Contractor	All construction sites	Construction stage	EIAO Guidance Note Ref4/2010 EIAO-TM	^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	EM&A Manual are fully complied with.						

Remark for Status:

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

Notes:

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

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

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

APPENDIX I

Event and Action Plan

Event and Action Plan for Landscape and Visual Impact Monitoring

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

Event and Action Plan for Air Quality

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

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

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

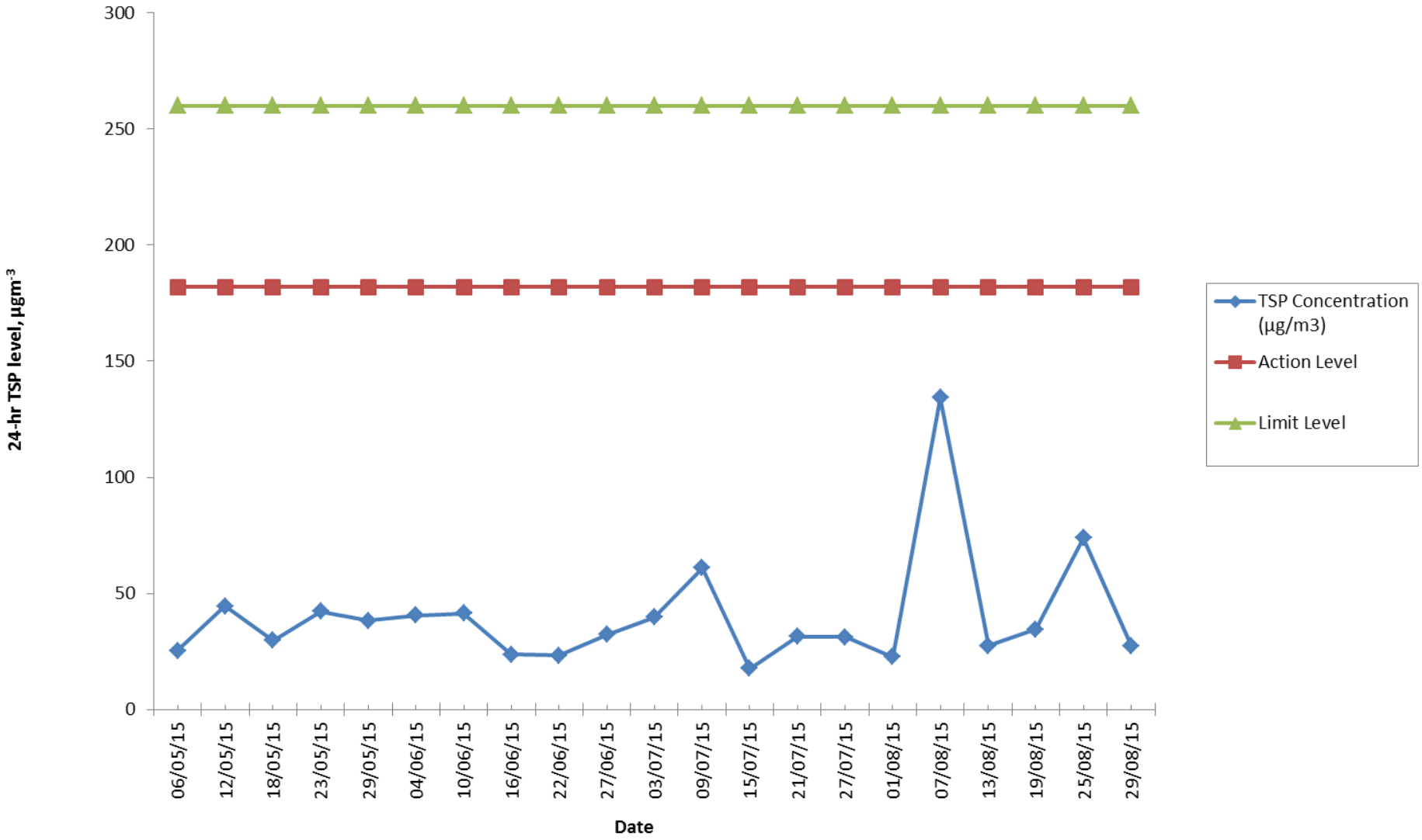
APPENDIX J

Monitoring Results and their Graphical Presentations

Air Quality Monitoring Results for AM2

Sampling Date	Wt. of paper (g)				Elapse Time			Flow Rate (CFM)			Total Volume (m^3)	TSP Concentration (µg/m3)	Weather	Remark
	Paper No.	Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate				
01/08/15	C6	2.7972	2.8343	0.0371	12993.30	13017.30	24.00	40	40	40.0	1631.05	22.7461	Heavy Rainfall	-
07/08/15	C7	2.8099	3.0290	0.2191	13017.30	13041.30	24.00	40	40	40.0	1631.05	134.3306	Hazy	-
13/08/15	C8	2.8113	2.8562	0.0449	13041.30	13065.30	24.00	40	40	40.0	1631.05	27.5283	Rainy	-
19/08/15	B109	2.8212	2.8776	0.0564	13065.30	13089.30	24.00	40	40	40.0	1631.05	34.5789	Rainy	-
25/08/15	B110	2.8344	2.9551	0.1207	13089.30	13113.30	24.00	40	40	40.0	1631.05	74.0014	Sunny	-
29/08/15	B111	2.8120	2.8565	0.0445	13113.30	13137.30	24.00	40	40	40.0	1631.05	27.2830	Fine	-

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		
	Imported from SCL1111	Imported from SCL1121	Total Quantity Generated	Hard Rock and Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills at HH Barging Point	Disposed as Public Fills at TKO137	Disposed as Public Fills at TM38	Metals	Paper/ Cardboard Packaging	Asphalt	Plastics	Chemical Waste		General Refuse
Unit	(in '000m^3)									(in '000Kg)				(in '000Kg)	(in '000L)	(in '000Kg)
Jun-13	0		0	0	0	0	0	0	0	137.3	0	0	0	0	-	6.55
Jul-13	0		0.36	0	0	0	0	0	0.36	365.34	0	0	0	0	-	16.87
Aug-13	0		1.68	0	0	0	0.05	0	1.63	69.98	0.25	0	0	0	-	12.67
Sep-13	0		3.39	0	0	0	0.20	0	3.19	131.18	0.22	0	0.46	0	-	16.25
Oct-13	0		4.04	0	0	0	0.78	0	3.26	179.97	0.63	8.28	2.04	0	-	39.87
Nov-13	0		6.09	0	0	0	2.09	0.18	3.82	125.70	0.45	160.35	0	0	-	28.69
Dec-13	0		5.69	0	0	0	1.74	0.01	3.94	72.15	0.39	4.13	0	0	-	18.04
Jan-14	0		4.58	0	0	0	0	0.27	4.31	117.57	0.26	147.67	0.26	0	-	30.09
Feb-14	0		3.80	0	0	0.14 [Note1]	0	0.19	3.46	28.32	0.29	414.67	0	0	-	15.73
Mar-14	0		10.10	0	0	6.18[Note2]	0	0.29	3.63	96.26	0.25	0	0	0	-	47.76
Apr-14	0		6.67	0	0	4.82[Note3]	0	0.0053	1.85	75.43	0.23	1,322.39	0	0.2	-	78.63
May-14	0.52		5.77	0	0.43	2.00[Note4]	0	0.12	3.65	48.86	0.28	501.45	0	0	-	66.03
Jun-14	0.47		4.56	0	0	1.73[Note5]	0	0.29	2.54	42.95	0.25	0	0	0.4	-	45.97
Jul-14	0.34		8.61	0	0	2.89[Note6]	0	0.87	4.84	70.99	0	0	0	0	-	40.50
Aug-14	0.20		8.57	0	0	3.56[Note7]	0	0.44	4.57	227.86	0	0	0	0	-	76.93
Sep-14	0.23		11.11	0	0	5.82[Note8]	0	0.23	5.06	220.85	0.29	0	0	0	-	43.01
Oct-14	0.54		12.79	0	0	6.04[Note9]	0	0.06	6.69	174.82	0.71	329.16	0	0	-	97.92
Nov-14	0.93		10.63	0	0	3.78[Note10]	0	0.15	6.70	163.72	0.56	376.40	0	0	-	81.91
Dec-14	3.72		8.59	0	0	2.97[Note11]	0	0	5.62	385.80	0.53	166.98	0	5.4	-	130.83

Waste Flow Table																	
Month	Actual Quantities of Inert C&D Materials Generated Monthly									Actual Quantities of non-inert C&D Wastes Generated Monthly							
	Generated				Disposed					Recycled				Disposed			
	Imported from SCL1111	Imported from SCL1121	Total Quantity Generated	Hard Rock and Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills at HH Barging Point	Disposed as Public Fills at TKO137	Disposed as Public Fills at TM38	Metals	Paper/ Cardboard Packaging	Asphalt	Plastics	Chemical Waste		General Refuse
Unit	(in '000m^3)									(in '000Kg)				(in '000Kg)	(in '000L)	(in '000Kg)	
Jan-15	3.72		19.29	0	0	10.03 [Note12]	0	0	9.26	543.40	0.80	179.01	0	0	1.60	318.66	
Feb-15	3.03		13.96	0	0	8.41 [Note13]	0	0	5.54	263.10	0.46	168.82	0	0	0	180.27	
Mar-15	5.68		22.28	0	0	12.45 [Note14]	0	0	9.82	346.70	0.61	11.45	0	0	0	429.13	
Apr-15	4.71		18.51	0	0	11.25 [Note15]	0	0.23	7.26	275.99	0.32	0	0	0	0	376.98	
May-15	4.62		20.64	0	0	11.53 [Note16]	0	0	9.10	353.88	0.67	0	0	0	0	266.43	
Jun-15	5.04		13.49	0	0	6.29 [Note17]	0	0	7.20	317.14	0.43	0	0	0.20	1.00	258.01	
Jul-15	6.21	0.09	21.64	0	0	16.15 [Note18]	0	0	5.50	706.38	0.69	0	0	0	0	270.73	
Aug-15	0.40	0	26.43	0	0	19.29 [Note19]	0	0	7.14	45.53	0.57	0	0	0	0	261.04	
TOTAL	**40.35**	**0.09**	**274.26**	**0**	**0.43**	**135.32**	**4.85**	**3.53**	**130.97**	**5260.96**	**11.31**	**3790.76**	**2.76**	**6.20**	**2.60**	**3266.14**	

Note:

1. 137 m^3 of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904.
2. 267 m^3 of the Inert C&D materials were reused in SIL Project Contract 904;
   3,998 m^3 of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and
   1,912 m^3 of the Inert C&D materials were reused in Tuen Mun – Chek Lap Kok Link (TM-CLKL) and Tuen Mun Western Bypass (TMWB) Project Contract HY/2012/08.
3. 1,728 m^3 of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and
   3,088 m^3 of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
4. 184 m^3 of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904; and
   1814 m^3 of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
5. 1,021 m^3 of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and
   707 m^3 of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
6. 2,894 m^3 of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
7. 575.5m^3 of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and

2907.6 m^3 of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08; and 76.0 m^3 of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2009/08.

8. 4,905.4 m^3 of the Inert C&D materials were reused in TM-CLKL and 912.3 m^3 of the Inert C&D materials were reused in SIL Project Contract 904.
9. 5,522.9 m^3 of the Inert C&D materials were reused in TM-CLKL and 515.9 m^3 of the Inert C&D materials were reused in SIL Project Contract 904.
10. 3,774.6 m^3 of the Inert C&D materials were reused in TM-CLKL.
11. 2,968.9 m^3 of the Inert C&D materials were reused in TM-CLKL (HY/2012/08).
12. 9,988.1 m^3 of the Inert C&D materials were reused in WENT (SITA) and 46.34 m^3 of the Inert C&D materials were reused in SIL Project Contract 904.
13. 8,212.8 m^3 of the Inert C&D materials were reused in WENT (SITA) and 200.9 m^3 of the Inert C&D materials were reused in SIL Project Contract 904.
14. 11,757 m^3 of the Inert C&D materials were reused in WENT (SITA), 23.41 m^3 of the Inert C&D materials were reused in SIL Project Contract 904 and 672.78 m^3 of the Inert C&D materials were reused in XRL822.
15. 10,633 m^3 of the Inert C&D materials were reused in WENT (SITA) and 0.61176 m^3 of the Inert C&D materials were reused in XRL822.
16. 11,533 m^3 of the Inert C&D materials were reused in WENT (SITA).
17. 6,290 m^3 of the Inert C&D materials were reused in WENT (SITA).
18. 16,145 m^3 of the Inert C&D materials were reused in WENT (SITA).
19. 878 m^3 of the Inert C&D materials were reused in WENT (SITA) and 18,415 m^3 of the Inert C&D materials were reused in SCL1121.

Marine Sediment Flow Table						
Month	Actual Quantities of Marine Dumping Monthly					
	Type 1			Type 2		
	Generated from SCL1111 [Note1]	Generated from SCL1112	Disposed	Generated from SCL1111 [Note2]	Generated from SCL1112	Disposed
Unit	(in '000m^3)			(in '000m^3)		
Jan-15	0	0	0	2.22	0.06	2.28
Feb-15	1.29	0	0.82	0	0	0
Mar-15	2.43	0	2.48	0	0	0
Apr-15	3.97	0.136	5.27	0	0	0
May-15	8.26	0.090	8.35	0	0	0
Jun-15	9.71	0.118	9.83	0	0	0
Jul-15	5.29	0	5.18	0	0	0
Aug-15	0	0	0	0	0	0
TOTAL	**31.69**	**0.344**	**31.92**	**2.22**	**0.06**	**2.28**

Note:

1. Type 1 Marine Sediment generated from SCL1111 will be delivered to the Barging Point at SCL1112 for disposal.
2. Type 2 Marine Sediment generated from SCL1111 will be delivered to the Barging Point at SCL1112 for disposal.

APPENDIX L

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Reference No.	Subject	Location of Concern	Status
Environmental complaints	10 March 2015	Public comment received by EPD, K01/RE/00005632 -15	Complaint of malodour from Hung Hom Station (near Exit B1)	Hung Hom Station, Tsim Sha Tsui	• ET conducted inspection to examine the environmental performance of the site on 12 Mar 2015 • No odour was noticed by all attending parties. It was observed that excavation, predrilling, welding, box culvert construction and installation of TAM grout pipeworks were carried out at the NAT works area, located to the west and east of the footbridge • The source of malodour could not be identified • A barrier was erected on the eastern side of footbridge, with the barrier already in place on the western side of the footbridge since November 2014, so now both sides of the footbridge contain barriers to shield off any dust or odour from the site • No noticeable malodour was observed and the air quality control was found to be satisfactory according to conversation between EPD and the Contractor • Investigation Report submitted to EPD on 26 Mar 2015
Environmental complaints	7 Feb 2015	Public comment received by EPD, EPD's Ref. No. K01/RE/00003309 -15	Complaint of construction dust from the construction site at MTR Hung Hom Building, 8-8 Cheong Wan Road, Tsim Sha Tsui	MTR Hung Hom Station Building, 8-8 Cheong Wan Road	• ET conducted inspection to examine the environmental performance of the site on 10 Feb 2015 • No demolition works carried out inside Hung Hom Station and Freight Operation Building during the complaint period • Watering and dust screen (site enclosed with bamboo scaffold and tarpaulin sheet) were provided for the demolition work at International Mail Centre • Renovation works on-going inside the Hung Hom Station with dust mitigation measures implemented • A joint inspection was then conducted by the Contractor and EPD on 13 Feb 2015 and no adverse comment was provided by EPD • Investigation Report submitted to EPD on 23 Feb 2015

	Date Received	Reference No.	Subject	Location of Concern	Status
	11 Nov 2014	Public comment received by EPD, EPD's Ref. No. K01/RE/00028087 -14	Complaint of welding smell and air nuisance other than dark smoke, from construction machine from Hung Hom Station, Tsim Sha Tsui	At footbridge between Hung Hom Station and Hung Hom Region, near Royal Peninsula	• Barrier was erected on the side of footbridge facing the construction site • ET conducted followed-up inspection of the implemented mitigation measures on 20 Nov 2014 and air quality control was found to be satisfactory • Investigation Report submitted to EPD on 3 Dec 2014
	11 Nov 2014	Public comment received by EPD, EPD's Ref. No. K01/RE/00028181 -14	Complaint of construction dust from Hung Hom Station, Tsim Sha Tsui	At footbridge between Hung Hom Station and Hung Hom Region, near Royal Peninsula	• Barrier was erected on the side of footbridge facing the construction site • ET conducted followed-up inspection of the implemented mitigation measures on 20 Nov 2014 and air quality control was found to be satisfactory • Investigation Report submitted to EPD on 3 Dec 2014
Notification of summons	-	-	-	-	-
Successful Prosecution	-	-	-	-	-

Appendix I

27th 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. 27

[Period from 1 to 31 August 2015]

Works Contract 1108 – Kai Tak Station and Associated Tunnels

(September 2015)

Certified by: Goldie Fung 

Position: Environmental Team Leader

Date: 11 September 2015

Kaden – Chun Wo Joint Venture (KCJV)

Shatin to Central Link –

Contract 1108

Kai Tak Station and Associated Tunnels

Monthly Environmental Monitoring & Auditing Report for August 2015

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 twenty seventh 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 August 2015 to 31st August 2015.

Summary of the Construction Works undertaken during the Reporting Month

The major site activities in this reporting period were including:

- Open Cut Tunnel: base and sump pit cast concrete, staircase corridor backfilling
- Cut and Cover Tunnel: Defect rectification, temporary drainage system maintenance and monitoring, mass stair formwork erection, patching up and defect rectification of internal structure
- Station structure: wall concreting, Adit B top slab concreting,sheetpile extraction at seaside
- Launching Shaft: Tunnel mining completed, strut installation, waterproofing installation in mined tunnel
- Receiving Shaft: wall and roof cast concrete, wall and roof steel fixing, backfilling

Variation in Construction Method

Based on recent engineering information and having considered the high construction risk for tunnel excavation, the tunnel with mining method is required to be shortened and the associated at-grade construction works within the buffer zone above the Former Kowloon City Pier (FKCP) is therefore proposed to minimize the potential impact on FKCP. The application for variation of an Environmental Permit with Environmental Review Report has been submitted to EPD on 19th March 2014 and the amended Environmental Permit (EP-438/2012/E) was issued to MTRC on 4th April 2014.

Environmental Monitoring and Audit Progress

Culture Heritage

Inspection of the Former Kowloon City Pier was conducted during the weekly environmental site inspection. Details of the inspection findings are presented in Section 6.

Landscape and Visual

The implementation of landscape and visual mitigation measures was inspected during the weekly environmental site inspection. Most of the necessary mitigation measures have been implemented. Details of the audit findings and implementation status are presented in Section 6.

Waste Management

According to Contractor's waste flow data, a total of 11718 m^3 of inert C&D materials were generated, which 7462 m^3 were disposed to the receiving facility of Contract 1108A and 4256 m^3 were reused in the contract. 202 m^3 of general refuse were generated and disposed at landfill site. 25 kg of paper, 9650 kg of metal and 640 kg of chemical waste were sent to recyclers for recycling.

Environmental Site Inspection

Joint weekly inspections were conducted by representatives of the Contractor, Engineer and ET on 4th, 11th, 18th and 25th August 2015. The representative of the IEC joined the site inspection on 11th August 2015. EPD carried out the site inspection on 7th August 2015. No any comments were advised by EPD during this reporting period. Details of the audit findings and implementation status are presented in Section 6.

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

One complaint received on 13th August 2015 was referred by EPD on 19th August 2015 regarding the muddy water discharged to the Kai Tak Nullah. ET had carried out the investigation on 25th August 2015 to resolve the concern.

No breaches of Action and Limits levels, non-compliance event, notification of summons and successful prosecution against the Project were received in this reporting month.

Future Key Issues

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

- Open cut tunnel: base slabs wall with sump pit cast concreting, wall and roof sliding formwork, mass stair cast, scaffold erection and steel fixing for upper stair erect, 1109 interface excavation down to formmation
- Cut and cover tunnel: tunnel bays excavation
- Station: tunnel bays excavation, Adit A wall concreting, Adit B wall concreting, floor to Adit A concreting
- Mined tunnel: Launching Shaft: waterproofing

Receiving Shaft: Roof and wall cast concreting, sliding formwork erection, prop cast concreting

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 twenty seventh monthly EM&A Report which summarises the audit findings for the EM&A programme during the reporting period from 1st August 2015 to 31st August 2015.

1.2 Structure of the Report

The structure of the report is as follow:

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

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

Section 3: Environmental Monitoring Requirement – summarises the monitoring requirements and environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

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

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

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

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

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

Section 9: Conclusions and Recommendations

2 Project Information

2.1 Background

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

The construction of the SCL (TAW-HUH) and SCL (HHS) have been divided into a series of civil construction works contracts. This Works Contract 1108 covers the construction of Kai Tak Station (KAT) and the section of tunnel between KAT and Sung Wong Toi Station (SUW) plus a short section of tunnel from KAT towards Diamond Hill Station (DIH). This construction contract was awarded to Kaden – Chun Wo Joint Venture (KCJV) in April 2013.

2.2 General Site Description

The works area includes work sites in the Kai Tak New Development Area. The construction of tunnel will employ cut & cover method. The alignment and works area for the Project is shown in **Appendix A**.

2.3 Construction Programme and Activities

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

- Open Cut Tunnel: base and sump pit cast concrete, staircase corridor backfilling
- Cut and Cover Tunnel: Defect rectification, temporary drainage system maintenance and monitoring, mass stair formwork erection, patching up and defect rectification of internal structure
- Station structure: wall concreting, Adit B top slab concreting,sheetpile extraction at seaside
- Launching Shaft: Tunnel mining completed, strut installation, waterproofing installation in mined tunnel
- Receiving Shaft: wall and roof cast concrete, wall and roof steel fixing, backfilling

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/H	10/09/2014	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-RE0034-15	01/08/2015	31/08/2015	Valid	/
Construction Noise Permit for General Works				
GW-RE0845-15	22/08/2015	15/02/2016	Valid	(Renew GW-RE0146-15)
GW-RE0688-15	14/07/2015	13/01/2016	Valid	/
GW-RE0136-15	14/02/2015	13/08/2015	Valid	/
GW-RE0146-15	16/02/2015	14/08/2015	Valid	/
GW-RE0225-15	13/03/2015	12/09/2015	Valid	/
GW-RE0226-15	14/03/2015	10/09/2015	Valid	/
GW-RE0352-15	15/04/2015	11/10/2015	Valid	/
GW-RE0307-15	16/04/2015	15/10/2015	Valid	/
GW-RE0376-15	27/04/2015	26/10/2015	Valid	/
GW-RE0385-15	24/04/2015	23/10/2015	Valid	/
Effluent Discharge License				
WT00020520-2014	07/01/2015	31/08/2018	Valid	/
Waste Disposal (Charges for Disposal of Construction Waste) Regulation				
Billing Account No. 7017544	07/06/2013	N/A	Valid	/
Registration of Chemical Waste Producer				
WPN 5213-286-K3069-01	09/07/2013	N/A	Valid	/

2.6 Summary of EM&A Requirements

The EM&A programme under Works Contract 1108 require regular environmental site audits. The EM&A requirements are described in the following sections, including:

- Weekly inspection for Cultural Heritage;
- Weekly inspection for Landscape and Visual;
- Environmental mitigation measures, as recommended in the Project EIA study final report; and
- Environmental requirements in contract documents.

