

MTR Corporation Limited

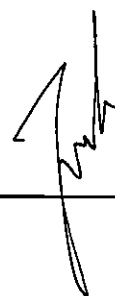
**Shatin to Central Link –
Tai Wai to Hung Hom Section and
Mong Kok East to Hung Hom Section**

Monthly EM&A Report No. 50

[Period from 1 to 31 October 2016]

(November 2016)

Verified by: _____ Fredrick Leong



Position: Independent Environmental Checker

Date: _____ 14 Nov. 16

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. 50

[Period from 1 to 31 October 2016]

(November 2016)

Certified by: Richard Kwan 

Position: Environmental Team Leader

Date: 14th November 2016

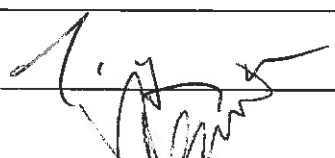

MTR Corporation Limited

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. 50

[Period from 1 to 31 October 2016]

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Version:

A

Date: 14 Nov 2016

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1 INTRODUCTION

1.1 Background

- 1.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai to Hung Hom via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH) and Stabling Sidings at Hung Hom Freight Yard (HHS); and (ii) The North-South Corridor which is an extension of the East Rail Line (EAL) at Hung Hom across the harbour to Admiralty Station (ADM).
- 1.1.2 Shatin to Central Link – Tai Wai to Hung Hom Section [SCL (TAW-HUH)] and Shatin to Central Link – Mong Kok East to Hung Hom Section [SCL (MKK-HUH) (hereafter referred to as “the Project”) are parts of the SCL. Shatin to Central Link – Stabling Sidings at Hung Hom Freight Yard [SCL (HHS)] is a proposed stabling sidings option for SCL (TAW – HUH) at the former freight yard in Hung Hom.
- 1.1.3 The Environmental Impact Assessment (EIA) Reports for SCL (TAW-HUH) (Register No.: AEIAR-167/2012), SCL (MKK-HUH) (Register No.: AEIAR-165/2012) and SCL (HHS) (Register No.: AEIAR-164/2012) were approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Reports, two Environmental Permits (EPs) were granted on 22 March 2012, one covers SCL (TAW-HUH) and SCL (HHS) (EP No: EP-438/2012) and the other covers SCL (MKK-HUH) and SCL (HHS) (EP No.: EP-437/2012), for their construction and operation. Variations of environmental permit (VEP) was subsequently applied for EP-438/2012 and the latest Environmental Permit (EP No: EP-438/2012/K) was issued by Director of Environmental Protection (DEP) on 4 October 2016.

1.2 Project Programme

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

Table 1.1 Summary of Awarded Works Contracts

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
1101 ⁽¹⁾	Ma On Shan Line Modification Works	December 2012	Sun Fook Kong Joint Venture (SFKJV)	ANewR Consulting Ltd. (ANewR)
1102	Hin Keng Station and Approach Structures	October 2013	Penta-Ocean Construction Co. Ltd.	Cinotech Consultants Ltd. (Cinotech)
1103	Hin Keng to Diamond Hill Tunnels	February 2013	Vinci Construction Grands Projets	Ove Arup & Partners Hong Kong Ltd. (Arup)
1106	Diamond Hill Station	March 2013	Leader Joint Venture	Cinotech Consultants Ltd. (Cinotech)
1107	Diamond Hill to Kai Tak Tunnels	May 2013	Chun Wo - SELI Joint Venture	Cinotech Consultants Ltd. (Cinotech)
1108	Kai Tak Station and Associated Tunnels	June 2013	Kaden -Chun Wo Joint Venture	Environmental Pioneers & Solutions Ltd.

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
1108A ⁽²⁾	Kai Tak Barging Point Facilities	September 2012	Concentric – Hong Kong River Joint Venture (CCL-HKR JV)	Cinotech Consultants Ltd. (Cinotech)
1109	Stations and Tunnels of Kowloon City Section	September 2012	Samsung-Hsin Chong JV (SSHCJV)	ERM-Hong Kong Limited (ERM)
1111	Hung Hom North Approach Tunnels	January 2013	Gammon-Kaden SCL1111 JV	AECOM Asia Co. Ltd.
1112	Hung Hom Station and Stabling Sidings	June 2013	Leighton Contractors (Asia) Limited	SMEC Asia Ltd., HK

Notes:

- (1) All construction works (works areas at Tai Wai Mei Tin Road and the offsite temporary storage areas) under Works Contract 1101 were completed on 29 February 2016.
- (2) All construction works (Kai Tak Barging Point Facilities) under Works Contract 1108A were completed on 29 September 2016.

1.3 Purpose of the Report

- 1.3.1 The Environmental Monitoring and Audit (EM&A) programme for the Project commenced in September 2012. This is the fiftieth 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 October 2016.

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/J and EP-438/2012/K. As per the EP Conditions, EM&A Reports for the works contracts as shown in the table below have been prepared by the respective Contractor's ETs.

Works Contract	Contract Title	Works Covered in Environmental Permit No.
1101	Ma On Shan Modification Works	EP-438/2012/J & EP-438/2012/K
1102	Hin Keng Station and Approach Structures	EP-438/2012/J & EP-438/2012/K
1103	Hin Keng to Diamond Hill Tunnels	EP-438/2012/J & EP-438/2012/K
1106	Diamond Hill Station	EP-438/2012/J & EP-438/2012/K
1107	Diamond Hill to Kai Tak Tunnels	EP-438/2012/J & EP-438/2012/K
1108	Kai Tak Station and Associated Tunnels	EP-438/2012/J & EP-438/2012/K
1108A	Kai Tak Barging Point Facilities	EP-438/2012/J & EP-438/2012/K
1109	Stations and Tunnels of Kowloon City Section	EP-438/2012/J & EP-438/2012/K
1111	Hung Hom North Approach Tunnels	EP-437/2012, EP-438/2012/J & EP-438/2012/K
1112	Hung Hom Station and Stabling Sidings	EP-437/2012, EP-438/2012/J & EP-438/2012/K

- 2.1.2 The EM&A Reports for Works Contracts 1109, 1111, 1103, 1106, 1107, 1112, 1108, and 1102, prepared by the respective Contractor's ETs are provided in **Appendices A to H**, respectively. The EM&A Reports provide details of the project information, EM&A requirements, impact monitoring and audit results for the corresponding Contracts.
- 2.1.3 The construction works of Works Contract 1108A was substantially completed in August 2016 and all minor outstanding works were also completed in September 2016. The Final EM&A Review Report for Works Contract 1108A summarising the waste management details, site inspections findings, environmental complaint records and investigations, and any notification of summons, prosecutions and corrective actions throughout the construction period of Works Contract 1108A is provided in **Appendix I**.
- 2.1.4 A summary of the major construction activities undertaken by the respective Contractors of various Works Contracts during the reporting period are presented in **Table 2.1**.

Table 2.1 Summary of Major Construction Activities in the Reporting Period

Works Contract	Site	Construction Activities
1102	Hin Keng Station and Approach Structures	<ul style="list-style-type: none"> • Slope improvement works; • External wall tiling at viaduct & at-grade box; • ABWF works at Hin Keng Station; and • Modification of retaining wall and installation of noise barrier.
1103	Diamond Hill Area	• Tunnel remedial works at cut-off wall
	Hin Keng Area	• Tunnel Lining and Partition Walls, Dividing Slabs, Drains and Walkways
	Fung Tak Area	• Tunnels Connection, RC Concrete and ELS Work and Sheet piling for retaining wall
	Ma Chai Hang Area	• Central Core, Ventilation Tunnel and C&S Works
	Shui Chuen O	• Storage Area
1106	Diamond Hill Station Area	<ul style="list-style-type: none"> • Construction of Level U1 Wall and structural steel erection; • ABWF works at SCL-DIH station area; • Foundation works and temporary road works at Lung Cheung Road and Choi Hung Road; • Installation of bored pile on Lung Cheung Road; • Excavation, strutting, sheet piling and grouting works at MOE near Entrance B; • Landscaping and tiling works, and planter reinstatement works at Entrance A1; and • Drilling works and install Pre-bored socketed H-Piles at Entrance A2.
1107	Tunnel section next to Kai Tak Station	<ul style="list-style-type: none"> • Backfilling works at cut and cover tunnels; and • Reinstatement and backfilling works of drainage
1108	Kai Tak Station	<ul style="list-style-type: none"> • Open cut tunnel: DT and UT general cleaning and defect rectification, stitch joint PU grouting, sheetpile extraction, 1108/1109 TAM grouting. • Cut and cover tunnel: Receiving shaft backfilling, DT and UT general cleaning and defect rectification, receiving shaft S2 and S1 shoring dismantling, (option 3) make good soil surface at nullah.

Works Contract	Site	Construction Activities
		<ul style="list-style-type: none"> • Station: Erection of formworks for oil interceptor and manholes at SVS & NVS, drainage work at all area, backfilling for DCS cable ducting, installation of roof cladding at Entrance D, installation of 5W at all area, installation of brackets for roof cladding and reflected ceiling at Entrance B.
1109	Ma Tau Wai (MTW) Works Area	<ul style="list-style-type: none"> • Along Ma Tau Wai Road and TKW/MTW Road Garden – Station excavation and construction; minipile installation; and EEP construction.
	To Kwa Wan (TKW) Works Area	<ul style="list-style-type: none"> • Olympic Garden – Construction of station entrance; • TKW Station – Construction of TKW station, and TBM/batching plant decommissioning; • Tam Kung Road – Shaft construction; and • Nam Kok Road – Excavation and slab construction.
1111	Mong Kok Freight Terminal ⁽¹⁾	<ul style="list-style-type: none"> • All construction activities were completed in May 2015.
	Hung Hom Area	<ul style="list-style-type: none"> • Fencing removal work, • Erection of noise enclosure, manhole construction, pipe laying, cable trench, grouting works, cable laying, concreting works, • Parapet modification works, bearing replacement, • ELS & decking removal work, formwork erection, reinforcement fixing, backfill, road & drainage construction, steel mesh enclosure erection, excavation, pipe laying, • Abutment wall construction, OB2 west bound reinstatement, stormwater drain installation, • Tunnel /ELS dismantling, tunnel works, removal of ELS, drainage work, • Reinstatement, road diversion, water main diversion, • Scaffolding platform erection, dismantling of scaffolding, construction of noise enclosure & steel truss, pre-split, lifting works, deck excavation, temporary working platform, ELS removal, rock breaking, rock cutting
1112	Hong Hom (HUH and HHS) Works Area	<ul style="list-style-type: none"> • Slab construction at HUH, NAT • Underpinning at HUH • Utilities diversion at SAT • Modification works at Concourse level • Drainage diversion at NAT • Noise barrier installation at NAT • Construction of Overhead Track Exhaust (OTE) structures • Construction of Back of House (BOH) structures

Note:

- (1) Construction works were completed.
- 2.1.5 Impact monitoring for air quality and construction noise were conducted in accordance with the EM&A Manual in the reporting period. Continuous noise monitoring was not required in the reporting period for all Works Contracts according to the Continuous Noise Monitoring Plan (CNMP). The air quality and construction noise for this reporting month are summarised in **Tables 2.2** and **2.3**. Details of the monitoring requirements, locations, equipment, methodology and QA/QC procedures are presented in the EM&A Reports as provided in **Appendices A to H**.
- 2.1.6 Water quality monitoring was not carried out during this reporting period since no dredging activity was conducted in the reporting month.
- 2.1.7 One environmental complaint regarding dust emission from the construction work in Kai Tak Area under Works Contract 1108 was received from EPD on 4 Oct 2016. Another complaint regarding construction noise issue in Kai Tak Area under Works Contract 1109 was received from EPD on 25 Oct 2016. Investigations were conducted and reported in the respective EM&A Reports. A summon was received by a sub-contractor of Works Contract 1112 on 3 October 2016 and the hearing would take place on 3 November 2016 at Kwun Tong Magistrates' Courts. No exceedance of action and limit levels, or successful prosecutions was received during the reporting period. Log for environmental complaints, notification of summons and successful prosecutions are provided in **Table 2.4**.
- 2.1.8 Regular site inspections were conducted by the respective Contractor's ETs on a weekly basis to check the implementation of environmental pollution control and mitigation measures for the Project. No non-conformance was identified in the reporting period.

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

Monitoring Station ID	Location	TSP Concentration ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	Exceedance due to the Project Construction (Yes/No)
Works Contract 1102 and 1103					
DMS-1	C.U.H.K.A.A. Thomas Cheung School	19.3-85.8	148.7	260	No
Works Contract 1103					
DMS-2	Price Memorial Catholic Primary School	31.2-106.4	167.4	260	No
Works Contracts 1103 and 1106					
DMS-3	Hong Kong S.K.H Nursing Home ⁽¹⁾	31.5-39.1	159.1	260	No
Works Contract 1106 and 1107					
DMS-4	Block 1, Rhythm Garden	14.7-33.6	160.4	260	No
Works Contract 1108 ⁽⁵⁾					
Works Contract 1109					
DMS-6	Katherine Building ⁽²⁾	43-60	156.8	260	No
DMS-7	Parc 22 ⁽³⁾	47-67	166.7	260	No
DMS-8	SKH Good Shepherd Primary School	46-74	152.2	260	No
DMS-9	No. 12 Pau Chung Street ⁽⁴⁾⁽⁹⁾	48-67	160.9	260	No
DMS-10	Chat Ma Mansion	50-66	170.4	260	No
Works Contract 1111					
AM1 ⁽⁶⁾	No. 234 – 238 Chatham Road North ⁽⁷⁾	23.4-84.0	183.9	260	No
Works Contract 1112					
AM2	Site Boundary of Finger Pier Adjacent To Harbourfront Horizon ⁽⁸⁾	29.9 – 41.1	182	260	No

Notes:

- (1) Alternative monitoring location to Shek On House
- (2) Alternative monitoring location to Prosperity House
- (3) Alternative monitoring location to Skytower Tower 2
- (4) Alternative monitoring location to Lucky Building
- (5) No TSP monitoring is required under this contract
- (6) AM1 named as HUH-1-3 in SCL(TAW-HUH) and SCL(HHS) EIA Reports.
- (7) Alternative monitoring location to Wing Fung Building
- (8) Alternative monitoring location to Harbourfront Horizon
- (9) 24-hour averaged dust monitoring at DMS-9 No. 26 Kowloon City Road (alternative location of Lucky Building) has been suspended since March 2014 due to denied access by the occupant of the premise. However, No. 12 Pau Chung Street, as an alternative monitoring location, was formally approved by EPD on 19 May 2014. Impact dust monitoring was resumed on 12 June 2014.

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

Monitoring Station ID	Location	Noise Level ($L_{Aeq,30mins}$, dB(A))			Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
		Measured	Baseline	Corrected ⁽⁷⁾		
Works Contract 1102 and 1103						
NMS-CA-1	C.U.H.K.A.A. Thomas Cheung School	55.9-56.9	57.0	< Baseline	70 (65 during examination period)	No
Works Contract 1103						
NMS-CA-2	Price Memorial Catholic Primary School	64.7-65.8	66.0	< Baseline	70 (65 during examination period)	No
Works Contracts 1103 and 1106						
NMS-CA-3	Hong Kong S.K.H Nursing Home ⁽¹⁾	70.5-74.0	73.0	< Baseline-67.1	70	No
Works Contract 1106 and 1107						
NMS-CA-4	Block 1, Rhythm Garden (north-eastern façade)	71.9-72.6	71.0	64.6-67.5	75	No
NMS-CA-5	Block 1, Rhythm Garden (northern façade) ⁽²⁾	70.6-71.9	74.0	< Baseline	70 (65 during examination period)	No
Works Contract 1108 ⁽⁶⁾						
Works Contract 1109						
NMS-CA-6	No. 16-23 Nam Kok Road ⁽³⁾	62.8-63.4	76.1	< Baseline	75	No
NMS-CA-7	Skytower Tower 2	65.1-65.7	70.0	< Baseline	75	No
NMS-CA-8	SKH Good Shepherd Primary School	73.3-74.1	75.4	< Baseline	70 (65 during examination period) (79 during the period of conducting the continuous noise monitoring) ⁽⁸⁾	No
NMS-CA-9	Kong Yiu Mansion ⁽⁴⁾	70.0-71.1	69.2	62.3-66.6	75	No
NMS-CA-10	Chat Ma Mansion	75.8-76.3	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)	66.8-70.2	68.0	< Baseline – 66.2	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⁾	64.0-72.8	79.0	< Baseline	75 (77) ⁽¹⁰⁾	No
Works Contract 1112 ⁽⁶⁾						

Notes:

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

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

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

3 IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS

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

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

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

EP Condition (EP-438/2012/J and EP-438/2012/K)	Submission	Submission date
		13 Sept 2013 (Approved) 20 Jan 2014 (10 th submission) 26 Feb 2014 (Approved) 7 Oct 2014 (11 th submission) 23 Oct 2014 (Approved)
Condition 2.11	Construction and Demolition Materials Management Plan (C&DMMP)	6 Jul 2012 (1 st submission) 12 Sep 2012 (2 nd submission) 10 Oct 2012 (Approved)
Condition 2.12	Sediment Management Plan	6 Jul 2012 (1 st submission) 12 Sep 2012 (2 nd submission) 5 Oct 2012 (3 rd submission) 10 Oct 2012 (Approved) 4 Mar 2013 (4 th submission) 9 May 2013 (5 th submission) 24 July 2013 (6 th submission) 26 July 2013 (Approved)
Condition 2.13	Visual, Landscape, Tree Planting & Tree Protection Plan	6 Jul 2012 (1 st submission) 30 Aug 2012 (2 nd submission) 3 Oct 2012 (3 rd submission) 13 Nov 2013 (Approved) 14 Nov 2012 (4 th submission) 8 Feb 2013 (5 th submission) 18 Mar 2013 (6 th submission) 18 June 2013 (7 th submission) 12 July 2013 (Approved)
Condition 2.14	Transplantation Proposal for Plant Species of Conservation Importance	22 Aug 2012 (1 st submission) 5 Oct 2012 (2 nd submission) 26 Nov 2012 (3 rd submission) 4 Dec 2012 (Approved)
Condition 2.15	Conservation Plan	31 Jan 2013 (1 st submission) 18 Mar 2013 (2 nd submission) 24 Apr 2013 (Approved)
Condition 2.16	Archaeological Action Plan(s) (AAP(s)) for Works Contract 1109	10 Aug 2012 (1 st submission) 3 Sep 2012 (2 nd submission) 21 Sep 2012 (Approved) 11 Oct 2013 (3 rd submission) 1 Nov 2013 (Approved)
Condition 2.16	Archaeological Action Plan(s) (AAP(s)) for Works Contract 1106	29 Jan 2013 (1 st submission) 19 Mar 2013 (2 nd submission) 8 Apr 2013 (Approved)
Condition 2.23	Supplementary Contamination Assessment Report for New Territories South Animal Centre	28 Sep 2012 25 Oct 2012 (Approved)
Condition 2.27	Operational Ground-borne Noise Mitigation Measures Plan	18 Mar 2016 (Batch 1 Version A submission) 28 Apr 2016 (Batch 1 Version B submission) 28 Apr 2016 (Batch 2 Version A submission) 1 Jun 2016 (Batch 1 Version C submission) 1 Jun 2016 (Batch 2 Version B submission) 23 Jun 2016 (Batch 1 Version D submission)

EP Condition (EP-438/2012/J and EP-438/2012/K)	Submission	Submission date
		23 Jun 2016 (Batch 2 Version C submission) 15 Jul 2016 (Batch 1 Version D approved) 15 Jul 2016 (Batch 2 Version C approved) 15 Sep 2016 (Batch 3 Version A submission) 4 Oct 2016 (Batch 3 Version A approved)
Condition 2.30	As-built Drawings for Operational Air-borne Noise Mitigation Measures	4 Dec 2015 (1 st submission) 28 Dec 2015 (2 nd submission) 4 Feb 2016 (Approved)
Condition 2.33	As-built Drawings for Landscape and Visual Mitigation Measures	4 Dec 2015 (1 st submission) 28 Dec 2015 (2 nd submission) 4 Feb 2016 (Approved)
Condition 2.36	Contamination Assessment Plan (CAP) for the Temporary Magazine Site at TKO Area 137	23 Mar 2016 (1 st submission) 20 Apr 2016 (2 nd submission) 22 Apr 2016 (Approved)
Condition 2.36	Contamination Assessment Report (CAR) for the Temporary Magazine Site at TKO Area 137	19 May 2016 (1 st submission) 3 Jun 2016 (2 nd submission) 15 Jun 2016 (Approved)
Condition 3.3	Baseline Monitoring Report (Works Contract 1109 - Stations and Tunnels of Kowloon City Section)	27 Jul 2012
Condition 3.3	Baseline Monitoring Report (Works Contract 1108A – Kai Tak Barging Point Facilities)	31 Jul 2012
Condition 3.3	Baseline Monitoring Report (Works Contracts 1103, 1106 and 1111 – Hin Keng to Diamond Hill Tunnels, Diamond Hill Station, and Hung Hom North Approach Tunnels)	19 Oct 2012
Condition 3.4	Monthly EM&A Reports No. 1 - 48 Monthly EM&A Report No. 49	Reported in previous Monthly EM&A Reports 14 Oct 2016

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 (1 st submission) 30 Apr 2013 (2 nd submission)
Condition 2.6	Construction Programme and EP Submission Schedule	19 Dec 2012

EP Condition (EP-437/2012)	Submission	Submission date
Condition 2.7	Construction Noise Mitigation Measures Plan (CNMMP)	30 Nov 2012 (1 st submission) 8 Feb 2013 (Approved) 26 Apr 2013 (2 nd submission) 11 Jun 2013 (3 rd submission) 27 Aug 2013 (Approved) 20 Jan 2014 (4 th submission) 28 Apr 2016 (Approved)
Condition 2.8	Continuous Noise Monitoring Plan (CNMP)	30 Nov 2012 (1 st submission) 11 Jan 2013 (2 nd submission) 8 Feb 2013 (Approved) 20 Jan 2014 (3 rd submission) 28 Apr 2016 (Approved)
Condition 2.9	Construction and Demolition Materials Management Plan (C&DMMP)	6 Jul 2012 (1 st submission) 12 Sep 2012 (2 nd submission) 15 Oct 2012 (Approved)
Condition 2.10	Sediment Management Plan	6 Jul 2012 (1 st submission) 12 Sep 2012 (2 nd submission) 5 Oct 2012 (3 rd submission) 15 Oct 2012 (Approved)
Condition 2.11	Visual, Landscape, Tree Planting & Tree Protection Plan (VLTP)	14 Nov 2012 (1 st submission) 8 Feb 2013 (2 nd submission) 4 Feb 2015 (3 rd submission) 26 Jun 2015 (4 th 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 - 48 Monthly EM&A Report No. 49	Reported in previous Monthly EM&A Reports 14 Oct 2016

Appendix A

**50th 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. 50

[Period from 1 to 31 October 2016]

Works Contract 1109 - Stations and Tunnels of
Kowloon City Section

(11 November 2016)

Certified by: *Mandy To* Mandy To

Position: Environmental Team Leader

Date: 11 November 2016

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.50

October 2016

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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.50

October 2016

Reference 0171181

For and on behalf of
ERM-Hong Kong, Limited

Approved by: Frank Wan

Signed:



Position: Partner

Date: 11 November 2016

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EXECUTIVE SUMMARY

The construction works of **MTR Shatin to Central Link Works Contract 1109 – Stations and Tunnels of Kowloon City Section** commenced on 1 September 2012. This is the fiftieth monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 October 2016 to 31 October 2016 in accordance with the EM&A Manual.

Summary of the Construction Works undertaken during the Reporting Month

The major construction works undertaken during the reporting month include:

Construction Activities undertaken

Works in Ma Tau Wai (MTW)

- Along Ma Tau Wai Road and TKW/MTW Road Garden – Station excavation and construction; minipile installation; and EEP construction.

Works in To Kwa Wan (TKW)

- Olympic Garden – Construction of station entrance;
 - TKW Station – Construction of TKW station, and TBM/batching plant decommissioning;
 - Tam Kung Road – Shaft construction; and
 - Nam Kok Road – Excavation and slab construction.
-

Regular Construction Noise and Construction Dust Monitoring

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

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

Continuous Noise Monitoring

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

Cultural Heritage

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

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

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

Waste Management

Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. No of inert C&D materials was generated from the Project, which were sent to 1108A Kai Tai Bargaining Facilities during the reporting month. 575 kg of plastics was generated and sent to recyclers for recycling during the reporting period. About 435 m³ 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. 144 kg of paper/cardboard packaging was generated and sent to recyclers for recycling during the reporting period. No chemical waste was generated during this reporting month.

Landscape and Visual

Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 3 and 17 October 2016. 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, 11, 17, 24 and 31 October 2016. The representative of the IEC joined the site inspection on 17 October 2016. 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 Limit Level of regular construction noise monitoring was recorded during the reporting period. The Action Level of construction noise was triggered (complaint received) during the reporting period.

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

One complaint was received on 25 October 2016. Investigation of complaint had been completed and the details of findings are presented in *Annex L*.

No summon or prosecution was received in this reporting period.

Future Key Issues

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

Construction Activities to be undertaken

Work in Ma Tau Wai (MTW)

- Along Ma Tau Wai Road and TKW/MTW Road Garden - Station excavation and construction; ABWF works; and EEP construction.

Work in To Kwa Wan (TKW)

- Olympic Garden - Construction of station entrance;
 - Tam Kung Road - Shaft construction;
 - TKW Station - Construction of TKW station, and TBM/batching plant decommissioning; and
 - Nam Kok Road - Excavation and wall construction.
-

1 INTRODUCTION

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

1.1 PURPOSE OF THE REPORT

This is the fiftieth EM&A report which summarises the monitoring results and audit findings during the reporting period from 1 October to 31 October 2016.

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
<u><i>Works in Ma Tau Wai (MTW)</i></u>
<ul style="list-style-type: none">• Along Ma Tau Wai Road and TKW/MTW Road Garden – Station excavation and construction; minipile installation; and EEP construction.
<u><i>Works in To Kwa Wan (TKW)</i></u>
<ul style="list-style-type: none">• Olympic Garden – Construction of station entrance;• TKW Station – Construction of TKW station, and TBM/batching plant decommissioning;• Tam Kung Road – Shaft construction; and• Nam Kok Road – Excavation and slab construction.

2.4 PROJECT ORGANISATION

The project organisational chart and contact details are shown in *Annex C*.

2.5 STATUS OF ENVIRONMENTAL LICENCES, NOTIFICATION AND PERMITS

A summary of the valid permits, licences, and/or notifications on environmental protection for this Project is presented in *Table 2.2*.

Table 2.2 *Summary of the Status of Valid Environmental Licence, Notification, Permit and Documentations*

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
Environmental Permit	EP-438/2012/J	Throughout the Contract	Permit granted on 29 February 2016
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation (Form NA)	348516	13 August 2012 – 30 April 2017	-
Notification of Construction Works under Air Pollution Control (Construction Dust) Regulation (Form NB)	351125	16 October 2012 – 30 April 2017	-
Wastewater Discharge Licence			
Site at TKW	WT00019555-2014	30-September-2017	-
Site at MTW	WT00019556-2014	30-September-2017	-
Chemical Waste Producer Registration			
Site at TKW	5213-286-S3682-01	Throughout the Contract	-
Site at MTW	5213-242-S3682-02	Throughout the Contract	-
Construction Noise Permit			
- PME at TKW Garden	GW-RE0450-16	12 May 2016 – 11 November 2016	-
- PME at Kai Tak Storage Yard 1	GW-RE0923-16	18 September 2016 – 16 March 2017	-
- PME at Kai Tak New Land 2	GW-RE0691-16	27 July 2016 – 26 January 2017	-
- PME at MTW Road E1-E6	GW-RE0458-16	12 May 2016 – 9 November 2016	-
- PME at SUW works Area (TBM)	GW-RE0758-16	3 August 2016 - 2 November 2016	-
- PME at SUW works Area	GW-RE0632-16	25 June 2016 - 16 December 2016	Superceded by GW-RE0994-16
-	GW-RE0994-16	15 October 2016 - 6 April 2017	-
- PME at Olympic Garden	GW-RE0511-16	24 May 2016 - 23 November 2016	-
- PME at Olympic Playground	GW-RE0697-16	9 July 2016 - 3 January 2017	Superceded by GW-RE1014-16
-	GW-RE1014-16	17 October 2016 - 16 April 2017	-
- PME at TKW	GW-RE0882-16	7 September 2016 – 6	Superceded by GW-

Permit/ Licences/ Notification	Reference	Validity Period	Remarks
- <i>Opening (1-8)</i>	GW-RE0978-16	October 2016 6 October 2016 – 20 November 2016	RE0978-16 -
- <i>PME at MTW Road TTMS (Inclinometer)</i>	GW-RE0908-16	20 September 2016 - 16 November 2016	-
- <i>PME at Nam Kok Road Welding</i>	GW-RE0296-16	2 April 2016 - 1 October 2016	-
- <i>PME at TBM main drive delivery</i>	GW-RE0940-16	27 September 2016 – 24 December 2016	-
- <i>PME at Lok Shan Road and Kiang Su Street</i>	GW-RE0470-16	12 May 2016 - 9 November 2016	-
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	-

3.1 REGULAR CONSTRUCTION NOISE MONITORING

3.1.1 Monitoring Location

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

Table 3.1 Regular Construction Noise Monitoring Location

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

Notes:

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

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

3.1.2 Monitoring Parameter and Frequency

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

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

3.1.3 *Monitoring Equipment and Methodology*

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

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

Table 3.2 *Noise Monitoring Equipment*

Monitoring Stations	Monitoring Equipment (Sound Level Meter and Calibrator)
NMS-CA-6, NMS-CA-7,	Calibrator: NC 73 (Serial No. 10997142)
NMS-CA-8, NMS-CA-9 and NMS-CA-10	Sound Level Meter: NL 52 (Serial No. 00131627)

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

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

3.1.4 *Action and Limit Levels*

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

Table 3.3 Action and Limit Levels for Noise Monitoring

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

Notes:

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

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

3.2 CONTINUOUS NOISE MONITORING

3.2.1 Monitoring Locations

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

Table 3.4 Proposed Continuous Noise Monitoring Locations

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

Note:

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

Continuous Noise Monitoring Location ^(a)	Description
review in March 2015.	

3.2.2 *Monitoring Parameter and Frequency*

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

3.2.3 *Monitoring Equipment and Methodology*

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

3.2.4 *Action and Limit Levels*

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

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

Proposed Continuous Noise Monitoring Stations	Description	Action/ Limit Level ^(a)	Measurement Period ^(a)
TKW-3-2(B)	Hing Fu Building	80	September 2014 – December 2014 ^(b)
MTW-12-3(A)	SKH Good Shepherd Primary School	80	August 2014 – January 2015 ^(b) , March 2015 – June 2015
MTW-12-4(A)	Kong Yiu Mansion	80	August 2014 – June 2015 ^(b)
MTW-12-4-1(A)	59 Maidstone Road	82	October 2014, December 2014 – June 2015
MTW-12-10	Lucky Building (South Façade)	84	March 2015 – April 2015, September 2015 – January 2016
MTW-12-10-1	Lucky Building (East Façade)	80	December 2014 – May 2015, September 2015 – January 2016
MTW-12-11(A)	SKH Good Shepherd Primary School	81	September 2014 – June 2015 ^(b)
MTW-16-1	SKH Good Shepherd Primary School	78	December 2012 – January 2013; April 2013 – 21 August 2013, 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 $\pm 3^\circ\text{C}$; the relative humidity (RH) was 40%; and
- SGS Hong Kong Ltd, a HOKLAS accredited laboratory, implemented comprehensive quality assurance and quality control programmes on the filters.

Field Monitoring

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

- the filter holder and area surrounding the filter were cleaned;
- the filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- the filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- the swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;
- the shelter lid was closed and secured with an aluminium strip;
- the HVS was warmed-up for about 5 minutes to establish run-temperature conditions;
- a new flow rate record sheet was inserted into the flow recorder;
- the flow rates of the HVSs were checked and adjusted to between 1.22 - 1.37 m³min⁻¹, which was within the range specified in the EM&A Manual (i.e. 0.6 - 1.7 m³min⁻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 ($\mu\text{g m}^{-3}$) ^(a)	Limit Level ($\mu\text{g m}^{-3}$) ^(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*.

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	Forty-ninth Monthly EM&A Report	14 October 2016

5.1 REGULAR CONSTRUCTION NOISE MONITORING

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

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

No exceedance of the Limit Level of construction noise was recorded during the reporting period. The Action Level of construction noise was triggered (complaint received) once during the reporting period.

5.2 CONTINUOUS NOISE MONITORING

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

5.3 CONSTRUCTION DUST MONITORING

A total of 25 sets of 24-hr TSP monitoring were carried out at the designated monitoring stations during normal weekdays of the reporting period. The monitoring results together with their graphical presentations are presented in *Annex J* and a summary of the dust monitoring results in this reporting month is given in *Table 5.1*.

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

Monitoring Station	24-hour TSP Monitoring Results measured, μgm^{-3} (a)		Action Level, μgm^{-3}	Limit Level, μgm^{-3}
	Average	Range		
DMS-6	50	43 – 60	156.8	260
DMS-7	55	47 – 67	166.7	260
DMS-8	58	46 – 74	152.2	260
DMS-9 (a)	57	48 – 67	160.9	260
DMS-10	59	50 – 66	170.4	260

Note:

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

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

5.4

CULTURAL HERITAGE

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

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

5.5

WASTE MANAGEMENT

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

Table 5.2 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	Inert C&D Materials (a) (b)	Chemical Waste (c)	Non-inert C&D Materials			
			General Refuse/Vegetative Waste	Recycled materials		
				Paper/card board	Plastics	Metals
October 2016	0 m ³	0 kg	435 m ³	144 kg	575 kg	0 kg

Notes:

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

(b) About 0 m³ 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 inspections of the implementation of landscape and visual mitigation measures were conducted on 3 and 17 October 2016. Most of the

mitigation measures given in *Annex H* have been implemented. Required Actions that were found are listed below:

3 October 2016

- No observation was reported during the site inspection.

17 October 2016

- 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, 11, 17, 24 and 31 October 2016. The representative of the IEC joined the site inspection on 17 October 2016. 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 October 2016

- The Contractor was reminded to provide drip tray for the chemical container at TKW works area.

11 October 2016

- There was no major observation during site inspection.

17 October 2016

- There was no major observation during site inspection.

24 October 2016

- There was no major observation during site inspection.

31 October 2016

- There was no major observation during site inspection.

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

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 SUMMARY OF MONITORING EXCEEDANCE

No exceedance of the Limit Level of the regular construction noise was recorded during the reporting period. The Action Level of construction noise was triggered (complaint received) once during the reporting period.

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

7.2 SUMMARY OF ENVIRONMENTAL NON-COMPLIANCE

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

7.3 SUMMARY OF ENVIRONMENTAL COMPLAINT

One complaint was received on 25 October 2016. Investigation of the complaint had been completed and the details of findings are presented in *Annex L*. The cumulative environmental complaint log is shown in *Annex M*.

7.4 SUMMARY OF ENVIRONMENTAL SUMMON AND SUCCESSFUL PROSECUTION

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

8.1 KEY ISSUES FOR THE COMING MONTH

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

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

Construction Activities to be undertaken
<u>Work in Ma Tau Wai (MTW)</u>
<ul style="list-style-type: none"> • Along Ma Tau Wai Road and TKW/MTW Road Garden – Station excavation and construction; ABWF works; and EEP construction.
<u>Work in To Kwa Wan (TKW)</u>
<ul style="list-style-type: none"> • Olympic Garden – Construction of station entrance; • Tam Kung Road – Shaft construction; • TKW Station – Construction of TKW station, and TBM/batching plant decommissioning; and • Nam Kok Road – Excavation and wall construction.

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

8.2 MONITORING SCHEDULE FOR THE NEXT MONTH

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

8.3 CONSTRUCTION PROGRAMME FOR THE NEXT MONTH

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

This 50th monthly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 October 2016 to 31 October 2016 in accordance with the EM&A Manual and the requirement under EP-438/2012/J and EP-438/2012/K.

No exceedance of the Limit Level of the regular construction noise was recorded during the reporting period. The Action Level of construction noise was triggered (complaint received) during the reporting period.

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

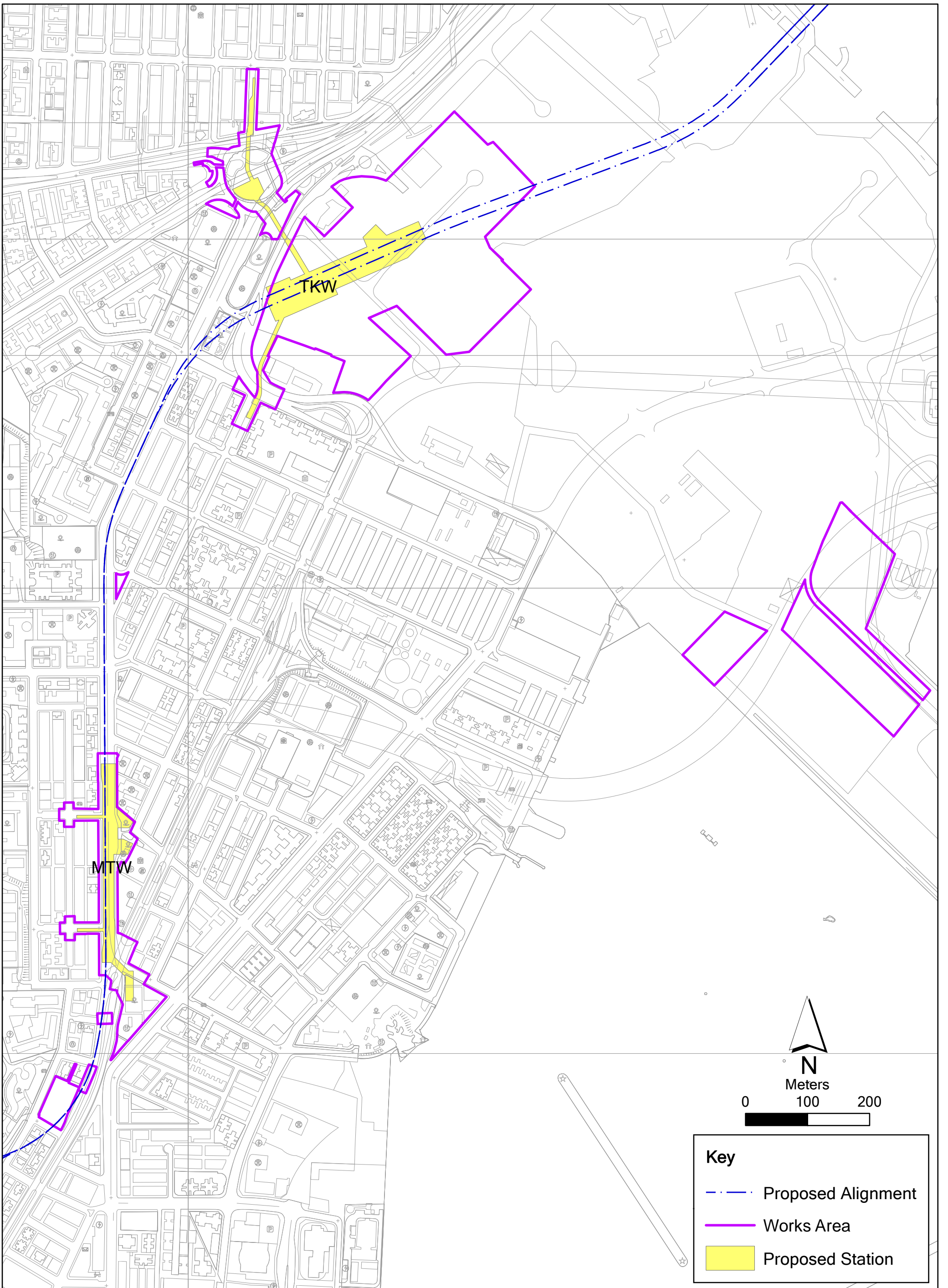
One complaint was received on 25 October 2016. Investigation of complaint had been completed and the details of findings are presented in *Annex L*.

No summon or prosecution was received during the reporting period.

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

Annex A

The Alignment and Works Area for Works Contract



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



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.

THREE MONTH ROLLING PROGRAMME - OCTOBER 2016

Activity ID	Activity Name	Physical % Complete	Start	Finish	2016			2017
					Oct	Nov	Dec	Jan
1109 - SUW & TKW Stations and Tunnels October 2016 (MPR2)								
PROJECT DATES								
Table 4 - Specified Degrees of Completion								
Degree 1 Dates								
Track and trackside areas								
01109.CD1090	4C Deg 1 - SUW Platform GL5-24 Track and trackside areas incl tunnel l/Face w. ... (DRM: 25 Dec 16, 51/16)	0%		25-Dec-16*				
01109.CD1170	4U Deg 1 - Tunnels (down track) from SUW to HOM (DRM: 18 Dec 16, 50/16)	0%		16-Jan-17*				
TKW Station								
01109.CD1110	4L Deg 1 - TKW Concourse Lvl BoH Tx Rm, CLP HV Cable riser rm & cable rt (DRM: 30 Oct 16, 43/16)	0%		30-Oct-16*				
Specified Milestone Dates (Revised)								
CC-B Milestones								
01109.MSB15ii-R	B15(ii) - 50% Track Level slab between gridlines 1 to 5 of SUW complete	100%		25-Oct-16 A				
CC-C Milestones								
01109.MSC17ii-P	C17(ii) - 80% internal structural works for Upper platform level completed (23 Oct 2016)	100%		23-Oct-16 A				
01109.MSC17iii-R	C17(iii) - 75% below ground structural works between gridlines 1E to 1 complete. (23 Oct 2016)	100%		23-Oct-16 A				
01109.MSC17i-R	C17(i) - 30% lower platform slab completed (23 Oct 2016)	100%		23-Oct-16 A				
CC-D Milestones								
01109.MSD14-P	D14 - Removal of Up Track TBM from SUW complete (4 Sep 2016)	100%		27-Sep-16 A				
CC-I Milestones								
01109.MSI002	I2-Removal of uptrack TBM gantries from SUW complete	100%		27-Sep-16 A				
01109.MSI008	I8-50% SUW structural works completed	100%		25-Oct-16 A				
CC-B - SUW STATION, ENTRANCES AND ADITS								
SUW Station Construction Works								
Station - Excavation and Foundation								
Additional Works after TBM								
01109.PDB5992	Removal of Facility (incl. Noise Barrier) between GL 1-5 for Structure Works after Removal of Gantries from Tunnel	100%	27-Sep-16 A	22-Oct-16 A				
Station - C&S Works (Platform Level)								
Sump Pits & Base Slabs								
GL 1 to 5								
01109.PDB5462-1A-1	Base Slab GL 1 to 3.5 / D to F	100%	19-Sep-16 A	06-Oct-16 A				
01109.PDB5463A-1	Breaking temporary slab for Base Slab GL 1 to 2 / A to D	50%	17-Oct-16 A	02-Nov-16				



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THREE MONTH ROLLING PROGRAMME - Oct 16 TASK filters: 3MRP Dates, MTRC 1109 - 3MRP.
Printed:04-Nov-16

- Actual Work
- Remaining Work
- Master Programme Rev.1
- Last Month Update
- Milestone
- MP Rev.1 Milestone
- Last Month Milestone

Activity ID	Activity Name	Physical % Complete	Start	Finish	2016				2017
					Oct	Nov	Dec	Jan	
01109.PDB5462-2A-1	Base Slab GL 3.5 to 5.5 / D to F	10%	25-Oct-16 A	31-Oct-16					
01109.PDB5463A-2	Welding (Pile Head) & Lay waterproofing for Base Slab GL 1 to 2 / A to D	0%	03-Nov-16	16-Nov-16					
01109.PDB5463A-3	Base Slab GL 1 to 2 / A to D	0%	17-Nov-16	03-Dec-16					
Sump pit at grid line 4.5									
01109.PDB5490A-10	Breaking of concrete for sheetpiling (remaining)	0%	26-Oct-16*	03-Nov-16					
01109.PDB5490A-11	Sheet pile driving & sawing cutting (remaining)	0%	04-Nov-16	15-Nov-16					
01109.PDB5490A-12	Excavation for strut installation	0%	16-Nov-16	18-Nov-16					
01109.PDB5490A-13	ELS works	0%	19-Nov-16	22-Nov-16					
01109.PDB5490A-14	Excavation to formation	0%	23-Nov-16	24-Nov-16					
01109.PDB5490A-15	Blinding	0%	25-Nov-16	25-Nov-16					
01109.PDB5490A-16	Lay waterproofing	0%	26-Nov-16	28-Nov-16					
01109.PDB5490A-17	Rebar fixing (for base slab)	0%	29-Nov-16	02-Dec-16					
01109.PDB5490A-18	Kicker formwork and cleaning	0%	03-Dec-16	03-Dec-16					
01109.PDB5490A-19	ELS removal	0%	05-Dec-16	06-Dec-16					
External Walls & Columns; From Base to Concourse Slab; (B/S-C/S)									
GL 1 to 5									
01109.PDB5740-1A-1	External Wall; B/S-C/S GL 1 to 2 DT, W1 10m (GL2 DT)	0%	01-Nov-16	16-Nov-16					
01109.PDB5740-1A-2	External Wall; B/S-C/S GL 2 to 3 DT, W2 8m (GL3 DT)	0%	01-Nov-16	26-Nov-16					
Station - C&S Works (Concourse Level and Above)									
Concourse Slab									
GL 1 to 5									
01109.PDB7511A	Concourse Slab GL 3.5 to 5.5 (F to F1), Bay 8	50%	17-Oct-16 A	04-Nov-16					
GL 6 to 13									
01109.PDB7560A	Concourse Slab GL 5.5 to 8.5 (A to F), Bay 1	100%	23-Sep-16 A	14-Oct-16 A					
01109.PDB7620A	Concourse Slab GL 8.5 to 10.5 (A to F), Bay 2	100%	04-Oct-16 A	16-Oct-16 A					
01109.PDB7500A	Concourse Slab GL 10.5 to 13.5 (A to F), Bay 3	80%	12-Oct-16 A	01-Nov-16					
GL 13 to 19									
01109.PDB7600A	Concourse Slab GL 13.5 to 16.5 (A to F), Bay 4	20%	25-Oct-16 A	10-Nov-16					
01109.PDB7680A	Concourse Slab GL 16.5 to 18 (A to F), Bay 5	0%	26-Oct-16	17-Nov-16					
External Walls & Columns; From Concourse Slab to Roof Slab (C/S-R/S)									
GL 6 to 13									
01109.PDB7830A	Columns; C/S to R/S GL 6 to 13	0%	26-Oct-16*	10-Nov-16					
01109.PDB7850A	External Walls; C/S to R/S GL 7-8/A	0%	01-Nov-16*	14-Nov-16					
01109.PDB7870A	External Walls; C/S to R/S GL 8-9/A	0%	05-Nov-16	21-Nov-16					



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THREE MONTH ROLLING PROGRAMME - Oct 16 TASK filters: 3MRP
 Dates, MTRC 1109 - 3MRP.

Printed:04-Nov-16

- Actual Work
- Remaining Work
- Master Programme Rev.1
- Last Month Update
- Milestone
- MP Rev.1 Milestone
- Last Month Milestone

Activity ID	Activity Name	Physical % Complete	Start	Finish	2016				2017
					Oct	Nov	Dec	Jan	
01109.PDB7890A	External Walls; C/S to R/S GL 9-10/A	0%	10-Nov-16	25-Nov-16					
01109.PDB7800A	External Walls; C/S to R/S GL 11-12/A	0%	15-Nov-16	01-Dec-16					
01109.PDB7770A	External Walls; C/S to R/S GL 10-11/A	0%	19-Nov-16	03-Dec-16					
01109.PDB7820A	External Walls; C/S to R/S GL 12 to 13/A	0%	24-Nov-16	08-Dec-16					
Entrance B & Adit B									
Entrance B & Adit B - Excavation and lateral Support									
Portion 1									
01109.PDB11830-30A-1	Excavation down to -3.00	100%	21-Sep-16 A	27-Sep-16 A					
01109.PDB11830-30A-2	Sheetpiles cutting	100%	28-Sep-16 A	28-Sep-16 A					
01109.PDB11830-30A-3	Excavation to -4.50	100%	29-Sep-16 A	20-Oct-16 A					
01109.PDB11830-30A-4	Blinding	100%	11-Oct-16 A	20-Oct-16 A					
01109.PDB11830-30A-5	Working platform	100%	20-Oct-16 A	24-Oct-16 A					
01109.PDB11830-40A-1	4th Walers & Struts installation	5%	25-Oct-16 A	04-Nov-16					
01109.PDB11830-40A-2	Packers & lagging	0%	05-Nov-16	05-Nov-16					
01109.PDB11830-40A-3	Excavation down to -6.00	0%	07-Nov-16	12-Nov-16					
Portion 3									
01109.PDB13290A-1	Excavation & Lateral Support Works; GL B19 to B21, Rock breaking & excavation	80%	06-Jul-16 A	05-Nov-16					
01109.PDB13290A-2	Excavation & Lateral Support Works; GL B19 to B21, Sump pit excavation	0%	06-Nov-16	24-Nov-16					
Entrance B & Adit B - Concrete Structural Works									
Portion 1									
01109.PDB11840A	Concrete Structure Baseslab GL B5.8 to B7	0%	26-Oct-16*	31-Oct-16					
01109.PDB11840B	Concrete Structure Roof Slab GL B7 to B8.5	0%	26-Oct-16*	29-Oct-16					
Portion 2									
01109.PDB13360A-1	Concrete Structure Internal Wall ; GL B13 to B15 (K-L) (Area 2F)	50%	14-Oct-16 A	09-Nov-16*					
01109.PDB13370A-1	Concrete Structure Internal Wall; GL B13 to B17 (Area 2A-2E)	50%	17-Oct-16 A	08-Nov-16					
01109.PDB13360A-2	Concrete Structure Perimeter Wall ; GL B13 to B15 (K-L) (Area 2F)	50%	24-Oct-16 A	09-Nov-16					
01109.PDB14900A-10	Concrete Structure Roof Slab; GL B14 to B15.5 (J-K) (Area 4)	0%	26-Oct-16*	03-Nov-16					
01109.PDB14900-1A-1	Concrete Structure Baseslab; GL B17.5 to B18 (J-K) (Area 4)	0%	26-Oct-16*	12-Nov-16					
01109.PDB13360B-2	Concrete Structure Roof Slab ; GL B13 to B15 (M-N) (Area 2G)	0%	26-Oct-16	08-Nov-16					
Portion 3									
01109.PDB13390A-2	Concrete Structure GL B25.2-B26.5, Wall upto +0.35mPD	100%	12-Aug-16 A	26-Sep-16 A					
01109.PDB13380A-1	Concrete Structure GL B24.5-B25.2, Base Slab	100%	04-Oct-16 A	13-Oct-16 A					
01109.PDB13380A-2	Concrete Structure GL B24.5-B25.2, Perimeter Wall	90%	13-Oct-16 A	27-Oct-16					
01109.PDB13380A	Concrete Structure Perimeter Wall GL B24.3 to B26	90%	17-Oct-16 A	27-Oct-16					



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Activity ID	Activity Name	Physical % Complete	Start	Finish	2016				2017
					Oct	Nov	Dec	Jan	
01109.PDB13390A	Concrete Structure Inclined Baseslab GL B27.4 to B28	0%	26-Oct-16*	04-Nov-16					
01109.PDB13390B	Concrete Structure Plenum Slab GL B26 to B27	0%	26-Oct-16	27-Oct-16					
01109.PDB13330-1A-1	Concrete Structure Base Slab GL B21 to B23	0%	26-Oct-16	01-Nov-16					
01109.PDB13340A	Concrete Structure Lift Pit Base Slab GL B23 to B23.5	0%	31-Oct-16*	04-Nov-16					
CC-C - TKW STATION, ENTRANCES AND ADITS									
TKW Station - Main Slabs									
Lower Track Slab Works									
LT Span 1									
01109.PDC20350-3A	Excavation in soil / Install struts & walers from strut S5 to LT/S soffits; Span 1 (Part 2 of 2)	70%	26-Sep-16 A	09-Nov-16					
01109.PDC20350-3A-1	Earth rod, earth mat installation and Blinding	0%	07-Nov-16	12-Nov-16					
01109.PDC20370-1A-1	LowerTrack Concrete Slab; GL 1A.5 to 1.5	0%	14-Nov-16	09-Dec-16					
01109.PDC20370-1A-3	LowerTrack Concrete Slab; GL 3 to 4.5	0%	14-Nov-16	10-Dec-16					
01109.PDC20370-1A-2	LowerTrack Concrete Slab; GL 1.5 to 3	0%	29-Nov-16	19-Dec-16					
LT Span 2									
01109.PDC20400-1A	Mini piles; Span 2	100%	12-Sep-16 A	26-Sep-16 A					
01109.PDC20390-3A	Excavation in soil / Install struts & walers from strut S5 to LT/S soffits; Span 2 (Part 2 of 2)	80%	27-Sep-16 A	31-Oct-16					
01109.PDC20390-3A-2	Sump pit level excavation and blinding	0%	01-Nov-16	14-Nov-16					
01109.PDC20390-3A-1	Earth rod, earth mat installation and Blinding	0%	01-Nov-16	07-Nov-16					
01109.PDC20410-1A-1	LowerTrack Concrete Slab; GL 4.5 to 6.5	0%	15-Nov-16	10-Dec-16					
01109.PDC20410-1A-2	LowerTrack Concrete Slab; GL 6.5 to 7.5	0%	23-Nov-16	20-Dec-16					
LT Span 3									
01109.PDC20470-3A	Excavation in soil / Install struts & walers from strut S5 to LT/S soffits; Span 3 (Part 2 of 2)	100%	12-Jul-16 A	22-Oct-16 A					
01109.PDC20470-3A-1	Earth tape installtion and blinding	0%	26-Oct-16	08-Nov-16					
01109.PDC20490-1A-3	LowerTrack Concrete Slab; GL 9.5 to 11	0%	01-Nov-16	17-Nov-16					
01109.PDC20490-1A-1	LowerTrack Concrete Slab; GL 7.5 to 8.5	0%	09-Nov-16	22-Nov-16					
01109.PDC20490-1A-2	LowerTrack Concrete Slab; GL 8.5 to 9.5	0%	09-Nov-16	29-Nov-16					
LT Span 4									
01109.PDC20550-3A	Excavation in soil / Install struts & walers from strut S5 to LT/S soffits; Span 4 (Part 2 (Part 1 of 2))	100%	06-Jul-16 A	22-Oct-16 A					
01109.PDC20550-3A-1	Earth tape installtion and blinding	5%	24-Oct-16 A	08-Nov-16					
01109.PDC20580-1A-2	LowerTrack Concrete Slab; GL 12.5 to 14	0%	29-Oct-16	16-Nov-16					
01109.PDC20580-1A-1	LowerTrack Concrete Slab; GL 11 to 12.5	0%	09-Nov-16	24-Nov-16					
LT Span 5									
01109.PDC20650-1A-2	LowerTrack Concrete Slab; GL 15.5 to 16.5	100%	09-Sep-16 A	29-Sep-16 A					
01109.PDC20650-1A-1	LowerTrack Concrete Slab; GL 14 to 15.5	100%	09-Sep-16 A	07-Oct-16 A					



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Activity ID	Activity Name	Physical % Complete	Start	Finish	2016			2017
					Oct	Nov	Dec	Jan
01109.PDC20650-1A-3	LowerTrack Concrete Slab; GL 16.5 to 17.5	48%	08-Oct-16 A	10-Nov-16				
01109.PDC20650-1A-5	LowerTrack Concrete Slab; GL 17.5 to 18.5	48%	08-Oct-16 A	23-Nov-16				
LT Span 6								
01109.PDC20720-1A	Mini piles; Span 6	100%	06-Sep-16 A	08-Oct-16 A				
01109.PDC20720-1A-1	Mini piles Testing and BD Approval	100%	11-Oct-16 A	15-Oct-16 A				
01109.PDC20730-1A-1	LowerTrack Concrete Slab; GL 18.5 to 19.5	20%	14-Oct-16 A	14-Nov-16				
01109.PDC20730-1A-2	LowerTrack Concrete Slab; GL 19.5 to 20.5	20%	14-Oct-16 A	21-Nov-16				
01109.PDC20730-1A-3	LowerTrack Concrete Slab; GL 20.5 to 21.5	0%	26-Oct-16	15-Nov-16				
LT Span 7								
01109.PDC20790-3A	Excavation in soil / Install struts & walers from strut S5 to LT/S soffits; Span 7 (Part 2 of 2)	100%	29-Jun-16 A	30-Sep-16 A				
01109.PDC20800-1A	Mini piles; Span 7	100%	29-Sep-16 A	24-Oct-16 A				
01109.PDC20820-1A-3	LowerTrack Concrete Slab; GL 24 to 25	10%	20-Oct-16 A	19-Nov-16				
01109.PDC20820-1A-1	LowerTrack Concrete Slab; GL 21.5 to 22.5	0%	26-Oct-16	26-Nov-16				
01109.PDC20820-1A-2	LowerTrack Concrete Slab; GL 22.5 to 24	0%	08-Nov-16	01-Dec-16				
LT Span 8								
01109.PDC20840-2A	Excavation in soil / Install struts & walers from strut S5 to LT/S soffits; Span 8 (Part 1 of 2)	100%	24-Jun-16 A	30-Sep-16 A				
01109.PDC20840-3A	Excavation in soil / Install struts & walers from strut S5 to LT/S soffits; Span 8 (Part 2 of 2)	100%	09-Jul-16 A	15-Oct-16 A				
01109.PDC20850-1A	Mini piles; Span 8	90%	08-Oct-16 A	26-Oct-16				
01109.PDC20870-1A-2	LowerTrack Concrete Slab; GL 26.5 to 27.5	0%	27-Oct-16	18-Nov-16				
01109.PDC20870-1A-1	LowerTrack Concrete Slab; GL 25 to 26.5	0%	31-Oct-16	28-Nov-16				
TKW Station								
Station - C&S Works (Concourse Level and above)								
Concourse Mezzanine								
01109.PDC27981A	Concourse Internal Wall and Mezz Slab (Remaining)	100%	02-Jul-16 A	03-Oct-16 A				
01109.PDC27980	All concourse Mezzanine C+S works complete	100%		03-Oct-16 A				
Span 1 and 2								
01109.PDC19680	Opening 1 & 2 - Concourse Mezzanine Slab	100%	11-May-16 A	03-Oct-16 A				
Station - C&S Works (Upper Platform Level)								
Upper Track Slab Works								
TBM Works - Upper Track Level								
01109.PDC20180	Completion of Upper Track slab following TBM removal	80%	13-Oct-16 A	21-Nov-16				
01109.PDC20182	Completion all excavation to Lower Track Level	0%		09-Nov-16				
Upper Track Platform - GL 1 to 23								
Upper Track Walls & Slabs - GL 1 to 23								



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					Oct	Nov	Dec	Jan	
01109.PDC29045A	Uppertrack Internal Wall and Mezz Slab (80% of Buildable Area)	100%	19-Jul-16 A	22-Oct-16 A					
01109.PDC29046A	Tunnel Track Area Handover to TKW	100%		18-Oct-16 A					
01109.PDC29048A	UpperTrack Wall & Mezz Slab Works at Track Side Area (GL 1-27.5)	20%	19-Oct-16 A	30-Nov-16					
01109.PDC29047A	Uppertrack Internal Wall and Mezz Slab (Remaining)	10%	24-Oct-16 A	04-Nov-16					
Station - C&S Works (Lower Platform Level)									
Top Down Lower Track Slab Works									
01109.PDC27840	Mini Pile load testing (1% of mini piles)	100%	09-Sep-16 A	15-Oct-16 A					
01109.PDC19654	All Excavation complete	0%		09-Nov-16					
Station - ABWF Works (Concourse Level and Above)									
01109.PDC27990-4A	Deg 1 - CLP Room ABWF	80%	12-Sep-16 A	29-Oct-16					
01109.PDC27990-5A	Deg 1 - ABWF works at FOH (GL 6-14/C)	80%	20-Oct-16 A	08-Nov-16					
Entrance A & Vent Shaft A									
Vent Shaft A									
Civil & Structure									
01109.PDC27430-1A	Vent Shaft A - Wall and Remaining Base Slab to -5.03mPD	100%	08-Sep-16 A	15-Oct-16 A					
01109.PDC27430-2A	Vent Shaft A - Install S6 Strut	5%	24-Oct-16 A	05-Nov-16					
01109.PDC27430-3A	Vent Shaft A - Wall below strut S3	0%	07-Nov-16	17-Nov-16					
01109.PDC27430-4A	Vent Shaft A - Concourse Slab Concrete	0%	18-Nov-16	01-Dec-16					
01109.PDC27450	Vent Shaft A - Wall concrete x 2	0%	02-Dec-16	17-Dec-16					
01109.PDC27460	Vent Shaft A - Roof slab Concrete	0%	19-Dec-16	04-Jan-17					
01109.PDC27470	Vent Shaft A - Waterproof roof / Backfill	0%	05-Jan-17	18-Jan-17					
01109.PDC27480	Vent Shaft A - Removal steel pipe pile (2 nr)	0%	19-Jan-17	24-Jan-17					
Entrance A									
Civil & Structure									
01109.PDC22670	Ent A - Wall concrete x 2	80%	02-Sep-16 A	08-Nov-16					
01109.PDC22640A	Ent A - Inner wall construction under Reprop S4	80%	12-Oct-16 A	31-Oct-16					
01109.PDC22680	Ent A - Roof slab Concrete	0%	26-Oct-16	08-Nov-16					
01109.PDC22641A	Ent A - Reprop S5, Dismantle S1 & S4	0%	01-Nov-16	19-Nov-16					
Entrance B									
Entrance B (Part A)									
01109.PDC16290-1A	Ent B - Wall and Roof concrete to +10.173mPD (GLA1-A2)	100%	21-May-16 A	25-Oct-16 A					
01109.PDC16290-2A	Ent B - Wall to +10.173mPD (GL A2-B2)	90%	21-May-16 A	05-Nov-16					
01109.PDC16300	Ent B - Roof slab Concrete	0%	07-Nov-16	30-Nov-16					
01109.PDC16310	Ent B - Waterproof_roof	0%	01-Dec-16	08-Dec-16					



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					Oct	Nov	Dec	Jan	
Entrance B (Part B)									
01109.PDC22712A	Steel Decking Erection	0%	31-Oct-16	12-Nov-16					
01109.PDC22720-2A	Ent B - Excavation and strut installation from S1 to FL	0%	14-Nov-16	14-Dec-16					
01109.PDC22730	Ent B - Lean concrete / Waterproof	0%	13-Dec-16	19-Dec-16					
01109.PDC22740	Ent B - Base slab concrete	0%	20-Dec-16	12-Jan-17					
01109.PDC22750	Ent B - Wall concrete (2 or 3 times)	0%	13-Jan-17	06-Feb-17					
Entrance C									
Entrance C (Part A)									
01109.PDC12210-10A	ELS (S1 to S4) (GLA2 - C3)	0%	14-Nov-16	29-Nov-16					
01109.PDC12210-30A	ELS (S1 to S4) (GL C3 - C5)	0%	14-Nov-16	29-Nov-16					
01109.PDC12210-20A	Structure Works (GLA2 - C3)	0%	30-Nov-16	02-Feb-17					
01109.PDC12210-40A	Structure Works (GLC3 - C5)	0%	30-Nov-16	31-Dec-16					
01109.PDC12210-20A-1	Base Slab and Wall Structure to S1 (GLA2 - C3/ +6 to +9mPD)	0%	30-Nov-16	09-Jan-17					
01109.PDC12210-20A-2	Roof and Wall Structure (GLA2 - C3/ +9 to 12.57mPD)	0%	10-Jan-17	02-Feb-17					
Entrance C (Part B)									
01109.PDC22790-1A	Ent C - Utility Diversion (Temporary Diversion)	60%	22-Aug-16 A	04-Nov-16					
01109.PDC22790-2A	Ent C - Sheet pile installation	60%	24-Sep-16 A	04-Nov-16					
01109.PDC22790A	Ent C - Slightly Shift Footpath	0%	05-Nov-16	05-Nov-16					
01109.PDC22790-3A	Ent C - Well installation and Pumping Test	0%	07-Nov-16	23-Nov-16					
01109.PDC22800	Ent C - Excavation (including struts and walers)	0%	24-Nov-16	29-Dec-16					
01109.PDC22810	Ent C - Lean concrete / Waterproof	0%	29-Dec-16	05-Jan-17					
01109.PDC22820	Ent C - Base slab concrete	0%	05-Jan-17	12-Jan-17					
01109.PDC22830	Ent C - Wall concrete (2 or 3 times)	0%	13-Jan-17	24-Jan-17					
Entrance D & Vent Shaft									
Entrance D (Top Down)									
01109.PDC23000-1A	Ent D - Excavation (A2&A3) to S5	80%	26-Sep-16 A	31-Oct-16					
01109.PDC23000-2A	Ent D - Install Strut S5 (A2&A3)	0%	01-Nov-16	12-Nov-16					
01109.PDC23000-3A	Ent D - Excavate to FL (A2&A3)	0%	14-Nov-16	25-Nov-16					
01109.PDC23030	Ent D - All excavation works complete	0%		25-Nov-16					
01109.PDC23000-4A	Ent D - Break End Wall (A3)	0%	26-Nov-16	30-Nov-16					
01109.PDC23041	Ent D - Slab Concrete Lower Track Topdown (A2)	0%	01-Dec-16	17-Dec-16					
01109.PDC23042	Ent D - Slab Concrete Lower Track Topdown (A3)	0%	01-Dec-16	19-Dec-16					
Entrances - ABWF Works									
01109.PDC27260A	Deg 1 - ABWF to CC (Transformer Room 1)	80%	12-Sep-16 A	29-Oct-16					



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					Oct	Nov	Dec	Jan
CC-D - BORED TUNNELS FROM SUW STATION TO HOM STATION								
Bored Tunnel Down Track (D99+583 to D101+514)								
01109.PDD1311	Mass concrete to invert and walkway, Stage 3	0%	26-Oct-16	10-Dec-16				
01109.PDD1410	Down Track Tunnel - Clean, dry & survey (DRM: 20 Nov 2016)	0%	08-Dec-16	06-Jan-17				
01109.PDD1411	For 4U Deg 1 handover, prepare Tunnels (down track) from SUW to HOM (DRM: 18 Dec 16, 50/16)	0%	02-Jan-17	16-Jan-17				
01109.PDD1500	Complete all necessary remaining works etc. at TKW Lower Platform Track Side	0%	11-Jan-17	16-Jan-17				
Tunnel from TKW to HOM (D100+755 to D101+514)								
01109.PDD1610-40A	Ch D101+040 - Tunnels Pump Sump - Sump Room Structure	50%	26-Aug-16 A	05-Dec-16				
In-situ lining at HOM								
01109.PDD1620	Ch D101+514 to 524 - Mass concrete in-situ lining	0%	26-Oct-16	11-Nov-16				
01109.PDD1630	Ch D101+514 to 524 - Install Waterproof membrane (for insitu lining)	0%	12-Nov-16	23-Nov-16				
01109.PDD1640	Ch D101+514 to 524 - Cast in-situ Reinforced Concrete lining	0%	24-Nov-16	16-Dec-16				
Mass concrete to invert and walkway								
01109.PDD1730A	Stage 2 Concrete, 180m (90m Left + 90m Right)	100%	10-Sep-16 A	28-Sep-16 A				
01109.PDD1720A	Stage 2 Concrete, 180m (90m Left + 90m Right)	100%	20-Sep-16 A	07-Oct-16 A				
01109.PDD1710A	Stage 2 Concrete, 180m (90m Left + 90m Right)	100%	23-Sep-16 A	14-Oct-16 A				
01109.PDD1700A	Stage 2 Concrete, 180m (90m Left + 90m Right)	100%	27-Sep-16 A	20-Oct-16 A				
01109.PDD1690A	Stage 2 Concrete, 180m (90m Left + 90m Right)	90%	05-Oct-16 A	26-Oct-16				
01109.PDD1680A	Stage 2 Concrete, Remaining	30%	13-Oct-16 A	12-Nov-16				
Bored Tunnel Up Track (U99+565 to U101+490)								
01109.PDD2050	Mass concrete to invert and walkway, Stage 1	100%	10-Sep-16 A	19-Oct-16 A				
01109.PDD1961	For 4V(i) Deg 1 handover, prepare Tunnels (up track) from SUW to HOM (DRM: 1 Jan 17, 52/16)	0%	11-Jan-17	18-Feb-17				
01109.PDD2040	Complete all necessary remaining works etc. at TKW Upper Platform Track Side	0%	17-Jan-17	21-Jan-17				
Tunnel from TKW to HOM (U100+744 to U101+490)								
Up Track Tunnel - Dismantle TBM & reverse out of tunnel								
01109.PDD2130	Up Track Tunnel - Dismantle TBM & reverse out of tunnel through HOM	60%	20-Aug-16 A	25-Nov-16				
01109.PDD4030	Removal of Gantries	100%	20-Sep-16 A	27-Sep-16 A				
01109.PDD4040	Cleanup of tunnel to allow works related to tunnel	60%	28-Sep-16 A	03-Nov-16				
CC-E - REPROVISIONING, REMEDIAL AND IMPROVEMENT WORKS (RIIW)								
General C & S Works								
C&S Works for Subways KS33 & KS34								
01109.PDE1050-320A02	Lift installation at KS33 (LT08) - Lift shaft handover	100%	29-Sep-16 A	29-Sep-16 A				
01109.PDE1050-320A03	Lift installation at KS33 (LT08) - Material delivery to site	100%	29-Sep-16 A	30-Sep-16 A				
01109.PDE1050-320A04	Lift installation at KS33 (LT08) - Plumbing and mark setting out	100%	29-Sep-16 A	03-Oct-16 A				



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					Oct	Nov	Dec	Jan	
01109.PDE1050-320A01	Lift installation at KS33 (LT08) - Site safety briefing for 1st phase of installation	100%	29-Sep-16 A	29-Sep-16 A					
01109.PDE1050-320A10	Lift installation at KS33 (LT08) - Guide rail bracket fixing	100%	04-Oct-16 A	06-Oct-16 A					
01109.PDE1050-320A11	Lift installation at KS33 (LT08) - Door sill fixing	100%	07-Oct-16 A	12-Oct-16 A					
01109.PDE1050-320A12	Lift installation at KS33 (LT08) - Lift Machine Installation	100%	13-Oct-16 A	13-Oct-16 A					
01109.PDE1050-320A13	Lift installation at KS33 (LT08) - Architrave fixing	100%	13-Oct-16 A	20-Oct-16 A					
01109.PDE1050-320A14	Lift installation at KS33 (LT08) - Landing door fixing	50%	21-Oct-16 A	27-Oct-16					
01109.PDE1050-320A20	Lift installation at KS33 (LT08) - Scaffolding modification	0%	28-Oct-16	28-Oct-16					
01109.PDE1050-320A21	Lift installation at KS33 (LT08) - Counterweight assembly machine/ controller	0%	29-Oct-16	01-Nov-16					
01109.PDE1050-320A22	Lift installation at KS33 (LT08) - Lift shaft trunking & wiring	0%	02-Nov-16	04-Nov-16					
01109.PDE1050-320A23	Lift installation at KS33 (LT08) - Car cage installation	0%	05-Nov-16	12-Nov-16					
01109.PDE1050-320A30	Lift installation at KS33 (LT08) - Site safety briefing for 2nd phase of installation	0%	14-Nov-16	14-Nov-16					
01109.PDE1050-320A31	Lift installation at KS33 (LT08) - E&M installation work	0%	15-Nov-16	22-Nov-16					
01109.PDE1050-320A32	Lift installation at KS33 (LT08) - ABWF installation work	0%	23-Nov-16	30-Nov-16					
01109.PDE1050-320A33	Lift installation at KS33 (LT08) - Push button box fixing	0%	01-Dec-16	08-Dec-16					
01109.PDE1050-320A34	Lift installation at KS33 (LT08) - Hall indicator installation	0%	09-Dec-16	10-Dec-16					
01109.PDE1050-320A35	Lift installation at KS33 (LT08) - CCTV system & supervisory panel installation	0%	12-Dec-16	16-Dec-16					
01109.PDE1050-320A40	Lift installation at KS33 (LT08) - Low speed test	0%	17-Dec-16	22-Dec-16					
01109.PDE1050-320A50	Lift installation at KS33 (LT08) - High speed test	0%	23-Dec-16	31-Dec-16					
01109.PDE1050-320A60	Lift installation at KS33 (LT08) - Load test	0%	03-Jan-17	06-Jan-17					