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

3 Environmental Monitoring Requirements

3.1 Culture Heritage

In accordance with the Environmental Permit and EM&A Manual, a buffer zone shall be maintained between both Lung Tsun Stone Bridge and Former Kowloon City Pier and SCL (TAW-HUH) works sites during the tunneling work. For Lung Tsun Stone Bridge, a horizontal distance of 25m between the bridge and the buffer boundary shall be maintained. For Former Kowloon City Pier, a vertical buffer distance of 1.8 – 2.2m from the top of the tunnel shall be maintained. The layout of the buffer zone was attached in **Appendix D**. No at-grade construction activities shall be allowed within the buffer zone. Audit shall be conducted on a weekly basis throughout the construction period for the mined tunnel section under Former Kowloon City Pier.

3.2 Landscape and Visual

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

The event/action plan for Landscape and Visual during Construction Stage is attached in **Appendix E**.

4 Implementation Status on Environmental Protection Requirements

The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and EM&A Manual. The implementation status of the environmental mitigation measures of the reporting period is summarized in **Appendix G**. Status of required submissions under the Environmental Permit (EP) as of the reporting period is presented in Table 4.1.

Table 4.1 Status of Required Submissions under EP

EP Condition	Submission	Submission Date
Condition 3.4	Twenty sixth Monthly EM&A Report	14th August 2015

5 Monitoring Results

5.1 Cultural Heritage

Inspection of the Former Kowloon City Pier was conducted during the weekly environmental site inspection. Details of the inspection findings are presented in Section 6.

5.2 Landscape and Visual

Inspections of the implementation of landscape and visual mitigation measures were conducted on weekly basis. The observations and recommendations made during the audit sessions are summarized in Table 6.1.

5.3 Waste Management

With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in Table 5.1. Inert C&D materials were disposed to the receiving facility of Contract 1108A or reused in the Contract. General refuse was disposed to designated landfill site. Plastics, paper and metal were sent to recycler for recycling. Chemical waste generated was collected by licensed collector. Detail of waste management data is presented in **Appendix F**.

Table 5.1 Quantities of Waste Disposed from the Project

Reporting Month	Quantity					
	C&D Materials (inert) [(a)]	C&D Materials (non-inert) [(b)]				
		General Refuse	Chemical Waste	Recycled materials		
				Paper/cardboard	Plastics	Metals
August 2015	11718 m^3	202 m^3	640 kg	25 kg	0 kg	9650 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 August 2015. The representative of the IEC joined the site inspection on 11th August 2015. The details of observations during site audit can refer to Table 6.1.

EPD carried out the site inspection on 7th August 2015. No any comments were advised by EPD during this reporting period.

6.2 Implementation Status of Environmental Mitigation Measures

According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. Updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix G**.

During site inspections in the reporting month, no non-conformance was identified. The observations, reminders and recommendations made during the audit sessions are summarized in Table 6.1.

Table 6.1 Summary results of site inspections findings

Parameters	Date	Findings	Advice from ET	Action taken	Closing date	Remarks
Noise	28 Jul 15	Sound absorptive material was missing during the rock breaking work at Area 3.	Contractor was advised to wrap the breaker tip with sound absorptive materials for noise reduction.	Breaking work at Area 3 was stopped by contractor.	4 Aug 15	/
Air	30 Jun & 7,14, 23 & 28 Jul 15	Stockpile at Area 1 was covered in general	Contractor was reminded to cover the inactive stockpile entirely for dust reduction.	Stockpile at Area 1 was covered with tarpaulin sheets.	4 Aug 15	/
	28 Jul 15	Water spraying was missing during the rock breaking work at Area 3.	Contractor was advised to implement water spraying for dust suppression.	Breaking work at Area 3 was stopped by contractor.	4 Aug 15	/
	4, 11, 18 &	Dusty material at Area 3	Contractor was advised to	Follow-up action will be	N/A	/

Parameters	Date	Findings	Advice from ET	Action taken	Closing date	Remarks
	25 Aug 15	was observed.	cover all the dusty material with tarpaulin sheets or implement water spraying for dust suppression.	inspected in next reporting month.		
	11 & 18 Aug 15	Water spraying was missing during rock breaking works at Area 3.	Contractor was advised to implement water spraying during rock breaking works for dust suppression.	Rock breaking work was stopped by contractor at Area 3.	25 Aug 15	/
	25 Aug 15	Insufficient water spraying was observed at Area 3.	Contractor was advised to implement water spraying for loading of dusty materials for dust control.	Follow-up action will be inspected in next reporting month.	N/A	/
	25 Aug 15	Dark smoke emission of excavator was observed at Area 3.	Contractor was reminded to repair the excavator and maintain in good conditions.	Follow-up action will be inspected in next reporting month.	N/A	/
Water	4 Aug 15	Chemical containers without drip tray were observed at workshop area.	Contractor was reminded to store all the chemical materials inside the drip tray.	Chemical containers at workshop area were removed by contractor.	11 Aug 15	/
	11 Aug 15	Muddy water was observed discharging into nullah at Area 2.	Contractor was advised to review wastewater treatment system and provide proper treatment for site water before discharging into nullah.	Muddy water was treated before discharging into nullah	18 Aug 15	/
	18 & 25 Aug 15	Surface run-off was observed at Area 2 due to insufficient length of pipeline of wastewater treatment system.	Although the water was clear, contractor was still reminded to discharge the treated site water into drainage directly.	Follow-up action will be inspected in next reporting month.	N/A	/
Waste / Chemical Management	4 Aug 15	Oil stain on ground was observed at workshop area.	Contractor was advised to clean the contaminated soil and provide proper treatment.	Oil stain on ground was removed by contractor at workshop area.	11 Aug 15	/
Cultural Heritage	7, 14, 23 & 28 Jul 15, 4 Aug 15	Concreting material was observed inside the FKCP Area.	Contractor was advised to remove all the materials from the FKCP Area.	Concreting material was stopped to dispose inside the KFCP Area and contractor promised to remove concreting material.	11 Aug 15	/
Landscape and Visual	N/A	N/A	N/A	N/A	N/A	/
Permits/ Licenses	N/A	N/A	N/A	N/A	N/A	/

7 Environmental Non-Conformance

7.1 Summary of Environmental Exceedances

No breaches of Action and Limit levels were recorded in the reporting month.

7.2 Summary of Environmental Non-Compliance

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

7.3 Summary of Environmental Complaint

One complaint received on 13th August 2015 was referred by EPD on 19th August 2015 regarding the muddy water discharged to the Kai Tak Nullah. ET had carried out the investigation on 25th August 2015 to resolve the concern.

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:

- Open cut tunnel: base slabs wall with sump pit cast concreting, wall and roof sliding formwork, mass stair cast, scaffold erection and steel fixing for upper stair erect, 1109 interface excavation down to formmation
- Cut and cover tunnel: tunnel bays excavation
- Station: tunnel bays excavation, Adit A wall concreting, Adit B wall concreting, floor to Adit A concreting
- Mined tunnel: Launching Shaft: waterproofing
  Receiving Shaft: Roof and wall cast concreting, sliding formwork erection, prop cast concreting

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 twenty seventh monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works undertaken during 1st August 2015 to 31st August 2015 in accordance with the EM&A Manual and the requirement under EP-438/2012/H.

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 were received during the reporting period.

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

9.2 Recommendations

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

Noise Impact

- Erect temporary noise barrier and wrap the breaker tip with sound absorptive material for rock breaking

Air Quality Impact

- Cover dusty stockpile entirely with tarpaulin or spray with water to maintain exposed surface wet
- Provide water spraying during boulder breaking
- Maintain plant in good conditions

Water Quality Impact

- Maintain the wastewater treatment facilities regularly for proper functioning
- Provide drip tray for chemical containers

- Provide sufficient length of pipeline to avoid surface run-off

Chemical Management

- Properly handle oil/chemical containing equipment

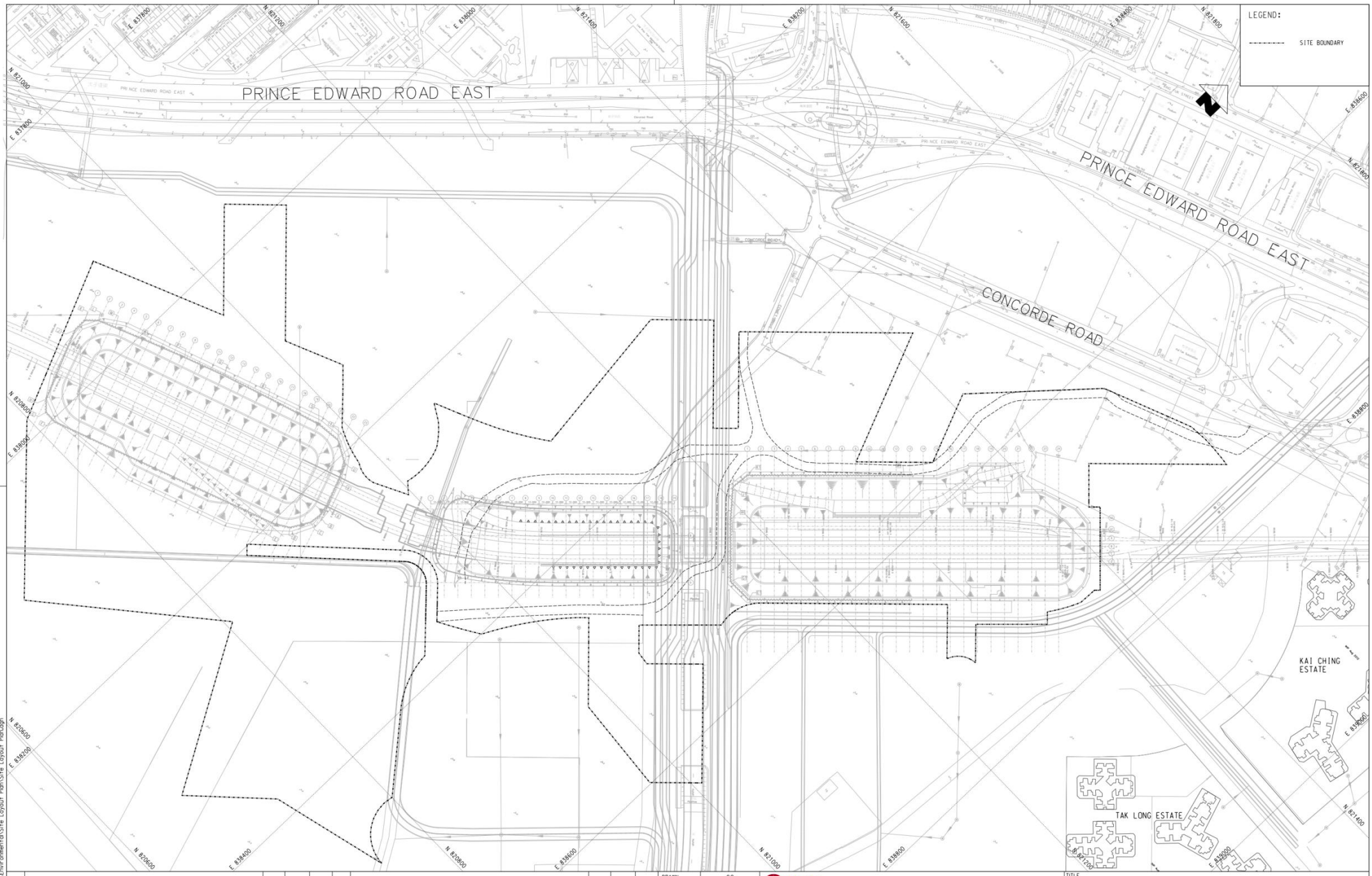
Waste Management

- N/A

Cultural Heritage

- Ensure the FKCP area is free of construction material and equipment

Appendix A – Site Location Plan



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PRINTED BY: CALVIN.C 8/12/2014 8:53:35 AM

REV	DESCRIPTION	BY	DATE	APPROVED
A	FIRST SUBMISSION	KW	110814	BW

DRAWN	CC
DESIGNED	KW
CHECKED	ET
APPROVED	BW
DATE	11/AUG/2014

MTR

SHATIN TO CENTRAL LINK

ORIGINATOR

Kaden – Chun Wo Joint Venture

CADD REF. Site Layout Plan.dgn

TITLE
CONTRACT 1108
KAI TAK STATION AND ASSOCIATED TUNNELS
SITE LAYOUT PLAN

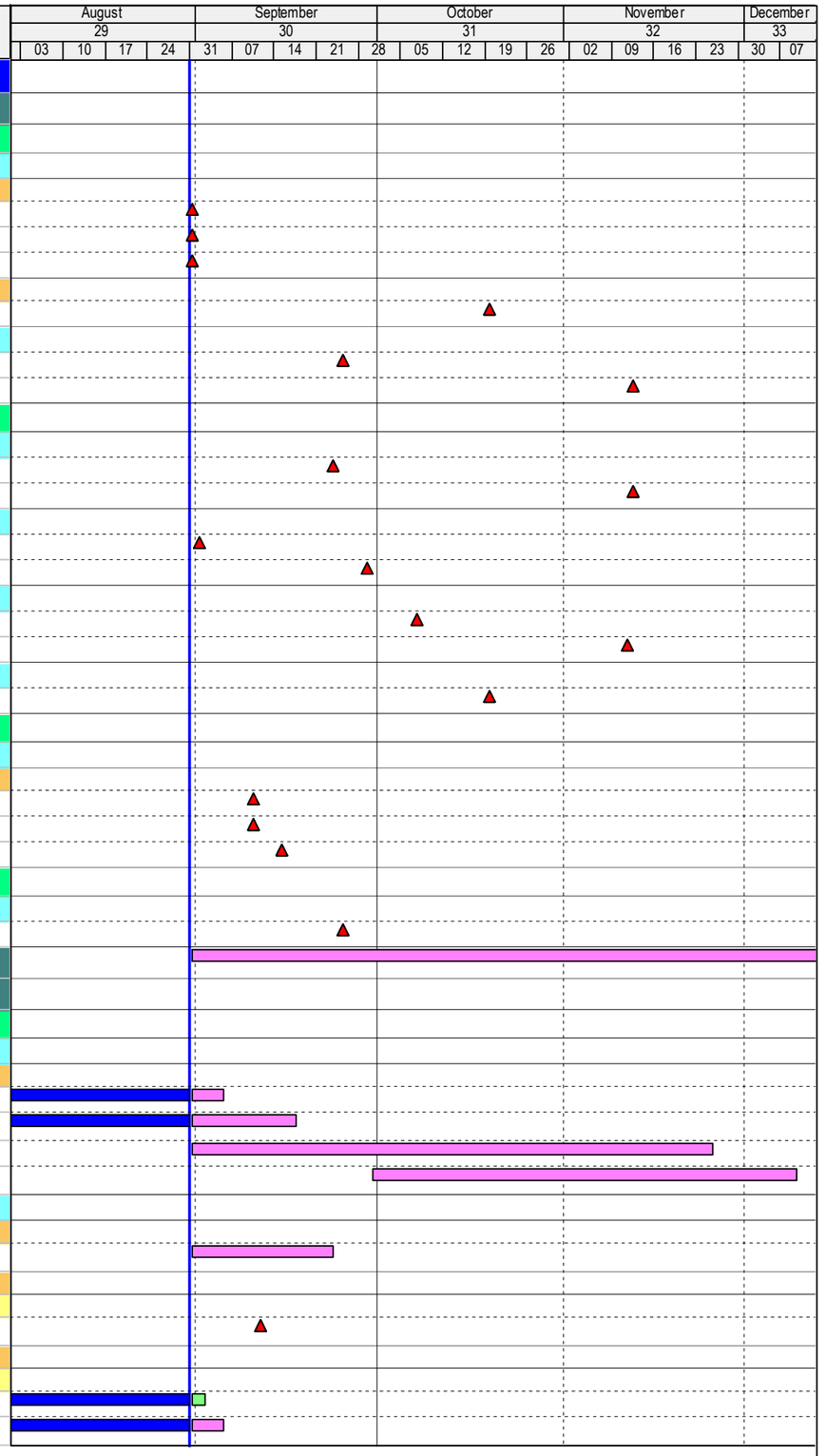
SCALE 1 : 1500 (A1)

DRAWING NO. SITE LAYOUT PLAN

REV. A

Appendix B –Construction Programme

Activity ID	Activity Name	Activity % Complete	Start	Finish
Contract 1108 Kai Tak Station and Associated Tunnels				
Contractual Dates and Project Key Dates				
Critical Dates				
Schedule of Options				
Latest Exercising Date				
01108.CDO2a-ED	Option 2a - Roads L9 & L16 & Associated Works, except the works in Options 2b & 2c - Latest Exercising Date (31-Mar-15)	0%	31-Aug-15*	
01108.CDO2b-ED	Option 2b - Landscape hardwork, irrigation facilities, softworks & pavers - Latest Exercising Date (31-Mar-15)	0%	31-Aug-15*	
01108.CDO2c-ED	Option 2c - Establishment works of the landscape softworks in Option 2b - Latest Exercising Date (31-Mar-15)	0%	31-Aug-15*	
Completion Date				
01108.CDO3a1-CD	Option 3a - Reconstruction & Upgrading of Kai Tak Nullah - Completion Date for Area 1108.W8 &W10 (Wk.22/15, 31-May-15)	0%		19-Oct-15*
Specified Parts Completion of the Works (General Damages Applicable)				
01108.CD3C	3C - Complete backfill of KAT station (Grid 12-19)&ready for EMSD/ DCScontractor for laying DCS pipe(Wk.09/15,01-Mar-15)	0%		25-Sep-15*
01108.CD3D	3D - Complete backfill to ex.ground level of necessary station area for CLP cable lead-in (Wk.33/15,16-Aug-15)	0%		12-Nov-15*
IPS Milestone Dates				
Cost Centre B - Kai Tak Station, Entrances and Adits				
01108.MSB07a	B7 - Complete all structural works for Concourse Level (Week No. 33/15, 16-Aug-15)	0%		23-Sep-15
01108.MSB07b	B7 - Complete backfill to Ground Level (Week No. 33/15, 16-Aug-15)	0%		12-Nov-15
Cost Centre C - South Approach Tunnel				
01108.MSC32	C6b - Complete Excavation to tunnel formation levels (Week No. 46/14, 15-Nov-14) under EI 22	0%		01-Sep-15
01108.MSC03b	C3b - Complete 50% excavation by plan length of mined tunnels (Week No. 49/14, 6-Dec-14) under EI 22	0%		29-Sep-15
Cost Centre F - Option 2 - CEDD Works for Roads L9 & L16 and Associated Works				
01108.MSF01	F1 - Contractor's dwgs submission schedule & All permanent works Material Control Schedule approved (WN.33/15,16-Aug-15)	0%		07-Oct-15
01108.MSF02	F2 - Shop drawings & material submissions approved (Week No. 50/15, 13-Dec-15)	0%		11-Nov-15
Cost Centre G - Option 3 - CEDD Entrusted Works for Reconstruction & Upgrading of Kai Tak Nullah				
01108.MSG02	G2 - Complete works for reconstruction & upgrading of Kai Tak Nullah at Works Areas 1108.W8 & W10 (WN.22/15, 31-May-15)	0%		19-Oct-15
Schedule of Access & Vacate Dates for Works Areas				
Vacation Dates				
Works Areas				
01108.VAW08	Works Area 1108.W8 (31-Jul-15)	0%		10-Sep-15*
01108.VAW10	Works Area 1108.W10 (31-Jul-15)	0%		10-Sep-15*
01108.VAWA3	Works Area 1108.A3 (31-Dec-14)	0%		15-Sep-15*
Schedule of Access Dates for Designated Contractors				
District Cooling System				
01108.IFDCS.1	Disctrict Cooling System - Works Areas 1108.W1 & 1108.W2 (Week No. 09/15, 01-Mar-15)	0%		25-Sep-15*
A - Preliminaries				
B - Kai Tal Station, Entrances and Adits				
B1 KAT Station				
B1.3 Station - U/G C&S Works (Below Concourse Level Soffit)				
Metalworks, BWIC with Services and BS Works				
01108.STN.BM04-12	GL 04~12 Installation of PSD support beam, 11 t	90%	29-Jun-15 A	05-Sep-15
01108.STN.BM00-04	GL 00~04 Installation of PSD support beam, 5.5 t	50%	06-Jul-15 A	17-Sep-15
01108.STN.BW12-24	GL 12~24 BWIC and BS works	0%	31-Aug-15	25-Nov-15
01108.STN.BW04-12	GL 04~12 BWIC and BS works	0%	30-Sep-15	09-Dec-15
B1.4 Station U/G C&S Works (Concourse Level and Above)				
External Wall to Lower Ground				
01108.STN.EG24-24	GL 24~24 External end wall (2 teams in 10m panel, 2 cycles)	0%	31-Aug-15	23-Sep-15
Mezzanine Level				
Mezzanine Internal Wall				
01108.MS07aP	B7- Complete all structural works for Concourse Level (Week No. 33/15, 16-Aug-15) - Programmed	0%		11-Sep-15*
Waterproofing				
Waterproofing to Lower Ground Level				
01108.STN.WP19-21.2	GL 19~21 Waterproofing works to external wall up to LGL, 2 x 30mL x 5.9mH (354 m2)	80%	05-Feb-15 A	02-Sep-15
01108.STN.WP00-02.2	GL 00~02 Waterproofing works to external wall up to LGL, 2 x 19.6mL x 5.9mH (230 m2)	25%	18-Jul-15 A	05-Sep-15



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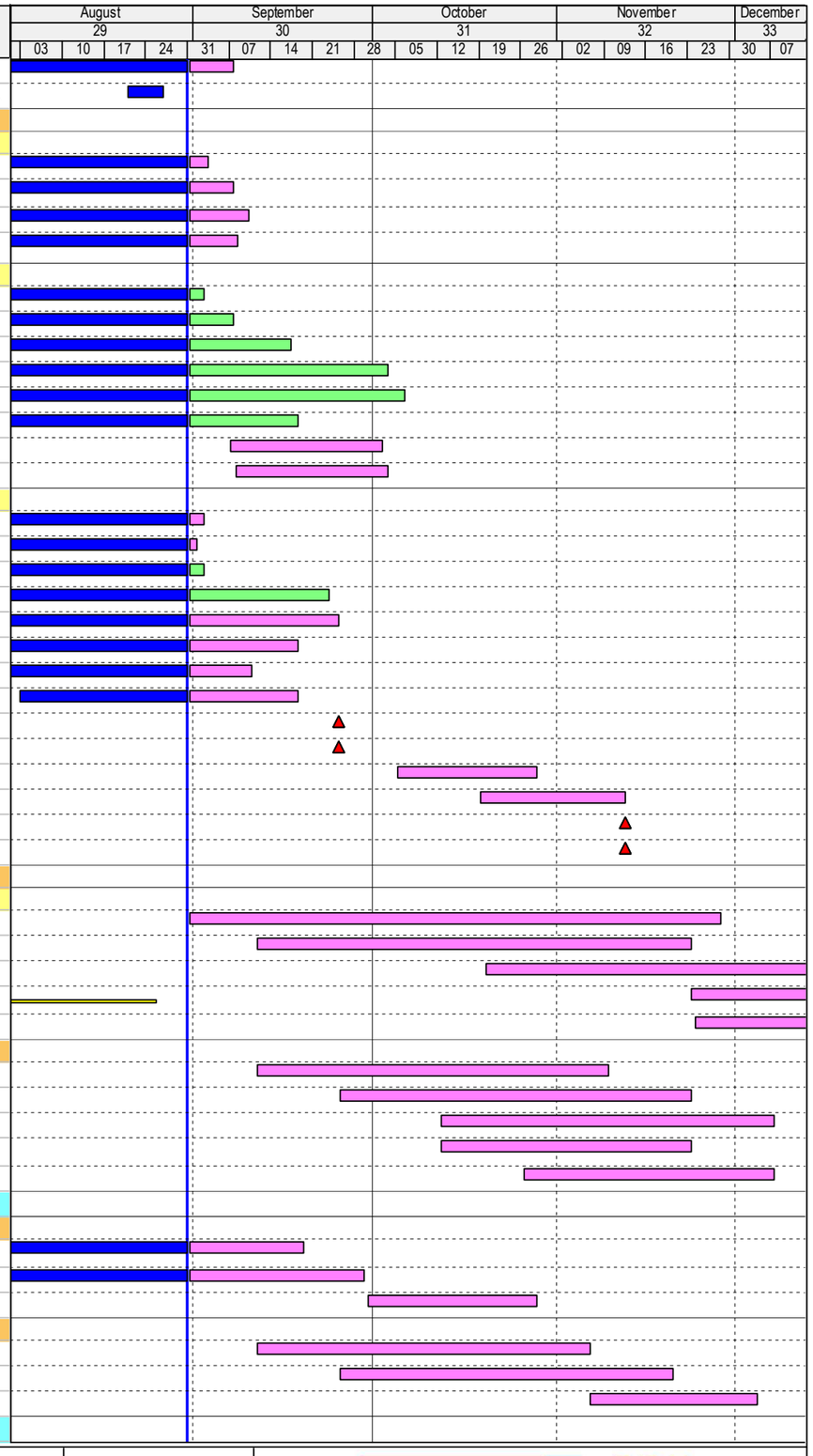
Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.STN.WP02-04.2	GL 02~04 Waterproofing works to external wall up to LGL, 2 x 24mL x 5.9mH (283 m2)	25%	18-Jul-15 A	07-Sep-15
01108.STN.WP00-00.2	GL 00-00 Waterproofing works to external end wall up to LGL, 35.6mL x 5.9mH (210 m2)	100%	21-Aug-15 A	27-Aug-15 A
Backfilling				
Backfilling to Concourse Level				
01108.STN.BF19-21.1	GL 19~21 Backfill and compaction, 7580 m3	85%	09-Feb-15 A	03-Sep-15
01108.STN.BF02-04.1	GL 02~04 Backfill and compaction, 6770 m3	75%	04-May-15 A	07-Sep-15
01108.STN.BF21-24.1	GL 21~24 Backfill and compaction, 6410 m3	55%	06-May-15 A	10-Sep-15
01108.STN.BF00-02.1	GL 00~02 Backfill and compaction, 4420 m3	45%	02-Jul-15 A	08-Sep-15
Backfilling to Lower Ground Level				
01108.STN.BF12-14.2	GL 12~14 Backfill and compaction, 9710 m3	90%	16-Feb-15 A	02-Sep-15
01108.STN.BF04-06.2	GL 04~06 Backfill and compaction, 8410 m3	80%	03-Mar-15 A	07-Sep-15
01108.STN.BF14-16.2	GL 14~16 Backfill and compaction, 9710 m3	55%	04-May-15 A	17-Sep-15
01108.STN.BF16-19.2	GL 16~19 Backfill and compaction, 9710 m3	20%	01-Jun-15 A	03-Oct-15
01108.STN.BF19-21.2	GL 19~21 Backfill and compaction, 9400 m3	15%	11-Jun-15 A	06-Oct-15
01108.STN.BF21-24.2	GL 21~24 Backfill and compaction, 8710 m3	50%	02-Jul-15 A	18-Sep-15
01108.STN.BF00-02.2	GL 00~02 Backfill and compaction, 5490 m3	0%	07-Sep-15	02-Oct-15
01108.STN.BF02-04.2	GL 02~04 Backfill and compaction, 7410 m3	0%	08-Sep-15	03-Oct-15
Backfilling to Finish Ground Level				
01108.STN.BF12-14.3	GL 12~14 Backfill and compaction, 8240 m3	90%	03-Mar-15 A	02-Sep-15
01108.STN.BF10-12.3	GL 10~12 Backfill and compaction, 8240 m3	95%	03-Mar-15 A	01-Sep-15
01108.STN.BF06-08.3	GL 06~08 Backfill and compaction, 8240 m3	90%	03-Mar-15 A	02-Sep-15
01108.STN.BF14-16.3	GL 14~16 Backfill and compaction, 8240 m3	40%	08-Apr-15 A	23-Sep-15
01108.STN.BF16-19.3	GL 16~19 Backfill and compaction, 8240 m3	35%	18-Apr-15 A	25-Sep-15
01108.STN.BF19-21.3	GL 19~21 Backfill and compaction, 7840 m3	50%	08-Jul-15 A	18-Sep-15
01108.STN.BF04-06.3	GL 04~06 Backfill and compaction, 8240 m3	70%	30-Jul-15 A	10-Sep-15
01108.STN.BF21-24.3	GL 21~24 Backfill and compaction, 7970 m3	50%	03-Aug-15 A	18-Sep-15
01108.IFDCS.1P	District Cooling System - Works Areas 1108.W1 & 1108.W2 (01-Mar-15) - Programmed	0%		25-Sep-15
01108.CD3CP	Complete backfill of KAT station (Grid 12-19) for EMSD/DCS contractor for DCS pipe laying - Programmed	0%		25-Sep-15
01108.STN.BF02-04.3	GL 02~04 Backfill and compaction, 7240 m3	0%	05-Oct-15	28-Oct-15
01108.STN.BF00-02.3	GL 00~02 Backfill and compaction, 6040 m3	0%	19-Oct-15	12-Nov-15
01108.MSB07bP	Completion of Station backfill and compaction for outside works - Programmed	0%		12-Nov-15
01108.CD3DP	Completion of Station backfill to ex. ground level of necessary atation for CLP cable lead-in - Programmed	0%		12-Nov-15
Water Tanks & CLP Transformer Rooms				
CLP Transformer Rooms				
01108.STN.CP010	CLP Transformer Rooms 3~6 (GL 17-21/B-D) and Dedicated Access 2 (and LV Switch Room) - Walls, etc.	0%	31-Aug-15	28-Nov-15
01108.STN.CP020	CLP Transformer Rooms 1~2 (GL A1-A2/1-4) and Dedicated Access 1 (and LV Switch Room)- Walls, etc.	0%	11-Sep-15	23-Nov-15
01108.STN.CP110	CLP Transformer Rooms 3~6 - BS Works	0%	20-Oct-15	12-Jan-16
01108.STN.CP120	CLP Transformer Rooms 1~2 - BS Works	0%	23-Nov-15	21-Jan-16
01108.STN.CP210	CLP Transformer Rooms 3~6 - ABWF Works	0%	24-Nov-15	19-Feb-16
Metalworks, BWIC with Services and BS Works				
01108.STN.BW110	KAT Concourse level - Elect hoisting beams, 5.99t	0%	11-Sep-15	09-Nov-15
01108.STN.BW120	KAT Concourse level - BWIC with services	0%	25-Sep-15	23-Nov-15
01108.STN.BW130	KAT Concourse level - BS works	0%	12-Oct-15	07-Dec-15
01108.STN.BW220	KAT Concourse level - BWIC with services	0%	12-Oct-15	23-Nov-15
01108.STN.BW230	KAT Concourse level - BS works	0%	26-Oct-15	07-Dec-15
B1.5 Station - A/G C&S Works (Vent Shaft)				
Northern Vent Shaft				
01108.STN.NS010	Suspended slabs and beams	65%	01-Jun-15 A	19-Sep-15
01108.STN.NS020	External walls, columns and walls	50%	29-Jun-15 A	29-Sep-15
01108.STN.NS030	Drainage	0%	30-Sep-15	28-Oct-15
Souther Vent Shaft				
01108.STN.SS010	Suspended slabs and beams	0%	11-Sep-15	06-Nov-15
01108.STN.SS020	External walls, columns and walls	0%	25-Sep-15	20-Nov-15
01108.STN.SS030	Drainage	0%	06-Nov-15	04-Dec-15
B1.6 Station - Station - A/G C&S Works (Entrance D & DEE)				



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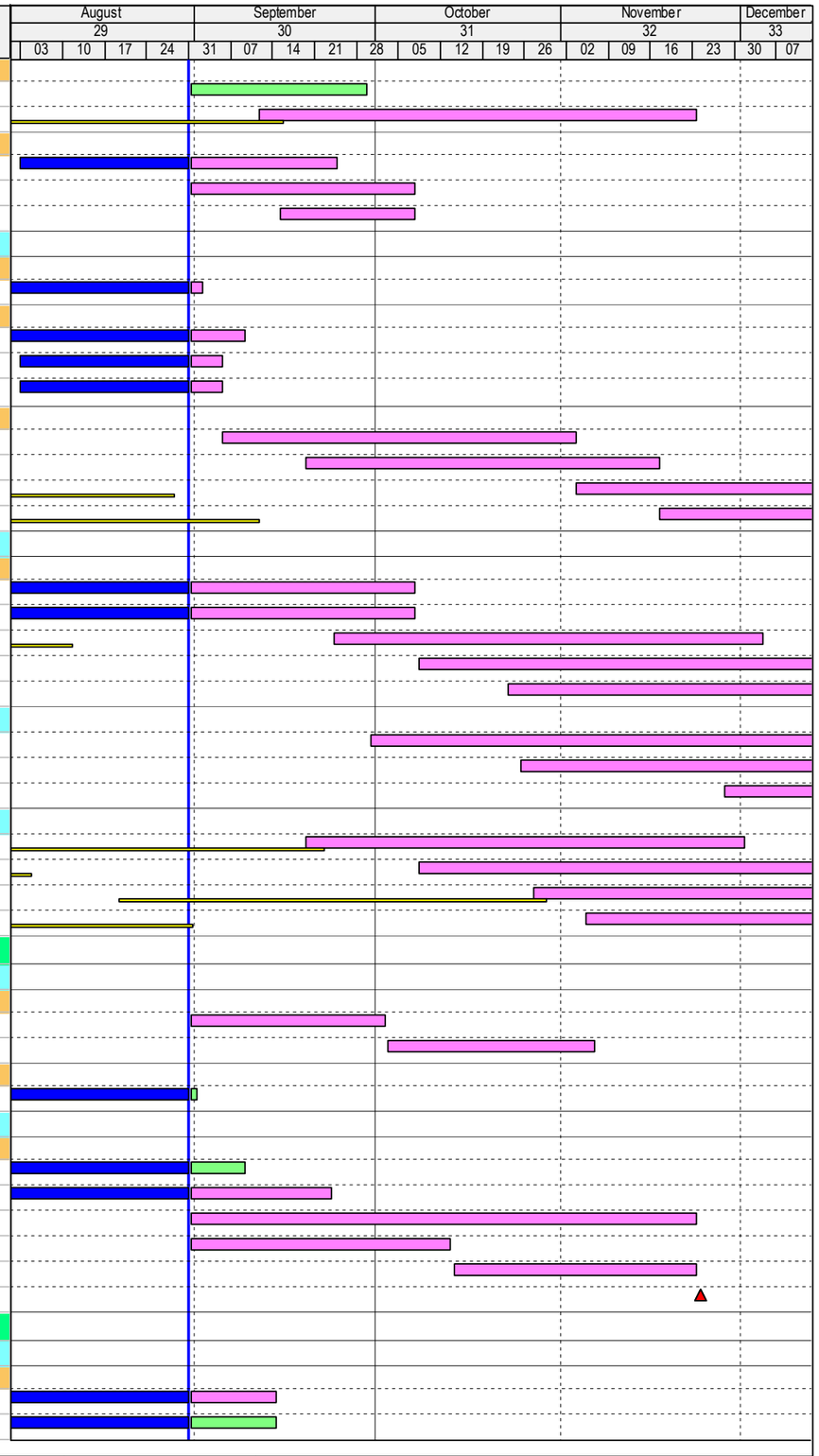
Entrance D				
01108.STN.ED030	Drainage	0%	31-Aug-15	29-Sep-15
01108.STN.ED040	Metal works	0%	11-Sep-15	23-Nov-15
Designated Emergency Entrance (DEE)				
01108.STN.DE010	Suspended slabs and beams	30%	03-Aug-15 A	24-Sep-15
01108.STN.DE020	External walls, columns and walls	0%	31-Aug-15	07-Oct-15
01108.STN.DE030	Drainage	0%	15-Sep-15	07-Oct-15
B1.7 Station - ABWF Works (Below Concourse Level Soffit)				
ABWF Works - Degree 1 of Completion				
01108.STN.CD4A1P3a	KAT Platform level - GL 4~1 Degree 1 of completion - Blockwork, partition wall, plastering, finish, staircase, etc.	95%	28-Feb-15 A	02-Sep-15
ABWF Works - Degree 2 of Completion				
01108.STN.CD4A2P3a	KAT Platform level - GL 4~1 Degree 2 of completeion - Door,wall&ceiling frame/support, strut. steel, finish, fixture,etc	90%	02-Jun-15 A	09-Sep-15
01108.STN.CD4A2P2a	KAT Platform level - GL 12~4 Degree 2 of completeion - Door frame, m. staircase, strut. steel, fixture, etc.	90%	03-Aug-15 A	05-Sep-15
01108.STN.CD4A2P1a	KAT Platform level - GL 24~12 Degree 2 of completeion - Door frame, m. staircase, strut .steel, fixture, etc	90%	03-Aug-15 A	05-Sep-15
ABWF Works - Degree 3 of Completion				
01108.STN.CD4A3P1a	KAT Platform level GL 24~12 Degree 3 of completeion - Int.&ext. to ceiling/ wall/ floor finish, incl.lift lobby, etc.	0%	05-Sep-15	03-Nov-15
01108.STN.CD4A3P2a	KAT Platform level GL 12~4 Degree 3 of completeion - Int.&ext. to ceiling/ wall/ floor finish, incl.lift lobby, etc.	0%	19-Sep-15	17-Nov-15
01108.STN.CD4A3P1b	KAT Platform level GL 24~12 Degree 3 of completeion - Glazing, permanent door, ironmongery, etc.	0%	03-Nov-15	31-Dec-15
01108.STN.CD4A3P2b	KAT Platform level GL 12~4 Degree 3 of completeion - Glazing, permanent doors, ironmongery, etc.	0%	17-Nov-15	15-Jan-16
B1.8 Station - ABWF Works (Concourse Level and Above)				
ABWF Works - Degree 1 of Completion				
01108.STN.CD4B1P1a	KAT Concourse level, exclude 4G - GL 24~12 Degree 1 of completion - Blockwork, partition wall, plastering, etc.	50%	10-Feb-15 A	07-Oct-15
01108.STN.CD4B1P2a	KAT Concourse level, exclude 4G - GL 12~4 Degree 1 of completion - Blockwork, partition wall, plastering, etc.	50%	10-Feb-15 A	07-Oct-15
01108.STN.CD4B1P3a	KAT Concourse level, exclude 4G- GL 4~1 Degree 1 of completion- Blockwork, part.wall, plastering, finish, staircase, etc	0%	24-Sep-15	04-Dec-15
01108.STN.CD4B1P1b	KAT Concourse level, exclude 4G - GL 24~12 Degree 1 of completion - E&M opening, finish, staircase, shaft&pit, etc.	0%	08-Oct-15	16-Dec-15
01108.STN.CD4B1P2b	KAT Concourse level, exclude 4G - GL 12~4 Degree 1 of completion - E&M opening, finish, staircase, shaft&pit, etc.	0%	23-Oct-15	02-Jan-16
B1.9 Station- ABWF Works (A/G Vent Shaft)				
01108.STN.VS110	Floor finishes	0%	30-Sep-15	21-Dec-15
01108.STN.VS120	Wall finishes	0%	25-Oct-15	16-Jan-16
01108.STN.VS130	Ceiling finishes	0%	28-Nov-15	24-Feb-16
B1.10 Station - ABWF (A/G Entrance D & DEE)				
01108.STN.ED060	Escalators - ABWF Works	0%	19-Sep-15	01-Dec-15
01108.STN.DE060	Lift - ABWF Works	0%	08-Oct-15	16-Dec-15
01108.STN.ED070	E&M Works for Escalators installation	0%	27-Oct-15	08-Jan-16
01108.STN.DE070	E&M Works for Lift installation	0%	05-Nov-15	16-Jan-16
B2 Entrance A, Adit & SEE				
B2.1 Entrance A, Adit & SEE - Excavation				
Temporary Works				
01108.STN.DN04.3.2	Entrance A & SEE - Design Revision, if required, & Submit to RDO/ BD/ GEO	0%	31-Aug-15	02-Oct-15
01108.STN.DN04.3.3	Entrance A & SEE - Design No-adverse-comment by RDO/ BD/ GEO	0%	03-Oct-15	06-Nov-15
Excavation				
01108.STN.EX610	Excavation, 4000 m3 for Adit & See	85%	21-May-15 A	01-Sep-15
B2.2 Entrance A, Adit & SEE - C&S Works				
Entrance A, Adit and SEE				
01108.STN.EA70	Suspended slabs and beams for Adit & See	85%	01-Apr-15 A	09-Sep-15
01108.STN.EA80	External walls, columns and walls for Adit & See	50%	25-May-15 A	23-Sep-15
01108.STN.EA90	Metal works and finishes for Adit & See	0%	31-Aug-15	23-Nov-15
01108.STN.EA100	Drainage for Adit & See	0%	31-Aug-15	13-Oct-15
01108.STN.PF610	Backfill and compaction, 3165 m3 for Adit & See	0%	14-Oct-15	23-Nov-15
01108.STN.EA060	DCS Pipe Installation	0%	24-Nov-15*	
B3 Entrance B and Adit				
B3.1 Entrance B and Adit - C&S Works				
Entrance B and Adit				
01108.STN.EB040	External walls, columns and walls	80%	02-Mar-15 A	14-Sep-15
01108.STN.EB020	Aduit at roof level	80%	01-Jun-15 A	14-Sep-15