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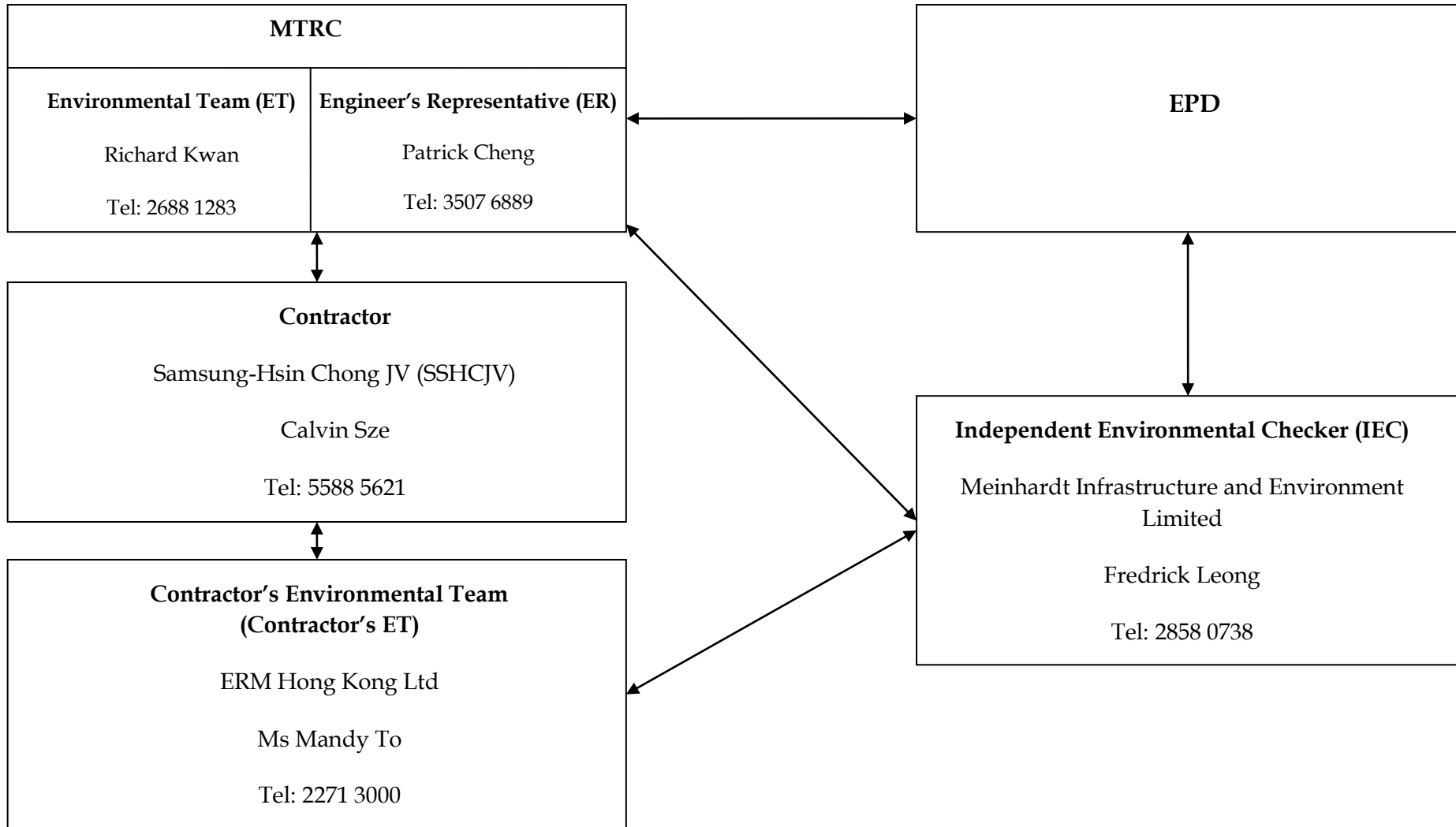
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Annex C

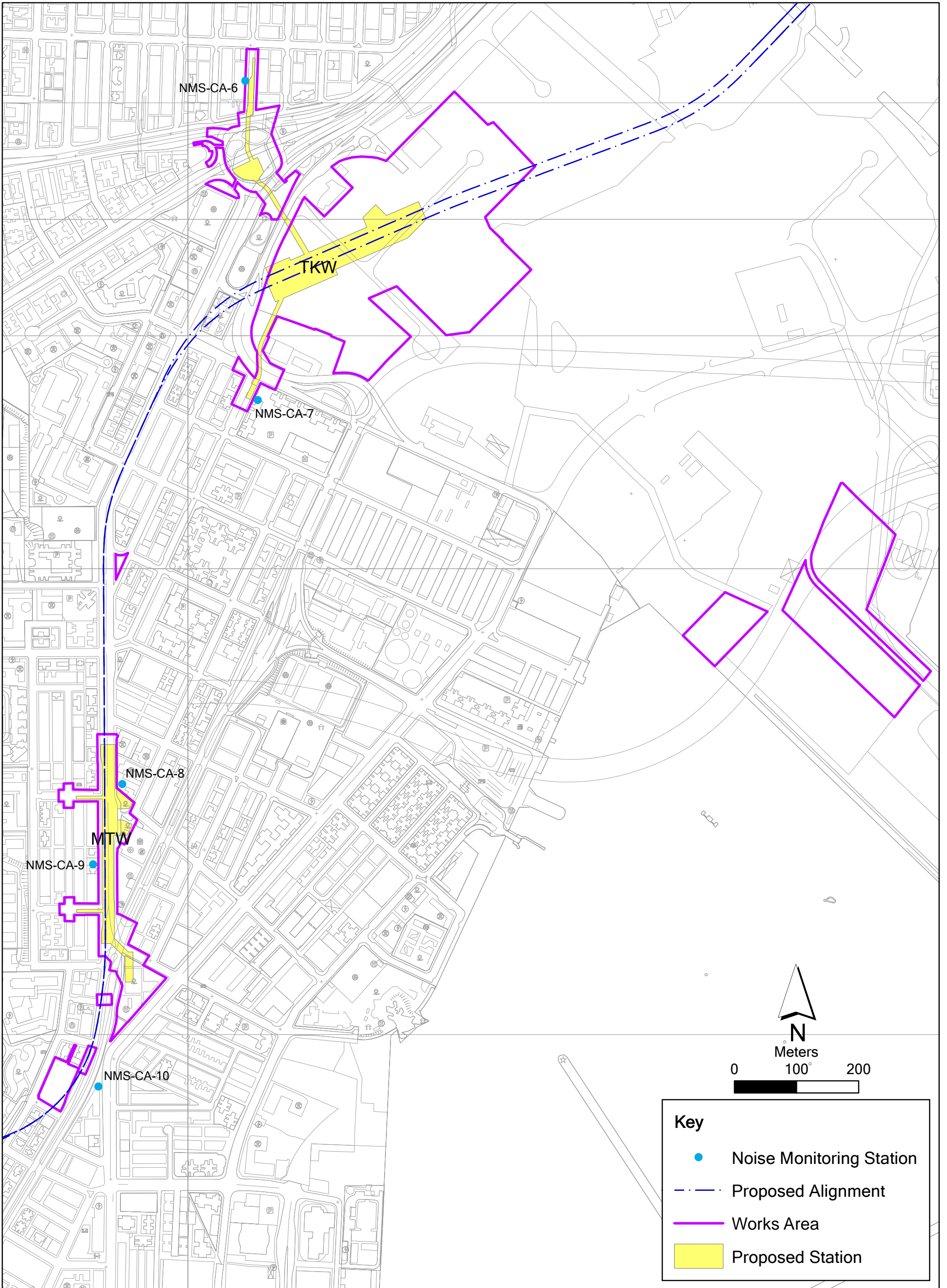
Project Organization Chart and Contact Detail

Annex C Project Organization of SCL Works Contract 1109



Annex D

Locations of Noise and Dust Monitoring Stations



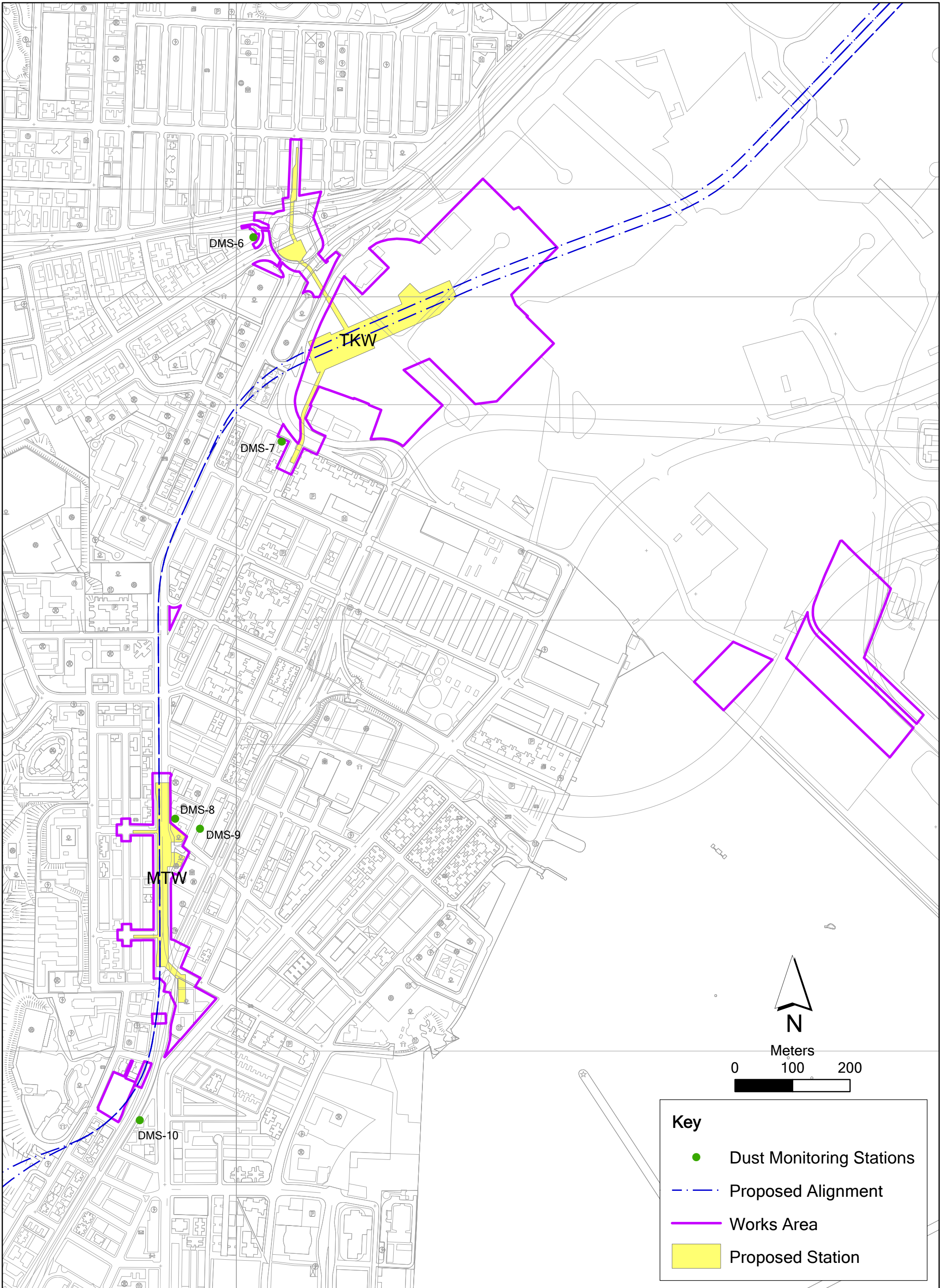
Annex D1

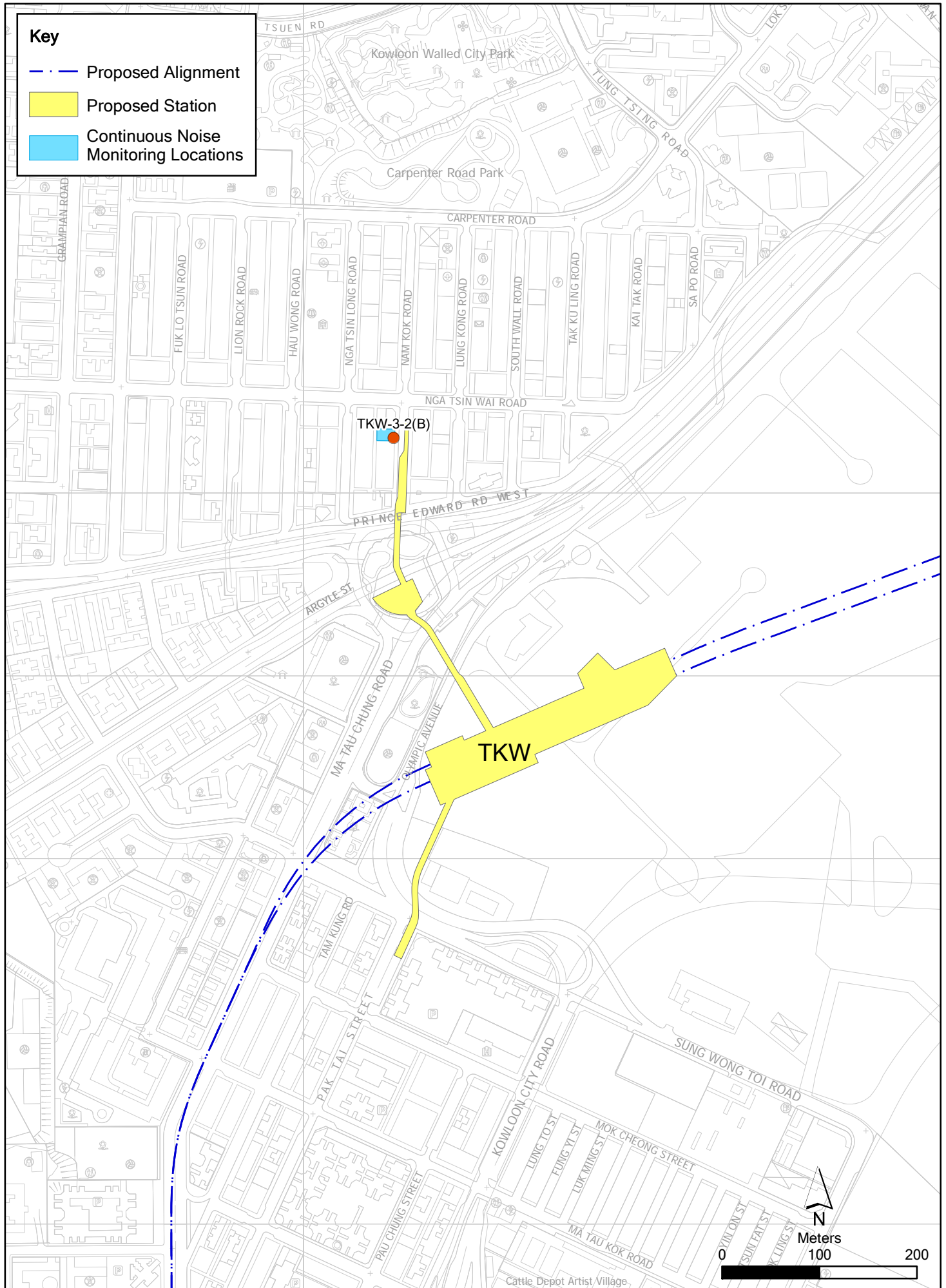
Location of Regular Construction Noise Monitoring Stations

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

Environmental
Resources
Management







Key

- - - Proposed Alignment
- Proposed Station
- Continuous Noise Monitoring Locations

Figure 2.2a

Continuous Noise Monitoring Locations

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

**Environmental
 Resources
 Management**



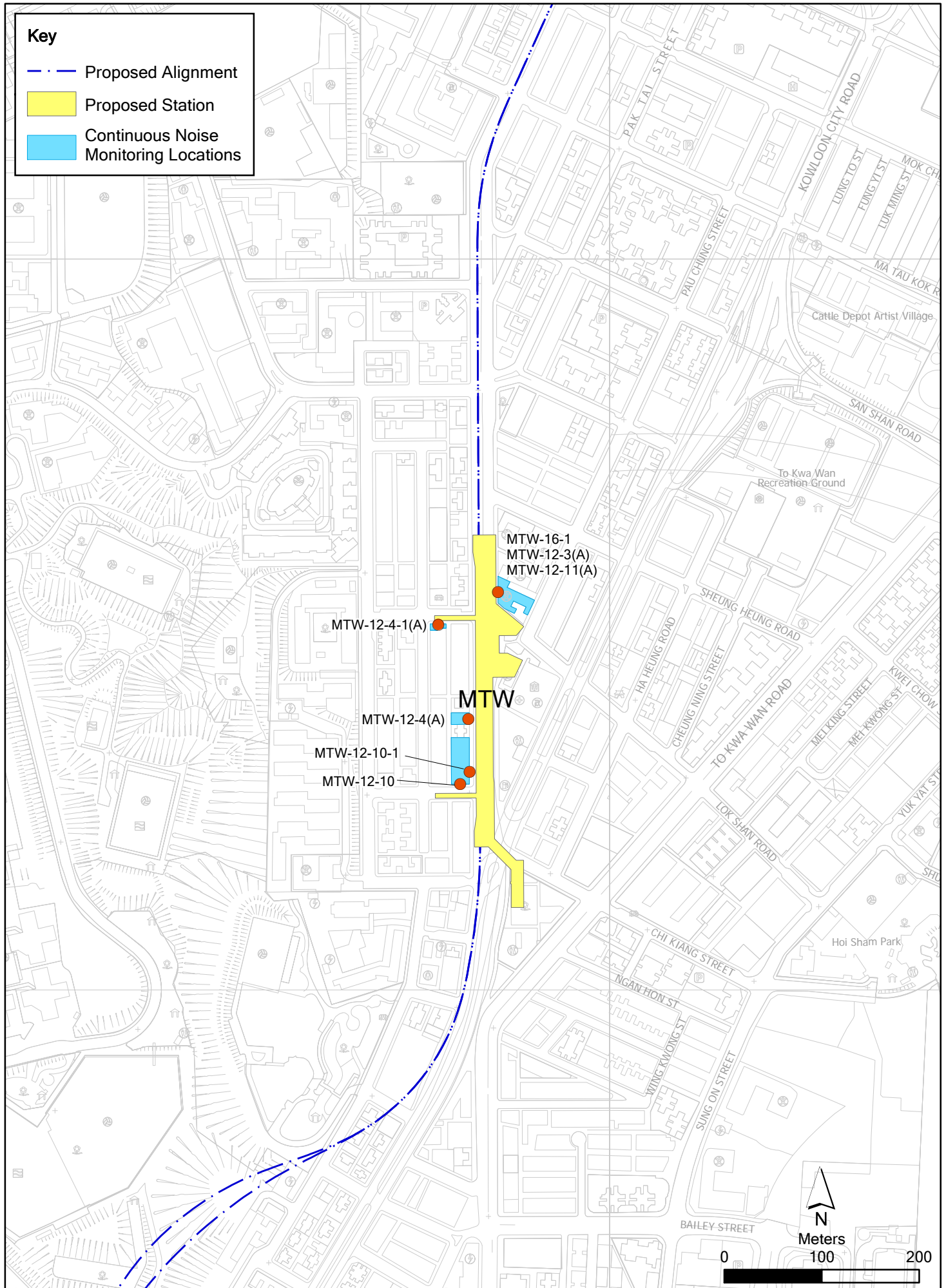


Figure 2.2b

Continuous Noise Monitoring Locations

Annex E

Monitoring Schedule of the Reporting Period and the Next Month

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

**Noise Monitoring Stations:
NMS-CA-6, NMS-CA-7, NMS-CA-8, NMS-CA-9 and NMS-CA-10
Monitoring Month : October 2016**

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

**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 : November 2016**

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

**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: October 2016**

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

**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: November 2016**

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

Annex F

Calibration Reports

Annex F Calibration Reports

Dust Monitoring Equipment

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

Noise Monitoring Equipment

Monitoring Station ID	Monitoring Equipment	Model & Serial No.	Last Calibration Date	Next Calibration Date
NMS-CA-6, NMS-CA-7, NMS-CA-8, NMS-CA-9 and NMS-CA-10	Calibrator	Rion NC-73 (S/N 10997142)	15 June 2016	15 June 2017
	Sound Level Meter	Rion NL-52 (S/N 00131627)	19 May 2016	19 May 2017

ENVIROTECH SERVICES CO.

High-Volume TSP Sampler
5-Point Calibration Record

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

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015
Ta(K) : 288

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	12.6	3.614	1.750	53	53.97
2 13 holes	9.6	3.155	1.532	46	46.84
3 10 holes	7.3	2.751	1.340	39	39.71
4 7 holes	4.4	2.136	1.047	30	30.55
5 5 holes	2.8	1.704	0.842	22	22.40

Sampler Calibration Relationship (Linear Regression)

Slope(m): 34.467 Intercept(b): -6.192 Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan

Date: 12/05/2016

High-Volume TSP Sampler
5-Point Calibration Record

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

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015
Ta(K) : 288

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	11.4	3.438	1.666	64	65.17
2	13 holes	9.6	3.155	1.532	58	59.06
3	10 holes	7.4	2.770	1.349	51	51.93
4	7 holes	4.8	2.231	1.092	40	40.73
5	5 holes	3.0	1.764	0.870	32	32.58

Sampler Calibration Relationship (Linear Regression)

Slope(m):41.048 Intercept(b):-3.551 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan

Date: 12/05/2016

High-Volume TSP Sampler
5-Point Calibration Record

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

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015
 Ta(K) : 288

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.2	3.556	1.723	62	63.13
2	13 holes	9.6	3.155	1.532	56	57.02
3	10 holes	7.8	2.844	1.384	50	50.91
4	7 holes	5.0	2.277	1.114	40	40.73
5	5 holes	3.0	1.764	0.870	30	30.55

Sampler Calibration Relationship (Linear Regression)

Slope(m): 38.466 Intercept(b): -2.486 Correlation Coefficient(r): 0.9991

Checked by: Magnum Fan

Date: 12/05/2016

High-Volume TSP Sampler
5-Point Calibration Record

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

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015
 Ta(K) : 288

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	12.2	3.556	1.716	62	63.13
2	13 holes	9.6	3.155	1.524	56	57.02
3	10 holes	7.2	2.732	1.322	48	48.87
4	7 holes	4.4	2.136	1.038	38	38.69
5	5 holes	2.6	1.642	0.802	28	28.51

Sampler Calibration Relationship (Linear Regression)

Slope(m): 37.895 Intercept(b): -1.267 Correlation Coefficient(r): 0.9990

Checked by: Magnum Fan

Date: 12/05/2016

High-Volume TSP Sampler
5-Point Calibration Record

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

Sampler

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

Calibration Orifice and Standard Calibration Relationship

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

Standard Condition

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

Calibration Condition

Pa (hpa) : 1015
 Ta(K) : 288

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	11.6	3.468	1.681	60	61.09
2 13 holes	9.4	3.122	1.516	54	54.98
3 10 holes	7.0	2.694	1.313	48	48.87
4 7 holes	4.5	2.160	1.059	40	40.73
5 5 holes	2.0	1.440	0.716	30	30.55

Sampler Calibration Relationship (Linear Regression)

Slope(m): 31.454 Intercept(b): 7.710 Correlation Coefficient(r): 0.9994

Checked by: Magnum Fan

Date: 12/05/2016



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9866	0.7037	1.4078	0.9957	0.7102	0.8896
0.9824	0.9765	1.9909	0.9914	0.9855	1.2581
0.9803	1.0880	2.2259	0.9893	1.0980	1.4066
0.9792	1.1399	2.3345	0.9882	1.1504	1.4753
0.9738	1.3735	2.8155	0.9828	1.3862	1.7792
Qstd slope (m) = 2.10326			Qa slope (m) = 1.31703		
intercept (b) = -0.06696			intercept (b) = -0.04232		
coefficient (r) = 0.99989			coefficient (r) = 0.99989		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

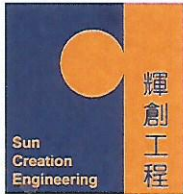
CALCULATIONS

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

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

For subsequent flow rate calculations:

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



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C163248
證書編號

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

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

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(55 \pm 20)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 15 June 2016

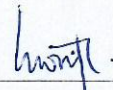
TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

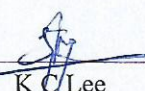
The test equipment used for calibration are traceable to National Standards via :

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

Tested By
測試


H T Wong
Technical Officer

Certified By
核證


K C Lee
Project Engineer

Date of Issue : 17 June 2016
簽發日期

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

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

Sun Creation Engineering Limited – Calibration & Testing Laboratory

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

輝創工程有限公司 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

Page 1 of 2



Certificate of Calibration

校正證書

Certificate No. : C163248
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C153519
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

- Test procedure : MA100N.

- Results :

5.1 Sound Level Accuracy

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

5.2 Frequency Accuracy

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

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

Note :

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

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

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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. : C162665
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC16-1067) Date of Receipt / 收件日期 : 12 May 2016

Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00131627
Supplied By / 委託者 : Envirotech Services Co.
Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun,
New Territories, Hong Kong

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 19 May 2016

TEST RESULTS / 測試結果

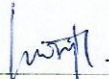
The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

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

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

Tested By
測試

:


H T Wong

Technical Officer

Certified By
核證

:


K C Lee

Project Engineer

Date of Issue
簽發日期

:

20 May 2016

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Sun Creation Engineering Limited – Calibration & Testing Laboratory

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

輝創工程有限公司 – 校正及檢測實驗室

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Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

Page 1 of 3

Certificate of Calibration

校正證書

Certificate No. : C162665

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 :

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

5. Test procedure : MA101N.

6. Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.7	± 1.1

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L _A	A	Fast	94.00	1	93.7 (Ref.)
				104.00		103.7
				114.00		113.7

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

- 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _A	A	Fast	94.00	1	93.7	Ref.
			Slow			93.7	± 0.3

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

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

Certificate of Calibration

校正證書

Certificate No. : C162665
證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

Range (dB)	UUT Setting			Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _A	A	Fast	94.00	63 Hz	67.5	-26.2 ± 1.5
					125 Hz	77.5	-16.1 ± 1.5
					250 Hz	85.0	-8.6 ± 1.4
					500 Hz	90.4	-3.2 ± 1.4
					1 kHz	93.7	Ref.
					2 kHz	94.9	+1.2 ± 1.6
					4 kHz	94.7	+1.0 ± 1.6
					8 kHz	92.6	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.3	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

Range (dB)	UUT Setting			Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	67.4	-0.8 ± 1.5
					125 Hz	77.5	-0.2 ± 1.5
					250 Hz	85.0	0.0 ± 1.4
					500 Hz	90.4	0.0 ± 1.4
					1 kHz	93.7	Ref.
					2 kHz	94.9	-0.2 ± 1.6
					4 kHz	94.7	-0.8 ± 1.6
					8 kHz	92.6	-3.0 (+2.1 ; -3.1)
					12.5 kHz	89.3	-6.2 (+3.0 ; -6.0)

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 06946

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

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

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

Note :

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

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

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

Annex G

Summary of Event/ Action Plans

Annex G1 *Event and Action Plan for Regular Construction Noise Monitoring*

EVENT	Action			
	Contractor's Environmental Team (Contractor's ET)	Independent Environmental Checker (IEC)	Engineer Representative (ER)	The Contractor
Exceeding Action Level	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notifications of exceedance in writing; 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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) 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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
- △ 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	<u>Submit an Archaeological Action Plan</u> Conduct survey-cum-excavation and additional boreholes/trenches investigation at the Sacred Hill (North) Study Area prior to construction.	Salvage cultural remains at the Sacred Hill (North) Study Area	Contractor	Sacred Hill (North) Area	Prior to the Construction Phase of TKW and associated tunnels	✓
Ecology (Construction Phase)							
S5.7	E5	<u>Good Site Practices</u> Impact on any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, containment of contaminated soils for removal from the site, appropriate storage of chemicals and chemical waste away from sites of ecological value and the provision of sanitary facilities for on-site workers. Adoption of such measures should permit waste to be suitably contained within the site for subsequent removal and appropriate disposal.	Minimise ecological impacts	Contractor	All construction sites	Construction Stage	✓

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		<p>The following good site practices should also be implemented:</p> <ul style="list-style-type: none"> • 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	<p>The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:</p> <p><u>Re-use of Existing Soil</u></p> <ul style="list-style-type: none"> • For soil conservation, existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing 	Minimize visual & landscape impact	Contractor	Within Project Site	Construction Stage	√

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
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ground may be set up on-site as necessary.

No-intrusion Zone

- To maximize protection to existing trees, ground vegetation and associated understorey 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.

Protection of Retained Trees

- 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
S6.12	LV2	<p>trees in Contractor's works sites.</p> <p><u>Decorative Hoarding</u></p> <ul style="list-style-type: none"> 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. <p><u>Management of facilities on work sites</u></p> <ul style="list-style-type: none"> 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). <p><u>Tree Transplanting</u></p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> • 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
		<p>sheeting to ensure that the dusty materials do not leak from the vehicle;</p> <ul style="list-style-type: none"> • 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
		<p>a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain an entirely wet surface</p> <ul style="list-style-type: none"> • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building upward, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by an impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by an impervious sheeting or placed in an area sheltered on the top and 3 sides; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; 					

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		and <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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
		<p>periods or should be throttled down to a minimum;</p> <ul style="list-style-type: none"> • 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>	To minimise water quality impact from construction site runoffs and general construction activities	Contractor	All construction sites where practicable	Construction stage	√
		<ul style="list-style-type: none"> 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 					

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		<p>facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates.</p> <ul style="list-style-type: none"> • 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, and definitely, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces should be covered by tarpaulin or other means. • The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all traffic areas and access roads protected by 					

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		<p>coarse stone ballast. An additional advantage from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows.</p> <ul style="list-style-type: none"> • 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 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 					

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		<p>ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.</p> <ul style="list-style-type: none"> • Precautions should be taken at any time of year when rainstorms are likely. Actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoffs during storm events, especially for areas located near steep slopes. • All vehicles and plant should be cleaned before leaving a construction site to ensure that no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and 					

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		<p>silty water to public roads and drains.</p> <ul style="list-style-type: none"> 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	<p><u>Tunnelling Works</u></p> <ul style="list-style-type: none"> 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
		<p>of suspended solids should be treated (e.g. by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove oil, lubricants and grease from the wastewater.</p> <ul style="list-style-type: none"> 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	<p><u>Sewage Effluent</u></p> <p>Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for their appropriate disposal and maintenance.</p>	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	√
S10.7.1	W4	<p><u>Groundwater from Contaminated Area in case contamination is found:</u></p> <ul style="list-style-type: none"> 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
		<p>contaminated areas is allowed. Prior to the excavation works within potentially contaminated areas, the groundwater quality should be reviewed with reference to the site investigation data in the EIA report for compliance and the Technical Memorandum on Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters (TM-Water). The existence of prohibited substance should be confirmed. The review results should be submitted to EPD for examination if the review results indicate that the groundwater to be generated from the excavation works would be contaminated. The contaminated groundwater should be either properly treated in compliance with the requirements of the TM-Water or properly recharged into the ground.</p> <ul style="list-style-type: none"> If wastewater treatment is deployed, the wastewater treatment unit shall deploy suitable treatment process (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (e.g. total petroleum hydrocarbon (TPH)) to undetectable range. All treated effluent from the wastewater treatment plant shall meet the requirements as stated in TM Water and should be discharged into the foul sewers. 					

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		<ul style="list-style-type: none"> If groundwater recharging wells are deployed, recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in the Section 2.3 of TM-Water. The baseline groundwater quality shall be determined prior to the selection of the recharge wells. It is necessary to submit a working plan (including the laboratory analytical results showing the quality of groundwater at the proposed recharge location(s) as well as the pollutant levels of groundwater to be recharged) to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than the pollutant levels of ambient groundwater at the recharge well. Prior to recharge, any prohibited substances such as TPH products should be removed as necessary by installing the petrol interceptor. The Contractor should apply for a discharge licence under the Water Pollution Control Ordinance (WPCO) through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater. 					
S10.7.1	W7	In order to prevent accidental spillage of chemicals, the following is recommended:	To minimize water quality impact from accidental	Contractor	All construction sites where practicable	Construction stage	<>

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		<p>All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains.</p> <ul style="list-style-type: none"> 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	<p><u>On-site sorting of C&D (Construction and Demolition) material</u></p> <ul style="list-style-type: none"> 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
		<p>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.</p>					
S11.5.1	WM2	<p><u>Construction and Demolition (C&D) Material</u></p> <ul style="list-style-type: none"> • 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; 	<p>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</p>	Contractor	All construction sites	Construction stage	✓

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		<ul style="list-style-type: none"> 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	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used. Metal hoarding should be used to enhance the possibility of recycling. The purchase of construction materials will be carefully planned in order to avoid over ordering and wastage. The Contractor should recycle as much of the C&D materials as possible on-site. 	Good site practice to minimize waste generation and recycle C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	√

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
S11.5.1	WM4	<p>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.</p> <p><u>General Refuse</u></p> <ul style="list-style-type: none"> • 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. <p>Participation in a local collection scheme</p>	Minimize the production of general refuse and minimise odour, pest and litter impacts	Contractor	All construction sites	Construction stage	√

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
S11.5.1	WM7	<p>should be considered by the Contractor.</p> <p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> Chemical waste as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, that is produced should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed. They should have a capacity of less than 450 litres unless the specification has been approved by the EPD. A label in English and Chinese should be displayed in accordance with instructions prescribed in Schedule 2 of the regulation. The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides. It should also have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest. It should have adequate ventilation and be covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. 	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	√

EIA Ref.	EM&A Log Ref*	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the implementation of measures	When to implement the measures?	Implementation Status
		<ul style="list-style-type: none"> Disposal of chemical waste should be via a licensed waste collector; to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre (which also offers a chemical waste collection service and can supply the necessary storage containers); or to a reuser of the waste, under the approval from the EPD. 					