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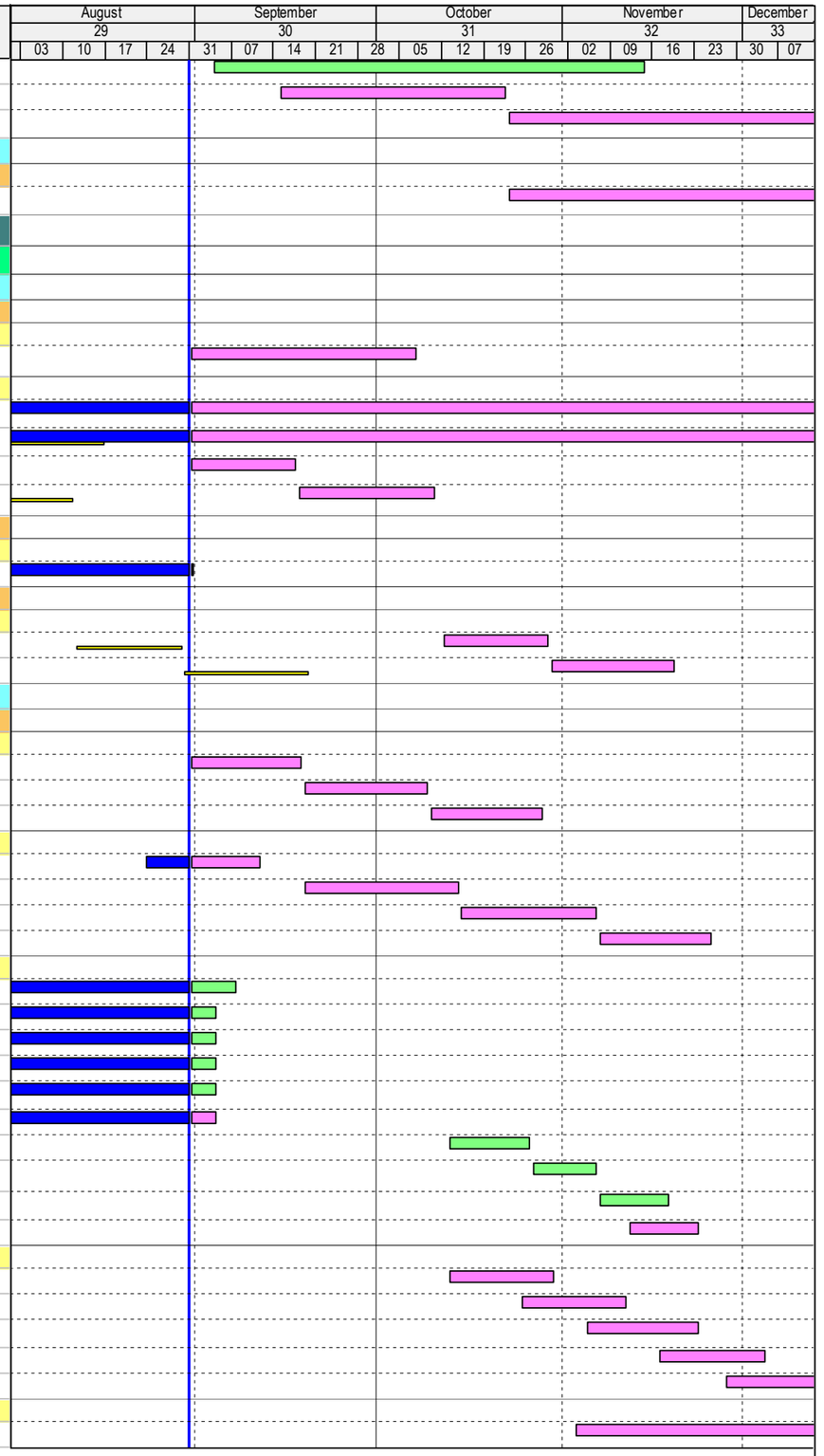
01108.STN.EB030	Suspended slabs and beams	0%	04-Sep-15	14-Nov-15
01108.STN.EB050	Drainage	0%	15-Sep-15	22-Oct-15
01108.STN.EB060	Metal works and finishes	0%	23-Oct-15	16-Jan-16
B3.2 Entrance B and Adit - ABWF Works				
Entrance B and Adit				
01108.STN.EB110	ABWF Works	0%	23-Oct-15	02-Jan-16
C - South Approach Tunnel				
C1 Open Cut Tunnels (U=341m; D=340m)				
C1.2 Excavation				
C1.2.2 Temporary Works				
Temporary Works Design & Approval				
01108.OCT.DN06.2.3	Open Cut (CH 99222 to 99257, Interface with C1109) - Design - No-adverse-comment by RDO/ BD/ GEO	0%	31-Aug-15	07-Oct-15
Dewatering and Observation Wells				
01108.OCT.DW0020	Ch 99080 to Ch 99185 Dewatering operations & maintenance, additional 21 nos. 4" submersible pumps	10%	30-Apr-14 A	19-Dec-16
01108.OCT.DW0030	Ch 99185 to Ch 99218 Dewatering operations & maintenance, additional 13 nos. 4" submersible pumps	55%	01-Nov-14 A	11-Apr-16
01108.OCT.DW9218	Ch 99185~99218 Dewatering wells, 13 nr PW1~PWQ13; Observation wells, 4 nr OW1~OW4; Piezometer, PZ9&PZ10 (2 Rigs)	0%	31-Aug-15	17-Sep-15
01108.OCT.DW9218t	Ch 99217~99258 Pumping tests	0%	18-Sep-15	10-Oct-15
C1.2.3 Excavation CH 98975 to CH 99217				
From Exisitng Ground Level to Formation Level				
01108.OCT.EX9217	CH 99206~99217 Excavation 10.5mL	95%	28-Sep-13 A	31-Aug-15
C1.2.3 Excavation CH 99215 to CH99257 (Interface with C1109)				
From Existing Ground Level to Formation Level				
01108.OCT.EX9238	CH 99217~99238 Excavation	0%	12-Oct-15	29-Oct-15
01108.OCT.EX9257	CH 99238~99257 Excavation, 19.64mL	0%	30-Oct-15	19-Nov-15
C1.3 C&S Works				
Tunnel Construction CH 98975 to CH99217				
Base Slabs				
01108.OCT.TS9185	CH 99164~99185 Base slabs, 2 x 2 x 10.5mL	0%	31-Aug-15	18-Sep-15
01108.OCT.TS9206	CH 99185~99206 Base slabs, 2 x 2 x 10.5mL	0%	19-Sep-15	09-Oct-15
01108.OCT.TS9217	CH 99206~99217 Base slabs, 2 x 10.5mL	0%	10-Oct-15	28-Oct-15
Walls & Top Slabs				
01108.OCT.TR8966	CH 98975~98996 Wall & top slabs, 2 x 2 x10.5mL	50%	24-Aug-15 A	11-Sep-15
01108.OCT.TR9185	CH 99164~99185 Wall & top slabs, 2 x 2 x10.5mL	0%	19-Sep-15	14-Oct-15
01108.OCT.TR9206	CH 99185~99206 Wall & top slabs, 2 x 2 x10.5mL	0%	15-Oct-15	06-Nov-15
01108.OCT.TR9217	CH 99206~99217 Wall & top slabs, 2 x 10.5 mL	0%	07-Nov-15	25-Nov-15
Internal C&S Works				
01108.OCT.IC9059	CH 99038~99059 Track level concrete works & finishes	40%	28-Jul-14 A	07-Sep-15
01108.OCT.IC9080	CH 99059~99080 Track level concrete works & finishes	65%	15-Jul-15 A	04-Sep-15
01108.OCT.IC9101	CH 99080~99101 Track level concrete works & finishes	65%	15-Jul-15 A	04-Sep-15
01108.OCT.IC9122	CH 99101~99122 Track level concrete works & finishes	65%	15-Jul-15 A	04-Sep-15
01108.OCT.IC9144	CH 99122~99143 Track level concrete works & finishes	65%	15-Jul-15 A	04-Sep-15
01108.OCT.IC9164	CH 99143~99164 Track level concrete works & finishes	65%	15-Jul-15 A	04-Sep-15
01108.OCT.IC8966	CH 98975~98996 Track level concrete works & finishes	0%	13-Oct-15	26-Oct-15
01108.OCT.IC9017	CH 98996~99017 Track level concrete works & finishes	0%	27-Oct-15	06-Nov-15
01108.OCT.IC9038	CH 99017~99038 Track level concrete works & finishes	0%	07-Nov-15	18-Nov-15
01108.OCT.IC9185	CH 99164~99185 Track level concrete works & finishes	0%	12-Nov-15	23-Nov-15
Waterproofing Works				
01108.OCT.WP8996	CH 98975~98996 2-coat spray, 75mm screed & 75mm blockworks, 2 x 2 x 10.5mL	0%	13-Oct-15	30-Oct-15
01108.OCT.WP9017	CH 98996~99017 2-coat spray, 75mm screed & 75mm blockworks, 2 x 2 x 10.5mL	0%	25-Oct-15	11-Nov-15
01108.OCT.WP9038	CH 99017~99038 2-coat spray, 75mm screed & 75mm blockworks, 2 x 2 x 10.5mL	0%	05-Nov-15	23-Nov-15
01108.OCT.WP9059	CH 99038~99059 2-coat spray, 75mm screed & 75mm blockworks, 2 x 2 x 10.5mL	0%	17-Nov-15	04-Dec-15
01108.OCT.WP9080	CH 99059~99080 2-coat spray, 75mm screed & 75mm blockworks, 2 x 2 x 10.5mL	0%	28-Nov-15	16-Dec-15
Drainage				
01108.OCT.DR9227	CH 98975~99217 U-channel, pipe laying, catch pits	0%	03-Nov-15	14-Jan-16



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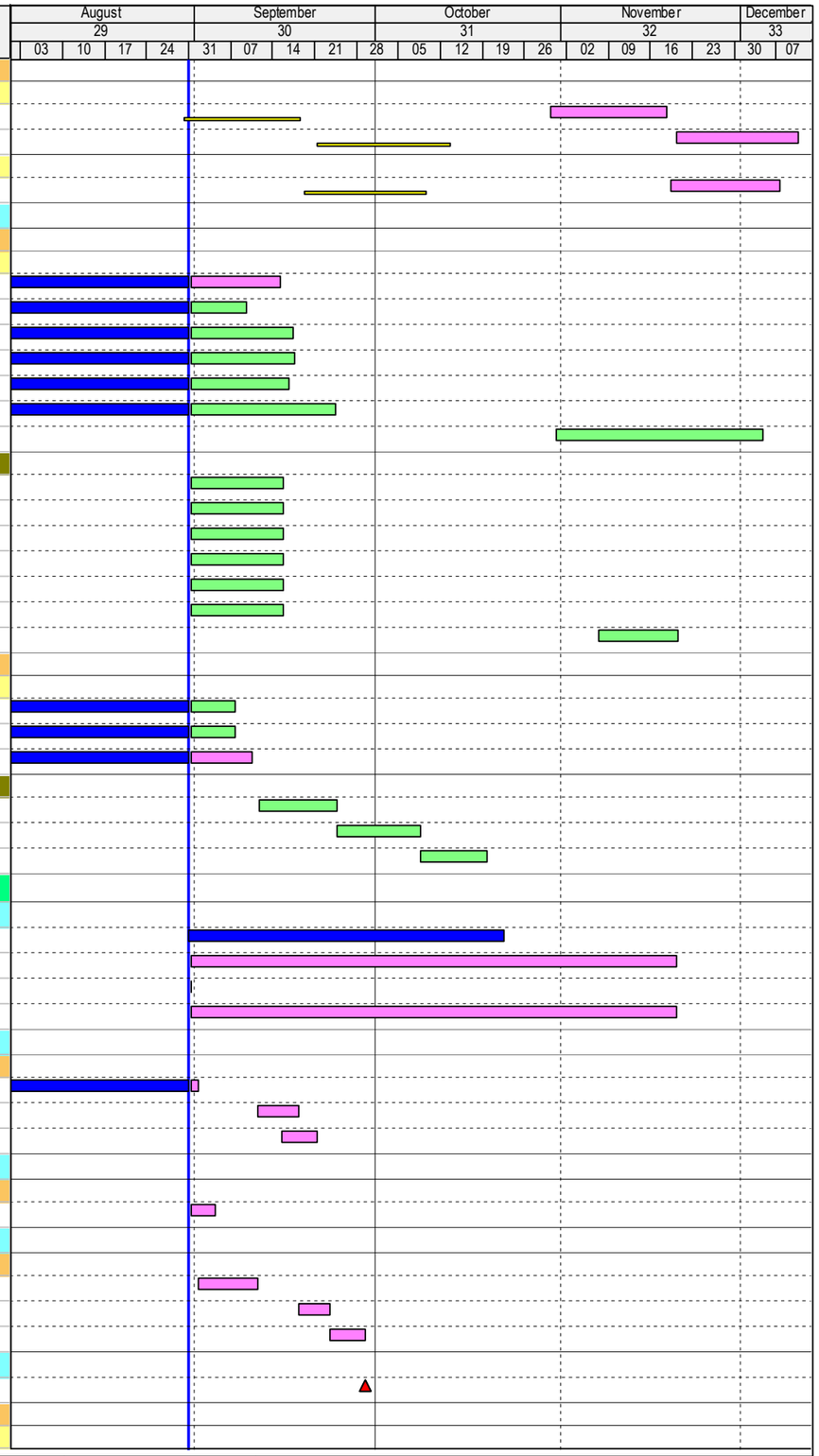
Tunnel Construction CH 99217 to CH 99257 (Interface with C1109)				
Base Slabs				
01108.OCT.TS9238	CH 99217~99238 Base slabs, 2 x 2 x 10.5mL	0%	30-Oct-15	18-Nov-15
01108.OCT.TS9257	CH 99238~99257 Base slabs, 2 x 2 x 9.82mL	0%	20-Nov-15	10-Dec-15
Wall & Top Slabs				
01108.OCT.TR9238	CH 99217~99238 Wall & top slabs, 2 x 2 x 10.5mL	0%	19-Nov-15	07-Dec-15
Backfill and Compaction				
Backfill and Compaction Works CH 98975 to CH 99217				
Formation Level to Finish Ground Level				
01108.OCT.BF9143	CH 99122~99143 Backfill and compaction	60%	23-Jan-15 A	15-Sep-15
01108.OCT.BF9122	CH 99101~99122 Backfill and compaction	70%	03-Feb-15 A	09-Sep-15
01108.OCT.BF9059	CH 99038~99059 Backfill and compaction	50%	31-Mar-15 A	17-Sep-15
01108.OCT.BF9101	CH 99080~99101 Backfill and compaction	50%	31-Mar-15 A	17-Sep-15
01108.OCT.BF9080	CH 99059~99080 Backfill and compaction	50%	31-Mar-15 A	16-Sep-15
01108.OCT.BF9038	CH 99017~99038 Backfill and compaction	35%	24-Jun-15 A	24-Sep-15
01108.OCT.BF8996	CH 98975~98996 Backfill and compaction	0%	31-Oct-15	04-Dec-15
CSMM Backfill				
01108.OCT.BF9038c	CH 99017~99038 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Aug-15	15-Sep-15
01108.OCT.BF9059c	CH 99038~99059 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Aug-15	15-Sep-15
01108.OCT.BF9080c	CH 99059~99080 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Aug-15	15-Sep-15
01108.OCT.BF9101c	CH 99080~99101 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Aug-15	15-Sep-15
01108.OCT.BF9122c	CH 99101~99122 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Aug-15	15-Sep-15
01108.OCT.BF9143c	CH 99122~99143 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Aug-15	15-Sep-15
01108.OCT.BF8996c	CH 98975~98996 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	07-Nov-15	20-Nov-15
Backfill and Compaction Works CH 98578 to CH 98636				
Formation Level to Finish Ground Level				
01108.OCT.BF8599	CH98578~98599 Backfill and compaction	50%	12-May-15 A	07-Sep-15
01108.OCT.BF8620	CH98599~98620 Backfill and compaction	50%	20-May-15 A	07-Sep-15
01108.OCT.BF8636	CH98620~98636 Backfill and compaction, 16mL	30%	08-Jun-15 A	10-Sep-15
CSMM Backfill				
01108.OCT.BF8599c	CH 98578~98599 CSMM backfill, 21mL x 72.8m2, total 1529 m3	0%	11-Sep-15	24-Sep-15
01108.OCT.BF8620c	CH 98599~98620 CSMM backfill, 21mL x 72.8m2, total 1529 m3	0%	24-Sep-15	08-Oct-15
01108.OCT.BF8636c	CH 98620~98636 CSMM backfill, 21mL x 72.8m2, total 1529 m3	0%	08-Oct-15	19-Oct-15
C2 Mined Tunnels (U=20m; D=19m)				
Design, Temporary Works Design, Approval, Fabrication & Installation of Tunnel Formwork				
01108.MT.DN07.3.183	Tunnel formwork design - No adverse comment	100%	31-Aug-15 A	22-Oct-15 A
01108.MT.TW550	D/T Tunnel formwork - Installation	0%	31-Aug-15	20-Nov-15
01108.MT.DN07.1.110	MIT Launching Shaft Vertical Elements - Revision, if required, & Submit to RDO/ BD/ GEO	0%	31-Aug-15	31-Aug-15
01108.MT.TW560	U/T Tunnel formwork - Installation	0%	31-Aug-15	20-Nov-15
C 2.1.1 Launching Shaft				
Excavation and Struts				
01108.MT.EX2520	Excavation down to -16.3mPD (approx.1500m3)	70%	02-Jul-15 A	01-Sep-15
01108.MT.EX2650	Excavation down to -17.7mPD (approx.1500m3)	0%	11-Sep-15	18-Sep-15
01108.MT.EX2460	Remove Strut	0%	15-Sep-15	21-Sep-15
C2.1.2 Receiving Shaft				
Excavation and Struts				
01108.MT.EX2380	Remove Strut	0%	31-Aug-15	04-Sep-15
C2.1.3 Horizontal Pipe Pile				
Downtrack and Uptrack				
01108.MT.HPP1350	7th batch (12 nos. x 813mm) after excavation down to -16.3mPD + Back to Back Tie + grouting	0%	01-Sep-15	11-Sep-15
01108.MT.HPP1360	8th batch (6 nos. x 813mm) after excavation down to -17.7mPD + Back to Back Tie + grouting	0%	18-Sep-15	23-Sep-15
01108.MT.EX2630	Cast temporary slab and backfill to formation for launching shaft and receiving shaft	0%	23-Sep-15	29-Sep-15
C2.1.4 Mining and Tunnel Lining				
01108.MSC03bp30	C3b- Complete 50% of excavation by plan length of mined tunnel (Week No. 13/14, 30-Mar-14) - Programmed	0%		29-Sep-15
Downtrack				
1st Mining from launching Shaft (0~1.5m)				



Milestone
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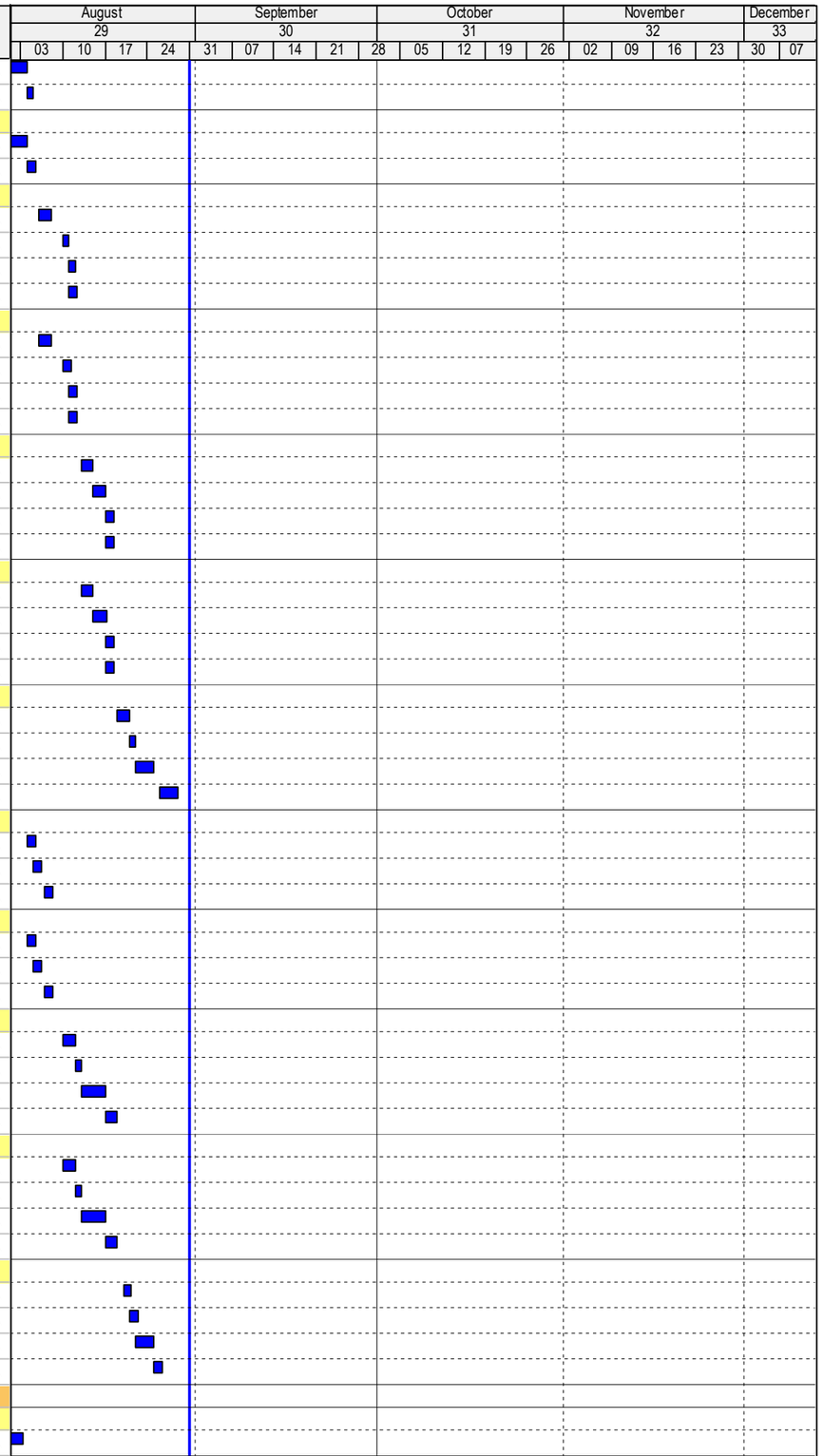
Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.MT.MT4103	Shotcreting for temporary Lining	100%	01-Aug-15 A	04-Aug-15 A
01108.MT.MT4113	Allow set time for shotcrete	100%	04-Aug-15 A	05-Aug-15 A
2nd Mining (1.5~3m)				
01108.MT.MT4143	Shotcreting for temporary Lining	100%	01-Aug-15 A	04-Aug-15 A
01108.MT.MT4123	Allow set time for shotcrete	100%	04-Aug-15 A	05-Aug-15 A
3rd Mining (3~4.5m)				
01108.MT.MT4163	Excavation (100m3)	100%	06-Aug-15 A	08-Aug-15 A
01108.MT.MT4173	Mesh and rebar installation	100%	10-Aug-15 A	11-Aug-15 A
01108.MT.MT4183	Allow set time for shotcrete	100%	11-Aug-15 A	12-Aug-15 A
01108.MT.MT4193	Shotcreting for temporary Lining	100%	11-Aug-15 A	12-Aug-15 A
4th Mining (4.5~6m)				
01108.MT.MT4213	Excavation (100m3)	100%	06-Aug-15 A	08-Aug-15 A
01108.MT.MT4223	Mesh and rebar installation	100%	10-Aug-15 A	11-Aug-15 A
01108.MT.MT4203	Shotcreting for temporary Lining	100%	11-Aug-15 A	12-Aug-15 A
01108.MT.MT4233	Allow set time for shotcrete	100%	11-Aug-15 A	12-Aug-15 A
5th Mining (6~7.5m)				
01108.MT.MT4253	Excavation (100m3)	100%	13-Aug-15 A	15-Aug-15 A
01108.MT.MT4263	Mesh and rebar installation	100%	15-Aug-15 A	17-Aug-15 A
01108.MT.MT4243	Shotcreting for temporary Lining	100%	17-Aug-15 A	18-Aug-15 A
01108.MT.MT4273	Allow set time for shotcrete	100%	17-Aug-15 A	18-Aug-15 A
6th Mining (7.5~9m)				
01108.MT.MT4293	Excavation (100m3)	100%	13-Aug-15 A	15-Aug-15 A
01108.MT.MT4303	Mesh and rebar installation	100%	15-Aug-15 A	17-Aug-15 A
01108.MT.MT4283	Shotcreting for temporary Lining	100%	17-Aug-15 A	18-Aug-15 A
01108.MT.MT4313	Allow set time for shotcrete	100%	17-Aug-15 A	18-Aug-15 A
7th Mining (9~10.5m)				
01108.MT.MT4333	Excavation (100m3)	100%	19-Aug-15 A	21-Aug-15 A
01108.MT.MT4343	Mesh and rebar installation	100%	21-Aug-15 A	22-Aug-15 A
01108.MT.MT4323	Shotcreting for temporary Lining	100%	22-Aug-15 A	25-Aug-15 A
01108.MT.MT4353	Allow set time for shotcrete	100%	26-Aug-15 A	29-Aug-15 A
10th Mining (18~16.5m)				
01108.MT.MT3893	Mesh and rebar installation	100%	04-Aug-15 A	05-Aug-15 A
01108.MT.MT3913	Shotcreting for temporary Lining	100%	05-Aug-15 A	06-Aug-15 A
01108.MT.MT3903	Allow set time for shotcrete	100%	07-Aug-15 A	08-Aug-15 A
11th Mining (16.5~15m)				
01108.MT.MT3943	Mesh and rebar installation	100%	04-Aug-15 A	05-Aug-15 A
01108.MT.MT3923	Shotcreting for temporary Lining	100%	05-Aug-15 A	06-Aug-15 A
01108.MT.MT3953	Allow set time for shotcrete	100%	07-Aug-15 A	08-Aug-15 A
12th Mining (15~13.5m)				
01108.MT.MT3973	Excavation (100m3)	100%	10-Aug-15 A	12-Aug-15 A
01108.MT.MT3983	Mesh and rebar installation	100%	12-Aug-15 A	13-Aug-15 A
01108.MT.MT3963	Shotcreting for temporary Lining	100%	13-Aug-15 A	17-Aug-15 A
01108.MT.MT3993	Allow set time for shotcrete	100%	17-Aug-15 A	19-Aug-15 A
13th Mining (13.5~12m)				
01108.MT.MT4013	Excavation (100m3)	100%	10-Aug-15 A	12-Aug-15 A
01108.MT.MT4023	Mesh and rebar installation	100%	12-Aug-15 A	13-Aug-15 A
01108.MT.MT4003	Shotcreting for temporary Lining	100%	13-Aug-15 A	17-Aug-15 A
01108.MT.MT4033	Allow set time for shotcrete	100%	17-Aug-15 A	19-Aug-15 A
14th Mining (12~10.5m)				
01108.MT.MT4043	Excavation (100m3)	100%	20-Aug-15 A	21-Aug-15 A
01108.MT.MT4053	Mesh and rebar installation	100%	21-Aug-15 A	22-Aug-15 A
01108.MT.MT4073	Shotcreting for temporary Lining	100%	22-Aug-15 A	25-Aug-15 A
01108.MT.MT4063	Allow set time for shotcrete	100%	25-Aug-15 A	26-Aug-15 A
Uptrack				
1st Mining from launching Shaft (0~1.5m)				
01108.MT.MT4453	Mesh and rebar installation	100%	01-Aug-15 A	03-Aug-15 A