Annex I

Regular Noise Monitoring Results

Annex I Regular Noise Monitoring Results

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

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L _{Aeq} (30 min)	Baseline (dB(A)), L _{Aeq} (30 min)	Corrected LAeq(dBA) ^(a)	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
06-Oct-16	11:12	11:42	Sunny	63.1	76.1	-(b)	-	Traffic noise	28	0.5	NL-52 00131627	NC-73 10997142
12-Oct-16	10:42	11:12	Cloudy	63.3	76.1	-(b)	-	Traffic noise	25	0.5	NL-52 00131627	NC-73 10997142
18-Oct-16	11:15	11:45	Cloudy	62.8	76.1	-(b)	-	Traffic noise	27	0.5	NL-52 00131627	NC-73 10997142
24-Oct-16	11:10	11:40	Fine	63.4	76.1	-(b)	-	Traffic noise	28	0.5	NL-52 00131627	NC-73 10997142

Station NMS-CA-7 Skytower Tower 2

Date	Start Time	End Time	Weather	Measured Noise level (dB(A)), L _{Aeq} (30 min)	Baseline (dB(A)), L _{Aeq} (30 min)	Corrected LAeq(dBA) ^(a)	Major Construction Noise Source(s) Observed	Other Noise Source(s) Observed	Temp. (°C)	Wind Speed (m/s)	Noise Meter Model / ID	Calibrator Model / ID
06-Oct-16	10:15	10:45	Sunny	65.4	70.0	-(b)	-	Traffic noise	28	0.5	NL-52 00131627	NC-73 10997142
12-Oct-16	10:15	10:45	Cloudy	65.1	70.0	-(b)	-	Traffic noise	25	0.5	NL-52 00131627	NC-73 10997142
18-Oct-16	10:17	10:47	Cloudy	65.3	70.0	-(b)	-	Traffic noise	27	0.5	NL-52 00131627	NC-73 10997142
24-Oct-16	10:15	10:45	Fine	65.7	70.0	-(b)	-	Traffic noise	28	0.5	NL-52 00131627	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-Oct-16	8:00	8:30	Sunny	73.3	75.4	-(b)	Backhoe	Traffic noise	28	0.5	NL-52 00131627	NC-73 10997142
12-Oct-16	8:00	8:30	Cloudy	73.3	75.4	-(b)	Backhoe	Traffic noise	25	0.5	NL-52 00131627	NC-73 10997142
18-Oct-16	8:00	8:30	Cloudy	74.1	75.4	-(b)	Backhoe	Traffic noise	27	0.5	NL-52 00131627	NC-73 10997142
24-Oct-16	8:00	8:30	Fine	73.8	75.4	-(b)	Backhoe	Traffic noise	28	0.5	NL-52 00131627	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-Oct-16	9:22	9:52	Sunny	66.6	69.2	66.6	Backhoe	Traffic noise	28	0.5	NL-52 00131627	NC-73 10997142
12-Oct-16	9:20	9:50	Cloudy	71.1	69.2	63.8	Backhoe/Crane operation	Traffic noise	25	0.5	NL-52 00131627	NC-73 10997142
18-Oct-16	9:22	9:52	Cloudy	70.2	69.2	63.3	Backhoe	Traffic noise	27	0.5	NL-52 00131627	NC-73 10997142
24-Oct-16	9:22	9:52	Fine	70.0	69.2	62.3	Crane operation/Backhoe	Traffic noise	28	0.5	NL-52 00131627	NC-73 10997142

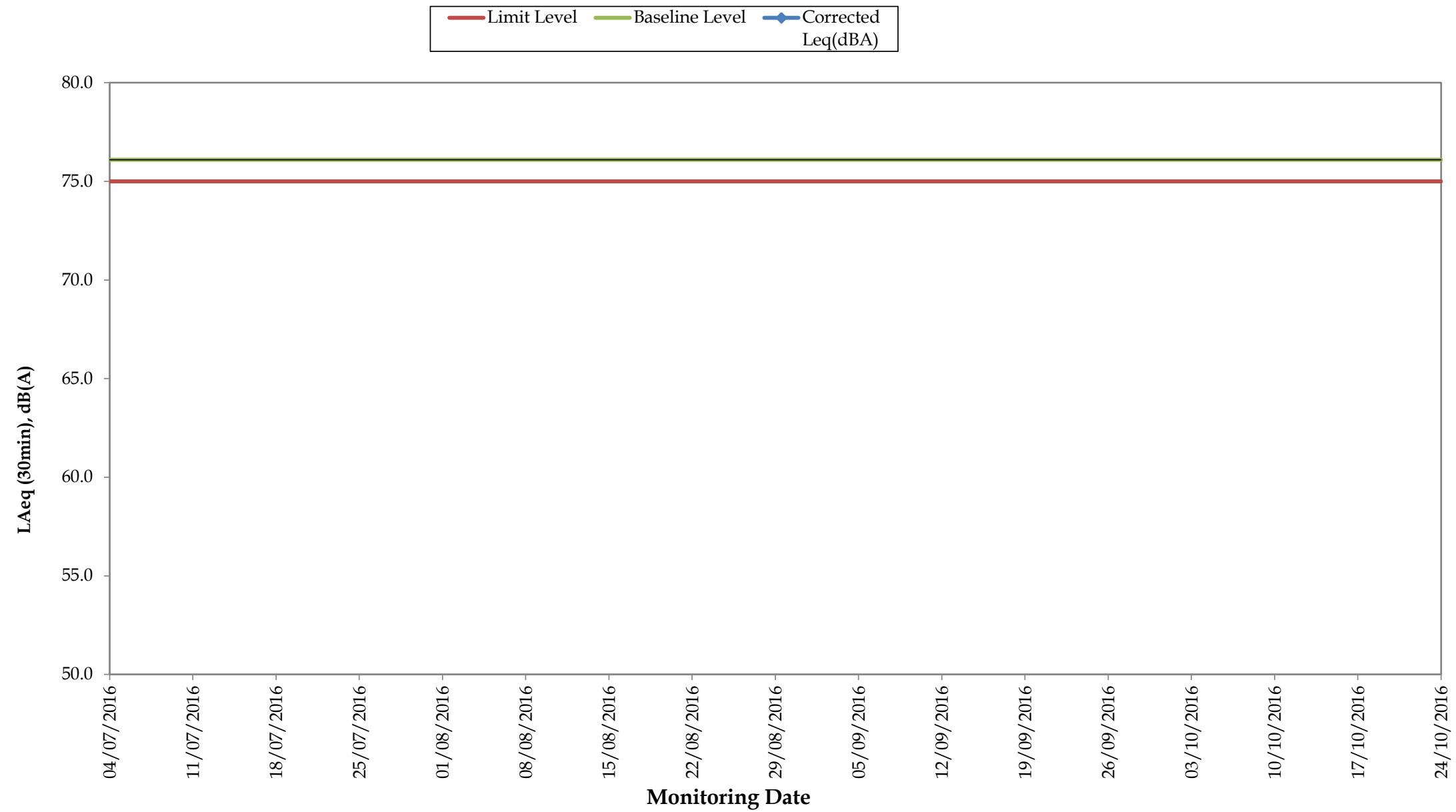
Station NMS-CA-10 Chat Ma Mansion

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-Oct-16	8:42	9:12	Sunny	76.3	76.6	-(b)	Backhoe/Crane operation	Traffic noise	28	0.5	NL-52 00131627	NC-73 10997142
12-Oct-16	8:40	9:10	Cloudy	75.8	76.6	-(b)	Backhoe	Traffic noise	25	0.5	NL-52 00131627	NC-73 10997142
18-Oct-16	8:42	9:12	Cloudy	76.0	76.6	-(b)	Backhoe	Traffic noise	27	0.5	NL-52 00131627	NC-73 10997142
24-Oct-16	8:42	9:12	Fine	76.1	76.6	-(b)	Backhoe	Traffic noise	28	0.5	NL-52 00131627	NC-73 10997142

Remarks:

- (a) The Measured LAeq is corrected against the corresponding Baseline Level.
- (b) No correction was made as the measured noise levels were equal to or below the baseline noise levels.
- (c) The noise monitoring results carried out at NMS-CA-8 on 6, 12, 18 and 24 October 2016, and NMS-CA-10 on 6, 12, 18 and 24 October 2016 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.

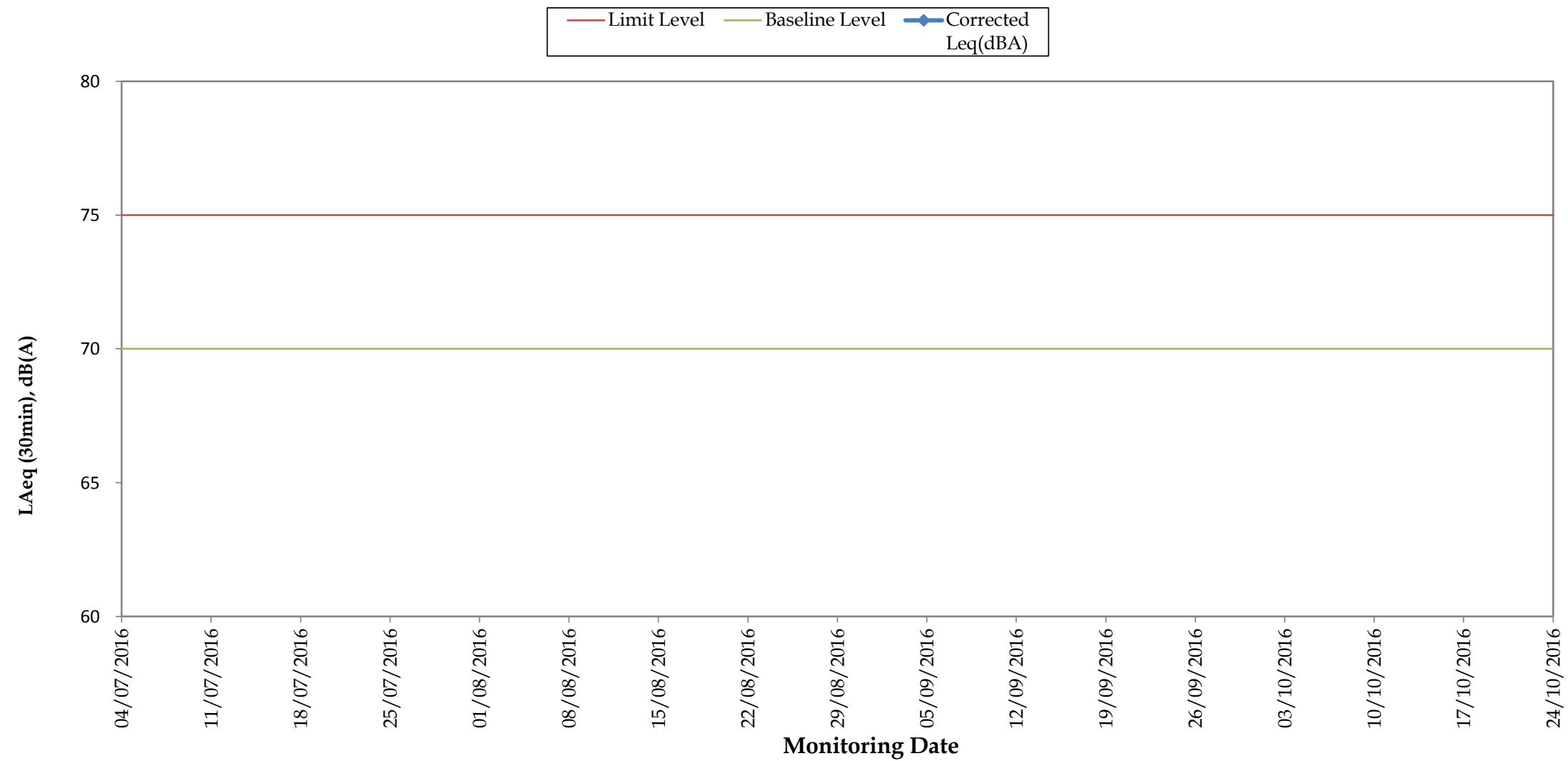
Regular Noise Monitoring Results at NMS-CA-6 (No. 16-23 Nam Kok Road) (LAeq, 30min) for the Past 4 Months



Remarks:

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

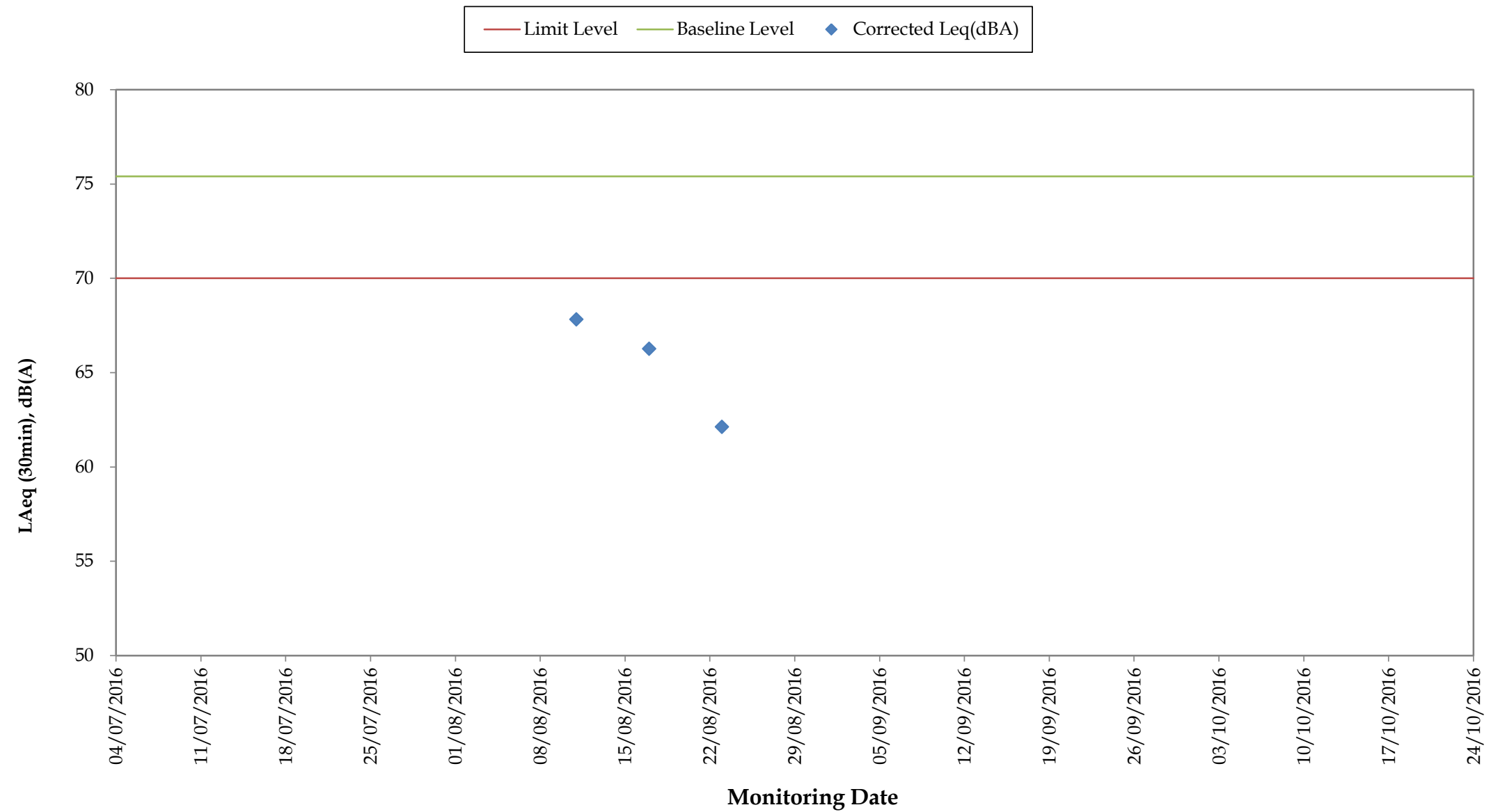
Regular Noise Monitoring Results at NMS-CA-7 (Skytower Tower 2) (LAeq, 30min) for the Past 4 Months



Remarks:

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

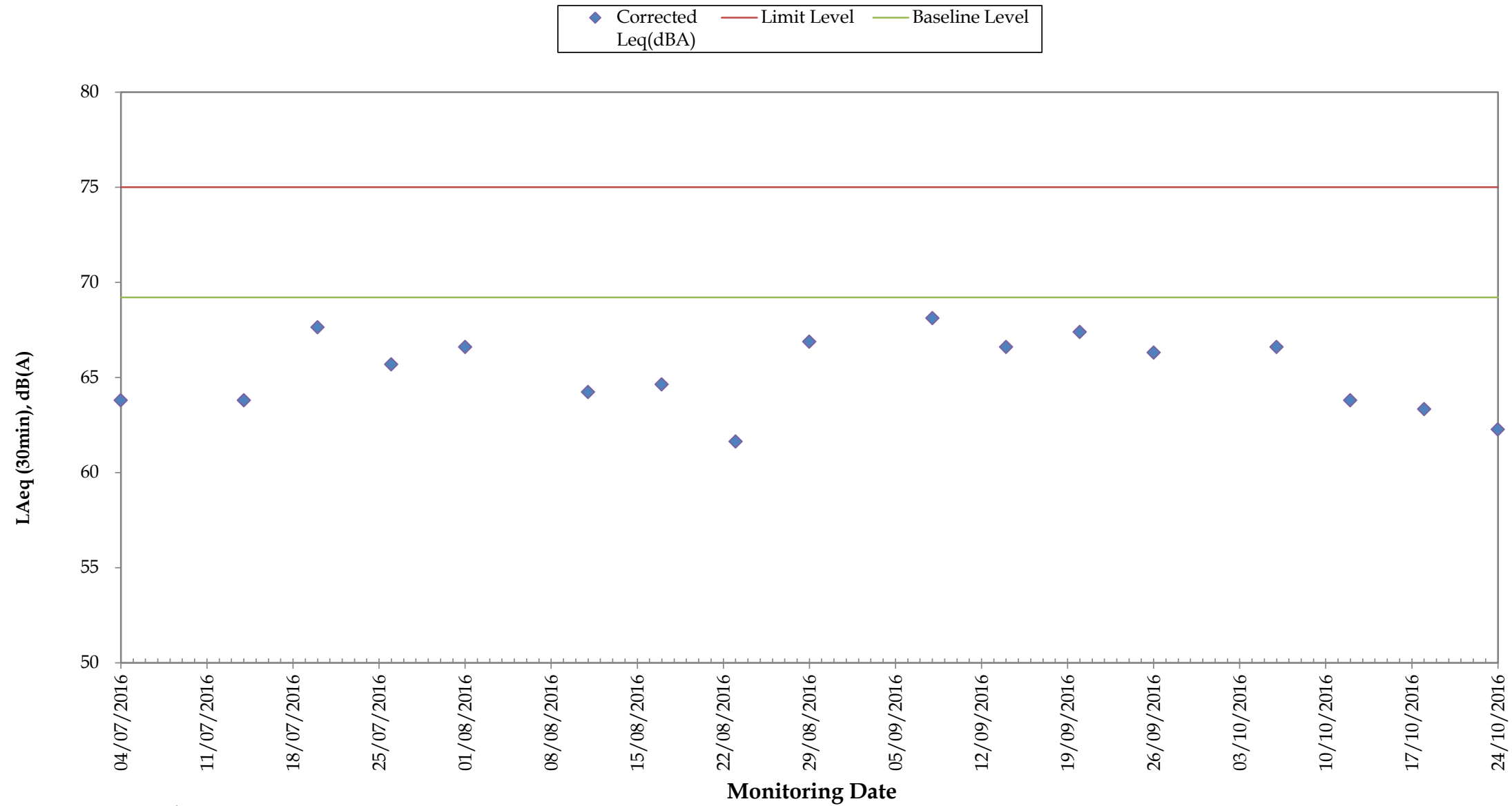
Regular Noise Monitoring Results at NMS-CA- 8 (SKH Good Shepherd Primary School) (LAeq, 30min) for the Past 4 Months



Remarks:

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

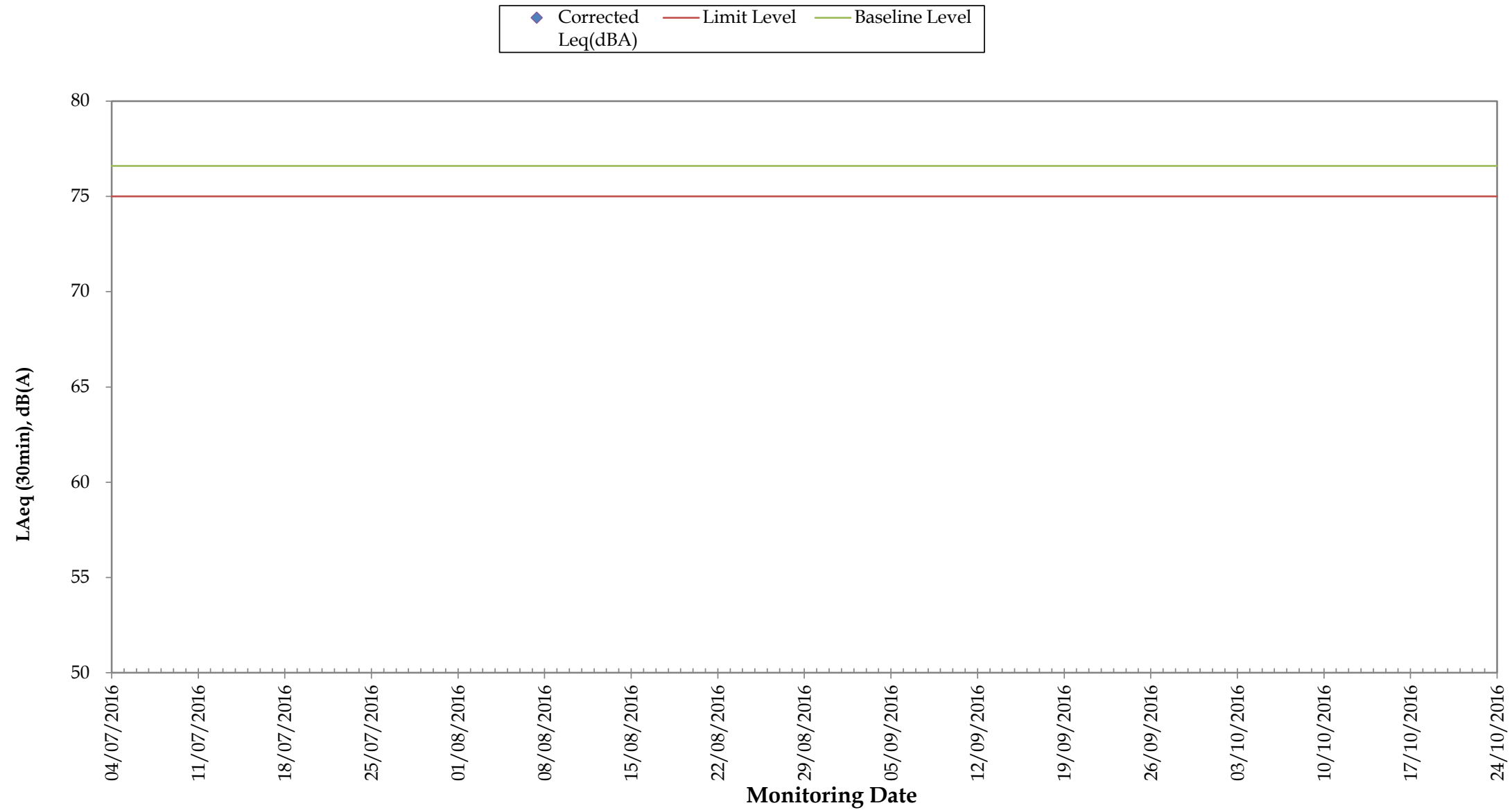
Regular Noise Monitoring Results at NMS-CA-9 (Kong Yiu Mansion) (LAeq, 30min)) for the Past 4 Months



Remarks:

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

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



Remarks:

- For those corrected noise levels that are not shown in this graph, the measured noise levels are equal to or below baseline level.
- Noise monitoring at NMS-CA-10 (Chat Ma Mansion) was temporarily suspended since June 2016 due to request from the Management Office and was resumed on 26 July 2016.

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)	Average	TSP Conc. (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)	Observations / Remarks	Sampler ID	Filter ID
Date	Date		Initial	Final	(hrs)	Initial	Final						
06-Oct-16	07-Oct-16	Sunny	2.8165	2.9002	24.00	16376.30	16400.30	1.35	1.35	1.35	-	0107	8136
12-Oct-16	13-Oct-16	Cloudy	2.7779	2.8900	24.00	16400.30	16424.30	1.35	1.35	1.35	-	0107	8147
18-Oct-16	19-Oct-16	Cloudy	2.7857	2.8721	24.00	16424.30	16448.30	1.35	1.35	1.35	-	0107	8206
24-Oct-16	25-Oct-16	Fine	2.7598	2.8771	24.00	16448.30	16472.30	1.35	1.35	1.35	-	0107	8213
28-Oct-16	29-Oct-16	Sunny	2.7479	2.8321	24.00	164732.30	164756.30	1.35	1.35	1.35	-	0107	8222
								Minimum	43				
								Average	50				
								Maximum	60				

Station DMS-7 Parc 22

Start	Finish	Weather	Filter Weight (g)	Elapsed Time Reading	Sampling Time	Flow Rate (m ³ /min)	Average	TSP Conc. (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)	Observations / Remarks	Sampler ID	Filter ID
Date	Date		Initial	Final	(hrs)	Initial	Final						
06-Oct-16	07-Oct-16	Sunny	2.8169	2.9012	24.00	6416.17	6440.17	1.24	1.24	1.24	-	3574	8135
12-Oct-16	13-Oct-16	Cloudy	2.7919	2.9112	24.00	6440.17	6464.17	1.24	1.24	1.24	-	3574	8146
18-Oct-16	19-Oct-16	Cloudy	2.7891	2.8800	24.00	6464.17	6488.17	1.24	1.24	1.24	-	3574	8205
24-Oct-16	25-Oct-16	Fine	2.7783	2.8911	24.00	6488.17	6512.17	1.24	1.24	1.24	-	3574	8212
28-Oct-16	29-Oct-16	Sunny	2.7631	2.8500	24.00	6512.17	6536.17	1.24	1.24	1.24	-	3574	8221
								Minimum	47				
								Average	55				
								Maximum	67				

Station DMS-8 SKH Good Shepherd Primary School

Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m ³ /min)		Average	TSP Conc. (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)	Observations / Remarks	Sampler ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final							
06-Oct-16	8:10	07-Oct-16	8:10	Sunny	2.8160	2.8997	6557.11	6581.11	24.00	1.21	1.21	1.21	48	152.2	260	-	3572	8134
12-Oct-16	8:10	13-Oct-16	8:10	Cloudy	2.7964	2.9200	6581.11	6605.11	24.00	1.21	1.21	1.21	71	152.2	260	-	3572	8145
18-Oct-16	8:10	19-Oct-16	8:10	Cloudy	2.7798	2.8600	6605.11	6629.11	24.00	1.21	1.21	1.21	46	152.2	260	-	3572	8204
24-Oct-16	8:05	25-Oct-16	8:05	Fine	2.7616	2.8900	6629.11	6653.11	24.00	1.21	1.21	1.21	74	152.2	260	-	3572	8211
28-Oct-16	8:15	29-Oct-16	8:15	Sunny	2.7631	2.8509	6653.11	6677.11	24.00	1.21	1.21	1.21	50	152.2	260	-	3572	8220
													Minimum	46				
													Average	58				
													Maximum	74				

Station DMS-9 No. 12 Pau Chung Street

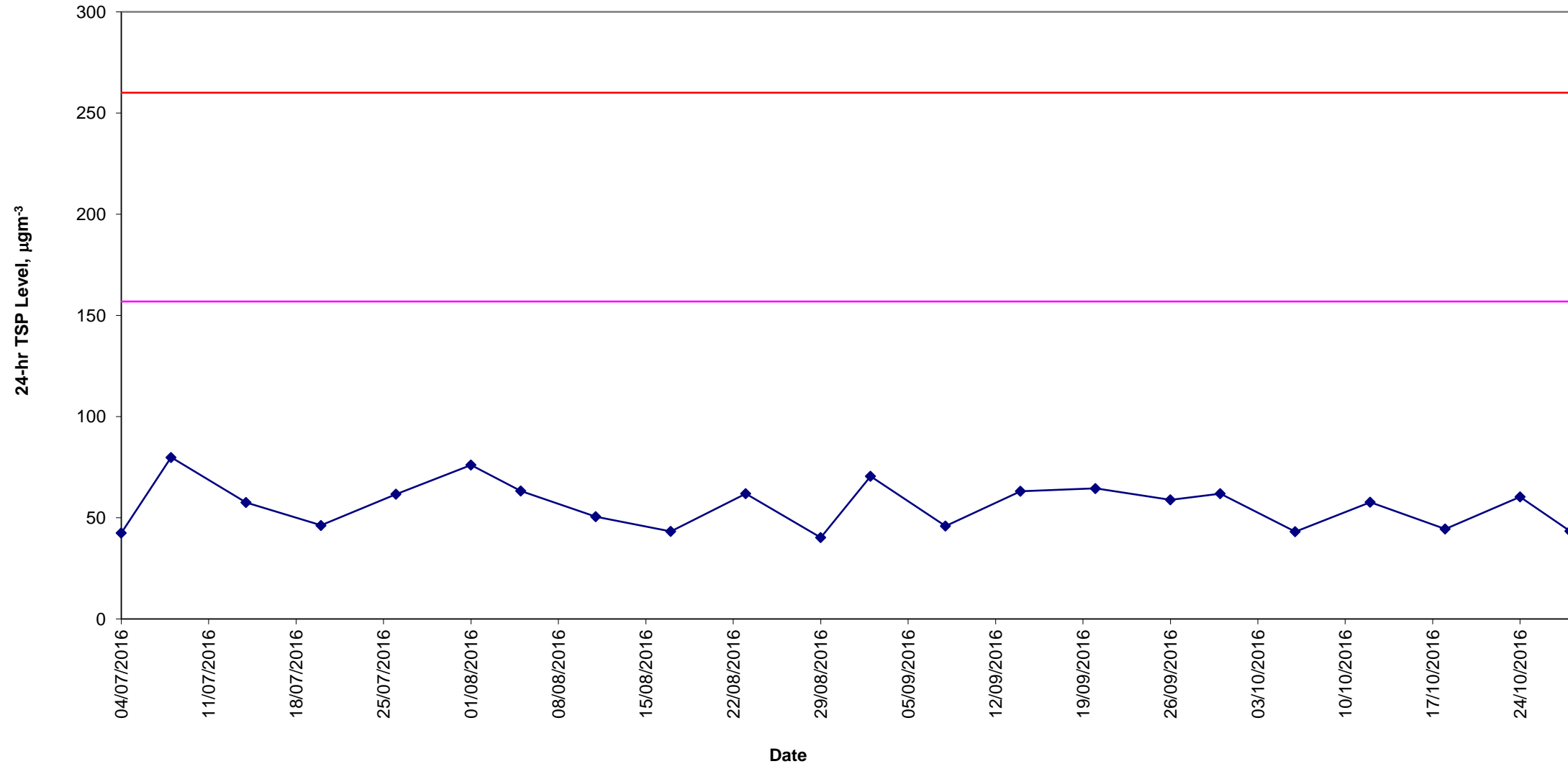
Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m ³ /min)		Average	TSP Conc. (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)	Observations / Remarks	Sampler ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final							
06-Oct-16	8:20	07-Oct-16	8:20	Sunny	2.8150	2.9000	16521.40	16545.40	24.00	1.24	1.24	1.24	48	160.9	260	-	0814	8133
12-Oct-16	8:20	13-Oct-16	8:20	Cloudy	2.8016	2.9216	16545.40	16569.40	24.00	1.24	1.24	1.24	67	160.9	260	-	0814	8144
18-Oct-16	8:20	19-Oct-16	8:20	Cloudy	2.7725	2.8701	16569.40	16593.40	24.00	1.24	1.24	1.24	55	160.9	260	-	0814	8203
24-Oct-16	8:15	25-Oct-16	8:15	Fine	2.7845	2.9000	16593.40	16617.40	24.00	1.24	1.24	1.24	65	160.9	260	-	0814	8210
28-Oct-16	8:10	29-Oct-16	8:10	Sunny	2.7719	2.8608	16617.40	16641.40	24.00	1.24	1.24	1.24	50	160.9	260	-	0814	8219
													Minimum	48				
													Average	57				
													Maximum	67				

Station DMS-10 Chat Ma Mansion

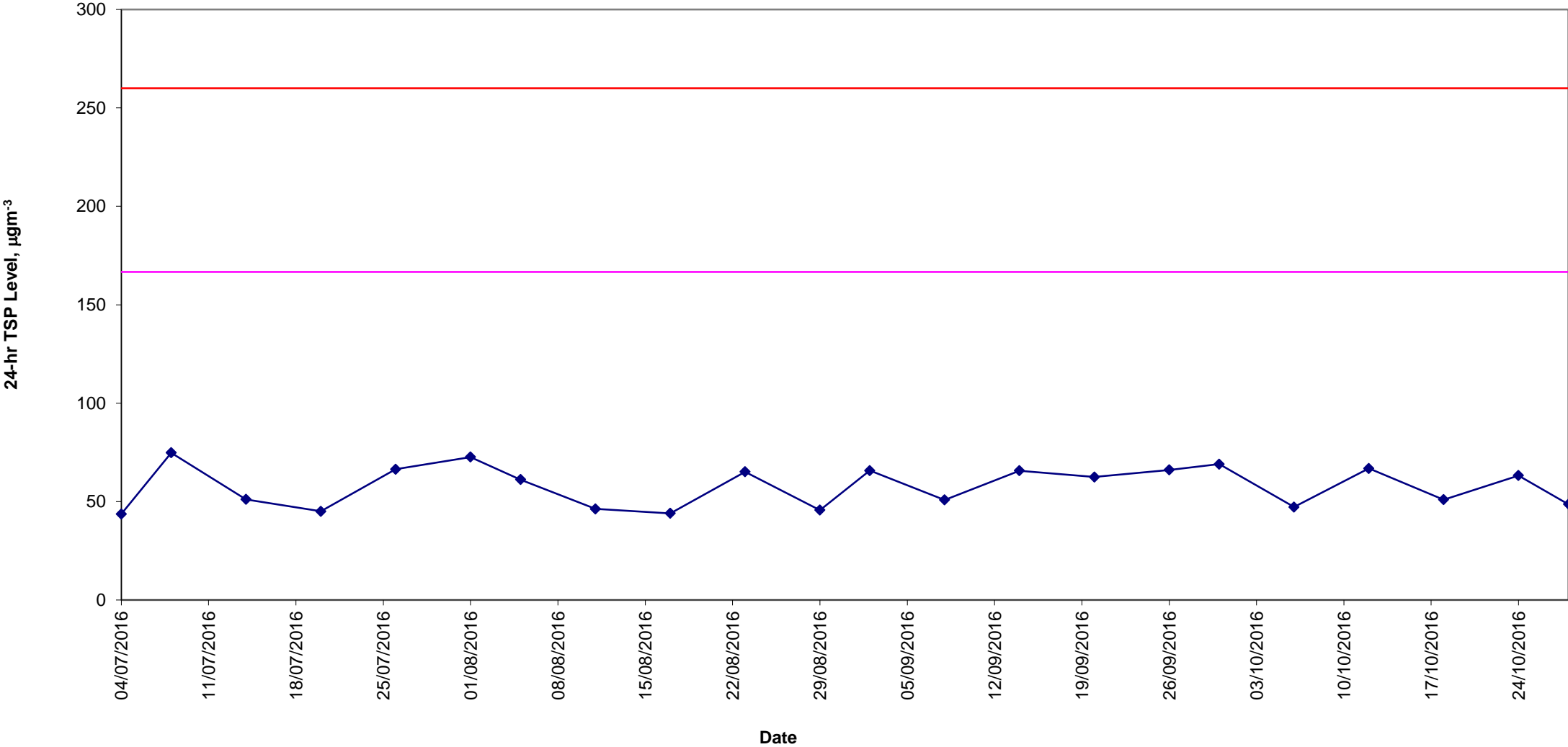
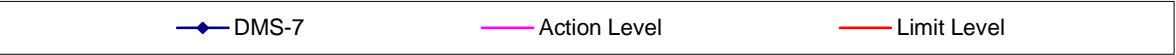
Start		Finish		Weather	Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m ³ /min)		Average	TSP Conc. (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)	Observations / Remarks	Sampler ID	Filter ID
Date	Time	Date	Time		Initial	Final	Initial	Final		Initial	Final							
06-Oct-16	8:47	07-Oct-16	8:47	Sunny	2.7931	2.8889	6973.20	6997.20	24.00	1.25	1.25	1.25	53	170.4	260	-	3573	8132
12-Oct-16	8:45	13-Oct-16	8:45	Cloudy	2.7961	2.9127	6997.20	7021.20	24.00	1.25	1.25	1.25	65	170.4	260	-	3573	8143
18-Oct-16	8:45	19-Oct-16	8:45	Cloudy	2.7920	2.8991	7021.20	7045.20	24.00	1.25	1.25	1.25	60	170.4	260	-	3573	8202
24-Oct-16	8:45	25-Oct-16	8:45	Fine	2.7821	2.9012	7045.20	7069.20	24.00	1.25	1.25	1.25	66	170.4	260	-	3573	8209
28-Oct-16	8:00	29-Oct-16	8:00	Sunny	2.7616	2.8510	7069.20	7093.20	24.00	1.25	1.25	1.25	50	170.4	260	-	3573	8218
													Minimum	50				
													Average	59				
													Maximum	66				

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

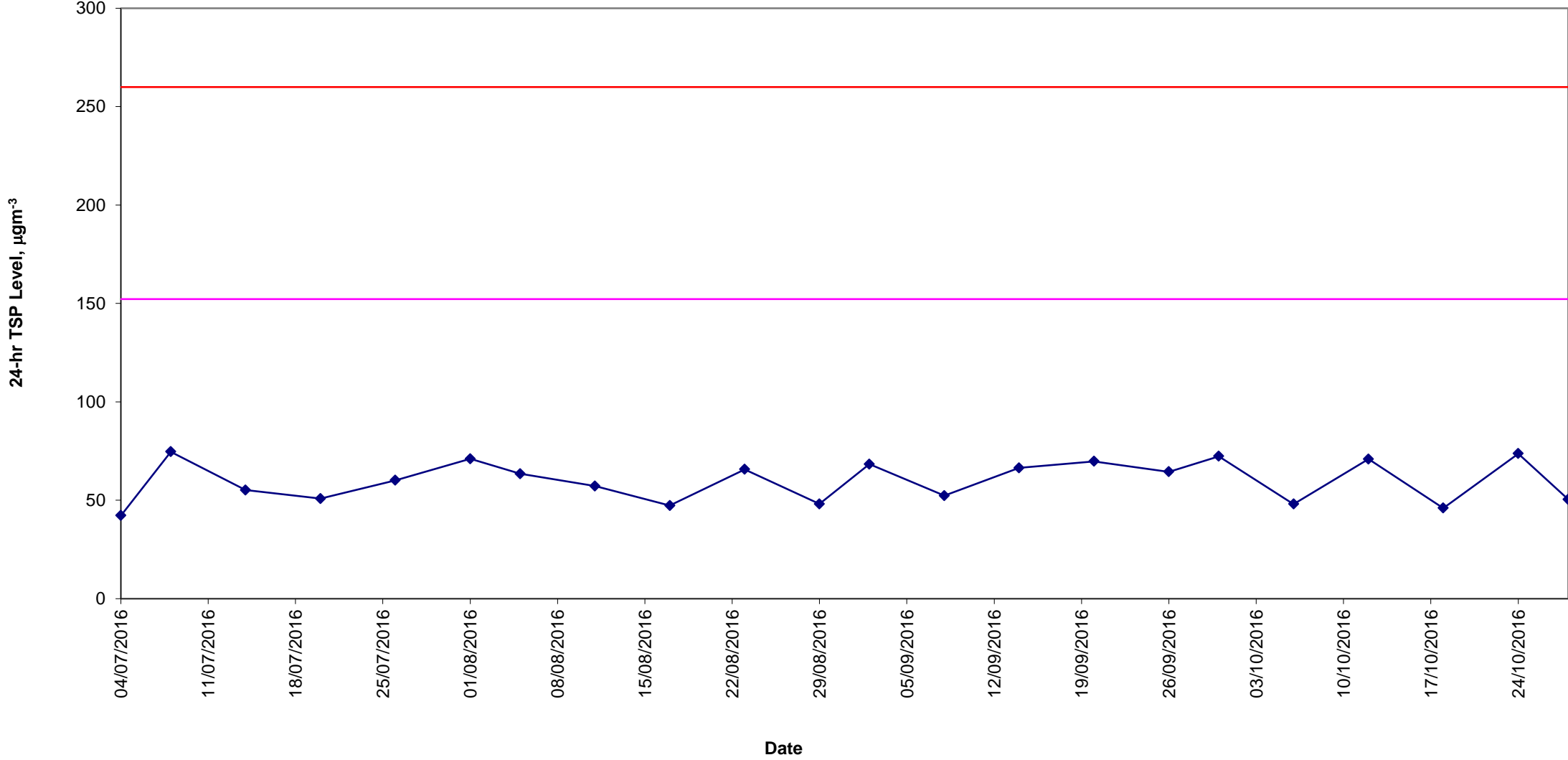
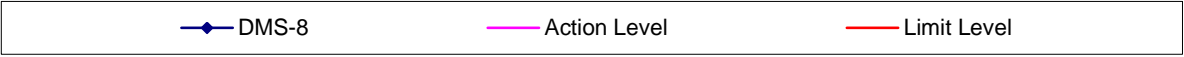
—◆— DMS-6 — Action Level — Limit Level



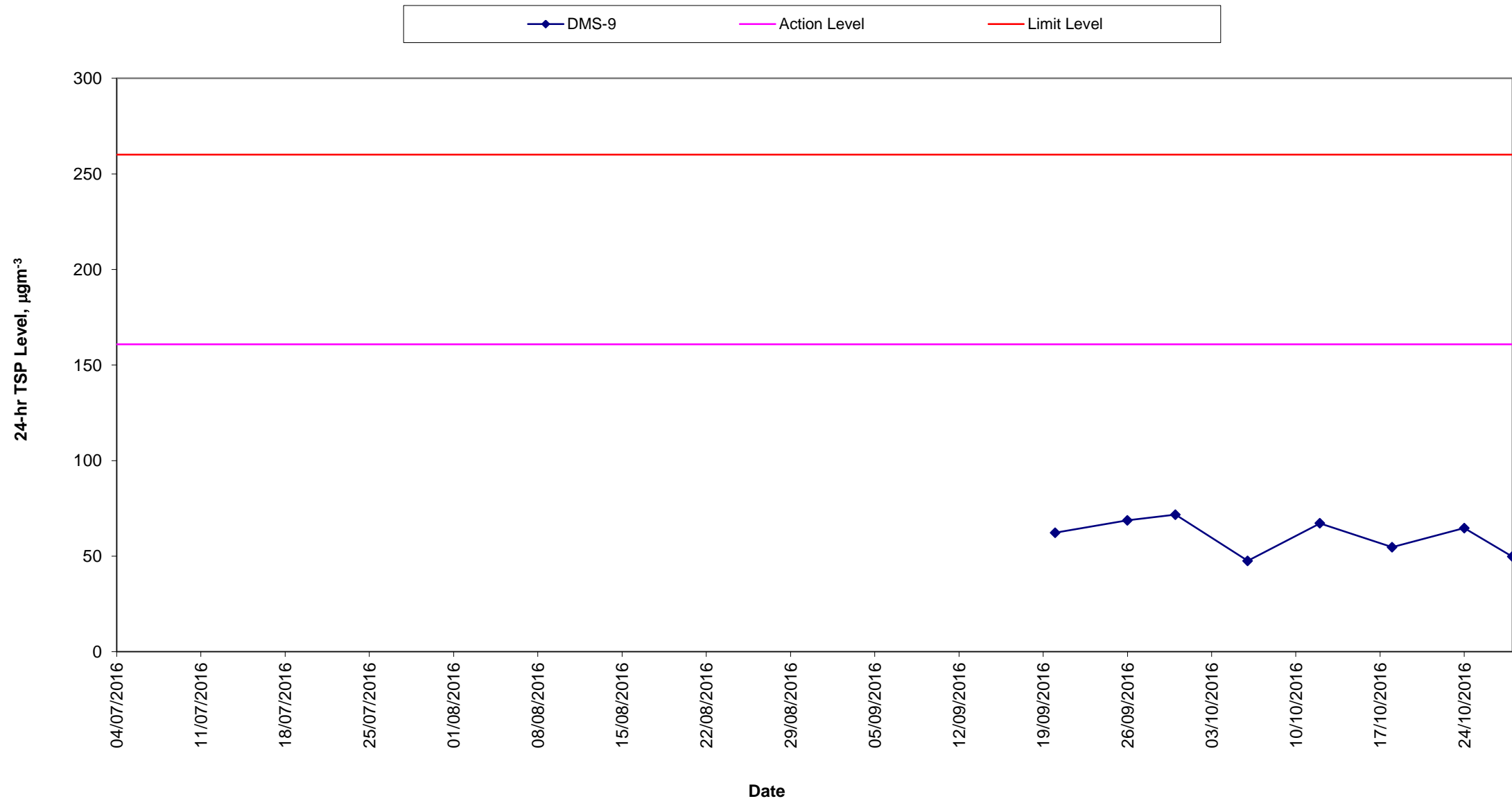
Construction Dust Monitoring Results for the Past 4 Months
DMS- 7 (Parc 22)



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



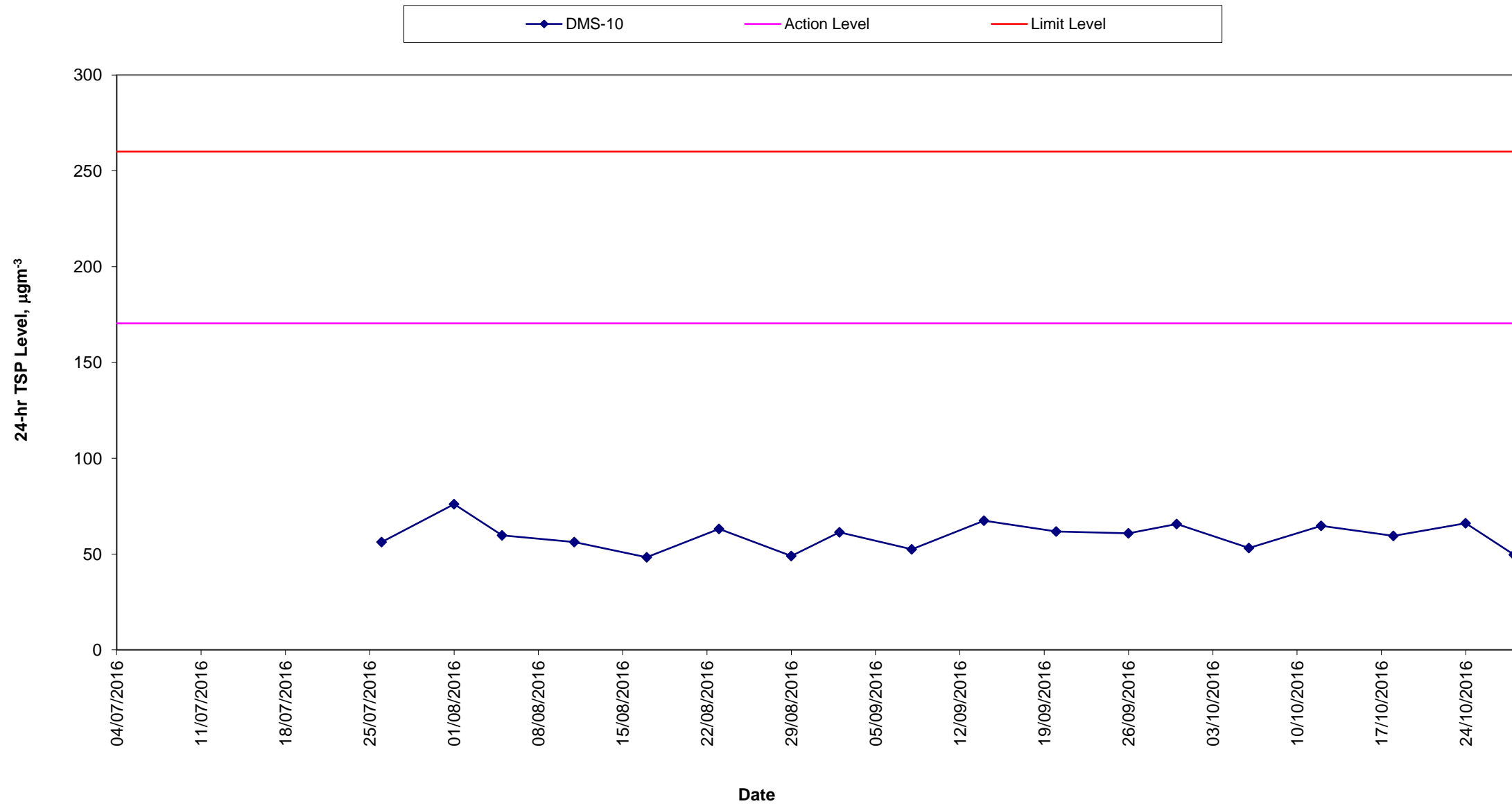
**Construction Dust Monitoring Results for the Past 4 Months
DMS-9 (No.12 Pau Chung Street)**



Remark:

- 24-hour averaged dust monitoring at DMS-9 (No. 12 Pau Chung Street) was temporary suspended since July 2016 due to request from the Management Office and was resumed on 20 September 2016.

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



Remark:

- 24-hour averaged dust monitoring at DMS-10 (Chat Ma Mansion) was temporary suspended since June 2016 due to request from the Management Office and was resumed on 26 July 2016.

Average wind speed and wind direction obtained from the meteorological station at Kai Tak from the Hong Kong Observatory (HKO) in October 2016

EXTRACT OF METEOROLOGICAL OBSERVATIONS FOR HONG KONG, OCTOBER 2016 (Table 2)

Date October	Number of hours of Reduced Visibility [#] (hours)	Total Bright Sunshine (hours)	Daily Global Solar Radiation (MJ/m ²)	Total Evaporation (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
1	12	5.8	16.05	0.6	090	16.2
2	9	3.0	11.57	4.2	060	17.8
3	0	1.2	8.37	2.0	050	28.5
4	0	4.9	9.68	1.9	050	17.5
5	0	5.7	16.61	4.4	070	18.7
6	0	8.9	18.76	6.8	010	19.3
7	0	3.8	11.82	3.1	010	23.6
8	0	2.1	10.54	3.7	360	35.2
9	0	4.7	15.92	6.1	010	33.0
10	0	6.8	16.51	3.5	020	28.0
11	0	0.7	9.51	3.2	010	29.8
12	0	0.1	4.70	1.3	060	39.7
13	0	6.5	17.41	4.7	080	39.5
14	0	9.0	19.58	3.9	080	34.6
15	0	7.0	15.64	4.5	050	20.3
16	0	7.8	15.66	5.0	020	20.3
17	0	2.2	7.73	N.A.	070	43.5
18	0	-	2.07	N.A.	090	57.5
19	0	0.1	2.27	N.A.	100	36.0
20	7	7.4	14.48	1.9	010	15.8
21	0	-	0.80	N.A.	220	60.8
22	0	5.0	12.47	0.5	220	18.2
23	0	2.8	10.47	2.1	100	6.0
24	0	4.1	12.90	1.9	120	13.8
25	0	9.2	20.00	4.2	090	16.5
26	0	8.5	17.55	3.2	070	17.1
27	0	9.8	19.82	4.6	060	11.1
28	0	10.3	20.33	3.3	020	8.6
29	0	3.7	11.38	5.3	080	31.5
30	0	3.6	12.46	4.1	020	32.3
31	0	7.9	17.24	5.2	070	24.0
Mean/Total	28	152.6	12.91	95.2 ^{&}	070	26.3
Normal*	142.8 [§]	193.9	14.05	123.9	080	27.4
Station	Hong Kong International Airport	King's Park			Waglan Island [^]	

[^] In case the data are not available from Waglan Island, observations of Cheung Chau or other nearby weather stations will be incorporated in computing the Prevailing Wind Direction and Mean Wind Speed.

Note:

- (a) Graphical presentations for wind speed and wind direction of nearest HKO weather station were not available.

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	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Inert C&D Materials Delivered to 1108A Kai Tai Barging Facilities (See Note 6)	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse	
	(in '000m ³)	(in '000m ³) (See Note 3)	(in '000m ³)	(in '000m ³)	(in '000m ³) (See Note 5)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg) (See Note 2)	(in '000kg) (See Note 10)	(in '000m ³) (See Note 5)	
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 '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 2015	64.165	0.000	0.000	0.266	0.000	63.899	0.000	0.077	0.328	0.180	0.150	0.000
Feb 2015	46.884	0.000	0.000	2.599	0.000	44.285	0.000	0.090	3.102	0.000	0.106	0.000
Mar 2015	41.498	0.000	0.000	0.000	0.000	41.498	0.000	0.072	2.321	0.600	0.126	0.000
Apr 2015	13.049	0.000	0.000	0.000	0.000	13.049	0.000	0.081	1.598	0.000	0.119	0.000
May 2015	54.559	0.000	0.000	0.000	0.000	54.559	0.000	0.063	0.548	0.000	0.099	0.000
Jun 2015	48.857	0.000	0.000	0.000	0.000	48.857	0.000	0.041	0.880	0.000	0.144	0.000
Jul 2015	34.471	0.000	0.000	0.000	0.000	34.471	0.000	0.090	4.972	0.720	0.218	0.000
Aug 2015	28.330	0.000	0.000	0.000	0.000	28.330	0.000	0.077	1.027	1.240	0.244	0.000
Sep 2015	25.376	0.000	0.000	0.000	0.000	25.376	0.000	0.068	0.845	2.080	0.224	0.000
Oct 2015	45.061	0.000	0.000	0.000	0.000	45.061	0.000	0.072	0.743	0.000	0.336	0.000
Nov 2015	45.607	0.000	0.000	0.000	0.000	45.607	0.000	0.085	4.719	1.760	0.344	0.000
Dec 2015	43.527	0.000	0.000	0.000	0.000	43.527	0.000	0.090	0.669	0.048	0.286	0.000
Sub-total	491.384	0.000	0.000	2.865	0.000	488.519	0.000	0.906	21.752	6.628	2.396	0.000
Jan 2016	28.064	0.000	0.000	0.000	0.000	28.064	0.000	0.855	0.494	0.000	0.276	0.000
Feb 2016	4.768	0.000	0.000	0.000	0.000	4.768	0.000	0.230	0.327	0.000	0.280	0.000
Mar 2016	13.662	0.000	0.000	0.000	0.000	13.662	0.000	0.000	0.316	0.000	0.232	0.000
Apr 2016	21.282	0.000	0.000	0.000	0.000	21.282	0.000	0.167	0.674	4.000	0.378	0.000
May 2016	28.466	0.000	0.000	0.000	0.000	28.466	0.000	0.072	0.580	0.000	0.315	0.000
Jun 2016	29.018	0.000	0.000	0.000	0.000	29.018	0.000	0.045	1.480	3.360	0.292	0.000
Jul 2016	3.727	0.000	0.000	0.000	0.000	3.727	0.000	0.045	0.860	0.000	0.347	0.000
Aug 2016	0.197	0.000	0.000	0.000	0.000	0.197	0.000	0.140	1.648	0.000	0.382	0.000
Sep 2016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.122	0.680	0.000	0.443	0.000
Oct 2016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.144	0.575	0.000	0.435	0.000
Sub-total	129.184	0.000	0.000	0.000	0.000	129.184	0.000	1.820	7.634	7.360	3.380	0.000
Total	942.267	0.000	0.605	2.865	0.064	938.732	12.800	4.711	45.100	17.043	10.706	6.804

Notes:

- 1 The performance targets are given below:
 - All excavated materials to be sorted for recovering the inert portion of C&D materials, e.g. hard rocks, soil and broken concrete, for reuse on the Site or disposal to designated outlets;
 - All metallic waste to be recovered for collection by recycling contractors;
 - All cardboard and paper packaging (for plant, equipment and materials) to be recovered, properly stockpiled in dry and covered condition to prevent cross contamination;
 - All chemical wastes to be collected and properly disposed of by specialist contractors; and
 - All demolition debris to be stored to recover broken concrete, reinforcement bars, mechanical and electrical fittings, hardware as well as other fitting / materials that have established recycling outlets.
- 2 Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- 3 Broken concrete for recycling into aggregates.
- 4 The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- 5 Density Assumption: 1.6(kg/l) for Public Fill and 0.9(kg/l) for General Refuse
- 6 Inert C&D Material was delivered to contract 1108A from 10-Dec-2012.
- 7 The quantity of paper/ cardboard packaging generated in January 2013 was updated by the Contractor in March 2013.
- 8 The quantity of general refuse generated in January 2013 was updated by the Contractor in March 2013.
- 9 The quantity of general refuse generated in March 2013 was updated by the Contractor in April 2013.
- 10 Chemical waste includes waste oil. It is assumed density of waste oil to be 0.8 kg/L.
- 11 The quantity of chemical waste generated in June 2013 was updated by the Contractor in August 2013.

Annex L

Details of Complaint Findings

Details of Complaint Findings

Project	SCL 1109
Date of Complaint	17 October 2016
EPD Reference No	16-26469
Date of Notification	25 October 2016
Description of the Complaint	A complaint was referred by EPD through above letter reference regarding loud noise from concreting work was affecting the complainant at 14 October 2016 night. The construction work should fulfill the requirement of related legislations.
Action/Limit Levels	Since a complaint was received from EPD, the Action Level was triggered.
Possible reason	Concreting works and associated works in vicinity of To Kwa Wan works area within Kai Tak Development Area.
Work details	The work activities of the Project included construction of To Kwa Wan Station.
Actions taken/ to be taken	The following actions have been taken: <ol style="list-style-type: none">1. All the works were proceeded according to the conditions and mitigation measures stipulated on current CNP (GW-RE0632-16)2. Concreting works schedule was adjusted to minimise any adverse noise impact.3. Equipment was placed as far as possible from noise sensitive receivers.4. No construction works were conducted during 23:00 to 07:00 hours.
Remarks	-

Annex M

Environmental Complaint,
Environmental Summon
and Prosecution Log

Annex M Environmental Complaint, Environmental Summon and Prosecution Log

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

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



Reporting Month	Number of Complaints in Reporting Month	Number of Summons/Prosecutions in Reporting Month
July 2016	0	0
August 2016	0	0
September 2016	0	0
October 2016	1	0
Overall Total	30	0

Appendix B

**46th EM&A Report for Works Contract 1111 –
Hung Hom North Approach Tunnel**

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
October 2016**

[November 2016]

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Version: 0

Date: 10 November 2016

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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 October 2016. As informed by the Contractor, major activities in the reporting period were:

Hung Hom Area

- Fencing removal work,
- Erection of noise enclosure, manhole construction, pipe laying, cable trench, grouting works, cable laying, concreting works,
- Parapet modification works, bearing replacement,
- ELS & decking removal work, formwork erection, reinforcement fixing, backfill, road & drainage construction, steel mesh enclosure erection, excavation, pipe laying,
- Abutment wall construction, OB2 west bound reinstatement, stormwater drain installation,
- Tunnel /ELS dismantling, tunnel works, removal of ELS, drainage work,
- Reinstatement, road diversion, water main diversion,
- Scaffolding platform erection, dismantling of scaffolding, construction of noise enclosure & steel truss, pre-split, lifting works, deck excavation, temporary working platform, ELS removal, rock breaking, rock cutting

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

- Erection of noise enclosure, manhole construction, pipe laying, cable trench, grouting works, cable laying, concreting works,
- Parapet modification works, bearing replacement,
- ELS & decking removal work, formwork erection, reinforcement fixing, backfill, road & drainage construction, steel mesh enclosure erection, excavation, pipe laying,
- Abutment wall construction, OB2 west bound reinstatement, stormwater drain installation,
- Tunnel /ELS dismantling, tunnel works, removal of ELS, drainage work,
- Reinstatement, road diversion, steel deck dismantling,
- Scaffolding platform erection, dismantling of scaffolding, construction of noise enclosure & steel truss, pre-split, lifting works, deck excavation, temporary working platform, ELS removal, rock breaking, rock cutting

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 forty sixth monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period from 1 to 31 October 2016.

1.2 Report Structure

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

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

2 PROJECT INFORMATION

2.1 Background

- 2.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH); and (ii) The North-South Corridor which is an extension of the East Rail Line (EAL) at Hung Hom across the harbour to Admiralty Station (ADM).
- 2.1.2 The Environmental Impact Assessment (EIA) Reports for SCL – Tai Wai to Hung Hom Section [SCL (TAW-HUH)] (Register No.: AEIAR-167/2012), SCL – Mong Kok East to Hung Hom Section [SCL (MKK-HUH)] (Register No.: AEIAR-165/2012) and SCL - Stabling Sidings at Hung Hom Freight Yard [SCL (HHS)] (Register No.: AEIAR-164/2012) were approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Reports, two Environmental Permits (EPs) were granted on 22 March 2012, one covers SCL (TAW-HUH) and SCL (HHS)(EP No: EP-438/2012) and the other covers SCL (MKK-HUH) and SCL (HHS) (EP No.: EP-437/2012), for their construction and operation. Variations of environmental permit (VEP) was subsequently applied for EP-438/2012 and the latest Environmental Permit (EP No: EP-438/2012/J) was issued by Director of Environmental Protection (DEP) on 29 February 2016.
- 2.1.3 The construction of the SCL is divided into different civil construction works contracts and Works Contract 1111 – Hung Hom North Approach Tunnels (hereafter referred to as “the Project”) covers construction activities at Mong Kok Freight Terminal and part of the construction activities located at Hung Hom under the two EPs.

2.2 Site Description

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

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

2.3 Construction Programme and Activities

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

Hung Hom Area

- Fencing removal work,
- Erection of noise enclosure, manhole construction, pipe laying, cable trench, grouting works, cable laying, concreting works,
- Parapet modification works, bearing replacement,
- ELS & decking removal work, formwork erection, reinforcement fixing, backfill, road & drainage construction, steel mesh enclosure erection, excavation, pipe laying,
- Abutment wall construction, OB2 west bound reinstatement, stormwater drain installation,
- Tunnel /ELS dismantling, tunnel works, removal of ELS, drainage work,
- Reinstatement, road diversion, water main diversion,
- Scaffolding platform erection, dismantling of scaffolding, construction of noise enclosure & steel truss, pre-split, lifting works, deck excavation, temporary working platform, ELS removal, rock breaking, rock cutting

- 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
GKSCJKV	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/J	29 Feb 2016	-	Valid	-
Construction Noise Permit				
GW-RE0534-16	27-May-16	26-Nov-16	Valid	For Foul Water Diversion Works at EWL7
GW-RE0586-16	22-Jun-16	21-Dec-16	Valid	CNP for General Works at NSL 9
GW-RE0591-16	13-Jul-16	12-Jan-17	Valid	CNP for Dewatering System at EWL 7
GW-RE0610-16	29-Jul-16	28-Oct-16	Valid	CNP for Hoarding Erection at NSL 3-6
GW-RE0671-16	6-Jul-16	5-Jan-17	Valid	CNP for General Works at EWL 9
GW-RE0673-16	8-Aug-16	7-Feb-17	Valid	CNP for General Works for steel decking at EWL8
GW-RE0647-16	2-Aug-16	1-Feb-17	Valid	CNP for General Works at NSL 7- 8
GW-RE0653-16	1-Aug-16	30-Oct-16	Valid	CNP for 6m Hoarding and Scaffolding Platform Modification Works at NSL 9 & Oi Sen Path
GW-RE0662-16	19-Jul-16	18-Jan-17	Valid	CNP for Dewatering and welding at HMT (for Towngas pipe to NSL6)
GW-RE0664-16	27-Jul-16	26-Jan-17	Valid	CNP for Dewatering and welding at NSL6
GW-RE0661-16	28-Jul-16	27-Jan-17	Valid	CNP for General and Re-provisioning Works at Hung Hom Station
GW-RE0674-16	12-Aug-16	11-Feb-17	Valid	CNP for General Work at Oi Sen Path and Ho Man Tin Siding
GW-RE0730-16	11-Sep-16	9-Mar-17	Valid	CNP for Dewatering and welding at HMT (for power cable duct to NSL9)
GW-RE0734-16	15-Sep-16	14-Mar-17	Valid	CNP for General Work at NSL 3 - 6
GW-RE0919-16	20-Sep-16	18-Dec-16	Valid	CNP for Scaffolding and 2.4m Hoarding Modification Works at Ho Man Tin and Oi Sen Path
GW-RE0936-16	26-Sep-16	31-Dec-16	Valid	CNP for OB1 & OB2 Maintenance Work at Chatham Rd North
GW-RE0942-16	28-Sep-16	27-Oct-16	Valid until superseded by GW-RE1034-16 on 27-Oct-16	CNP for Parapet Modification Work at Hung Hom Bypass
GW-RE0943-16	28-Sep-16	30-Nov-16	Valid	CNP for Noise Enclosure and Steel Platform Erection Work at Oi Sen Path
GW-RE1034-16	27-Oct-16	10-Dec-16	Valid	CNP for Parapet Modification Work at Hung Hom Bypass

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Wastewater Discharge License				
WT00015644-2013	16-Apr-13	30-Apr-18	Valid	For MTR Ho Man Tin Sidings
WT00016090-2013	14-Jun-13	30-Jun-18	Valid	For alongside On Wan Road, MTR Hung Hom Station
WT00016108-2013	14-Jun-13	30-Jun-18	Valid	For Hong Chong Park and Slip road from Chatham Road North and underneath
WT00016435-2013	23-Jul-13	31-Jul-18	Valid	For Hong Chong Slip Rd and Slip Rd at Princess Margaret Road Link & Chatham Road North
WT00018688-2014	14-Apr-14	30-Apr-19	Valid	For inside Hung Hom Freight Terminal at Cheong Tung Road
WT00019068-2014	25-Jun-14	30-Jun-19	Valid	For Oi Sen Path
WT00019895-2014	24-Sep-14	30-Sep-19	Valid	For near Hong Chong Road, Hung Hom at MTRC Ho Man Tin Sidings
WT00020525-2014	30 Dec 2014	31 Dec 2019	Valid	For Chatham Road North
WT00020727-2015	6 Feb 2015	28 Feb 2020	Valid	For Chatham Road North above the railway
WT00020759-2015	15-May-13	31-May-18	Valid	For near Chatham Road North
WT00022080-2015	13-Aug-15	31-Aug-20	Valid	For near Chatham Road North, EWL 9
WT00022793-2015	23-Nov-15	31-Jul-18	Valid	For Winslow Street Slope (near Wa Fung Street)
WT00022802-2015	23-Nov-15	28-Feb-18	Valid	For near Winslow Street
Chemical Waste Producer Registration				
5213-641-G2618-01	22-Mar-13	End of Project	Valid	For Winslow Street Playground Works
5213-641-G2618-03	8-Apr-13	End of Project	Valid	For Hung Hom Station Works
5213-213-G2618-06	16-Apr-13	End of Project	Valid	For Ho Man Tin Sidings Works
5213-236-G2618-10	14-Jun-13	End of Project	Valid	For Chatham Road North - Hong Chong Road Works
5213-236-G2618-11	27-May-13	End of Project	Valid	For Chatham Road North- NSL8 & EWL8 Works
5213-213-G2618-12	14-Apr-14	End of Project	Valid	For Hung Hom Freight Terminal - NSL 3-5 Works
5213-236-G2618-14	8-May-14	End of Project	Valid	For Oi Sen Path Works
5213-236-G2618-15	9-Feb-15	End of Project	Valid	For NSL7 & EWL7 Works
5213-236-G2618-16	3-Aug-15	End of Project	Valid	For EWL9 Works
Billing Account for Construction Waste Disposal				
7016658	24 Jan 2013	End of Project	Account Active	
Notification Under Air Pollution Control (Construction Dust) Regulation				
353991	02 Jan 2013	18 Apr 2018	Notified	
Clinical Waste Producer Premises Code				
PC01/RE/00362644	30 Jan 2014	End of Project	Valid	For Hung Hom Freight Yard Works

3 ENVIRONMENTAL MONITORING REQUIREMENTS

3.1 Construction Dust Monitoring

Monitoring Requirements

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

Monitoring Equipment

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

Table 3.1 Air Quality Monitoring Equipment

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

Monitoring Locations

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

Table 3.2 Locations of Construction Dust Monitoring Stations

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

Note:

- (1) Permission of access could not be obtained from Wing Fung Building (originally proposed in the approved EM&A Manuals) and hence the monitoring location was relocated to No. 234-248 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 $\pm 2.5\%$ deviation over 24-hour sampling period.
- (b) Preparation of Filter Papers
- (i) Glass fibre filters, G810 were labelled and sufficient filters that were clean and without pinholes were selected.
 - (ii) All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was < 50% and not variable by more than $\pm 5\%$. A convenient working RH was 40%.
 - (iii) All filter papers were prepared and analysed by ALS Technichem (HK) Pty Ltd., which is a HOKLAS accredited laboratory and has comprehensive quality assurance and quality control programmes.
- (c) Field Monitoring
- (i) The power supply was checked to ensure the HVS works properly.
 - (ii) The filter holder and the area surrounding the filter were cleaned.
 - (iii) The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
 - (iv) The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
 - (v) The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied was sufficient to avoid air leakage at the edges.
 - (vi) Then the shelter lid was closed and was secured with the aluminium strip.
 - (vii) The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
 - (viii) A new flow rate record sheet was set into the flow recorder.
 - (ix) On site temperature and atmospheric pressure readings were taken and the flow rate of the HVS was checked and adjusted at around 1.3 m³/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m³/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 October 2016 is provided in **Appendix F**.

3.2 Regular Construction Noise Monitoring

Monitoring Requirements

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

Table 3.4 Noise Monitoring Parameters, Frequency and Duration

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

Monitoring Equipment

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

Table 3.5 Noise Monitoring Equipment for Regular Noise Monitoring

Equipment	Brand and Model
Integrated Sound Level Meter	B&K (Model No. 2238 (S/N: 2800927), B&K (Model No. 2250-L (S/N: 2681366), B&K (Model No. 2270 (S/N: 2644597),
Acoustic Calibrator	B&K (Model No. 4231 (S/N: 3006428))

Monitoring Locations

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

Table 3.6 Locations of Regular Construction Noise Monitoring Stations

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

Note:

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

Monitoring Methodology

3.2.4 Monitoring Procedure

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

3.2.5 Maintenance and Calibration

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

Monitoring Schedule for the Reporting Month

- 3.2.6 The schedule for environmental monitoring in October 2016 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/J (Condition 2.10), continuous noise monitoring should be conducted at the NSRs as identified by the Construction Noise Mitigation Measures Plan (CNMMP) to have residual air-borne noise impacts. A CNMMP and Continuous Noise Monitoring Plan (CNMP) were submitted to EPD on 20 January 2014.

Monitoring Locations

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

Table 3.7 Summary of Proposed Continuous Noise Monitoring Location

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

Note:

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

Monitoring Equipment

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

Table 3.8 Noise Monitoring Equipment for Continuous Noise Monitoring

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

Monitoring Parameters, Frequency and Duration

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

Monitoring Methodology

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

Event and Action Plan

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

Table 3.9 Summary of Proposed Continuous Noise Monitoring Programme

Monitoring Location	NSR Description	Action/Limit Level, dB(A)	Measurement Period
NM1	Carmel Secondary School (South Block)	68 ⁽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/J)	Monthly EM&A Report for September 2016	14 October 2016

5 MONITORING RESULTS

5.1 Construction Dust Monitoring

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

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

ID	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
AM1	53.0	23.4 – 84.0	183.9	260

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

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

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

5.2 Regular Construction Noise Monitoring

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

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

ID	Range, dB(A), L_{eq} (30 mins)	Limit Level, dB(A), L_{eq} (30 mins)
NM 1 ⁽²⁾	<Baseline – 66.2	70 (65) ⁽¹⁾
NM 2 ⁽²⁾	<Baseline	75

Note:

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

(2) Baseline correction will be made to the measured L_{eq} when the measured noise level exceeded the corresponding baseline noise level and presented in the table. No correction was made to NM2 as all measured noise levels were below the baseline noise level.