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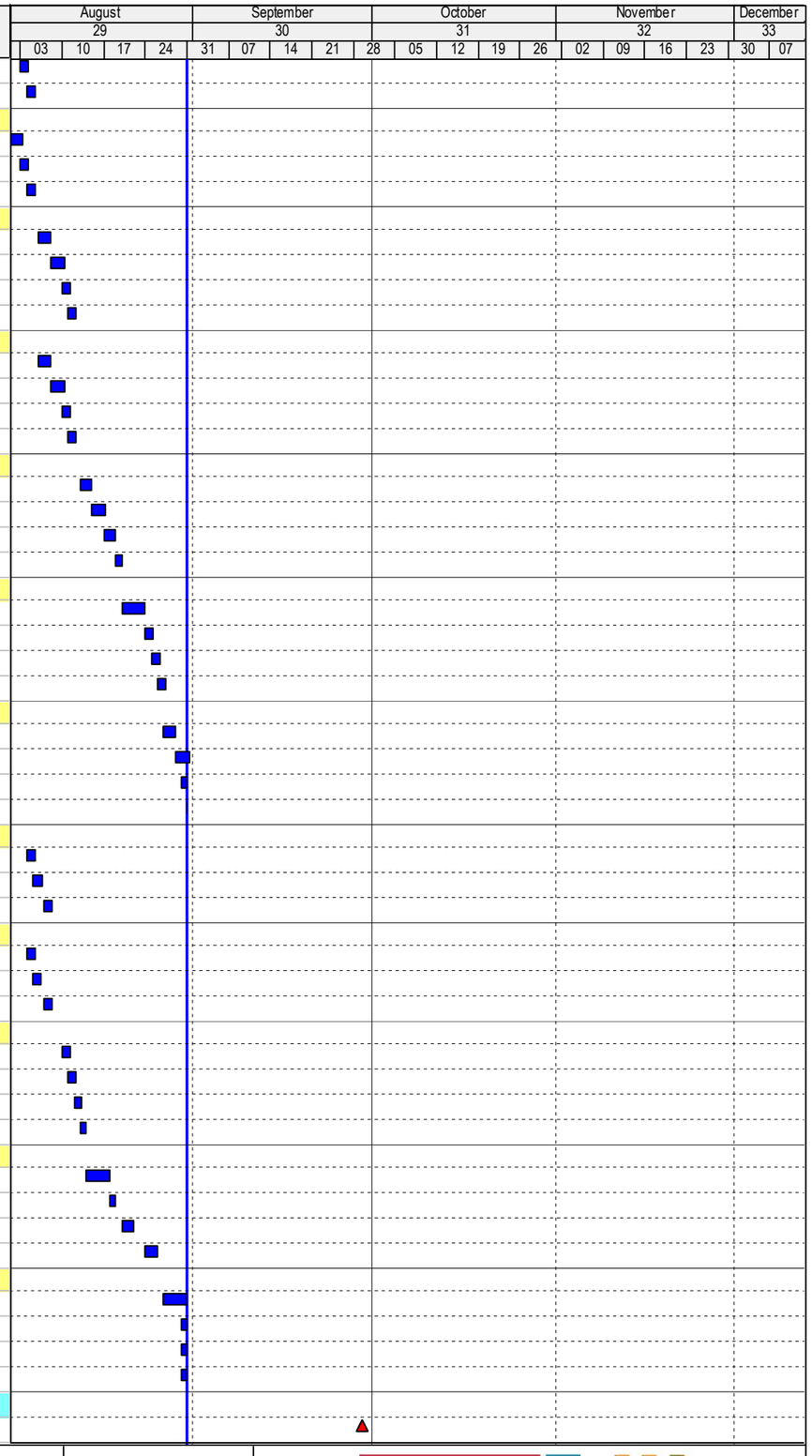
Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.MT.MT4463	Shotcreting for temporary Lining	100%	03-Aug-15 A	04-Aug-15 A
01108.MT.MT4473	Allow set time for shotcrete	100%	04-Aug-15 A	05-Aug-15 A
2nd Mining (1.5~3m)				
01108.MT.MT4503	Mesh and rebar installation	100%	01-Aug-15 A	03-Aug-15 A
01108.MT.MT4483	Shotcreting for temporary Lining	100%	03-Aug-15 A	04-Aug-15 A
01108.MT.MT4513	Allow set time for shotcrete	100%	04-Aug-15 A	05-Aug-15 A
3rd Mining (3~4.5m)				
01108.MT.MT4523	Excavation (100m3)	100%	06-Aug-15 A	08-Aug-15 A
01108.MT.MT4533	Mesh and rebar installation	100%	08-Aug-15 A	10-Aug-15 A
01108.MT.MT4553	Shotcreting for temporary Lining	100%	10-Aug-15 A	11-Aug-15 A
01108.MT.MT4543	Allow set time for shotcrete	100%	11-Aug-15 A	12-Aug-15 A
4th Mining (4.5~6m)				
01108.MT.MT4573	Excavation (100m3)	100%	06-Aug-15 A	08-Aug-15 A
01108.MT.MT4583	Mesh and rebar installation	100%	08-Aug-15 A	10-Aug-15 A
01108.MT.MT4563	Shotcreting for temporary Lining	100%	10-Aug-15 A	11-Aug-15 A
01108.MT.MT4593	Allow set time for shotcrete	100%	11-Aug-15 A	12-Aug-15 A
5th Mining (6~7.5m)				
01108.MT.MT4623	Excavation (100m3)	100%	13-Aug-15 A	15-Aug-15 A
01108.MT.MT4603	Mesh and rebar installation	100%	15-Aug-15 A	17-Aug-15 A
01108.MT.MT4633	Shotcreting for temporary Lining	100%	17-Aug-15 A	19-Aug-15 A
01108.MT.MT4613	Allow set time for shotcrete	100%	19-Aug-15 A	20-Aug-15 A
6th Mining (7.5~9m)				
01108.MT.MT4653	Excavation (100m3)	100%	20-Aug-15 A	24-Aug-15 A
01108.MT.MT4663	Mesh and rebar installation	100%	24-Aug-15 A	25-Aug-15 A
01108.MT.MT4643	Shotcreting for temporary Lining	100%	25-Aug-15 A	26-Aug-15 A
01108.MT.MT4673	Allow set time for shotcrete	100%	26-Aug-15 A	27-Aug-15 A
7th Mining (9~10.5m)				
01108.MT.MT4693	Excavation (100m3)	100%	27-Aug-15 A	29-Aug-15 A
01108.MT.MT4703	Mesh and rebar installation	100%	29-Aug-15 A	31-Aug-15 A
01108.MT.MT4683	Shotcreting for temporary Lining	100%	30-Aug-15 A	31-Aug-15 A
01108.MT.MT4713	Allow set time for shotcrete	100%	31-Aug-15 A	31-Aug-15 A
10th Mining (18~16.5m)				
01108.MT.MT4893	Mesh and rebar installation	100%	04-Aug-15 A	05-Aug-15 A
01108.MT.MT4913	Shotcreting for temporary Lining	100%	05-Aug-15 A	06-Aug-15 A
01108.MT.MT4903	Allow set time for shotcrete	100%	07-Aug-15 A	08-Aug-15 A
11th Mining (16.5~15m)				
01108.MT.MT4863	Mesh and rebar installation	100%	04-Aug-15 A	05-Aug-15 A
01108.MT.MT4843	Shotcreting for temporary Lining	100%	05-Aug-15 A	06-Aug-15 A
01108.MT.MT4873	Allow set time for shotcrete	100%	07-Aug-15 A	08-Aug-15 A
12th Mining (15~13.5m)				
01108.MT.MT4963	Excavation (100m3)	100%	10-Aug-15 A	11-Aug-15 A
01108.MT.MT4973	Mesh and rebar installation	100%	11-Aug-15 A	12-Aug-15 A
01108.MT.MT4993	Shotcreting for temporary Lining	100%	12-Aug-15 A	13-Aug-15 A
01108.MT.MT4983	Allow set time for shotcrete	100%	13-Aug-15 A	14-Aug-15 A
13th Mining (13.5~12m)				
01108.MT.MT4933	Excavation (100m3)	100%	14-Aug-15 A	18-Aug-15 A
01108.MT.MT4943	Mesh and rebar installation	100%	18-Aug-15 A	19-Aug-15 A
01108.MT.MT4923	Shotcreting for temporary Lining	100%	20-Aug-15 A	22-Aug-15 A
01108.MT.MT4953	Allow set time for shotcrete	100%	24-Aug-15 A	26-Aug-15 A
14th Mining (12~10.5m)				
01108.MT.MT4813	Excavation (100m3)	100%	27-Aug-15 A	31-Aug-15 A
01108.MT.MT4803	Shotcreting for temporary Lining	100%	30-Aug-15 A	31-Aug-15 A
01108.MT.MT4823	Mesh and rebar installation	100%	30-Aug-15 A	31-Aug-15 A
01108.MT.MT4833	Allow set time for shotcrete	100%	30-Aug-15 A	31-Aug-15 A
C2.2 C&S Works				
01108.MSC05P30	C5 - Complete mined tunnels included lining (Week. No. 42/14, 19-Oct-14) - Programmed	0%		29-Sep-15



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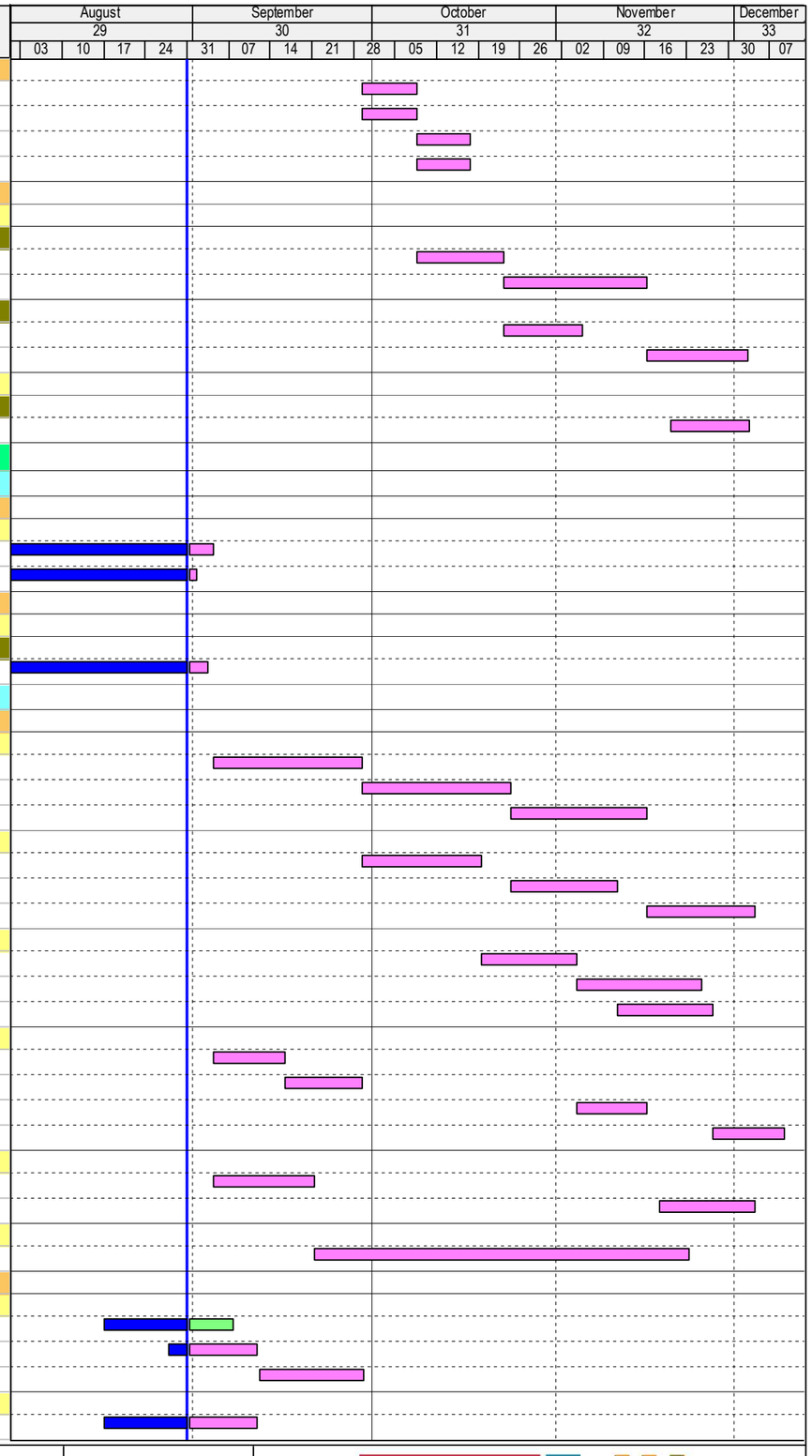
Activity ID	Activity Name	Activity % Complete	Start	Finish
C2.2.1 Waterproofing				
01108.MT.WP9027	DT 0-11m geotextile, waterproof membrance,	0%	29-Sep-15	08-Oct-15
01108.MT.WP9047	UT 0-11m geotextile, waterproof membrance	0%	29-Sep-15	08-Oct-15
01108.MT.WP9037	DT 11-19m geotextile, waterproof membrance	0%	08-Oct-15	17-Oct-15
01108.MT.WP9057	UT 11-19m geotextile, waterproof membrance	0%	08-Oct-15	17-Oct-15
C2.2.2 Tunnel Structure				
Uptrack				
0-10m				
01108.MT.TS2200	Tunnel Base	0%	08-Oct-15	23-Oct-15
01108.MT.TR2210	Tunnel Crown	0%	23-Oct-15	16-Nov-15
10-20m				
01108.MT.TS2210	Tunnel Base	0%	23-Oct-15	05-Nov-15
01108.MT.TR2220	Tunnel Crown	0%	16-Nov-15	03-Dec-15
Downtrack				
0-10m				
01108.MT.TS2220	Tunnel Base	0%	20-Nov-15	03-Dec-15
C3 Cut and Cover Tunnels (U=297m; D=307m)				
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.DN05.1b.3	CCT ELS/ Hydraulic (CH 98650 to 98750) - No-adverse-comment by RDO/ BD/ GEO	90%	20-Aug-13 A	04-Sep-15
01108.CCT.DN05.2.3	CCT ELS (CH 98750 to 98976) - Design No-adverse-comment by RDO/ BD/ GEO	90%	23-Dec-13 A	01-Sep-15
C3.2.3 Earthworks				
Partial Open Cut				
Cofferdam below -3.5mPD				
01108.CCT.EX8825s	CH 98818~98840 Excavation & struts, 6222m3	80%	06-Aug-14 A	03-Sep-15
C3.3 C&S Works				
Tunnel Construction CH 98650 to CH 98840				
Base Slabs				
01108.CCT.TB8783	CH98776~987797 Base slabs, 2 x 2 x 10.5mL	0%	04-Sep-15	29-Sep-15
01108.CCT.TB8804	CH98797~98818 Base slabs, 2 x 2 x 10.5mL	0%	29-Sep-15	24-Oct-15
01108.CCT.TB8825	CH98818~98840 Base slabs, 2 x 2 x 10.5mL	0%	24-Oct-15	16-Nov-15
External Walls				
01108.CCT.TW8783	CH98776~98797 Walls, 2 x 2 x 10.5mL	0%	29-Sep-15	19-Oct-15
01108.CCT.TW8804	CH98797~98818 Walls, 2 x 2 x 10.5mL	0%	24-Oct-15	11-Nov-15
01108.CCT.TW8825	CH98818~98840 Walls, 2 x 2 x 10.5mL	0%	16-Nov-15	04-Dec-15
Top Slabs				
01108.CCT.TR8783	CH98776~98797 Top slabs, 2 x 2 x 10.5mL	0%	19-Oct-15	04-Nov-15
01108.CCT.TR8750	Trackwork access shaft	0%	04-Nov-15	25-Nov-15
01108.CCT.TR8804	CH98797~98818 Top slabs, 2 x 2 x 10.5mL	0%	11-Nov-15	27-Nov-15
Internal C&C Works				
01108.CCT.IC8741	CH98734~98755 Track level concrete works & finishes	0%	04-Sep-15	16-Sep-15
01108.CCT.IC8762	CH98755~98776 Track level concrete works & finishes	0%	16-Sep-15	29-Sep-15
01108.CCT.IC8783	CH98776~98797 Track level concrete works & finishes	0%	04-Nov-15	16-Nov-15
01108.CCT.IC8804	CH98797~98818 Track level concrete works & finishes	0%	27-Nov-15	09-Dec-15
Waterproofing Works				
01108.CCT.WP8762	CH98775~98776 2-coat spary, 75mm screed & 75mm blockworks, 2 x 2 x 10.5mL	0%	04-Sep-15	21-Sep-15
01108.CCT.WP8783	CH98776~98797 2-coat spray, 75mm screed & 75mm blockworks, 2 x 2 x 10.5mL	0%	18-Nov-15	04-Dec-15
Drainage				
01108.CCT.DR9005	CH98755-~98840 U-channel, pipe laying, catch pits, 210mL	0%	21-Sep-15	23-Nov-15
Tunnel Construction CH 98928 to CH 98975				
External Walls				
01108.CCT.TW8947	CH98928~98947 Walls, 2 x 2 x 9.5mL	70%	17-Aug-15 A	07-Sep-15
01108.CCT.TW8966	CH98947~98966 Walls, 2 x 2 x 9.5mL	50%	28-Aug-15 A	11-Sep-15
01108.CCT.TW8975	CH98966~98975 Walls, 2 x 9.5mL	0%	12-Sep-15	29-Sep-15
Top Slabs				
01108.CCT.TR8947	CH98928~98947 Top slabs, 2 x 2 x 9.5mL	50%	17-Aug-15 A	11-Sep-15