5.2.2 No noise complaint was received in the reporting month 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, 199m³ of inert C&D material was generated. 71m³ and 16m³ were disposed as public fills at TKO137 and TM38 respectively. 112m³ of public fills was delivered to Hung Hom Barging Point and handled by other project. No public fills was reused in the Contract. While 103,050kg of general refuse was disposed at NENT landfill in the reporting month. No paper/cardboard packaging material, 3kg of metals and 3kg of plastic were collected by recycling contractor in the reporting month. No Type 1 marine dumping was delivered to Hung Hom Barging Point. No chemical waste was collected by licensed contractor in the reporting period. The waste flow table is annexed in **Appendix K**.
- 5.4.3 The Contractor is advised to properly maintain on site C&D materials and wastes collection, sorting and recording system and maximize reuse / recycle of C&D materials and wastes. The Contractor is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.
- 5.4.4 The Contractor is reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

5.5 Landscape and Visual

- 5.5.1 Bi-weekly inspection of the implementation of landscape and visual mitigation measures were conducted on 13 and 27 October 2016. 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 October 2016. The one held on 13 October 2016 was a joint inspection with the IEC, ER, the Contractor and the ET. No EPD site visit was conducted in 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	N/A	N/A	N/A
Air Quality	13 October 2016	<ul style="list-style-type: none"> The Contractor was reminded to provide spraying or impervious sheeting coverage to open stockpile for dust suppression at EWL7. (Reminder) 	The item was rectified by the Contractor on 20 October 2016.
		<ul style="list-style-type: none"> The Contractor was reminded to provide sufficient water spraying to exposed area for dust suppression at NSL4. (Reminder) 	The item was rectified by the Contractor on 20 October 2016.
	27 October 2016	<ul style="list-style-type: none"> The Contractor was reminded to provide sufficient water spraying for dust suppression to haul roads at NSL4 and EWL9. (Reminder) 	The item will be followed-up in the next reporting month.
Noise	N/A	N/A	N/A
Waste/ Chemical Management	29 September 2016	<ul style="list-style-type: none"> Oil stain was observed on ground and metal plate at OSP. The Contractor shall remove the oil stain properly and dispose of as chemical waste. 	The item was rectified by the Contractor on 6 October 2016.
	6 October 2016	<ul style="list-style-type: none"> Stagnant oil mixture was observed in a drip tray at EWL9 containing a generator. The Contractor shall remove the oil mixture properly and dispose of as chemical waste. 	The item was rectified by the Contractor on 13 October 2016.
		<ul style="list-style-type: none"> Oil drum and chemical containers were observed placed on ground without secondary container at EWL9 and NSL9. The Contractor shall provide drip tray to the chemical to prevent chemical leakage. 	The item was rectified by the Contractor on 13 October 2016.
	13 October 2016	<ul style="list-style-type: none"> Chemical containers were observed on ground without secondary container at NSL7 & EWL8. The Contractor shall provide drip tray to the chemical to prevent chemical leakage. 	The item was rectified by the Contractor on 20 October 2016.
		<ul style="list-style-type: none"> Oil mixture was observed in drip tray containing oil drum at EWL9. The Contractor shall remove the oil mixture and dispose of as chemical waste. 	The item was rectified by the Contractor on 20 October 2016.
		<ul style="list-style-type: none"> The Contractor was reminded to remove construction waste regularly at EWL9. (Reminder) 	The item was rectified by the Contractor on 20 October 2016.
20 October 2016	<ul style="list-style-type: none"> A drain hole was observed to be unplugged at a drip tray of a generator at EWL8. The Contractor was reminded to plug up the drain hole. 	The item was rectified by the Contractor on 26 October 2016.	

Parameters	Date	Observations and Recommendations	Follow up
Landscape & Visual	N/A	N/A	N/A
Permits/ Licenses	N/A	N/A	N/A

- 6.1.3 Most of the follow-up actions requested by Contractor's ET and IEC during the site inspection were undertaken as reported by the Contractor and confirmed into the following weekly site inspection conducted during the reporting period. Some outstanding follow-up actions will be reported in the next reporting period.
- 6.1.4 The items of which their inspection for follow-up actions were outstanding as recorded in the last reporting month have already been rectified by the Contractor as confirmed by the ET during the reporting period.

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 Summary of Monitoring Exceedances

- 7.1.1 All 24-hour TSP results were below the Action and Limit level at all monitoring locations in the reporting month.
- 7.1.2 No noise complaint during 0700 to 1900 hours on normal weekdays was received in the reporting month; hence, no Action Level exceedance was recorded.
- 7.1.3 No Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.
- 7.1.4 As the construction works that have been identified by the CNMMP to be potentially causing exceedance of noise criteria have not commenced during this reporting month, no continuous noise monitoring was carried out.

7.2 Summary of Environmental Non-Compliance

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

7.3 Summary of Environmental Complaints

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

7.4 Summary of Environmental Summon and Successful Prosecutions

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

8 FUTURE KEY ISSUES

8.1 Construction Programme for the Project

Construction Programme for the Next Two Month

8.1.1 The major construction works in November 2016 and December 2016 will be:

Hung Hom Area

- Erection of noise enclosure, manhole construction, pipe laying, cable trench, grouting works, cable laying, concreting works,
- Parapet modification works, bearing replacement,
- ELS & decking removal work, formwork erection, reinforcement fixing, backfill, road & drainage construction, steel mesh enclosure erection, excavation, pipe laying,
- Abutment wall construction, OB2 west bound reinstatement, stormwater drain installation,
- Tunnel /ELS dismantling, tunnel works, removal of ELS, drainage work,
- Reinstatement, road diversion, steel deck dismantling,
- Scaffolding platform erection, dismantling of scaffolding, construction of noise enclosure & steel truss, pre-split, lifting works, deck excavation, temporary working platform, ELS removal, rock breaking, rock cutting

8.2 Key Issues for the Coming Month

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

8.3 Monitoring Schedule for the Next Two Month

8.3.1 The tentative schedule for environmental monitoring in November 2016 and December 2016 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 October 2016. 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

- No specific observation was identified in the reporting month.

Chemical/ Waste Management

- Provide proper chemical and waste management.

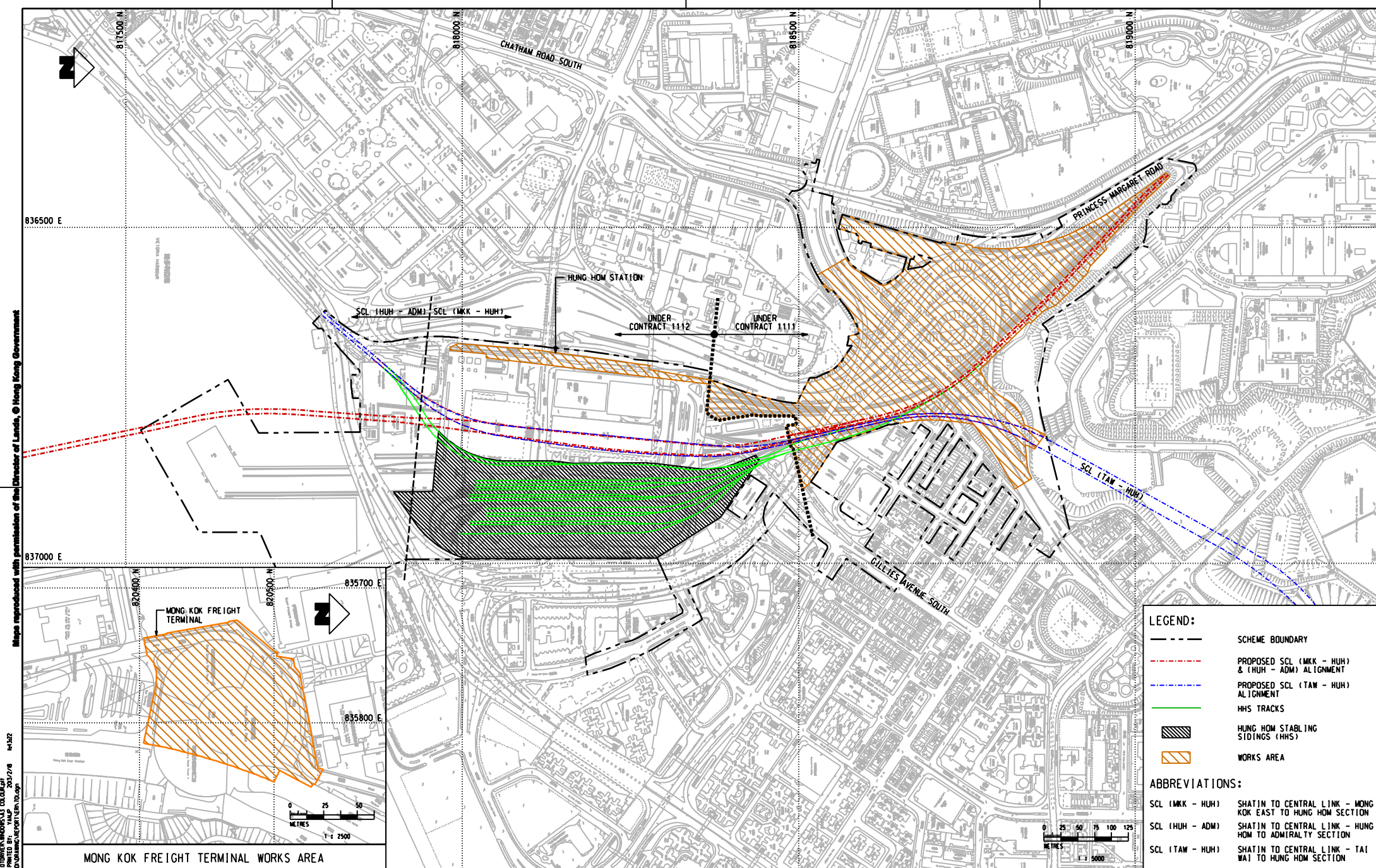
Landscape and Visual Impact

- No specific observation was identified in the reporting month.

Permits/Licenses

- No specific observation was identified in the reporting month.

FIGURES



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PLOT DATE: 15/01/2013
 FILE NAME: P:\PROJECTS\2012\20120204\MK-KO\1111\1111_01.dgn
 NO. 1111

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

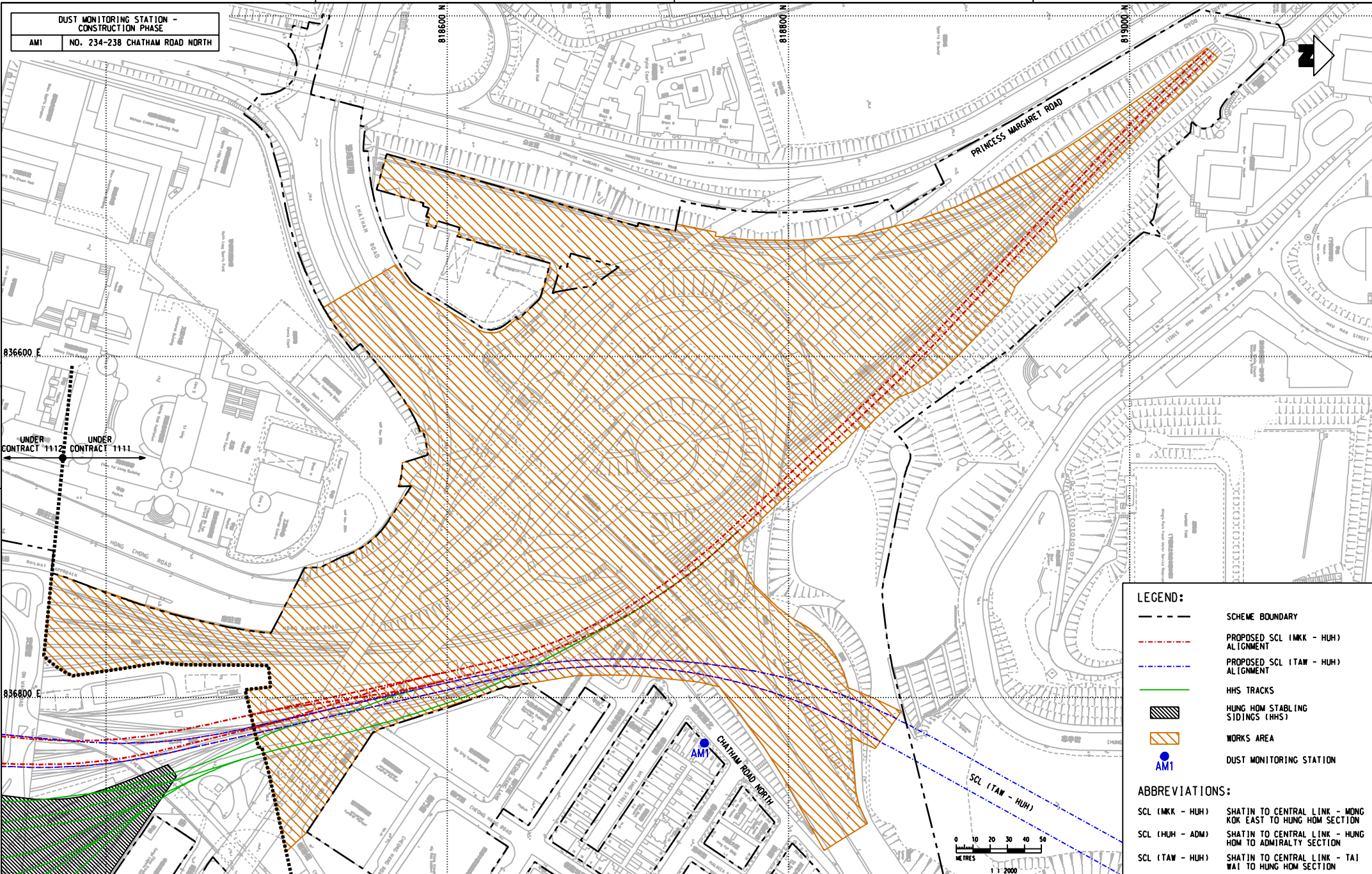
MONG KOK FREIGHT TERMINAL WORKS AREA

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

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PLOT DATA: PLOT NO. 14/6, CHATHAM ROAD NORTH, HONG KONG
 FILE NAME: M4C48



LEGEND:

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

ABBREVIATIONS:

- SCL (MKK - HUH) SHATIN TO CENTRAL LINK - MONG KOK EAST TO HUNG HOM SECTION
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REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

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

SCALE: 1 : 2000 (A3)
 FIGURE NO.: **FIGURE 2.1**

APPENDIX A

Construction Programme

Activity Description	Start	Finish	2013												2014												2015												2016												2017																
			D	J	F	M	A	M	J	J	A	S	O	N	D	D	J	F	M	A	M	J	J	A	S	O	N	D	D	J	F	M	A	M	J	J	A	S	O	N	D	D	J	F	M	A	M	J	J	A	S	O	N	D	D	J	F	M	A	M	J	J	A	S	O	N	D
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

APPENDIX C

**Implementation Schedule of Environmental Mitigation
Measures**

Appendix C - Implementation Schedule of Environmental Mitigation Measures

EIA Ref.	Environmental Mitigation Measures	Location	Implementation Status	
Landscape and Visual Impact				
S6.9.3 (TAW-HUH) , S6.12 (HHS), S6.12 (TAW-HUH), Table 6.9 (HHS) & Table 4.9 (MKK-HUH)	Minimize visual & landscape impact	<ul style="list-style-type: none"> Existing topsoil shall be re-used where possible for new planting areas within the Project. 	All construction sites	N/A
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> Compensatory tree & shrub planting shall be provided to compensate for the loss of shrub planting in amenity areas. 	All construction sites	N/A
		<ul style="list-style-type: none"> Control of night-time lighting glare. 	All construction sites	N/A
		<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works. 	All construction sites	V
		<ul style="list-style-type: none"> Mobile plant should be sited as far away from NSRs as possible and practicable. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<p>The following quiet PME should be used:</p> <ul style="list-style-type: none"> Asphalt Paver (SWL=101dB(A)) Backhoe (SWL=106dB(A)) Backhoe with Hydraulic Breaker (SWL=110dB(A)) Concrete lorry mixer (SWL=96dB(A)) Concrete mixer truck (SWL=96dB(A)) Concrete Pump (SWL=106dB(A)) Concrete Pump Truck (SWL=106dB(A)) Crane, mobile (SWL=94dB(A)) Crawler Crane (SWL=102dB(A)) Drill, hand-held (SWL=98dB(A)) Dump truck (SWL=104dB(A)) Excavator (SWL=106dB(A)) Flat Bed Lorry (SWL=102dB(A)) Generator (SWL=95dB(A)) Giken Piler and Power-pack (SWL=94dB(A)) Hydraulic breaker (SWL=110dB(A)) 	Works areas where required	N/A

Construction Noise Impact				
		<ul style="list-style-type: none"> • 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)) 		
		<ul style="list-style-type: none"> • Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. 	All construction sites	√
		<ul style="list-style-type: none"> • Install movable noise barriers, acoustic mat or full enclosure, screen the noisy plants 	All construction sites	√
		<ul style="list-style-type: none"> • Sequencing operation of construction plants where practicable. 	All construction sites	√
		<ul style="list-style-type: none"> • Particularly noisy construction activities will be scheduled to avoid school examination period as far as practicable. 	Works areas near the Carmel Secondary School	√
/	To control construction airborne noise	<ul style="list-style-type: none"> • Hand held breakers having a mass of above 10 kg and air compressor capable of supplying compressed air at 500 kPa or above for carrying out construction work shall be fitted with valid noise emission labels during operation 	All construction sites	√

Construction Air Quality Impact				
S7.6.5 (TAW-HUH) , S7.6.6 (HHS), S5.50, 5.51 &5.57 (MKK-HUH)	Minimize dust impact at nearby sensitive receivers	<ul style="list-style-type: none"> Watering once per hour on exposed worksites and haul road should be conducted to achieve dust removal efficiencies of 91.7%. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> Vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building. 	All construction sites	V

Construction Air Quality Impact				
		<ul style="list-style-type: none"> Any skip hoist for material transport should be totally enclosed by impervious sheeting. 	All construction sites	N/A
		<ul style="list-style-type: none"> Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs. 	All construction sites	N/A
/	Minimize dust impact at nearby sensitive receivers	<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> Imposition of speed controls for vehicles on site haul roads. 	All construction sites	N/A
		<ul style="list-style-type: none"> Open burning shall be prohibited. 	All construction sites	V
/	Emission from Vehicles and Plants	<ul style="list-style-type: none"> All vehicles shall be shut down in intermittent use. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Construction Site Drainage should be implemented to control site run-off and drainage as well as any site effluents generated from the works areas, and to prevent run-off and construction wastes from entering nearby water environment. 	Site drainage system	V
		<ul style="list-style-type: none"> Surface run-off from construction sites should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sedimentation basins. 	Site drainage system	V
		<ul style="list-style-type: none"> Channels or earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. 	All works area	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly. 	All construction sites	V
		<ul style="list-style-type: none"> Construction works should be programmed to minimize soil excavation works in rainy seasons. 	All construction sites	N/A
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. 	All construction sites	V

Construction Water Quality Impact				
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> A cofferdam wall should be built as necessary to limit groundwater inflow to the excavation works areas. 	Excavation works areas	N/A
		<ul style="list-style-type: none"> Wastewater generated should not be discharged into the stormwater drainage system. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> Appropriate measures will be deployed to minimize the intrusion of groundwater into excavation works areas. 	All construction sites	N/A
		<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement. 	All construction sites	N/A
		<ul style="list-style-type: none"> Sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> Proper storage and site practices to minimize the potential for damage or contamination of construction materials. 	All construction sites	@
		<ul style="list-style-type: none"> Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste. 	All construction sites	N/A
		<ul style="list-style-type: none"> Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution. 	All construction sites	V
		<ul style="list-style-type: none"> Maintain and clean storage areas routinely. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> Waste should be removed in timely manner. 	All construction sites	V
		<ul style="list-style-type: none"> Waste collectors should only collect wastes prescribed by their permits. 	All construction sites	V
		<ul style="list-style-type: none"> Waste should be disposed of at licensed waste disposal facilities. 	All construction sites	V
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides. 	All construction sites	V
		<ul style="list-style-type: none"> The Contractor should register as a chemical waste producer if chemical wastes would be generated. 	All construction sites	V
<ul style="list-style-type: none"> Disposal of chemical waste should be via a licensed waste collector. 	All construction sites	V		

Waste Management				
		<ul style="list-style-type: none"> Stockpiling of contaminated sediments should be avoided as far as possible. 	All construction sites	N/A
		<ul style="list-style-type: none"> 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 of contamination during construction.	<ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 $\mu\text{g}/\text{m}^3$	260.0 $\mu\text{g}/\text{m}^3$

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

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

Note:

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

Table 3 Action and Limit Levels for Continuous Noise

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

Note:

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

APPENDIX E

Calibration Certificates of Equipments



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

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

CALCULATIONS

$$Vstd = \text{Diff. Vol} [(Pa - \text{Diff. Hg}) / 760] (298 / Ta)$$

$$Qstd = Vstd / \text{Time}$$

$$Va = \text{Diff Vol} [(Pa - \text{Diff Hg}) / Pa]$$

$$Qa = Va / \text{Time}$$

For subsequent flow rate calculations:

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

$$Qa = 1/m \{ [\text{SQRT} H2O (Ta/Pa)] - b \}$$

AECOM Asia Company Limited

TSP High Volume Sampler

Field Calibration Report

Station 234 - 238 Chatham Road North; SCL - DMS - 11 Operator: Shum Kam Yuen
 Cal. Date: 24-Aug-16 Next Due Date: 24-Oct-16
 Equipment No.: --- Serial No. 8259

Ambient Condition			
Temperature, Ta (K)	307	Pressure, Pa (mmHg)	752.8

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

Calibration of TSP Sampler					
Resistance Plate No.	Orifice			HVS Flow Recorder	
	DH (orifice), in. of water	[DH x (Pa/760) x (298/Ta)] ^{1/2}	Qstd (m ³ /min) X-axis	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) Y-axis
18	7.1	2.61	1.32	44.0	43.14
13	5.5	2.30	1.17	35.0	34.32
10	5.0	2.19	1.11	32.0	31.38
7	3.8	1.91	0.97	26.0	25.49
5	2.9	1.67	0.85	18.0	17.65

By Linear Regression of Y on X

Slope, mw = 52.4676 Intercept, bw = -26.5744

Correlation Coefficient* = 0.9954

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m³/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} = 42.46

Remarks: _____

QC Reviewer:  Signature:  Date: 25/8/2016

AECOM Asia Company Limited

TSP High Volume Sampler

Field Calibration Report

Station: 234 - 238 Chatham Road North; SCL - DMS - 11 Operator: Shum Kam Yuen
 Cal. Date: 24-Oct-16 Next Due Date: 24-Dec-16
 Equipment No.: --- Serial No. 8259

Ambient Condition			
Temperature, Ta (K)	307	Pressure, Pa (mmHg)	752.8

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

Calibration of TSP Sampler					
Resistance Plate No.	Orifice			HVS Flow Recorder	
	DH (orifice), in. of water	[DH x (Pa/760) x (298/Ta)] ^{1/2}	Qstd (m ³ /min) X-axis	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) Y-axis
18	7.1	2.61	1.32	43.0	42.16
13	5.4	2.28	1.16	34.0	33.34
10	5.0	2.19	1.11	31.0	30.40
7	4.0	1.96	1.00	25.0	24.51
5	3.0	1.70	0.87	18.0	17.65

By Linear Regression of Y on X

Slope, mw = 53.5656 Intercept, bw = -28.8585

Correlation Coefficient* = 0.9993

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m³/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} = 41.59

Remarks: _____

QC Reviewer: HK Signature: HK Date: 26/10/2016



CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0704 03-01 Page 1 of 2

Item tested

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

Item submitted by

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

Date of test: 07-Jul-2016

Reference equipment used in the calibration

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

Ambient conditions

Temperature: 22 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 5 hPa

Test specifications

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

Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory:

Huang Jian Min/Feng Jun Qi

Date: 09-Jul-2016

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA0704 03-01 Page 2 of 2

1, Electrical Tests

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

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	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	
		Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
		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	
		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	
		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:

Date:

Fung Chi Yip
07-Jul-2016

Checked by:

Date:

Lam Tze Wai
09-Jul-2016

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



CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0304 02 Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	Microphone	Preamp
Manufacturer:	B & K	B & K	B & K
Type/Model No.:	2250-L	4950	ZC0032
Serial/Equipment No.:	2681366	2879980	19428
Adaptors used:	- (N-04(1.01))	-	-

Item submitted by

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

Date of test: 05-Mar-2016

Reference equipment used in the calibration

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

Ambient conditions

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

Test specifications

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

Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory:

Huang Jian Min/Feng Jun Qi

Date: 08-Mar-2016

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA0304 02 Page 2 of 2

1, Electrical Tests

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

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

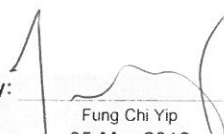

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

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: 	Checked by: 
Date: 05-Mar-2016	Date: 08-Mar-2016

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



CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0401 01 Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2270	,	4189
Serial/Equipment No.:	2644597	,	2933110
Adaptors used:	- (N.012.01)	,	-

Item submitted by

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

Date of test: 06-Apr-2016

Reference equipment used in the calibration

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

Ambient conditions

Temperature: 22 ± 1 °C
Relative humidity: 55 ± 10 %
Air pressure: 1005 ± 5 hPa

Test specifications

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

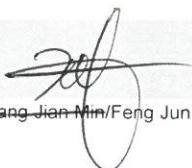
Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory:


Huang Jian Min/Feng Jun Qi

Date: 07-Apr-2016

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA0401 01 Page 2 of 2

1, Electrical Tests

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

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

2, Acoustic tests

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

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

3, Response to associated sound calibrator

N/A

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

- End -

Calibrated by:

Date:

Fung Chi Yip
06-Apr-2016

Checked by:

Date:

Lam Tze Wai
07-Apr-2016

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



CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0223 01

Page: 1 of 2

Item tested

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

N.004.03

Item submitted by

Customer: AECOM ASIA CO LIMITED
Address of Customer: -
Request No.: -
Date of receipt: 23-Feb-2016

Date of test: 25-Feb-2016

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	15-Apr-2016	SCL
Preamplifier	B&K 2673	2743150	22-Apr-2016	CEPREI
Measuring amplifier	B&K 2610	2346941	22-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI
Digital multi-meter	34401A	US36087050	17-Apr-2016	CEPREI
Audio analyzer	8903B	GB41300350	17-Apr-2016	CEPREI
Universal counter	53132A	MY40003662	16-Apr-2016	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 55 ± 10 %
Air pressure: 1010 ± 5 hPa

Test specifications

- 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.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- 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: 27-Feb-2016

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA0223 01 Page: 2 of 2

1, Measured Sound Pressure Level

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

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	(Output level in dB re 20 μ Pa)
			Estimated Expanded Uncertainty dB
1000	94.00	94.14	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 = 999.9 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 = 0.4 %

Estimated expanded uncertainty 0.7 %

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

- End -

Calibrated by:

Date:

Fung Chi Yip
25-Feb-2016

Checked by:

Date:

Lam Tze Wai
27-Feb-2016

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

APPENDIX F

EM&A Monitoring Schedules

**Shatin to Central Link Contract 1111 - Hung Hom North Approach Tunnels
Impact Monitoring Schedule for October 2016**

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

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 November 2016**

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

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

**Shatin to Central Link Contract 1111 - Hung Hom North Approach Tunnels
Tentative Impact Monitoring Schedule for December 2016**

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

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

APPENDIX G

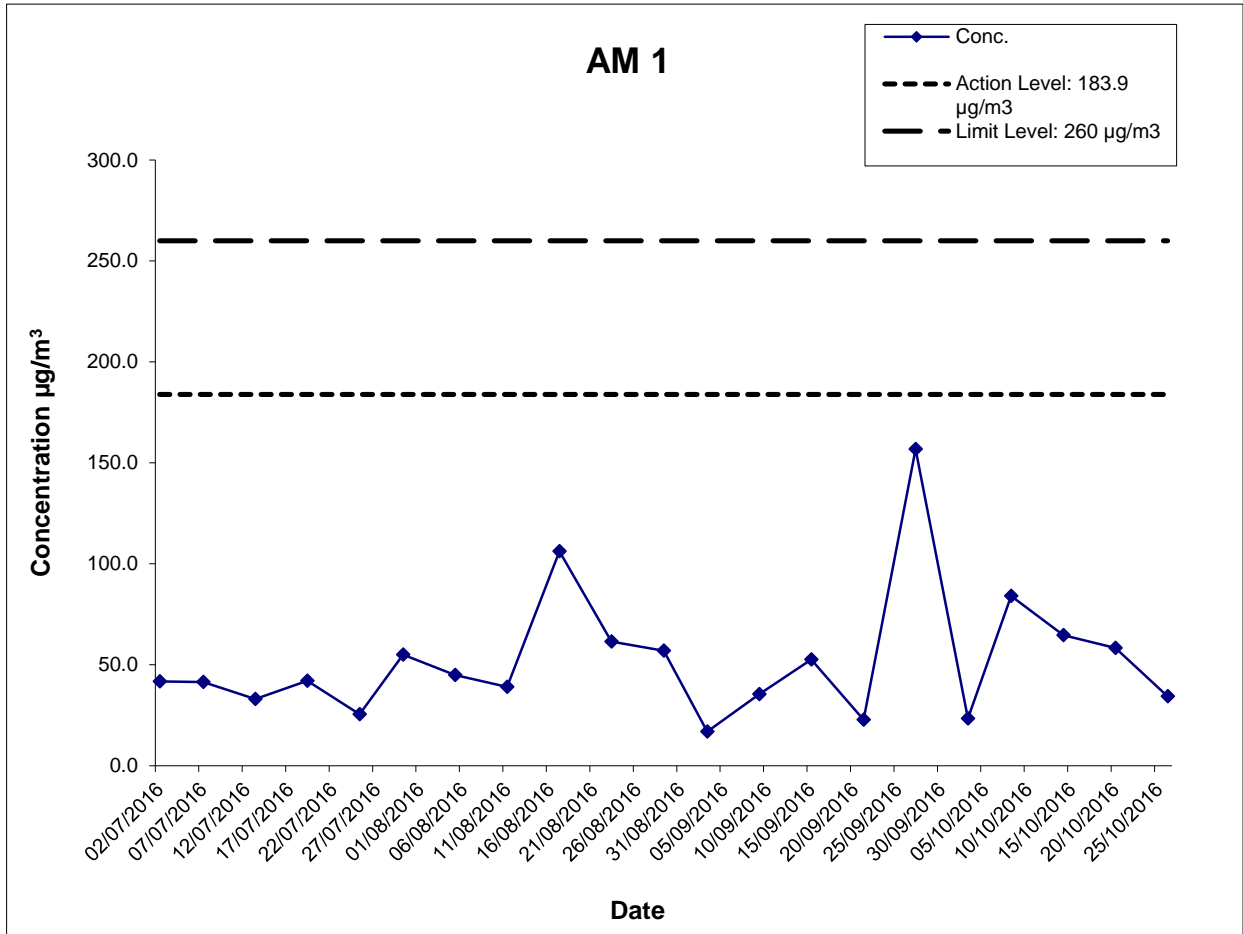
**Air Quality Monitoring Results and
their Graphical Presentations**


**Appendix G
Air Quality Monitoring Results**

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

Start		End		Weather	Air	Atmospheric	Flow Rate (m ³ /min.)		Av. flow	Total vol.	Filter Weight (g)		Particulate	Elapse Time		Sampling	Conc.
Date	Time	Date	Time	Condition	Temp. (°C)	Pressure (hPa)	Initial	Final	(m ³ /min)	(m ³)	Initial	Final	weight(g)	Initial	Final	Time(hrs.)	(µg/m ³)
3-Oct-16	0:00	4-Oct-16	0:00	Fine	27.5	1007.8	1.31	1.31	1.31	1890.7	2.8411	2.8854	0.0443	12500.04	12524.04	24.00	23.4
8-Oct-16	0:00	9-Oct-16	0:00	Fine	28.1	1006.8	1.31	1.31	1.31	1890.7	2.8217	2.9806	0.1589	12524.04	12548.04	24.00	84.0
14-Oct-16	0:00	15-Oct-16	0:00	Sunny	26.7	1013.2	1.31	1.31	1.31	1890.7	2.8106	2.9328	0.1222	12548.04	12572.04	24.00	64.6
20-Oct-16	0:00	21-Oct-16	0:00	Fine	27.3	1004.6	1.31	1.31	1.31	1890.7	2.8433	2.9537	0.1104	12572.04	12596.04	24.00	58.4
26-Oct-16	0:00	27-Oct-16	0:00	Sunny	27.1	1015.6	1.31	1.31	1.31	1890.7	2.8314	2.8963	0.0649	12596.04	12620.04	24.00	34.3
																Average	53.0
																Minimum	23.4
																Maximum	84.0

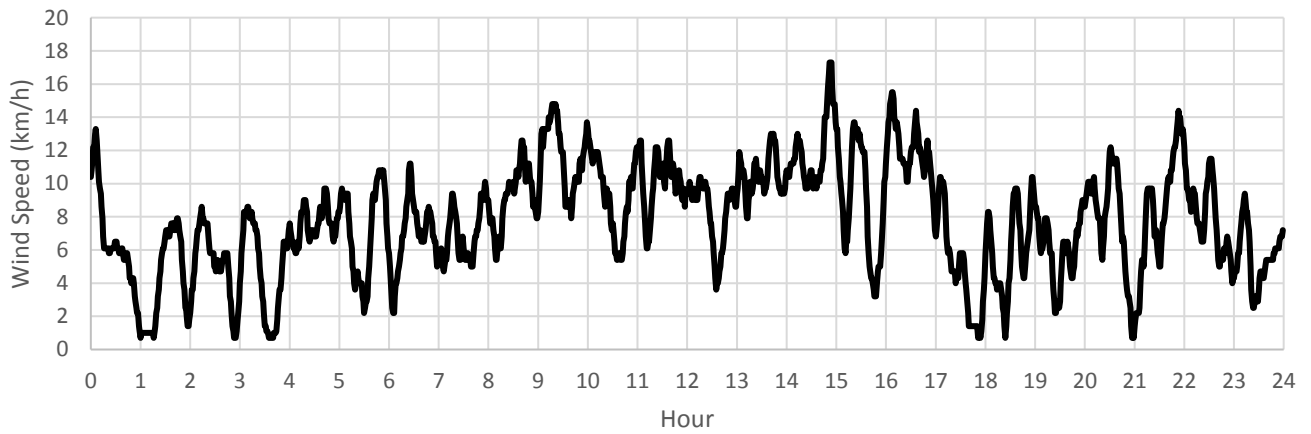
Appendix G Air Quality Monitoring Results



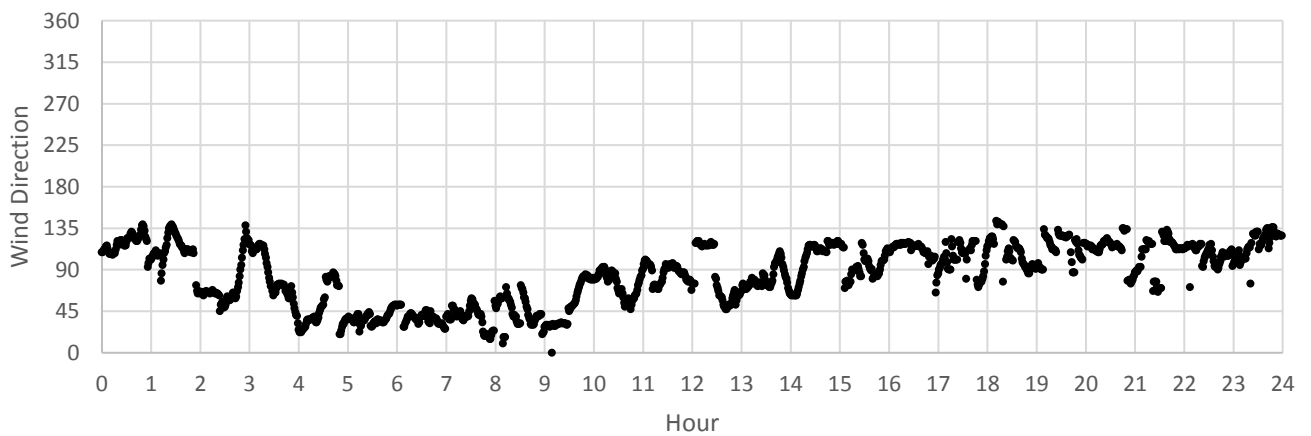
	Shatin to Central Link Works Contract 1111- Hung Hom North Approach Tunnels	SCALE	N.T.S.	DATE	Nov-16
	Graphical Presentations of Impact 24-hour TSP Monitoring Results	CHECK	TYUT	DRAWN	YIPLWO
		JOB NO.	60284101	APPENDIX No.	G

Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, October 2016

Wind Speed (3 October 2016)

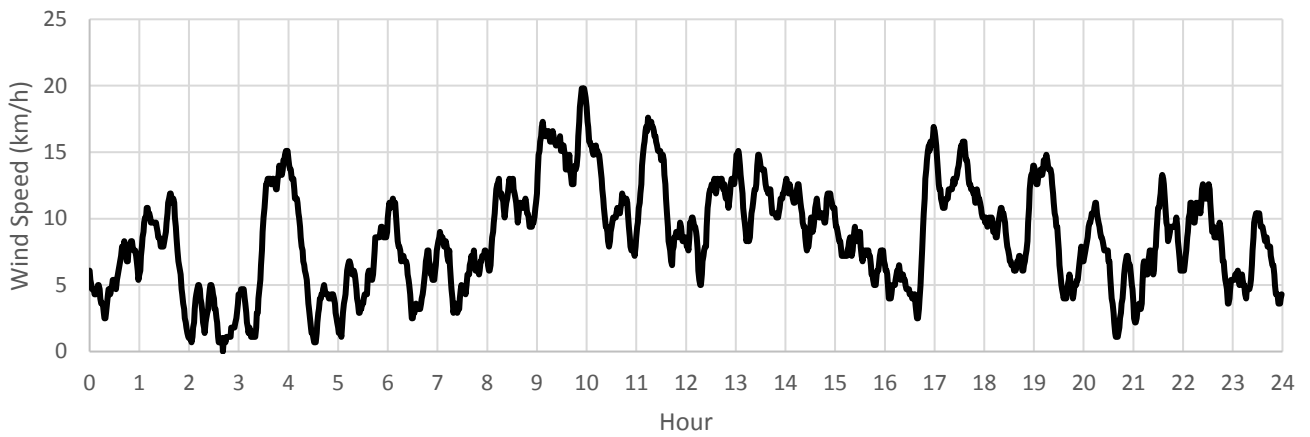


Wind Direction (3 October 2016)

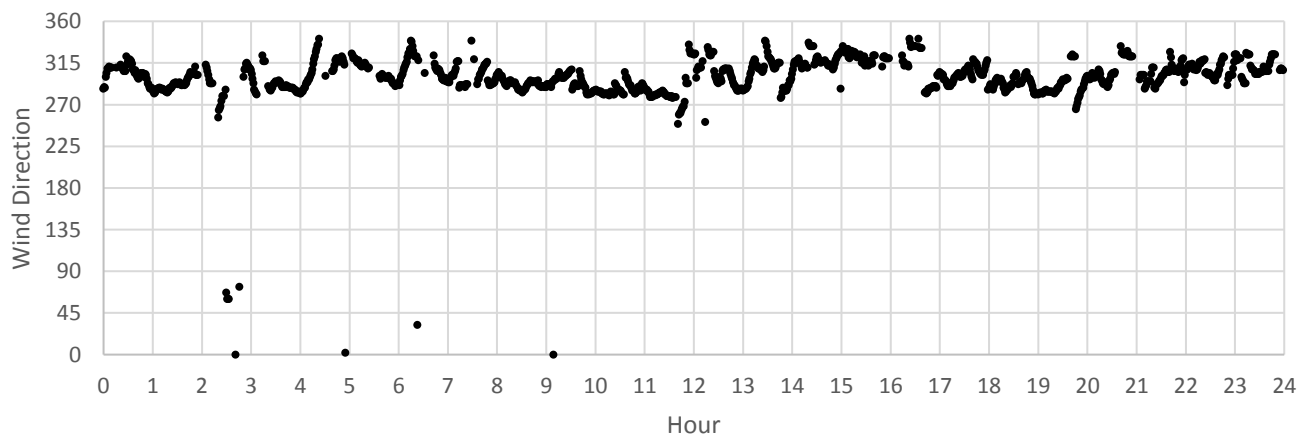


Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, October 2016

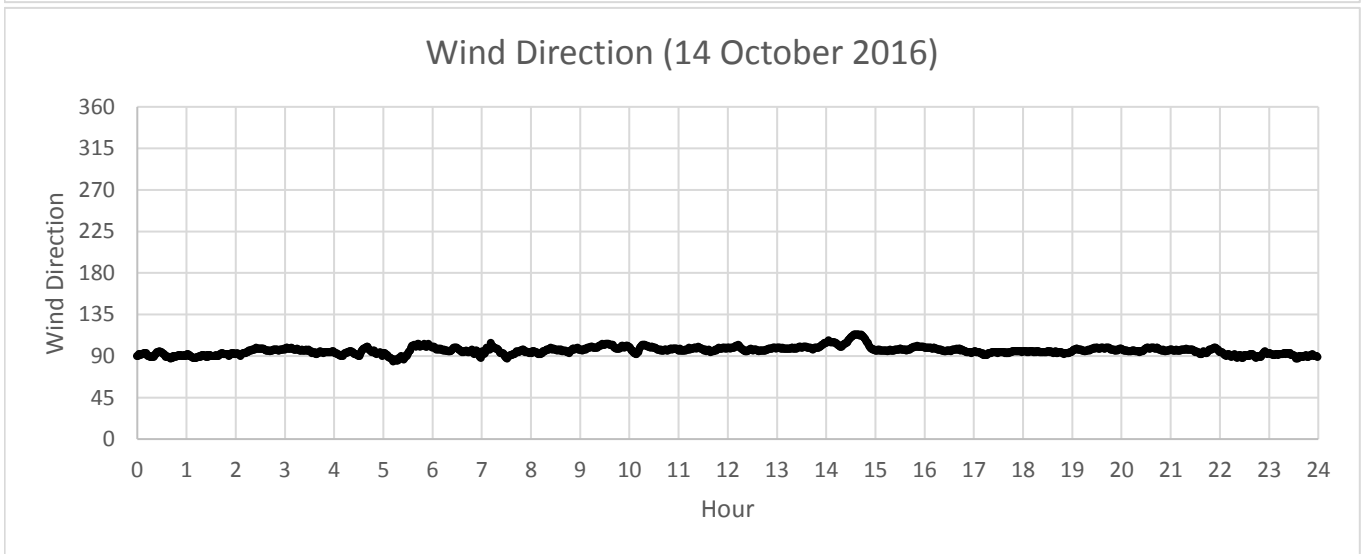
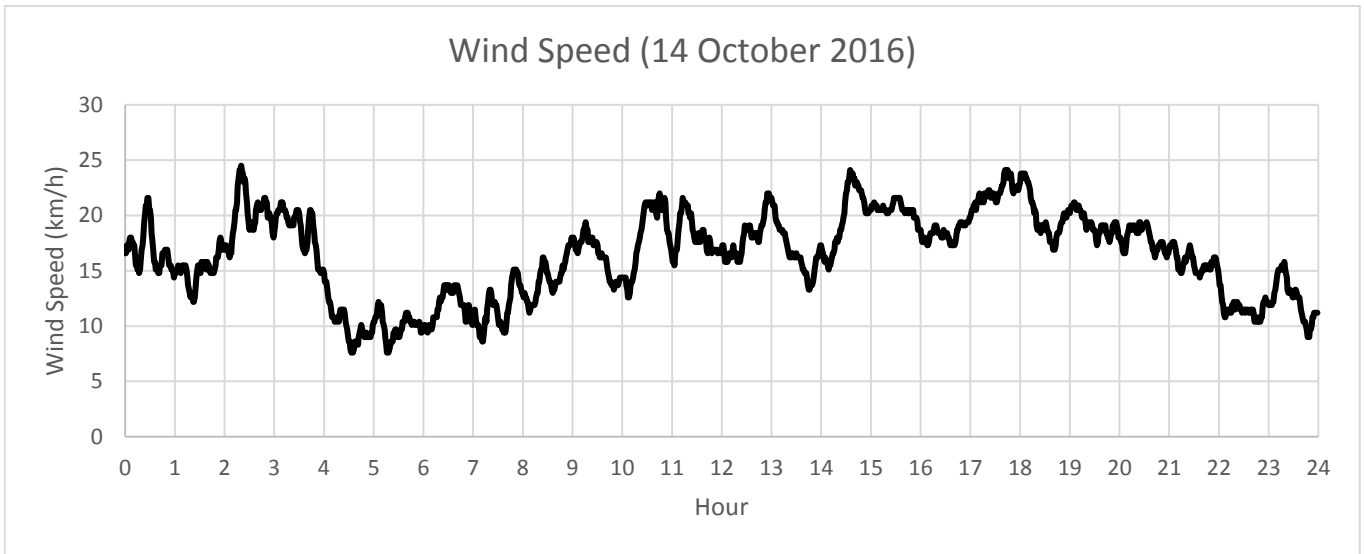
Wind Speed (8 October 2016)



Wind Direction (8 October 2016)

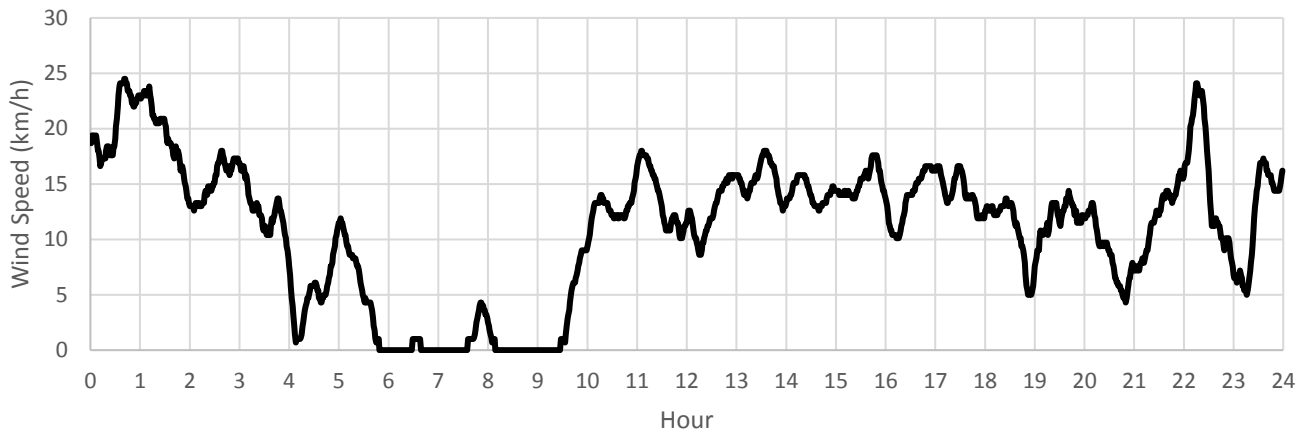


Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, October 2016

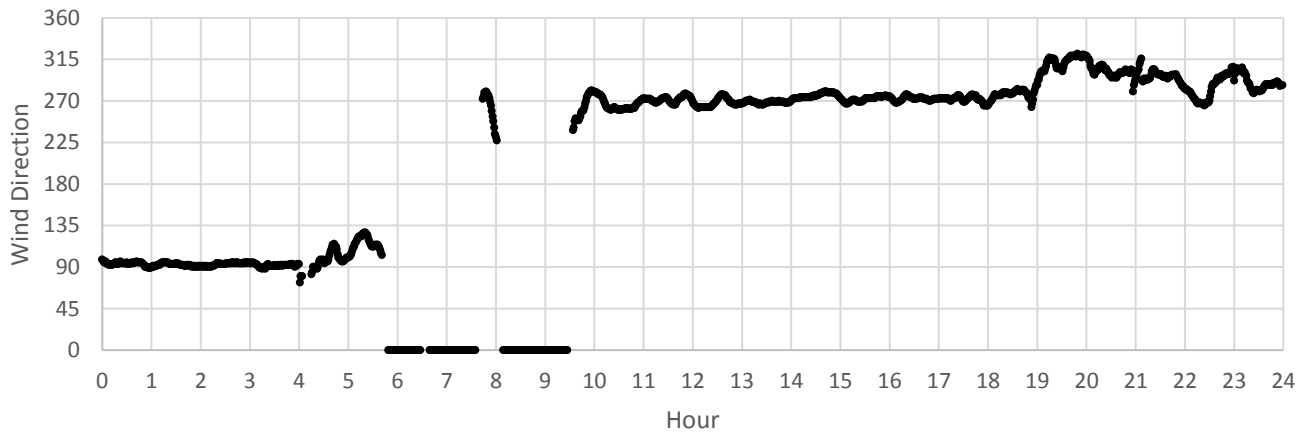


Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, October 2016

Wind Speed (20 October 2016)

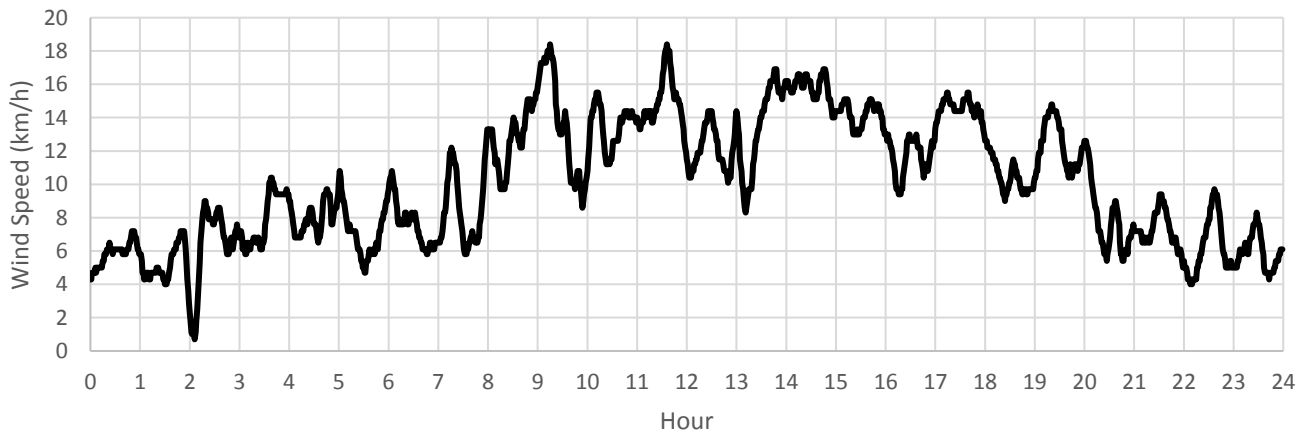


Wind Direction (20 October 2016)

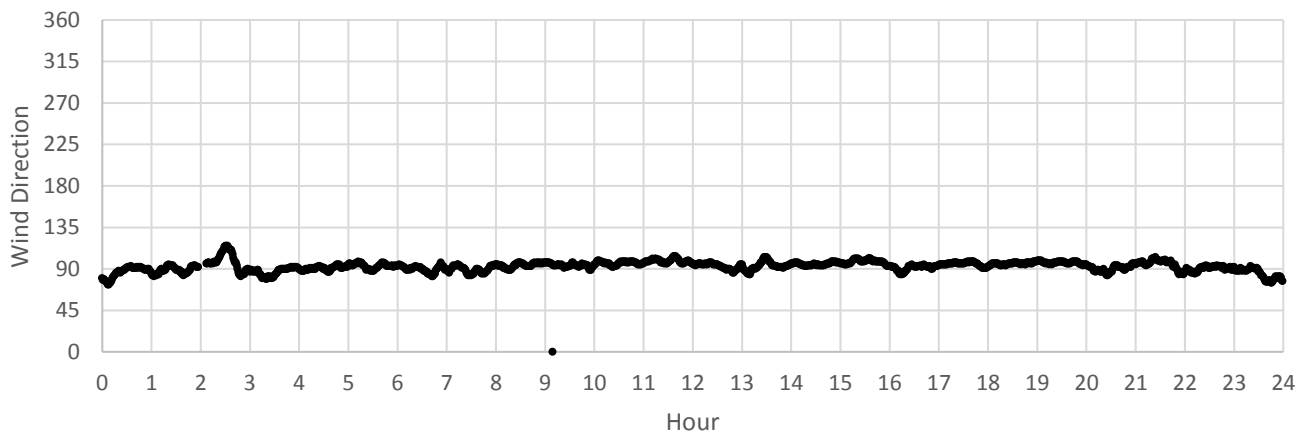


Appendix G – Extract of Meteorological Observations for King's Park Automatic Weather Station, October 2016

Wind Speed (26 October 2016)



Wind Direction (26 October 2016)



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				
4-Oct-16	Fine	10:30	66.3	71.2	68.7	60.4	68.0	70	N
11-Oct-16	Fine	15:58	67.2	74.2	70.0	65.7	68.0	70	N
22-Oct-16	Sunny	13:10	65.0	69.0	66.8	<Baseline	68.0	70	N
27-Oct-16	Sunny	11:02	67.0	72.5	70.2	66.2	68.0	70	N

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

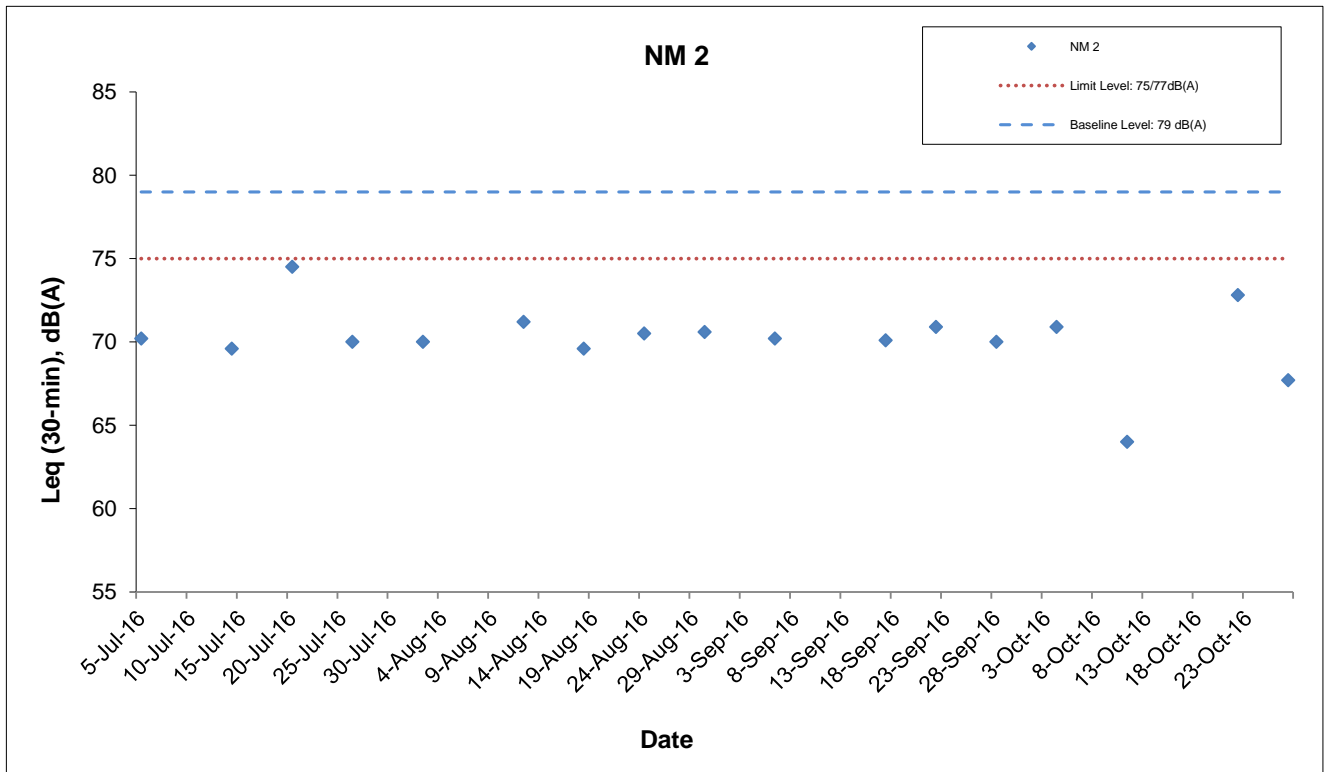
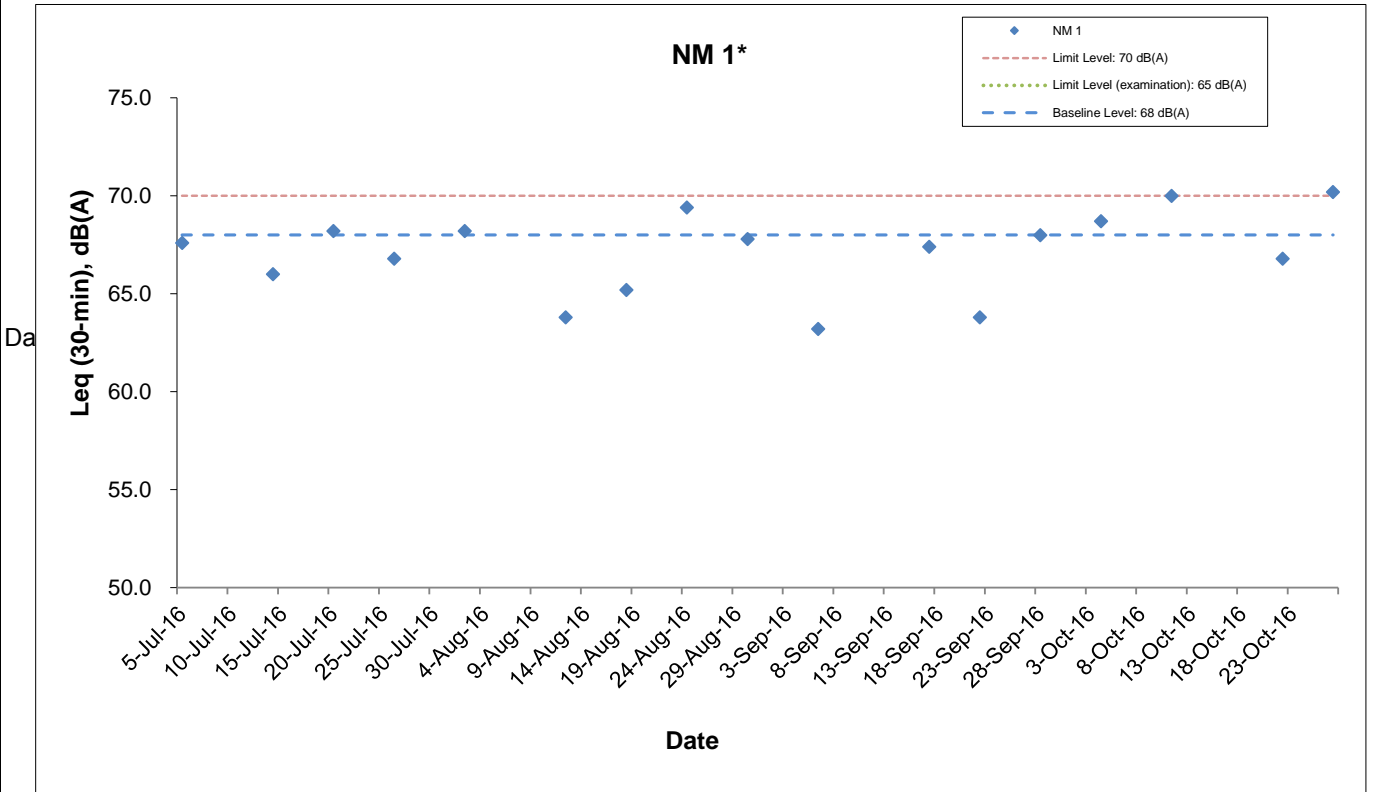
Date	Weather Condition	Noise Level for 30-min, dB(A) ⁺⁺				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
4-Oct-16	Fine	9:32	68.5	72.4	70.9	<Baseline	79.0	75	N
11-Oct-16	Fine	11:00	60.2	67.4	64.0	<Baseline	79.0	75	N
22-Oct-16	Sunny	14:01	71.5	74.0	72.8	<Baseline	79.0	75	N
27-Oct-16	Sunny	10:16	64.0	69.4	67.7	<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	Nov-16
	Graphical Presentations of Noise Monitoring Results	CHECK	TYUT	DRAWN	OYLW
		JOB NO.	60284101	APPENDIX	H

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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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
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)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000m ³)	('000m ³)	
Jan	8.577	0.000	0.000	0.000	8.577	1.259	0.062	0.000	1.320	0.000	0.015	0.000	7.242	7.257	0.000	0.850	0.000	0.000	141.060	0.013	0.000
Feb	4.570	0.007	0.000	0.000	4.577	0.706	0.059	0.000	0.765	0.000	0.000	0.000	3.812	3.812	0.000	0.937	0.000	0.000	127.070	0.003	0.000
Mar	5.813	0.000	0.000	0.000	5.813	1.509	0.173	0.000	1.681	0.000	0.000	0.000	4.132	4.132	0.000	2.040	0.000	0.000	140.410	0.000	0.000
Apr	2.561	0.000	0.000	0.008	2.569	0.664	0.060	0.000	0.724	0.000	0.000	0.000	1.845	1.845	0.000	0.000	0.000	0.000	163.530	0.000	0.000
May	3.008	0.000	0.000	0.008	3.016	1.153	0.108	0.000	1.262	0.026	0.000	0.000	1.728	1.754	0.000	0.000	0.000	0.000	224.210	0.000	0.000
Jun	3.711	0.039	0.007	0.011	3.768	1.003	0.096	0.000	1.099	0.042	0.000	0.000	2.627	2.669	0.000	0.000	0.000	0.000	155.170	0.000	0.000
SUB-TOTAL	28.240	0.046	0.007	0.026	28.320	6.292	0.558	0.000	6.851	0.068	0.015	0.000	21.387	21.470	0.000	3.827	0.000	0.000	951.450	0.016	0.000
Jul	3.707	0.039	0.007	0.011	3.764	0.387	0.036	0.000	0.424	2.132	0.000	0.000	1.209	3.341	0.000	1.068	0.000	0.000	132.220	0.000	0.000
Aug	0.716	0.039	0.007	0.011	0.773	0.023	0.012	0.000	0.035	0.005	0.000	0.000	0.733	0.738	11.000	1.343	0.000	0.000	92.640	0.000	0.000
Sep	0.266	0.039	0.007	0.011	0.324	0.031	0.012	0.000	0.042	0.006	0.000	0.000	0.275	0.281	0.000	0.000	0.000	0.000	48.520	0.000	0.000
Oct	0.142	0.039	0.007	0.011	0.199	0.071	0.016	0.000	0.087	0.000	0.000	0.000	0.112	0.112	0.003	0.000	0.003	0.000	103.050	0.000	0.000
Nov																					
Dec																					
2016 TOTAL	33.071	0.201	0.037	0.071	33.380	6.805	0.634	0.000	7.439	2.211	0.015	0.000	23.715	25.941	11.003	6.238	0.003	0.000	1327.880	0.016	0.000

Note:

1. Assume the density of fill is 2 ton/m³.

2. Refuses disposed of at North East New Territories (NENT) Landfill.

3. Assume the weight of recycled papers is 7 kg/bag.

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

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

Appendix C

**45th 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. 45

[Period from 1 to 31 October 2016]

Works Contract 1103 – Hin Keng to Diamond Hill Tunnels

(November 2016)

Certified by: Jonathan Pyke 

Position: Environmental Team Leader

Date: 11 November 2016

MTR Corporation Limited

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

Monthly Environmental Monitoring
and Audit Report – October 2016

228105-27

November 2016

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

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

Job number 228105-27

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ARUP

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- Appendix K: Environmental Monitoring Programme for Coming Month
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Executive Summary

This is the forty-fifth 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 October 2016 (1 to 31 October 2016).

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

- Tunnel remedial works at cut-off wall in Diamond Hill;
- Tunnel Lining and Partition Walls, Dividing Slabs, Drains and Walkways at Hin Keng;
- Tunnels Connection, RC Concrete and ELS Work and Sheet piling for retaining wall at Fung Tak;
- Central Core, Ventilation Tunnel and C&S Works at Ma Chai Hang; and
- Storage Area at Shui Chuen O.

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

Impact monitoring was carried out at 2 air quality and 2 noise monitoring stations during the reporting month.

Environmental Monitoring Works – Breaches of Action and Limit Levels

Air Quality

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

Noise

No exceedence of Action Level / 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 635 m³ were generated and disposed of at public fill in TKO137FB/TM38FB. 286 m³ of general refuse was generated and disposed of at NENT/SENT/WENT landfill.

Hazard

No blasting activity was carried out during the reporting month.

Environmental Auditing

A total of 4 environmental site audits were conducted on a weekly basis in the reporting month. The first site inspection was on 5 October 2016 and the final was undertaken on 26 October 2016. An IEC joint site audit was undertaken on 19 October 2016. No non-conformance to the environmental requirements was identified during the reporting period.

Complaint Log

No complaints 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 ^[1]	Major Works Undertaken
Diamond Hill	Tunnel remedial works at cut-off wall
Hin Keng	Tunnel Lining and Partition Walls, Dividing Slabs, Drains and Walkways
Fung Tak	Tunnels Connection, RC Concrete and ELS Work and Sheet piling for retaining wall
Ma Chai Hang	Central Core, Ventilation Tunnel and C&S Works
Shiu Chui O	Storage Area

1.4 Project Organization

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

Table 1.2 Contacts of Key Environmental Staff

Organisation	Name	Telephone
Project Proponent: MTRC Engineer's Representative SCL Project-wide Environmental Team Leader	Sammi Wong Richard Kwan	3767 0268 2688 1283
Independent Environmental Checker: Meinhardt Infrastructure & Environment Ltd. Independent Environmental Checker	Fredrick Leong	2859 1739
Contractor: VINCI Construction Grands Projets Project Director IMS Manager	Francois Dudouit Keith Lee	3765 5610 3765 5657
Contractor's Environmental Team: Ove Arup & Partners Hong Kong Ltd. Designated Environmental Team Leader for Works Contract 1103	Jonathan Pyke	2268 3555

1.5 Project Area and Environmental Monitoring locations

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

Table 1.3 Summary of Air Quality and Noise Monitoring Stations

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

Notes:

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

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

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

1.6 Impact Monitoring Schedule

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

1.7 Status of Environmental Licensing and Permitting

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

Table 1.4 Summary of Environmental Licensing Status

Types of Permits / Licenses	Reference No.	Site	Valid from	Valid to
Environmental Permit	EP-438/2012/J	All	29 Feb 2016	4 Oct 2016
	EP-438/2012/K	All	4 Oct 2016	Throughout the Contract
Discharge License under WPCO	WT00014650-2012	Hin Keng	10 Dec 2012	31 Dec 2017
	WT00014648-2012	Hin Keng	10 Dec 2012	31 Dec 2017
	WT00015145-2013	Shui Chuen O	21 Feb 2013	28 Feb 2018
	WT00015513-2013	Ma Chai Hang	2 Apr 2013	30 Apr 2018
	WT00015430-2013	Fung Tak	18 Mar 2013	31 Mar 2018
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation	351345	All	22 Oct 2012	15 Apr 2018
Construction Noise Permit	GW-RE0721-16	Ma Chai Hang	2 Aug 2016	31 Jan 2017
	GW-RE0714-16	Fung Tak	21 July 17	20 Jan 2017
	GW-RN0667-16	Hin Keng	17 Sept 2016	16 Mar 2017
	GW-RN0281-16	Hin Keng	5 May 2016	4 Nov 2016
	GW-RN0570-16	Hin Keng	8 Aug 2016	7 Feb 2017
	GW-RE0917-16	Diamond Hill	20 Sept 2016	Superseded
	GW-RE0362-16	Diamond Hill	1 Jun 2016	Superseded
	GW-RN0770-16	Hin Keng	5 Nov 2016	4 May 2017
Chemical Waste Producer Registration	5213-759-V2179-01	Hin Keng	13 Dec 2012	Throughout the Contract
	5213-281-V2180-01	Diamond Hill	12 Dec 2012	Throughout the Contract
	5213-281-V2179-03	Fung Tak	28 Feb 2013	Throughout the Contract
	5213-282-V2180-02	Ma Chai Hang	18 Mar 2013	Throughout the Contract
Billing Account for Disposal of Construction Waste	7016250	All	2 Nov 2012	Throughout the Contract

1.8 Purpose of the Report

The purpose of this monthly EM&A report is to provide the information on monitoring methodology, monitoring results, environmental permit status, site audit findings, recommendations and conclusions during the construction of this works contract for the EM&A conducted during the construction period. This is the forty-fifth 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 October 2016.

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 (September 2016)	14 October 2016

3 Air Quality Monitoring

3.1 Air Quality Monitoring Requirements

Monitoring Parameters

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

Monitoring Frequency

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

Table 3.1 Air quality monitoring parameters and frequency

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

Monitoring Locations

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

Table 3.2 Air Quality Monitoring Locations

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

Notes:

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

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

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

Note 4: The associated monitoring was carried out under Works Contract SCL1106 since October 2016.

Wind Monitoring

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

Environmental /Quality Performance Limits

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

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

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

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

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

Note:

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

3.2 Air Quality Monitoring Methodology

3.2.1 Monitoring Equipment

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

Table 3.5 Air Quality Equipment List for Impact Air Quality Monitoring

Equipment	Manufacturer & Model No	Measurement Parameter	Serial No.
High Volume Sampler	TE-5170	24-hour TSP	3761, 3763
Fibreglass Filter	G810		-
HVS Calibration Kit	TE-5025A		2421

3.2.2 Maintenance and Calibration

High Volume Sampler

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

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

3.2.3 Monitoring Procedures

High Volume Sampler

Specifications of the HVS are as follows:

- 0.6 – 1.7 m³/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 cm² (63in²);
- 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

October 2016 was characterised at times by gloomy and rainy conditions associated with low pressure. A Typhoon 8 signal was hoisted on Friday the 21st of October.

Hot and humid conditions associated with a sub-tropical ridge were also present throughout the month.

3.3.2 Air Quality Monitoring Results

Monitoring of 24-hour TSP was conducted on 5, 11, 17, 22 and 28 October 2016. 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 ($\mu\text{g}/\text{m}^3$)		Action Level	Limit Level
	Average	Range ^(Note 1)		
DMS-1	44.2	19.3 – 85.8	148.7	260
DMS-2	54.5	31.2 – 106.4	167.4	260

Note:

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

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

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

3.3.3 General Observations

Major construction works including Tunnel remedial works at cut-off wall in Diamond Hill; Tunnel Lining and Partition Walls, Dividing Slabs, Drains and Walkways at Hin Keng; Tunnels Connection, RC Concrete, ELS works and Sheet piling for retaining wall at Fung Tak and Central Core, Ventilation Tunnel and C&S Works at Ma Chai Hang.

4 Noise Monitoring

4.1 Noise Monitoring Requirements

4.1.1 Impact Monitoring

Monitoring Parameters

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

Monitoring Frequency

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

Table 4.1 Construction Noise Monitoring Parameters and Frequency

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

Monitoring Location

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

Table 4.2 Noise Monitoring Locations

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

Notes:

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

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

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

Note 4: The associated monitoring was carried out under Works Contract SCL1106 since October 2016.

Environmental /Quality Performance Limits

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

Table 4.3 Action and Limit Levels of construction noise

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

Notes:

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

4.1.2 Continuous Noise Monitoring

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

4.2 Noise Monitoring Methodology

4.2.1 Monitoring Equipment

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

Table 4.4 Noise Equipment List for Impact Noise Monitoring

Equipment	Manufacturer & Model No.	Serial No.	Precision Grade
Integrated SLM	NA - 28	00162248	IEC 651 Type 1 IEC 804 Type 1
Sound level calibrator	Castle Group Ltd.	043328	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 a sound level calibrator; and
- The SLM was re-calibrated by the sound level calibrator to confirm that there is no significant drift of reading. Measurements shall be accepted as valid only if the calibration levels before and after the noise measurement agrees to within 1.0 dB.