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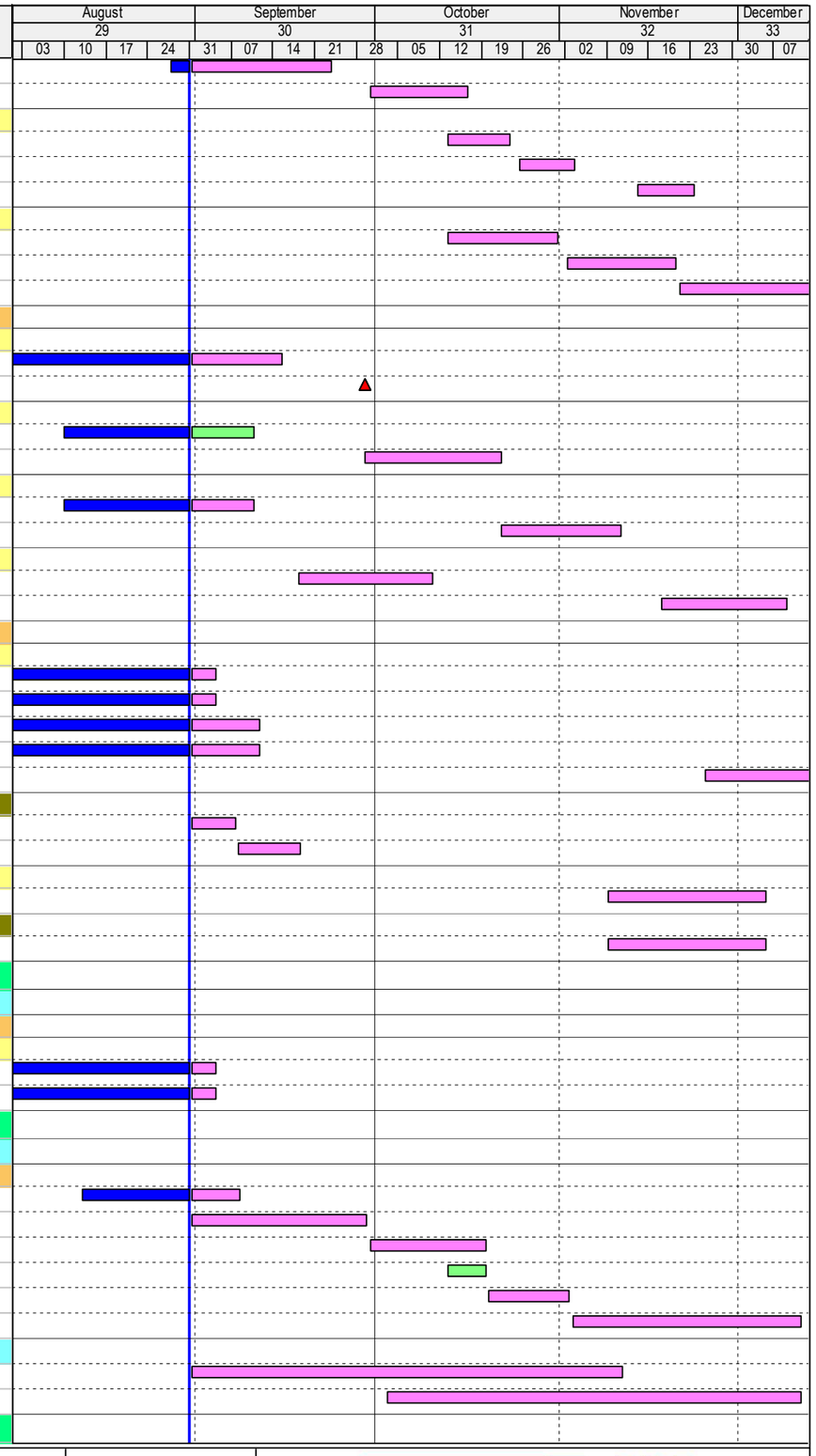
01108.CCT.TR8966	CH98947~98966 Top slabs, 2 x 2 x 9.5mL	0%	28-Aug-15 A	23-Sep-15
01108.CCT.TR8975	CH98966~98975 Top slabs, 2 x 9.5mL	0%	30-Sep-15	16-Oct-15
Internal C&C Works				
01108.CCT.IC8947	CH98928~98947 Track level concrete works & finishes	0%	13-Oct-15	23-Oct-15
01108.CCT.IC8966	CH98947~98966 Track level concrete works & finishes	0%	25-Oct-15	03-Nov-15
01108.CCT.IC8975	CH98966~98975 Track level concrete works & finishes	0%	14-Nov-15	23-Nov-15
Waterproofing Works				
01108.CCT.WP8947	CH98928~98947 2-coat spray, 75mm screed & 75mm blockworks, 2 x 2 x 9.5mL	0%	13-Oct-15	31-Oct-15
01108.CCT.WP8966	CH98947~98966 2-coat spray, 75mm screed & 75mm blockworks, 2 x 2 x 9.5mL	0%	02-Nov-15	20-Nov-15
01108.CCT.WP8975	CH98966~98975 2-coat spray, 75mm screed & 75mm blockworks, 2 x 9.5mL	0%	21-Nov-15	14-Dec-15
Tunnel Construction CH 98840 to CH 98866 & CH 98907 to CH 98928				
Base Slabs				
01108.CCT.TB8866	CH98840~98866 Base slabs, 2 x 10.5+15.5mL	30%	27-Jun-15 A	15-Sep-15
01108.MSC05PP	C5 - Complete mined tunnels included lining (Week. No. 42/14, 19-Oct-14) - Programmed	0%		29-Sep-15
External Walls				
01108.CCT.TW8928	CH98907~98928 Walls, 2 x 2 x 10.5mL	50%	10-Aug-15 A	10-Sep-15
01108.CCT.TW8866	CH98840~98866 Walls, 2 x 10.5+15.5mL	0%	29-Sep-15	22-Oct-15
Top Slabs				
01108.CCT.TR8928	CH98907~98928 Top slabs, 2 x 2 x 10.5mL	50%	10-Aug-15 A	10-Sep-15
01108.CCT.TR8866	CH98840~98866 Top slabs, 2 x 10.5+15.5mL	0%	22-Oct-15	11-Nov-15
Waterproofing Works				
01108.CCT.WP8928	CH98907~98928 2-coat spray, 75mm screed & 75mm blockworks, 2 x 2 x 10.5mL	0%	18-Sep-15	10-Oct-15
01108.CCT.WP8866	CH98840~98866 2-coat spray, 75mm screed & 75mm blockworks, 2 x 10.5+15.5mL	0%	18-Nov-15	09-Dec-15
Backfill and Compaction				
Backfill and Compaction CH 98650 to CH 98840				
01108.CCT.BF8678	CH98671~98692 Backfill, compaction & remove strut, 8470m3	75%	04-Sep-14 A	04-Sep-15
01108.CCT.BF8720	CH98713~98734 Backfill, compaction & remove strut, 8470m3	75%	30-Sep-14 A	04-Sep-15
01108.CCT.BF8657	CH98650~98671 Backfill, compaction & remove strut, 8470m3	45%	30-Sep-14 A	11-Sep-15
01108.CCT.BF8741	CH98734~98755 Backfill, compaction & remove strut, 8470m3	45%	16-Oct-14 A	11-Sep-15
01108.CCT.BF8762	CH98755~98776 Backfill, compaction & remove strut, 8470m3	0%	25-Nov-15	16-Dec-15
CSMM Backfill CH 98650 to CH 98840				
01108.CCT.BF8720c	CH98707~98720 CSMM backfill, 13mL x 42m2, total 546 m3	0%	31-Aug-15	07-Sep-15
01108.CCT.BF8741c	CH98720~98741 CSMM backfill, 21mL x 42m2, total 882 m3	0%	08-Sep-15	18-Sep-15
Backfill and Compaction CH 98928 to CH 98975				
01108.CCT.BF8947	CH98928~98947 Backfill, compaction & remove strut, 6992m3	0%	09-Nov-15	05-Dec-15
CSMM Backfill CH 98928 to CH 98975				
01108.CCT.BF8947c	CH98903~98947 CSMM backfill, 37mL x 39.2m2 + 7mL x 78m2, total 1996 m3	0%	09-Nov-15	05-Dec-15
C4 Stub Tunnels (U=32m; D=32m; R=33m)				
C4.2 Stub Tunnels - C&S Works				
Backfill and Compaction				
Backfill and Compaction CH98258 to CH98290				
01108.STT.BF8273	CH98258~98273 Backfill, compaction & remove strut, 8159 m3	80%	16-Jun-15 A	04-Sep-15
01108.STT.BF8290	CH98273~98290 Backfill, compaction & remove strut, 8159 m3	80%	16-Jun-15 A	04-Sep-15
C5 SUA				
C5.1 SUA - C&S Works				
SUA Adit GL A2/C2 and Access at GL C1/C2				
01108.OCT.SU170	At CH99088/GL C1~C2 SUA - Stairs & landings	45%	13-Aug-15 A	08-Sep-15
01108.OCT.SU120	At CH99088/GL C1~C2 SUA - Suspended slabs, beams & walls to -9.482mPD	0%	31-Aug-15	29-Sep-15
01108.OCT.SU130	At CH99088/GL C1~C2 SUA - Walls to top slabs	0%	30-Sep-15	19-Oct-15
01108.OCT.SU140	At CH99088/GL C1~C2 SUA - Mass concrete	0%	13-Oct-15	19-Oct-15
01108.OCT.SU160	At CH99088/GL C1~C2 SUA - Top slab	0%	20-Oct-15	02-Nov-15
01108.OCT.SU510	At CH99088/GL A1~A2-C1~C2 SUA - Waterproofing, backfill & compaction	0%	03-Nov-15	11-Dec-15
C5.2 SUA - ABWF Works				
01108.OCT.SU210	At CH99088/GL A1~A2 SUA - BWIC, BS works & works for Degree 1 of completion	0%	31-Aug-15	11-Nov-15
01108.OCT.SU220	At CH99088/GL A2~C2 SUA - BWIC, BS works & works for Degree 1 of completion	0%	03-Oct-15	11-Dec-15
C6 Access Shafts				



Milestone
Critical Milestone
Critical Remaining Work
Remaining Work
Remaining Level of Effort
PMP Rev F
Actual Work

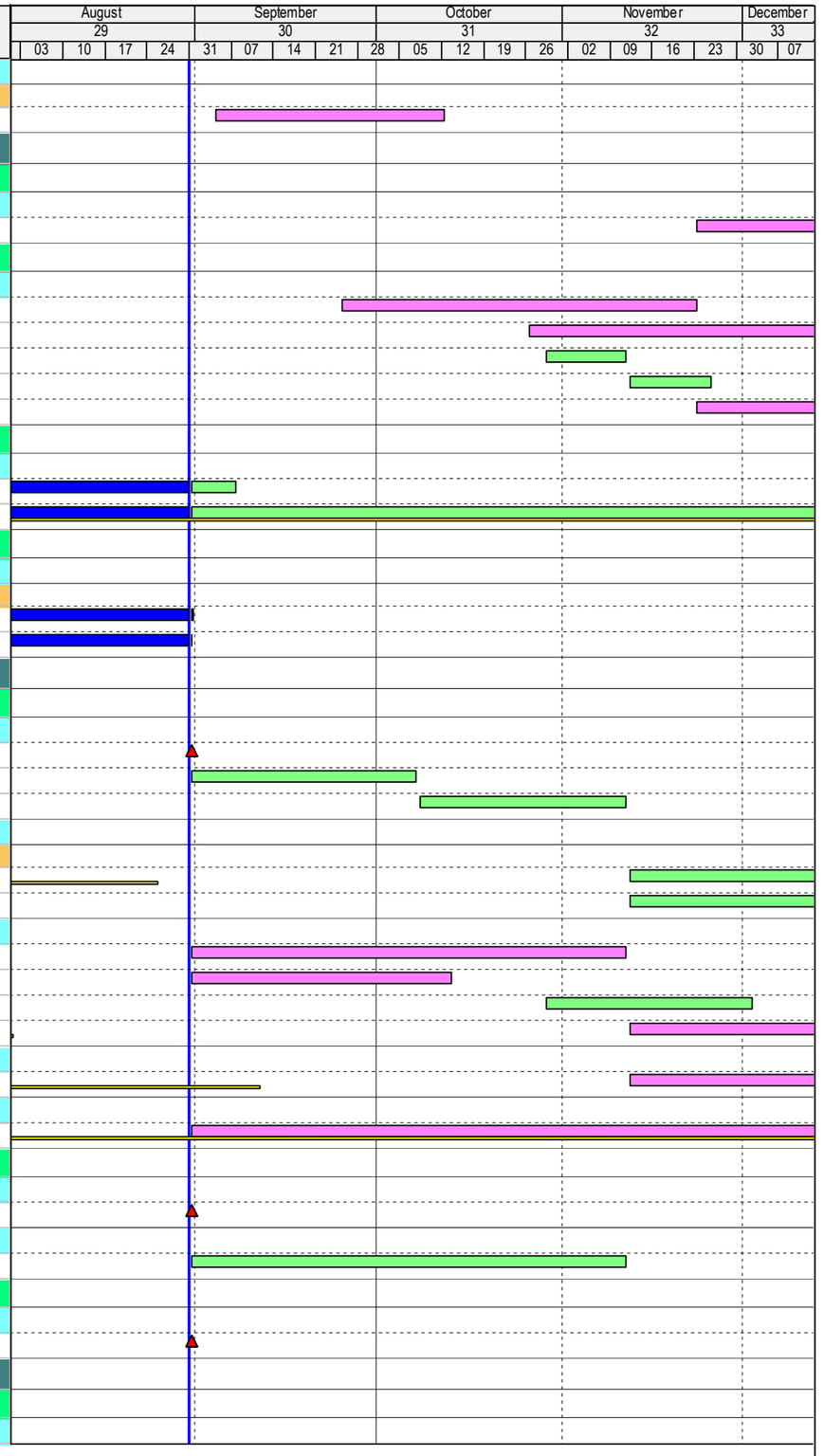
Contract 1108

Kai Tak Station and Associated Tunnels

3-months Rolling Programme (August 2015)

Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
C&S Works				
C6.1.1 External Walls				
01108.OCT.AS050	CH98746~98768 Access shaft - Temporary Wall 0.4mT 200mm above existing ground	0%	04-Sep-15	12-Oct-15
D - Associated Works				
D1 Utilities				
Fresh and Salt Watermains				
01108.AWW.F010	Fresh watermain, 309m	0%	23-Nov-15	04-Feb-16
D2 Drainage				
Sewerage and Stormwater				
01108.AWD.F010	Foul sewer, F1.3~F1.4~MH10, F1.7~F.14: 180m, 6 nr. MH	0%	25-Sep-15	23-Nov-15
01108.AWD.S010	Storm sewer, S1.2~S1.3~S1.6, S1.4~S1.3, S2.1~S2.4~S1.6; DP-7~S2.4: 633m, 10 nr. MH	0%	26-Oct-15	08-Mar-16
01108.AWD.F020	Foul sewer, F1.1~F1.3, 100m, 2 nr. MH	0%	29-Oct-15	11-Nov-15
01108.AWD.S020	Storm sewer, S1.1~S1.2: 35m, 1 nr. MH	0%	12-Nov-15	25-Nov-15
01108.AWD.C010	U-channels, 197 m straight, 24 m curved	0%	23-Nov-15	30-Dec-15
D3 Instrumentation and Monitoring				
Instrumentation Installation and Monitoring				
01108.AWM.0010	Installation of piezometers, inclinometers, ground/ bldg/ utility settlement markers	90%	02-Jul-13 A	07-Sep-15
01108.AWM.0030	Regular Monitorings and Submit Monitoring Reports (weekly for 50 months)	50%	01-Aug-13 A	12-Aug-17
D5 Utilities Diversion				
Diversion of Existing Nullah				
Temporary Works & Hydraulic Assessment				
01108.AWD.DNA1.3	KTND Hydraulic Assessment - No-adverse-comment by DSD	98%	08-Aug-13 A	31-Aug-15
01108.AWD.DN09.5.3	KTND Temporary Channel - Design - No-adverse-comment by DSD & RDO/ BD/ GEO	98%	16-Jan-14 A	31-Aug-15
F Option 2 CEDD Entrusted Works for Roads L9 & L16 & Associated Works				
Option 2a Roads L9 and L16 and Assocaited Works				
Preliminaries				
01108.CDO2a.EDP	Option 2a CEDD Entrusted Works - Roads L9 & L16 - Latest Exercising Date (31-Mar-15)	0%	31-Aug-15	
01108.O2A.PRE.010	Sumbmission of drawings & permanent works material control schedules & Approval	0%	31-Aug-15	07-Oct-15
01108.O2A.PRE.020	Submission of shop drawings & materials & Approval	0%	08-Oct-15	11-Nov-15
3. Drainage Works				
Drainage - Pipe				
01108.O2A.DRP020	SM1204~SM1216 PC concreted rainage pipe, 1.5m to 4.5m-dia, gully, manhole, chamber, etc. 460 mL	0%	12-Nov-15	23-Jan-16
01108.O2A.DRP000	Remove disused pipes, 700mL	0%	12-Nov-15	22-Dec-15
4. Sewage Works				
01108.O2A.SEW020	FM50_10~DP23/24 Sewer pipe, 300d to 450d, 307mL; 13 nr MH	0%	31-Aug-15	11-Nov-15
01108.O2A.SEW000	Remove disused pipes, 400mL	0%	31-Aug-15	13-Oct-15
01108.O2A.SEW025	FM50_10~DP23/24 Sewer pipe CCTV	0%	29-Oct-15	02-Dec-15
01108.O2A.SEW030	2A4_1~FM20_90 Sewer pipe, 300d & 375d; 195mL; 6 nr MH	0%	12-Nov-15	30-Dec-15
5. Waterworks				
01108.O2A.FWM010	CH 342.7~661.7 Fresh watermain pipe , 200d, 250d, 300d, 600d - 320mL; trust blocks, chambers, valve, bend, etc.	0%	12-Nov-15	13-Feb-16
11. Preservation & Protection of Trees				
01108.O2A.PPT010	(Provisional) Preservataion & protection meausres to preserved trees, survey & reporting (30 months)	0%	31-Aug-15	17-Dec-17
Option 2b Landscape Hardworks & Softworks, Irrigation Facilities & Pavers				
Programmed Completion Date				
001108.CDO2b.EDP	Option 2b CEDD Entrusted Works - LS Hardwroks & Softwork & Irrigation System- LED (31-Mar-15)	0%	31-Aug-15	
9. Irrigation Facilities				
01108.O2B.IRR000	Design & Approval of Irrigiation Systems	0%	31-Aug-15	11-Nov-15
Option 2c Establishment Works				
10 Establishment Works				
01108.CDO2c.EDP	Option 2c Establishment works of the landscape softworks in Option 2b -Latest Ex.Date (31-Mar-15) - Programmed	0%	31-Aug-15	
G Option 3 CEDD Entrusted Works for Reconstruction of Kai Tak Nullah				
Earthworks				
Formation Level				



Milestone
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Actual Work

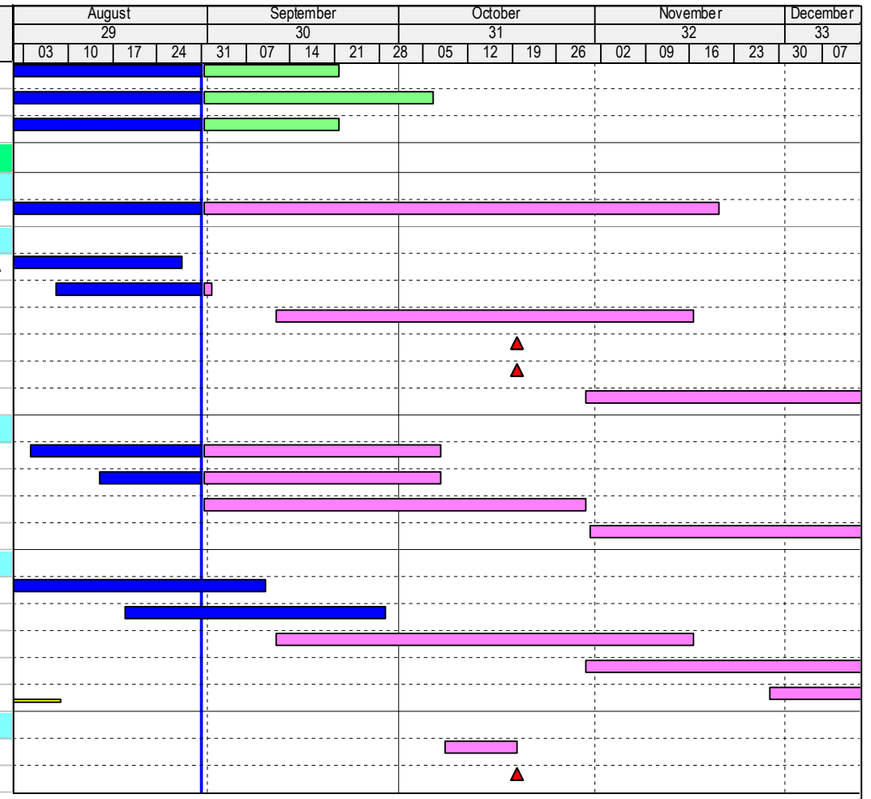
Contract 1108

Kai Tak Station and Associated Tunnels

3-months Rolling Programme (August 2015)

Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish
01108.O3.ERW030	CH 98620~98636 Formation level of proposed nullah	40%	14-May-15 A	21-Sep-15
01108.O3.ERW010	Ch 98578~98599 Formation level of proposed nullah	5%	14-May-15 A	06-Oct-15
01108.O3.ERW020	Ch 98599~98620 Formation level of proposed nullah	40%	14-May-15 A	21-Sep-15
Construction of Nullah				
Formation of Nullah Foundation with Rock Fill				
01108.O3.FML010	Type 2 Geotextile, 500thk Grade 200 Rock fill, 3760 m3	10%	25-Jun-15 A	20-Nov-15
Nullah - Twin-cell Box Culvert (SOL 01)				
01108.O3.SL3060	Walls & Top slab, 2 bays x 15mL (wtihin W8)	100%	01-Aug-15 A	28-Aug-15 A
01108.O3.SL1020	Walls & Top slab, 2 bays x 15mL (within W10)	90%	08-Aug-15 A	01-Sep-15
01108.O3.SL3080	Base slab, 6 bays x 15 mL (within W9)	0%	11-Sep-15	16-Nov-15
01108.O3.SL1030	Vacation Date for Works Area 1108.W8 (31-Jul-15) progrrammed	0%		19-Oct-15*
01108.O3.SL1040	Vacation Date for Works Area 1108.W10 (31-Jul-15) programmed	0%		19-Oct-15*
01108.O3.SL3090	Walls & Top slab, 3 bays x 15mL (within W9)	0%	30-Oct-15	05-Jan-16
Nullah - Open & Decked Channel (SOL 02)				
01108.O3.SL2020	Walls, 4 bays x 10mL typ. (within W8) Open Channel	25%	04-Aug-15 A	07-Oct-15
01108.O3.SL3140	Walls, 6 bays x 10mL typ. (within W10) Open Channel	50%	15-Aug-15 A	07-Oct-15
01108.O3.SL3110	Base slab, 5 bays x 10mL typ. (within W9) Decked Channel	0%	31-Aug-15	30-Oct-15
01108.O3.SL3120	Walls & Top slab, 5 bays x 10mL typ. (within W9) Decked Channel	0%	31-Oct-15	30-Dec-15
Nullah - Twin-cell Box Culvert (SOL 03)				
01108.O3.SL3160	Walls & Top slab, 2 bays x 15mL (within W8)	100%	01-Aug-15 A	10-Sep-15 A
01108.O3.SL3020	Walls & Top slab, 2 bays x 15mL (within W10)	100%	19-Aug-15 A	29-Sep-15 A
01108.O3.SL3170	Base slab, 6 bays x various 10 to 15 mL (within W9)	0%	11-Sep-15	16-Nov-15
01108.O3.SL3180	Walls & Top slab, 3 bays x 15mL (within W9)	0%	30-Oct-15	05-Jan-16
01108.O3.SL3190	Walls & Top slab, 3 bays x 15mL (within W9)	0%	28-Nov-15	03-Feb-16
Backfill				
01108.O3.ERW110	Backfill & compaction to finish ground level in/ at Works Areas 1108.W8 & W10	0%	08-Oct-15	19-Oct-15
01108.CDO.CDa1P	Completion of works in/ at Works Areas 1108.W8 & W10 (31-May-15) - Programmed	0%		19-Oct-15



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Actual Work

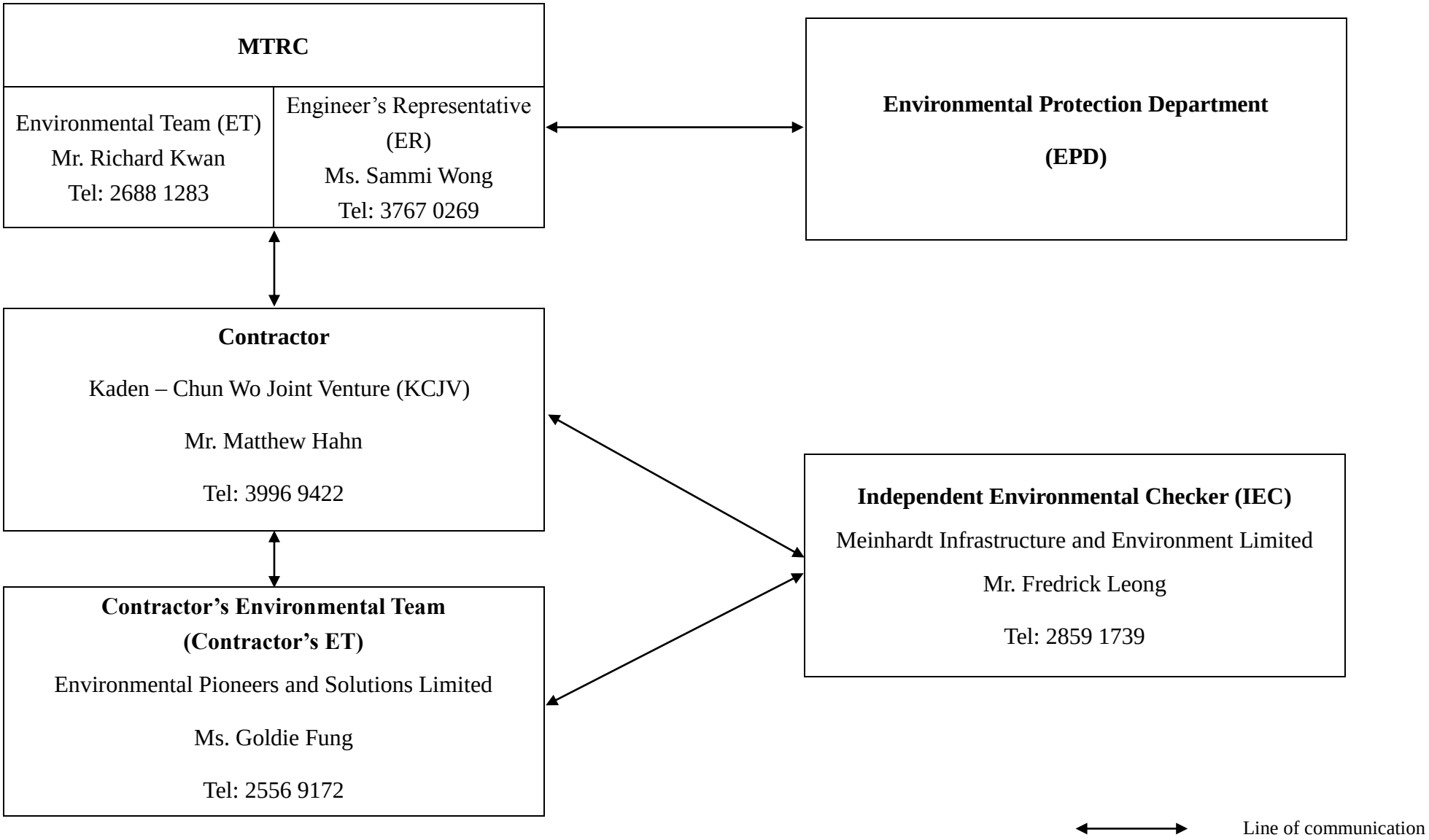
Contract 1108

Kai Tak Station and Associated Tunnels

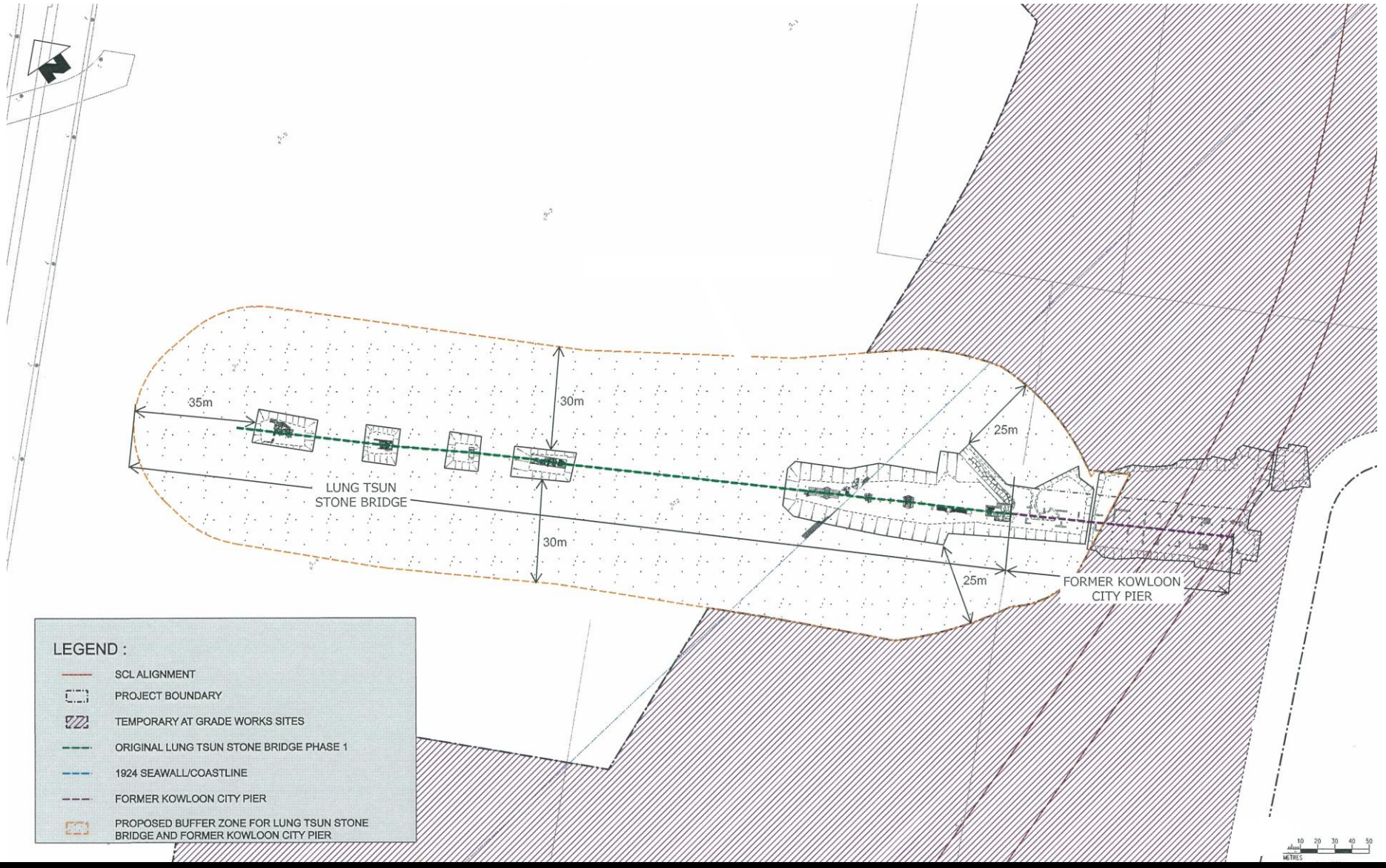
3-months Rolling Programme (August 2015)

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: 3767 0269
Environmental Protection Department
(EPD)
Contractor
Kaden – Chun Wo Joint Venture (KCJV)
Mr. Matthew Hahn
Tel: 3996 9422
Independent Environmental Checker (IEC)
Meinhardt Infrastructure and Environment Limited
Mr. Fredrick Leong
Tel: 2859 1739
Contractor's Environmental Team (Contractor's ET)
Environmental Pioneers and Solutions Limited
Ms. Goldie Fung
Tel: 2556 9172
Line of communication

Appendix D – Buffer Zone for Lung Tsun Stone Bridge & Former Kowloon City Pier



Project Title 工程名稱	Shatin to Central Link (SCL) - Tai Wai to Hung Hom Section(TAW-HUH) 沙田至中環綫 - 大圍至紅磡段	Environmental Permit No.: EP-438/2012/H 環境許可證編號：EP-438/2012/H
Figure 6 圖六	Buffer Zone from the Boundary of Lung Tsun Stone Bridge 龍津石橋界線之緩衝區 [This figure was prepared based on the attachment of the Application No.: VEP-432/2014] [本圖是根據申請編號 VEP-432/2014 的附件編制]	

Appendix E – Event/Action Plan for landscape & Visual During Construction Stage

Event / Action Plan for Landscape and Visual during Construction Stage

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

Appendix F – Waste Flow Table

Monthly Summary Waste Flow Table for _2015_ (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Materials 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 '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	21.421	0.000	21.421	0.000	0.000	0.000	18.530	0.075	0.000	0.640	0.203
Feb	32.137	0.000	31.290	0.000	0.847	0.000	15.590	0.060	0.006	0.000	0.136
Mar	31.149	0.000	28.783	0.000	2.366	0.000	36.260	0.072	0.009	0.000	0.186
Apr	40.033	0.000	26.285	0.000	13.748	0.000	27.190	0.056	0.015	0.000	0.232
May	11.639	0.000	9.525	0.000	2.114	0.000	25.250	0.057	0.020	0.000	0.159
Jun	28.414	0.000	20.336	0.000	8.078	0.000	7.270	0.168	0.014	0.000	0.264
Sub-total	164.793	0.000	137.640	0.000	27.153	0.000	130.090	0.488	0.064	0.640	1.180
July	25.488	0.000	14.946	0.000	10.542	0.000	17.210	0.020	0.000	0.000	0.125
August	11.718	0.000	4.256	0.000	7.462	0.000	9.650	0.025	0.000	0.640	0.202
September											
October											
November											
December											
Total	201.999	0.000	156.842	0.000	45.157	0.000	156.950	0.533	0.064	1.280	1.507
Year 2014	311.876	0.000	39.476	0.000	272.400		103.280	0.855	0.056	1.540	1.484
Year 2013	144.512	0.000	0.000	0.000	144.512		93.330	0.030	0.000	0.480	2.568
Grand Total	658.387	0.000	196.318	0.000	462.069		353.560	1.418	0.120	3.300	5.559

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	✔ N/A
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 extended 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,					✔ N/A ✔ ✔ ✔ N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		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	✔ ✔ ✔ ✔ ✔ ✔

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
S8.3.6	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites	Construction stage	✔
S8.3.6	N3	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressor, generators and saw.	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction stage	*
S8.3.6	N4	Use "Quiet plants"	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	✔
S8.3.6	N5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	✔
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),	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
		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 commencement of					✔ ✔

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. • 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					✔ ✔ * ✔

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
		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					✔ ✔ ✔ ✔

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
		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 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					✔ ✔ * *

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
		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	Contractor	All tunneling portion	Construction stage	✔ ✔ ✔ ✔

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.7.1	W3	<u>Sewage Effluent</u> • Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	✔
S10.7.1	W4	<u>Groundwater from Contaminated Area:</u> • No direct discharge of groundwater from contaminated areas should be adopted. Prior to the excavation works within these potentially contaminated areas, the groundwater quality should be reviewed with reference to the site investigation data in this EIA report for compliance to the Technical Memorandum on Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters (TM-Water) and the existence of prohibited substance should be confirmed. The review results 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	To minimize groundwater quality impact from contaminated area	Contractor	Excavation areas where contamination is found	Construction stage	N/A N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		shall deploy suitable treatment process (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (e.g. TPH) to undetectable range. All treated effluent from wastewater treatment plant shall meet the requirements as stated in TM-Water and should be discharged into the foul sewers. • If groundwater recharging wells are deployed, recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in the Section 2.3 of TM-Water. The baseline groundwater quality shall be determined prior to the selection of the recharge wells, and submit a working plan (including the laboratory analytical results showing the quality of groundwater at the proposed recharge location(s) as well as the pollutant levels of groundwater to be recharged) to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Prior to recharge, any prohibited substances such as TPH products should be removed as necessary by installing the petrol interceptor. The Contractor should apply for a discharge licence under the WPCO through the Regional Office of EPD for					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
		groundwater recharge operation or discharge of treated groundwater.					
S10.7.1	W7	In order to prevent accidental spillage of chemicals, the following is recommended: • All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains. • The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings. • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	✔ ✔ ✔
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	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
		stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use Details regarding control measures at source site and crushing facilities should be submitted by the Contractors for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc should also be explored.					
S11.5.1	WM2	<u>Construction and Demolition Material</u> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	✔ ✔ ✔ ✔

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
		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					✔ ✔ ✔
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	✔

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		• The 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	✔ ✔ ✔

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
		volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor.					✔
S11.5.1	WM6	<u>Land-based and Marine-based Sediment</u> • All construction plant and equipment shall be designed and maintained to minimize the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location; • All vessels shall be sized such that adequate draft is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; • Before moving the vessels which are used for transporting dredged material, excess material shall be cleaned from the decks and exposed fittings of vessels and the excess materials shall never be dumped into the sea except at the approved locations; • 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	To control pollution due to marine sediment	Contractor	Within Project Site Area	Construction Stage	✔ N/A N/A N/A N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		designated locations and copies of such records shall be submitted to the engineers;					
		• The Contractors shall comply with the conditions in the dumping licence.					✔
		• All bottom dumping vessels (Hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material;					N/A
		• The material shall be placed into the disposal pit by bottom dumping;					N/A
		• Contaminated marine mud shall be transported by spit barge of not less than 750m ^{3} capacity and capable of rapid opening and discharge at the disposal site;					N/A
		• Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Material adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site.					N/A
		• 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					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
		covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfil confined mud disposal.					
S11.5.1	WM7	<u>Chemical Waste</u> • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	✔ ✔ ✔

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		• Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.					*
EM&A Project							
S14.2 – 14.4	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	MTR Corporation/ Contractor	All construction sites	Construction stage	✔ ✔ ✔

Remarks :

✔ Compliance of mitigation measure

X Non-compliance of mitigation measure

• Non-compliance but rectified by the contractor

* Recommendation was made during site audit but improved/rectified by the contractor.

N/A Not Applicable

Appendix H – Cumulative Log for Environmental Exceedance, Complaints, Notification of Summons and Successful Prosecutions

Cumulative Log for Environmental Exceedance, Complaints, Notification of Summons and Successful Prosecution

Reporting Month	Number of Exceedance	Number of Environmental Complaints	Number of Notification of Summons	Number of Successful Prosecutions
January 2015	0	3	0	0
February 2015	0	2	0	0
March 2015	0	1	0	0
April 2015	0	0	0	0
May 2015	0	0	0	0
June 2015	0	2	0	0
July 2015	0	0	0	0
August 2015	0	1	0	0
Total	0	9	0	0
Year 2013	0	0	0	0
Year 2014	0	0	0	0
Grand Total	0	9	0	0

COMPLAINT / CONCERN LOG

Ref: KFMD0213-CL-15

Log Ref	Event Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/Mitigation Action	File Closed
Ref no.: KFMD0213-CL-150813 EPD complaint ref.: 15-20429	Kai Tak Area	A complaint was received on 13th August 2015	A complaint received on 13th August 2015 was referred from EPD on 19th August 2015 regarding the muddy water discharged to the Kai Tak Nullah.	1. A complaint received on 13th August 2015 was referred from EPD on 19th August 2015 regarding the muddy water discharged to the Kai Tak Nullah. Environmental Team (ET) was informed via email by the MTRC. 2. ET has conducted a site investigation with the representatives from Contractor and MTRC on 25th August 2015 to resolve the concern. Routine weekly site inspection was also carried out on 4th, 11th & 18th Aug 2015. During the site inspection on 11th August 2015, muddy water discharge was observed at Area 2 and the following mitigation measures were advised to contractor after the site inspection. - Review wastewater treatment system and provide proper treatment for site water before discharging into nullah. 3. During the investigation on 25th August 2015, no muddy water was observed discharging into the Kai Tak Nullah. The wastewater was treated by the wastewater treatment facilities and sedimentation tank before discharging into nullah. During the investigation, the following mitigation measures were observed. - Site water was collected in the sump pit and pumped to further treatment. - Wastewater treatment facilities and sedimentation tank were provided and operated 4. Contractor was still advised to provide sufficient treatment and hence mitigation measures before discharge of site water. And, contractor was also reminded to prevent surface run-off causing from site	Yes

				water due to the adverse weather during the wet season. 5. The Contractor reported that the following measures will be further implemented after receiving the complaint from EPD to enhance prevention of muddy water discharge. - Increase the number of sedimentation tanks and wastewater treatment facilities. - Divert all site water to wastewater treatment facilities. - Provided the sand bag bound to prevent surface run off from entering into Kai Tak Nullah. - Provide sufficient treatment before discharge of site water. 6. Contractor was seriously reminded to continue implementing all necessary mitigation measure to avoid discharge of sub-standard effluent	

Filed by Environmental Team Leader:_____ _____ Date: 25th August 2015

Appendix J

23rd 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. 23

[Period from 1 to 31 August 2015]

Works Contract 1102 –

Hin Keng Station and Approach Structures

(September 2015)

Certified by: Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 8th September 2015

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)

August 2015

Approved By _____

(Contractor's Environmental Team Leader)

REMARKS:

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

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

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EXECUTIVE SUMMARY

Introduction

1. This is the 23rd 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 August 2015.

Summary of Construction Works undertaken during the Reporting Month

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

- Slope Improvement Works;
- Pumping Test;
- ELS Structure Installation and Superstructure Works at At-grade Box;
- Pier and Pile Cap Construction of Viaduct;
- ABWF Works at Hin Keng Station; and
- Modification of Retaining Wall and Installation of Noise Barrier.

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) 6 times

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

Waste Management

4. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. About 1,932.6 m^3 of inert C&D materials were generated from the Project and sent to Tuen Mun Area 38 Fill Bank, Tseung Kwan O Area 137 Fill Bank and Contract 1108A Kai Tak Barging Point during the reporting month. No non-recyclable non-inert C&D materials and 120.9 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 August 2015. 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 August 2015.The representative of the IEC joined the site inspection on 20 August 2015. 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;
- ELS Structure Installation and Superstructure Works at At-grade Box;
- Pier and Pile Cap Construction of Viaduct;
- ABWF Works at Hin Keng Station; and
- Modification of Retaining Wall and Installation of Noise Barrier.

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 23rd 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 August 2015.

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;
- Pumping Test;
- ELS Structure Installation and Superstructure Works at At-grade Box;
- Pier and Pile Cap Construction of Viaduct;
- Steel Structure and ABWF Works at Hin Keng Station; and
- Modification of Retaining Wall and Installation of Noise Barrier.

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/H	10/9/2014	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
Reference No: 362534	29/7/2013	N/A	Valid
Billing Account for Construction Waste Disposal			
A/C No.: 7017900	02/8/2013	N/A	Valid
Registration of Chemical Waste Producer			
Registration No. 5218-759-P1057-03	03/9/2013	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00018589-2014	29/4/2014	30/9/2018	Valid
Construction Noise Permit (CNP)			
GW-RN0214-15	15/4/2015	14/10/2015	Valid
GW-RN0354-15	30/6/2015	29/12/2015	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 (July 2015)	14 August 2015

5 MONITORING RESULTS

Regular Construction Noise Monitoring

5.1 A total of 4 sets of 30-minute construction noise measurements were carried out at the monitoring stations during normal weekdays during the reporting period by ET of SCL 1103. No exceedance of the limit level was recorded at designated monitoring station.

5.2 Based on observation during the on-site monitoring, road traffic nearby is considered as a potential noise source other than construction works of the Project that affects the monitoring results of the reporting month.

5.3 The detailed noise monitoring results together with their graphical presentations are presented in Appendix H of SCL 1103 monthly EM&A report.

Table 5.1 Summary Table of Construction Noise Monitoring Results

Parameter	Minimum Leq(30min), dB(A)	Maximum Leq(30min), dB(A)	Action Level	Limit Level, Leq(30min), dB(A)
Noise	56.4	58.8	When one documented complaint is received	70/65(1)

Remarks:
(1) For normal day-time working hours, the noise criteria is 70 dB(A) and 65 dB(A) for normal teaching period and examination periods respectively.
(2) The noise monitoring data presented in the table is baseline corrected.

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

Regular Dust Monitoring

5.5 A total of 6 sets of 24-hour TSP monitoring were carried out at the designated monitoring station of the reporting period by ET of Works Contract SCL 1103. The monitoring results together with their graphical presentations are presented in Appendix E of SCL 1103 monthly EM&A report and a summary of the dust monitoring results in this reporting month is given in **Table 5.2**.

Table 5.2 Summary Table of Dust Monitoring Results

Parameter	Minimum $\mu g/m^3$	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	10.2	25.5	20.4	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
August 2015[d]	1,932.6 m^3	120.9 m^3	0 *kg*	0 *kg*	0 *kg*	0 *kg*

Notes:
(a) Inert C&D materials include excavated soil and rock. 1,904.0 m^3 and 13.3 m^3 of inert C&D materials were delivered to Tuen Mun Area 38 Fill Bank and Tseung Kwan O Fill Bank respectively during the reporting month.
(b) In 1,932.6 m^3 ineert C&D materials, 15.2 m^3 excavated soil was delivered to Contract 1108A Kai Tak Barging Point and would be reused in other project in reporting month.
(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 table in reporting month was 29 August 2015.

Landscape and Visual

5.10 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 11 and 25 August 2015. 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 August 2015 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 20 August 2015. No EPD site inspection was conducted during the reporting month. The details of observations during site audit carried out by ET can refer to **Table 6.1**.

Implementation Status of Environmental Mitigation Measures

6.3 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix E**.

6.4 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 6.1**.

Table 6.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	28 Jul 2015	Bund should be provided to A2 work area to prevent runoff leakage out of site area.	Sand bags were provided in A2 work area on 4 Aug 2015.
	28 Jul 2015	Silty water was observed leaking from pipe near hoarding of station area. Pipe directing wastewater should be properly maintained.	No water leakage from pipe was observed on 4 Aug 2015.
	20 Aug 2015	Milky water and runoff was observed in station area. The Contractor should properly remove and treat the milky water, and ensure the quality of effluent discharged complying the valid discharge license.	The milky water and runoff were properly treated and removed by the contractor on 25 Aug 2015.
	25 Aug 2015	The residual paint was observed on the ground near the station. The contractor was reminded to clear the residual paint to avoid milky water generation during the rainy day.	Follow up actions will be reported in the next month.
Noise	28 Jul 2015	Reminder: More noise blanket should be erected to fill the gap of barrier at At-Grade Box.	Noise blanket was erected for barrier at At-Grade Box on 4 Aug 2015.
	4 Aug 2015	Reminder: Noise barrier should be enhanced during breaking work in A2 work area.	No breaking work was observed in A2 work area during site inspection on 11 Aug 2015.
	11 Aug 2015	Reminder: Noise barrier and erected noise blanket should be kept maintenance for efficient noise reduction at At-Grade Box.	The noise barrier and erected noise blanket at At-Grade Box were maintained on 20 Aug 2015.
	25 Aug 2015	Reminder: The contractor was reminded to wrap the breaker near A2 area with the acoustic material to reduce the noise generation.	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	N/A	There was no observation in the reporting period.	N/A
Waste / Chemical Management	11 Aug 2015	Drip tray should be provided to chemical containers in station area to prevent leakage.	The chemical containers were removed on 20 Aug 2015.
	11 Aug 2015	Reminder: General refuse and waste in station area should be properly and regularly removed.	The general refuse and waste were removed on 20 Aug 2015.
Permits/ Licenses	N/A	There was no observation in the reporting period.	N/A

7 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

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

Summary of Environmental Non-Compliance

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

Summary of Environmental Complaint

7.3 No environmental Project-related complaint was received in the reporting month. The Complaint Log in reporting month and cumulative summary table since the commencement of the Project is presented in **Appendix H**.

Summary of Environmental Summon and Successful Prosecution

7.4 There was no successful environmental prosecution or notification of summons received since the Project commencement. The Log for environmental summon and successful prosecution in reporting month and cumulative summary table since the commencement of the Project is presented in **Appendix H**.

8 FUTURE KEY ISSUES

Construction Programme for the Next Month

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

- Slope Improvement Works;
- ELS Structure Installation and Superstructure Works at At-grade Box;
- Pier and Pile Cap Construction of Viaduct;
- ABWF Works at Hin Keng Station; and
- Modification of Retaining Wall and Installation of Noise Barrier.

Key Issues in the Next Month

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

- Dust arising from loading, unloading, transfer, handling or storage of bulk cement, excavated materials and soil erosion in dry days;
- Control of silty surface runoff;
- Implementation of mitigation measures for wastewater spillage from construction works.
- Preservation and protection of retained and transplanted trees;
- Implementation of mitigation measures for noise nuisance from construction works; and
- Regular removal of silt, mud and sand along drainage channels and sedimentation tanks.

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 August 2015 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, erosion and sediment control structures and discharge point should be regularly inspected and maintained to ensure proper and efficient operation at all times; and
- Wastewater and runoff generated from painting works should be properly treated. Any water discharge before treatment should be avoided. Residual paint and chemical should be removed.

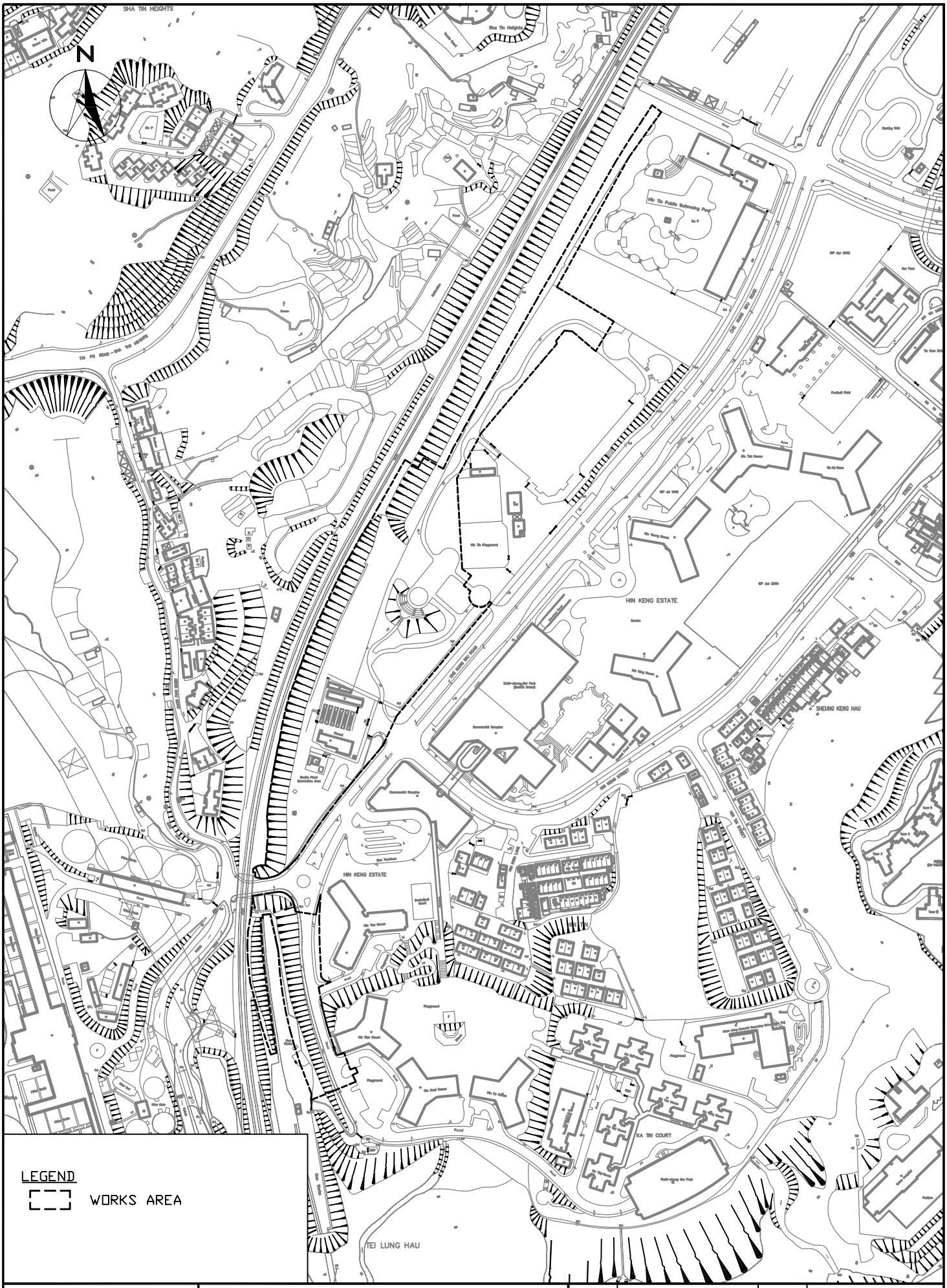
Construction Noise

- Regular review on the noise mitigation measures and the conditions of the implemented noise mitigation measures shall be properly maintained.

Waste/Chemical Management

- Good site practice of providing drip trays for temporary use of chemicals shall be sustained. Drip trays should be properly maintained and ensure enough capacity for the chemical containers; and
- General refuse and waste should be regularly removed to prevent accumulation.

FIGURES



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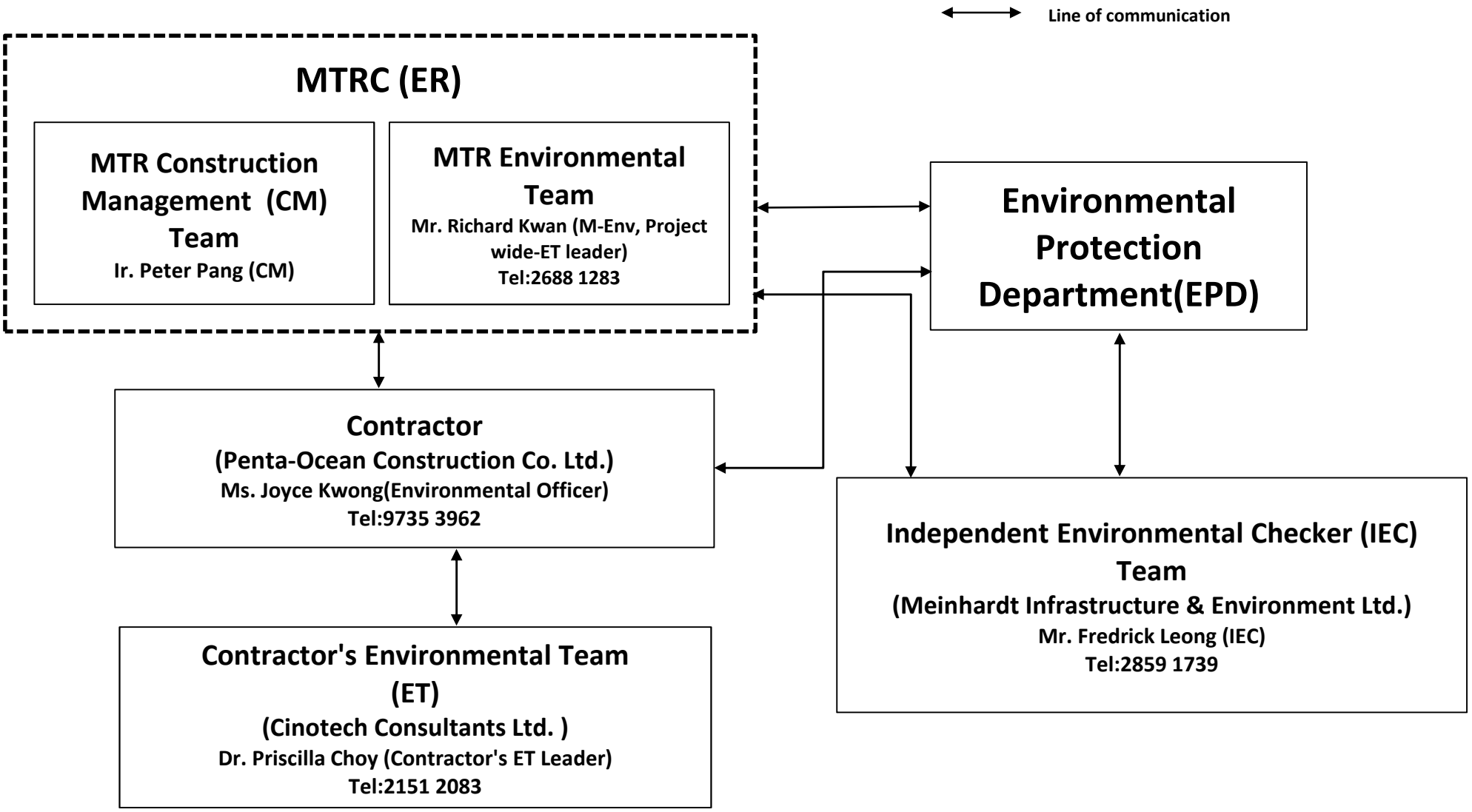
SCL CONTRACT 1102
THE SHATIN TO CENTRAL LINK –
HIN KENG STATION AND APPROACH STRUCTURES

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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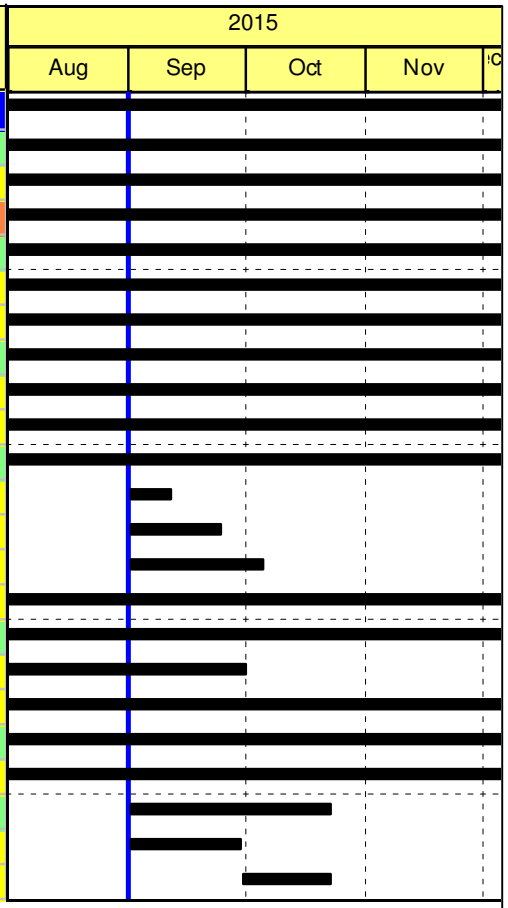
SCL CONTRACT 1102
THE SHATIN TO CENTRAL LINK –
HIN KENG STATION AND APPROACH STRUCTURES

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
	3-month Rolling Programme Summary (Sep tc	923.00	264.00	21-Oct-13 A	28-Jul-16
	Hin Keng Station	403.00	153.00	04-Mar-15 A	11-Mar-16
	Superstructure	403.00	153.00	04-Mar-15 A	11-Mar-16
	ABWF	403.00	153.00	04-Mar-15 A	11-Mar-16
	Ma On Shan Line & Tail Track	818.08	264.00	21-Oct-13 A	28-Jul-16
	Noise Barrier behind Hin Tin Swimming Pool	378.00	129.00	21-Oct-13 A	04-Feb-16
	Noise Barrier Work	157.00	83.00	15-Jul-14 A	28-Jul-16
	At-grade Box	311.00	166.00	21-May-15 A	30-Mar-16
	ELS Works	136.00	86.00	21-May-15 A	12-Dec-15
	Superstructure	261.00	166.00	13-Jul-15 A	30-Mar-16
	Hin Keng Viaduct	405.00	167.00	05-May-15 A	31-Mar-16
	Pile Cap A2	10.00	10.00	01-Sep-15	11-Sep-15
	Abutment A1	21.00	21.00	01-Sep-15	24-Sep-15
	Pier A2	28.00	28.00	01-Sep-15	05-Oct-15
	Superstructure	405.00	167.00	05-May-15 A	31-Mar-16
	FR63 Slope	85.00	85.00	03-Dec-14 A	11-Dec-15
	Drainage Work	64.00	25.00	03-Dec-14 A	30-Sep-15
	Soft Landscape	60.00	60.00	15-Jul-15 A	11-Dec-15
	FR65 Slope	90.00	160.00	05-Jan-15 A	19-Mar-16
	Soft Landscape	90.00	160.00	05-Jan-15 A	19-Mar-16
	F320 Slope	42.00	42.00	01-Sep-15	22-Oct-15
	Row 1	24.00	24.00	01-Sep-15	29-Sep-15
	Row 2	18.00	18.00	30-Sep-15	22-Oct-15



PENTA-OCEAN CONSTRUCTION CO.LTD 五洋建設

Actual Work
Remaining Work
Critical Remaining Work
Milestone
% Complete

MTRC SCL Project Contract 1102

Hin Keng Station and Approach Structures

3 Months Rolling Programme

Summary

(Period - Sep to Nov 2015)

Date	Revisi...	Checked	Approved
07-Sep-15	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: August 2015

a) Exceedance Report for Dust Monitoring (NIL)

b) Exceedance Report for Noise Monitoring (NIL)

APPENDIX D
SITE AUDIT SUMMARY

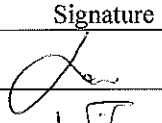
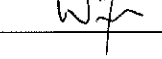
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150820
Date	20 August 2015 (Thursday)
Time	14:00 – 15:15

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

Ref. No.	Remarks/Observations	Related Item No.
150820-O01	***Part B – Water Quality*** • Milky water and runoff was observed in station area. The Contractor should properly remove and treat the milky water, and ensure the quality of effluent discharged complying the valid discharge license. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part F – Construction Noise Impact*** • No environmental deficiency was identified during the site inspection. ***Part G – Waste/Chemical Management*** • No environmental deficiency was identified during the site inspection. ***Part H – Permits/Licenses*** • No environmental deficiency was identified during the site inspection. ***Part I – Others*** • No environmental deficiency was identified during the site inspection.	B 12 and B15ii

	Name	Signature	Date
Recorded by	Jason Lai		20 August 2015
Checked by	Dr. Priscilla Choy		20 August 2015

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150804
Date	4 August 2015 (Tuesday)
Time	09:00 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
150804-R01	***Part B – Water Quality*** • No environmental deficiency was identified during the site inspection. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part F – Construction Noise Impact*** • Noise barrier should be enhanced during breaking work in A2 work area. ***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.	F 7

	Name	Signature	Date
Recorded by	Jason Lai		4 August 2015
Checked by	Dr. Priscilla Choy		4 August 2015

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150811
Date	11 August 2015 (Tuesday)
Time	09:00 – 10:45

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

Ref. No.	Remarks/Observations	Related Item No.
	Part B – Water Quality • No environmental deficiency was identified during the site inspection. ***Part C – Ecology*** • No environmental deficiency was identified during the site inspection. ***Part D – Landscape & Visual*** • No environmental deficiency was identified during the site inspection. ***Part E – Air Quality*** • No environmental deficiency was identified during the site inspection. ***Part F – Construction Noise Impact***	
150811-R03	• Noise barrier and erected noise blanket should be kept maintenance for efficient noise reduction at At-Grade Box.	F 7
	Part G – Waste/Chemical Management	
150811-O01	• Drip tray should be provided to chemical containers in station area to prevent leakage.	G 10
150811-R02	• General refuse and waste in station area should be properly and regularly removed.	G 1iii
	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 August 2015
Checked by	Dr. Priscilla Choy		11 August 2015

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	150825
Date	25 August 2015 (Tuesday)
Time	9:00 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
150825-O02	*Part B – Water Quality* • The residual paint was observed on the ground near the station. The contractor was reminded to clear the residual paint to avoid milky water generation during the rainy day. *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.	B 19
150825-R01	*Part F – Construction Noise Impact* • The contractor was reminded to wrap the breaker near A2 area with the acoustic material to reduce the noise generation. *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.	F 5

	Name	Signature	Date
Recorded by	Benjamin Wong		25 August 2015
Checked by	Dr. Priscilla Choy		25 August 2015

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 Supplementary RAP (if contamination is confirmed) shall be prepared and submitted to EPD for agreement. • Supplementary Remediation Report (RR) shall also be prepared and submitted to EPD for endorsement prior to the commencement of any construction/ development works at Site L1 (NT South Animal Centre)	To analyse cyanide (free) at Site L1 (NT South Animal Centre)	Contractor	Site L1 (NT South Animal Centre)	After the site is resumed and handed over to the Project Proponent	• Practice Guide (PG) forInvestigation and Remediation of ContaminatedLand • GN/GM for land contamination • Risk-Based Remediation Goals	^ ^ ^
Hazard to Life								
Chapter 13.13	A13C.8	Installation of on-site gas monitors in all relevant SCL construction/operation areas;	To reduce the risks to the SCL staff, construction workers and passengers	MTRC/ Contractor	Guardhouse next to Site Entrance (Opposite to Hin	Construction and operation		^

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

SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S 14.2	EM1	• An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	MTR Corporation	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO	^
S 14.2 – 14.4	EM2	• An Environmental Team needs to be employed as per the EM&A Manual • Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. • An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	MTR Corporation/ Contractor	All construction sites	Construction stage	• EIAO Guidance Note No.4/2010 • TM-EIAO	^ ^ ^

Remarks: ^ Compliance of mitigation measure X Non-compliance of mitigation measure

• Non-compliance but rectified by the contractor

* Recommendation was made during site audit but improved/rectified by the contractor.

N/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 2015

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)
Jan-15	1.5370	0	0	0	1.5277	0.0093	0	0	0	0	0.1224
Feb-15	1.3199	0	0	0	1.3156	0.0045	0	0	0	0	0.0876
Mar-15	2.0981	0	0	0.3023	1.7724	0.0235	0	0	0	0	0.1674
Apr-15	0.5166	0	0	0	0.5058	0.0109	0	0	0	0	0.1784
May-15	0.4987	0	0	0	0.4948	0.0039	0	0	0	0	0.1224
Jun-15	2.5555	0	0	0	2.5526	0.0029	0	0	0	0	0.1182
Sub-total	8.5258	0	0	0.3023	8.1689	0.0550	0	0	0	0	0.7964
Jul-15	3.5247	0	0	0	3.5247	0	0	0	0	0	0.1394
Aug-15 (See Note 3)	1.9326	0	0	0.0152	1.9173	0	0	0	0	0	0.1209
Sep-15											
Oct-15											
Nov-15											
Dec-15											
Total	**13.9831**	**0**	**0**	**0.3175**	**13.6109**	**0.055**	**0**	**0**	**0**	**0**	**1.0567**

Note: (1) Inert C&D materials include excavated soil and rock. 1,904.0m^3 and 13.3m^3 of inert C&D materials were delivered to Tuen Mun Area 38 Fill Bank and Tseung Kwan O Area 137 Fill Bank respectively during the reporting month.

Note: (2) 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 table in reporting month was 29 August 2015.

APPENDIX H
LOG AND CUMULATIVE SUMMARY TABLE FOR COMPLAINTS, NOTIFICATIONS OF SUMMONS AND SUCCESSFUL PROSECUTIONS

Appendix H - Log and Cumulative Summary Table for Complaints, Notifications of Summons and Successful Prosecutions

Reporting Month: August 2015

Complaint Log

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	Status
--	--	--	--	--	--

Log for Notifications of Summons

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
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Log for Successful Prosecutions

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

Cumulative Summary Table for Complaints, Notifications of Summons and Successful Prosecution

Reporting Month	Number of Complaints	Number of Notifications of Summons	Number of Successful Prosecution
October 2013	0	0	0
November 2013	0	0	0
December 2013	0	0	0
January 2014	0	0	0
February 2014	0	0	0
March 2014	0	0	0
April 2014	0	0	0
May 2014	0	0	0
June 2014	0	0	0
July 2014	0	0	0
August 2014	0	0	0
September 2014	0	0	0
October 2014	0	0	0
November 2014	1	0	0
December 2014	0	0	0

Reporting Month	Number of Complaints	Number of Notifications of Summons	Number of Successful Prosecution
January 2015	0	0	0
February 2015	0	0	0
March 2015	0	0	0
April 2015	0	0	0
May 2015	0	0	0
June 2015	0	0	0
July 2015	0	0	0
August 2015	0	0	0
Total	1	0	0