4.3 Monitoring Results and Observations

4.3.1 Weather Condition

October 2016 was characterised at times by gloomy and rainy conditions associated with low pressure. A Typhoon 8 signal was hoisted on Friday the 21st of October.

Hot and humid conditions associated with a sub-tropical ridge were also present throughout the month.

4.3.2 Noise Monitoring Results

Impact Monitoring

Monitoring of the construction noise level was conducted on 6, 12, 18 and 29 October 2016. All monitoring data and graphical presentation of the monitoring results are provided in **Appendix H** and are summarised in **Tables 4.5 - 4.6**. The graphical presentations of the monitoring results are provided in **Appendix H**.

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

Date	Time	Measured Noise Level, dB(A)	Baseline Noise Level, dB(A)	Construction Noise Level(Note1), dB(A)	Limit Level (Note 2)
		Leq (30min)	Leq (30min)	Leq (30min)	dB(A)
6-Oct-16	11:15-11:45	55.9	57.0	< Baseline Level	70/65
12-Oct-16	11:30-12:00	56.5		< Baseline Level	
18-Oct-16	16:15-16:45	56.1		< Baseline Level	
29-Oct-16	13:00-13:30	56.9		< Baseline Level	

Notes:

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

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

Date	Time	Measured Noise Level, dB(A)	Baseline Noise Level, dB(A)	Construction Noise Level(Note1), dB(A)	Limit Level (Note 2)
		Leq (30min)	Leq (30min)	Leq (30min)	dB(A)
6-Oct-16	12:30-13:00	65.8	66.0	< Baseline Level	70/65
12-Oct-16	10:15-10:45	65.7		< Baseline Level	
18-Oct-16	15:00-15:30	64.7		< Baseline Level	
29-Oct-16	11:30-12:00	65.2		< Baseline Level	

Notes:

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

4.3.3 Exceedance of Limit and Action Levels for Construction Noise

No exceedance of Action Level / 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 5 and 19 October 2016. 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	635 m ³ (Total)	TKO137FB/TM38FB
Inert C&D Materials	0 m ³	Reused in the Contract
Chemical Waste	0 kg	Disposed of by a licensed collector
Paper / cardboard packaging	0 kg	-
Plastic	0 kg	
Metal	0 kg	
General Refuse	286 m ³	NENT/SENT/WENT Landfill

7 Cultural Heritage

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

8 Hazard

No blasting activity was carried out during the reporting month.

9 Environmental Performance

9.1 Environmental Site Inspection

Environmental site inspections were carried out on a weekly basis, with the IEC joint site inspection being carried out on 19 October 2016, to monitor environmental issues on the construction sites to ensure that all mitigation measures were implemented timely and properly. A summary of the site inspections in the reporting month is presented in **Table 9.1**.

Table 9.1 Key Findings of Weekly Environmental Site Audit

Inspection Date	Works Area	Key Observations and Recommendations	Contractor's Response / Environmental Outcome	Closed Date / Follow up Status
Air				
5 Oct 2016	Fung Tak	The contractor is reminded to cover stockpiles of dusty materials when not in use.	Agreed with ET's Advice.	The contractor rectified the issue and covered stockpiles of dusty materials when not in use. Closed 12 October 2016.
Water				
12 Oct 2016	Ma Chai Hang	The contractor was reminded to maintain the sedimentation tank regularly	Agreed with ET's Advice.	The contractor rectified the issue and maintained the sedimentation tank regularly. Closed 19 Oct 2016.
19 Oct 2016	Fung Tak & Ma Chai Hang	The Contractor was reminded to maintain the wastewater treatment facilities regularly.	Agreed with ET's Advice.	The contractor rectified the issue and maintained the wastewater treatment facilities regularly. Closed 26 Oct 2016.
Waste Management				
28 Sept 2016	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 contractor rectified the issue and ensured that chemical containers have the provision of a drip tray

Inspection Date	Works Area	Key Observations and Recommendations	Contractor's Response / Environmental Outcome	Closed Date / Follow up Status
				directly after unloading. Closed 5 Oct 2016.
5 Oct 2016	Fung Tak	The contractor is reminded to ensure that chemical containers are properly labelled.	Agreed with ET's Advice.	The contractor rectified the issue and ensured that chemical containers are properly labelled. Closed 12 Oct 2016.
12 Oct 2016	Fung Tak	The contractor was reminded not to place empty containers inside chemical waste storage area.	Agreed with ET's Advice.	The contractor rectified the issue and ensured not to place empty containers inside chemical waste storage area. Closed 19 Oct 2016.
19 Oct 2016	Fung Tak	The contractor was reminded that chemical containers should be properly located to avoid the accumulated rain water.	Agreed with ET's Advice.	The contractor rectified the issue and properly located chemical containers. Closed 26 Oct 2016.
26 Oct 2016	Ma Chai Hang	The contractor was reminded to remove or provide secondary containment to chemical containers.	Agreed with ET's Advice.	The contractor noted the issue and will report the status in the next reporting month.

9.2 Summary of Environmental Complaint

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

Table 9.2 Summary of Complaints

Reporting Period	Complaint Statistics	
	Number	Cumulative
01/10/16 – 31/10/16	0	19

9.3 Summary of Environmental Non-Compliance

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

9.4 Summary of Environmental Summon and Successful Prosecution

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

10 Future Key Issues

10.1 Key Issues for the Coming Month

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

Table 10.1 Tentative Programme of Construction Works for the Coming Month

Locations ^[1]	Major Works Undertaken
Diamond Hill	Tunnel remedial works at cut-off wall
Hin Keng	Tunnel Lining and Partition Walls, Dividing Slabs, Drains and Walkways
Fung Tak	Tunnels Connection, RC Concrete and ELS Work and Sheet piling for retaining wall
Ma Chai Hang	Central Core, Ventilation Tunnel and C&S Works
Shiu Chui O	Storage Area

10.2 Environmental Monitoring Program for the Coming Month

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

10.3 Construction Program for the Coming Month

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

11 Conclusions and Recommendations

11.1 Conclusions

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

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

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

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

No complaints were received during the reporting period. No summons/prosecution was received during the reporting period.

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

11.2 Recommendations

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

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

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

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

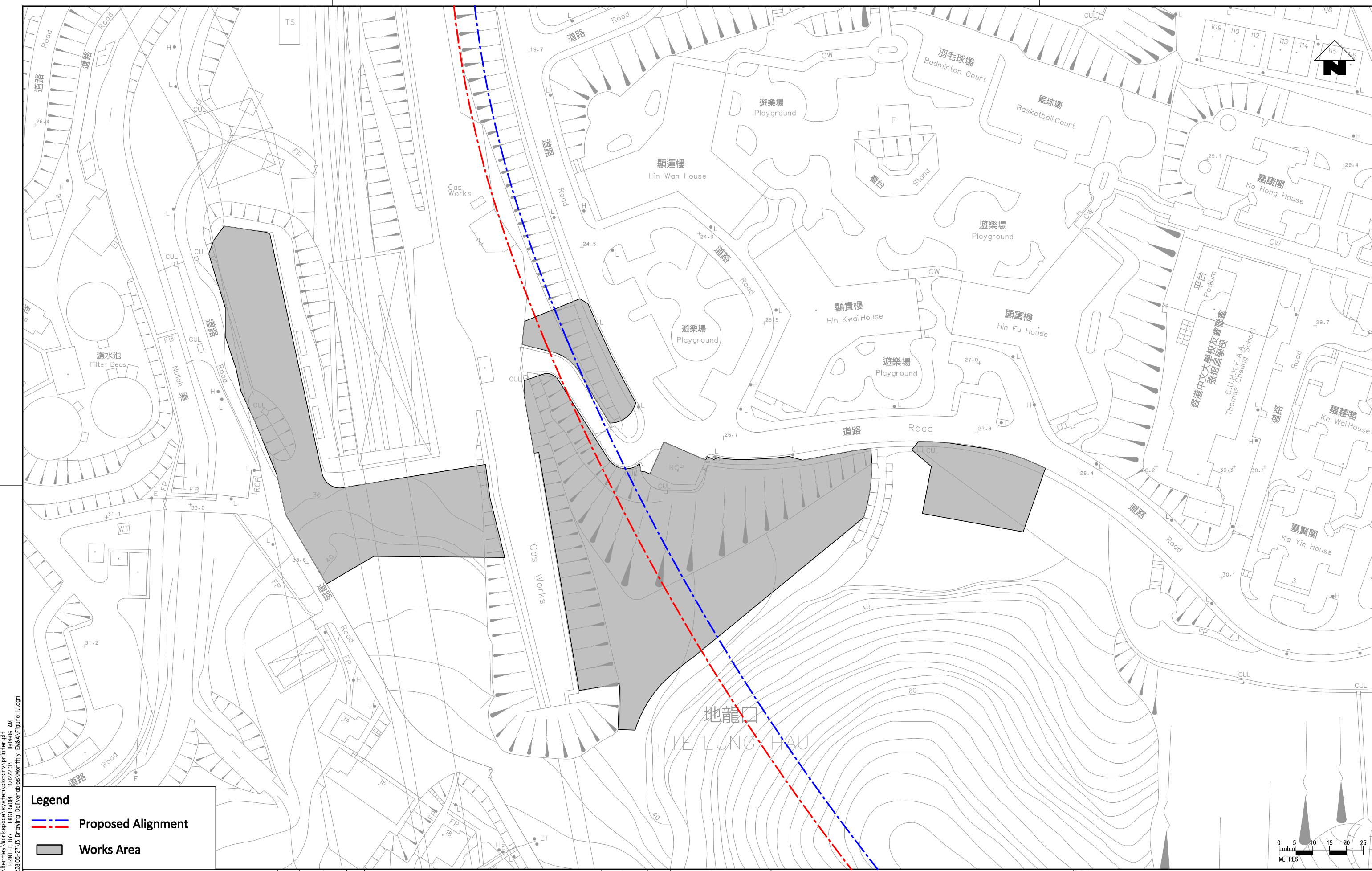
Construction dust is also key environmental issue. The implemented construction dust mitigation measures including covering of exposed slope / soil with tarpaulin

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

12 Reference

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

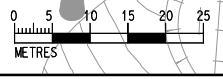
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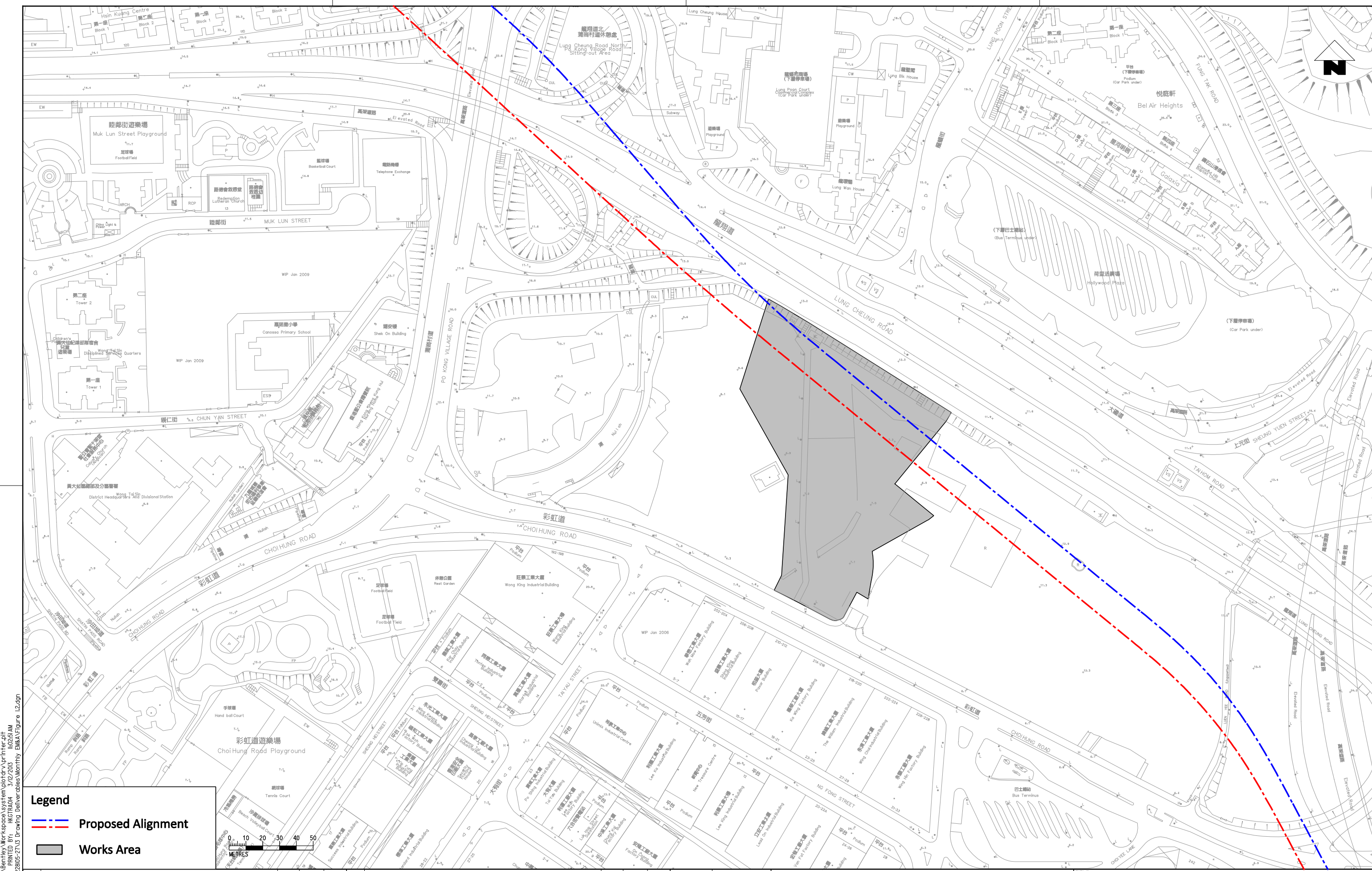
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TITLE

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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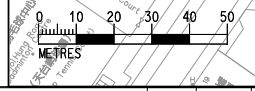


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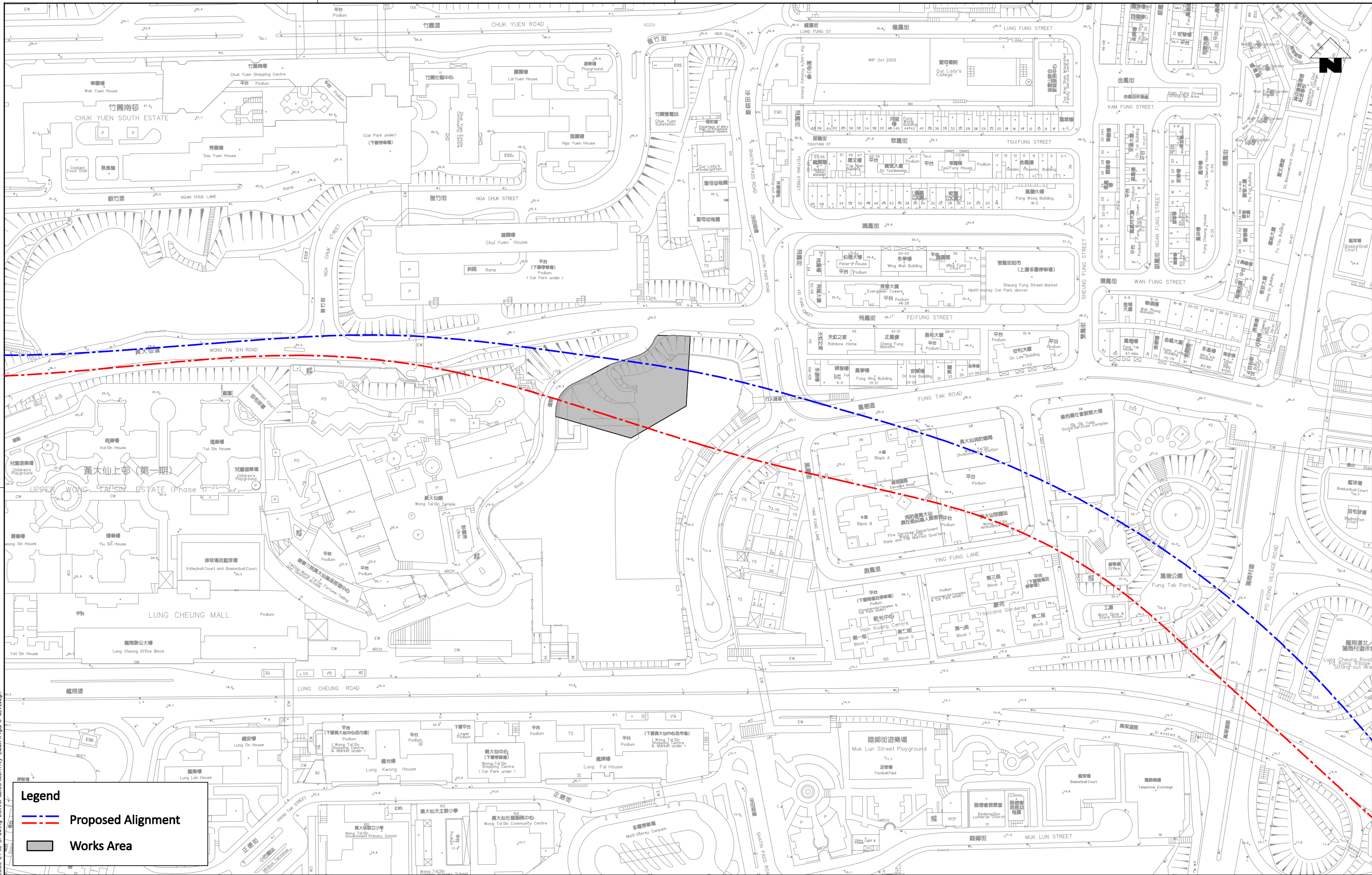
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TITLE		CONTRACT 1103	
		HIN KENG TO DIAMOND HILL TUNNELS	
		Locations of Project Works Areas	
		- General Site Layout of Diamond Hill Works Area	
		(Sheet 2 of 6)	
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- - - Proposed Alignment
- Works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

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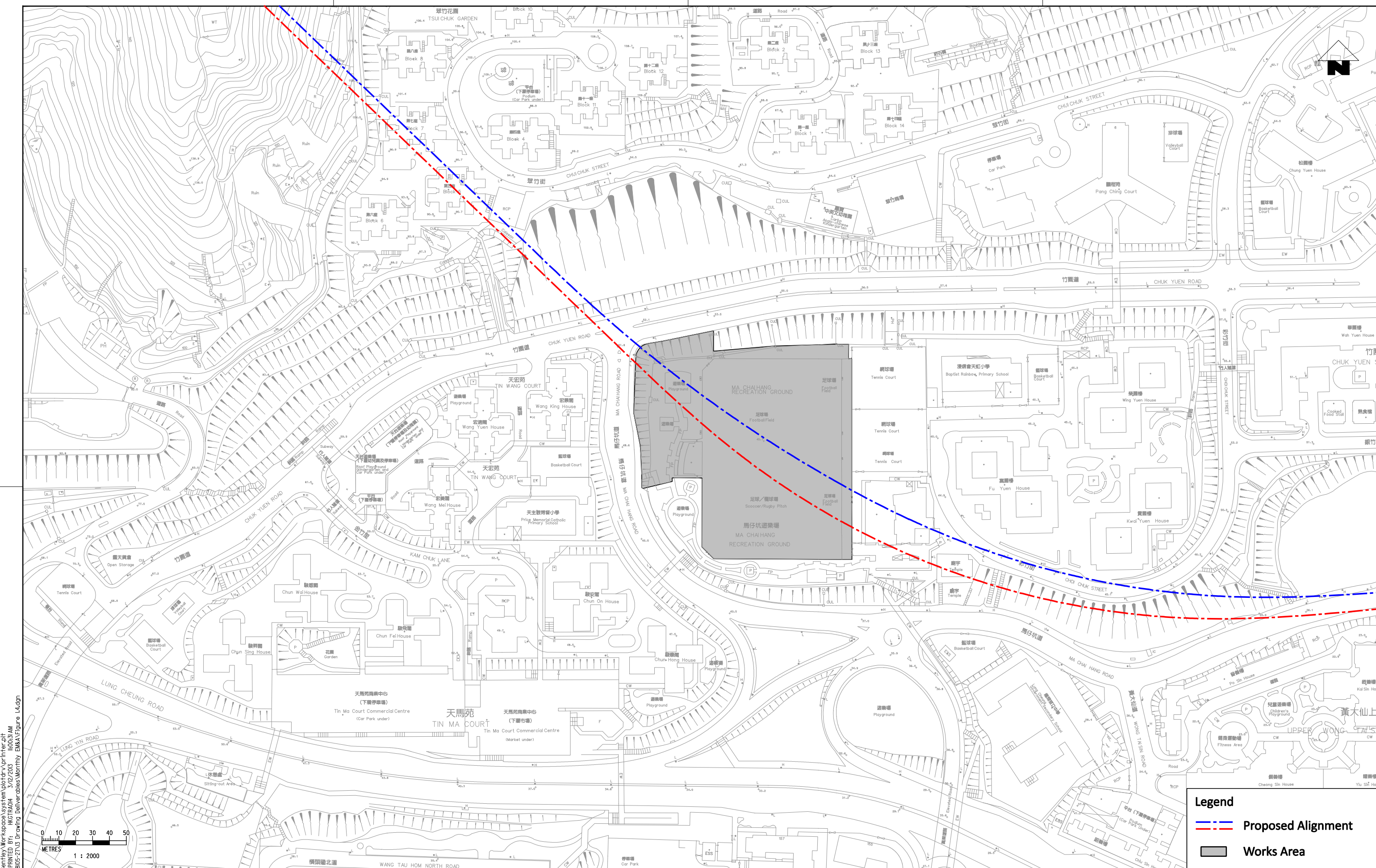
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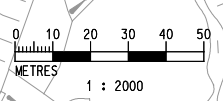
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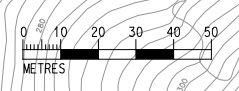
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		HIN KENG TO DIAMOND HILL TUNNELS	
		Locations of Project Works Areas	
		- Site Layout Plan of Ma Chai Hang Shaft	
		(Sheet 4 of 6)	
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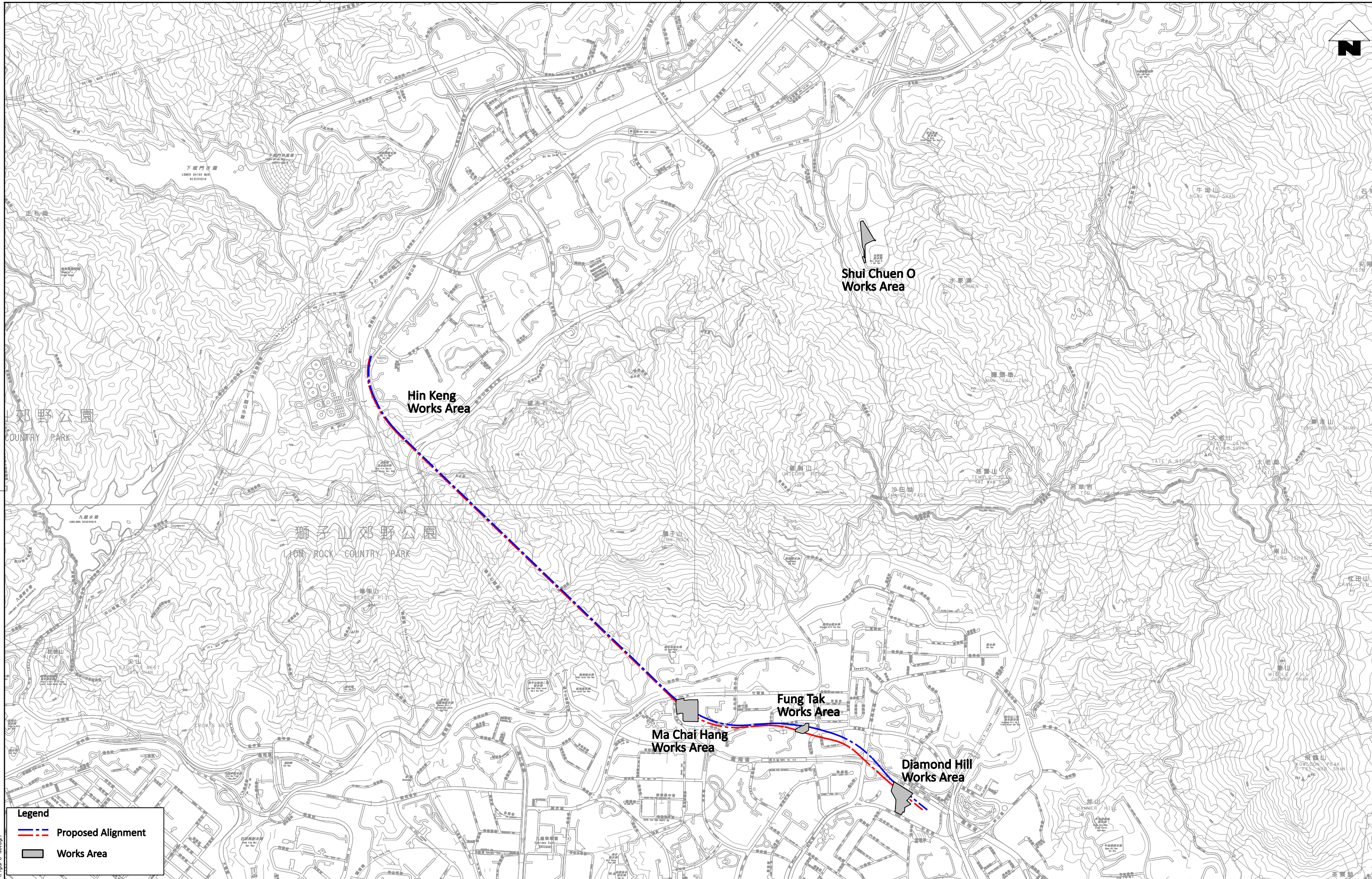
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Works Area



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				<small>DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE. © MTR CORPORATION LIMITED 2008. COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS OWNED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO REPRODUCTION OF THE DRAWING / DOCUMENT OR ANY PART BY WHATEVER MEANS IS PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.</small>			ARUP Ove Arup & Partners Hong Kong Limited				SCALE 1 : 2000 (A3)
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- --- Proposed Alignment
- Works Area

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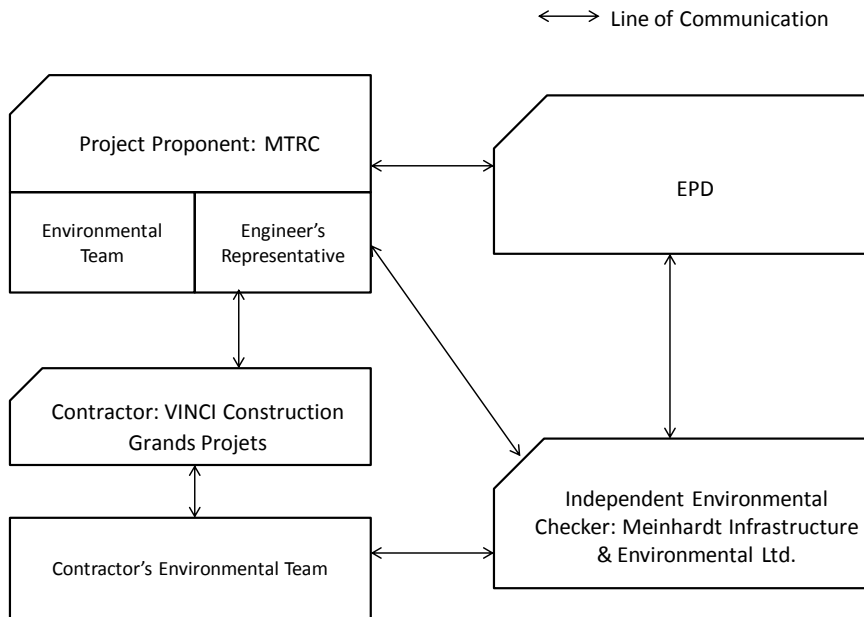
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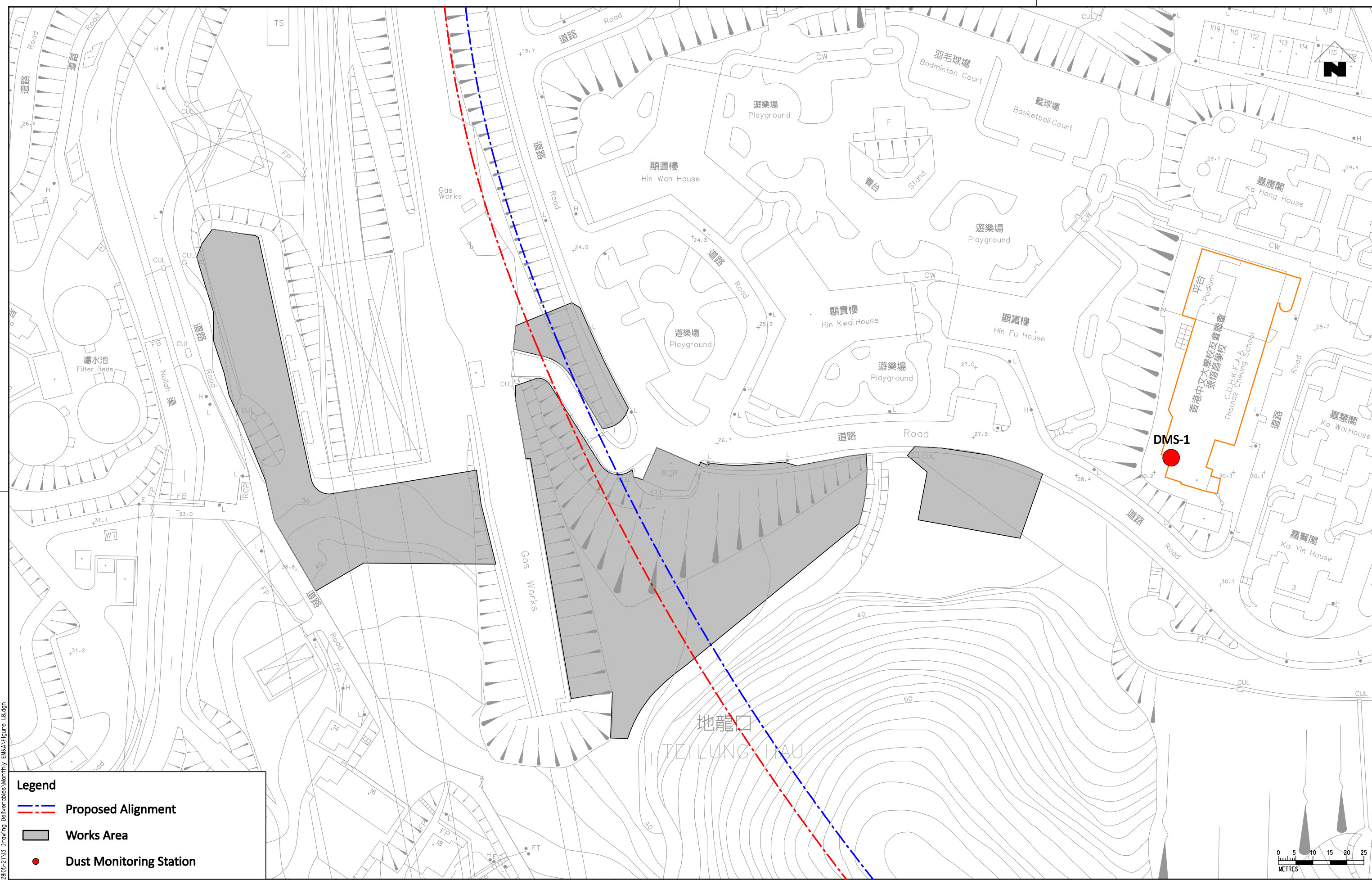
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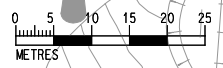
Figure 1.7 - Project Organisation for Environmental Works



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



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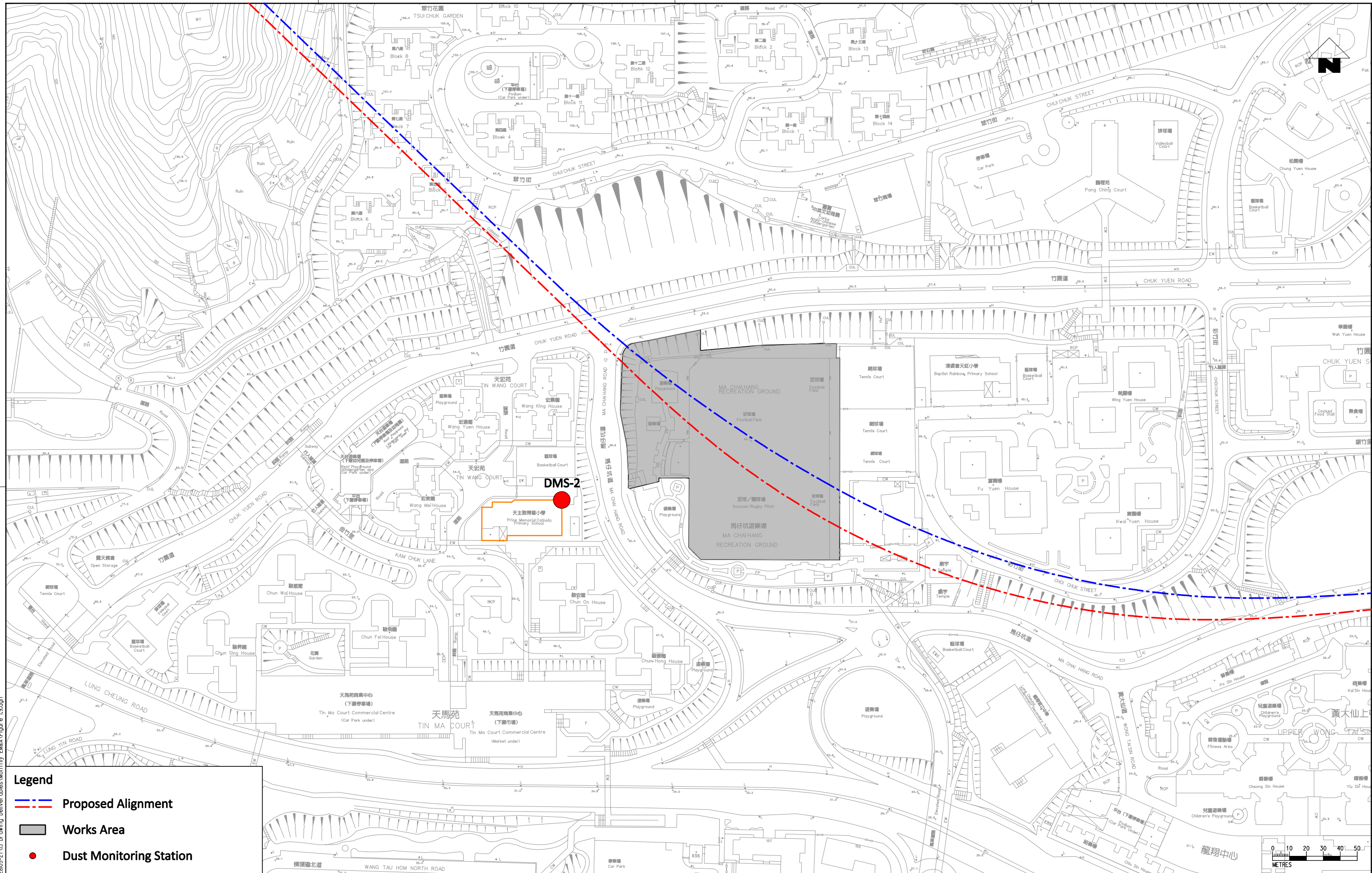
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TITLE		CONTRACT 1103	
		HIN KENG TO DIAMOND HILL TUNNELS	
		Locations of Proposed Dust Monitoring Stations	
		(Sheet 1 of 3)	
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- Legend**
- --- Proposed Alignment
 - Works Area
 - Dust Monitoring Station

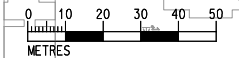
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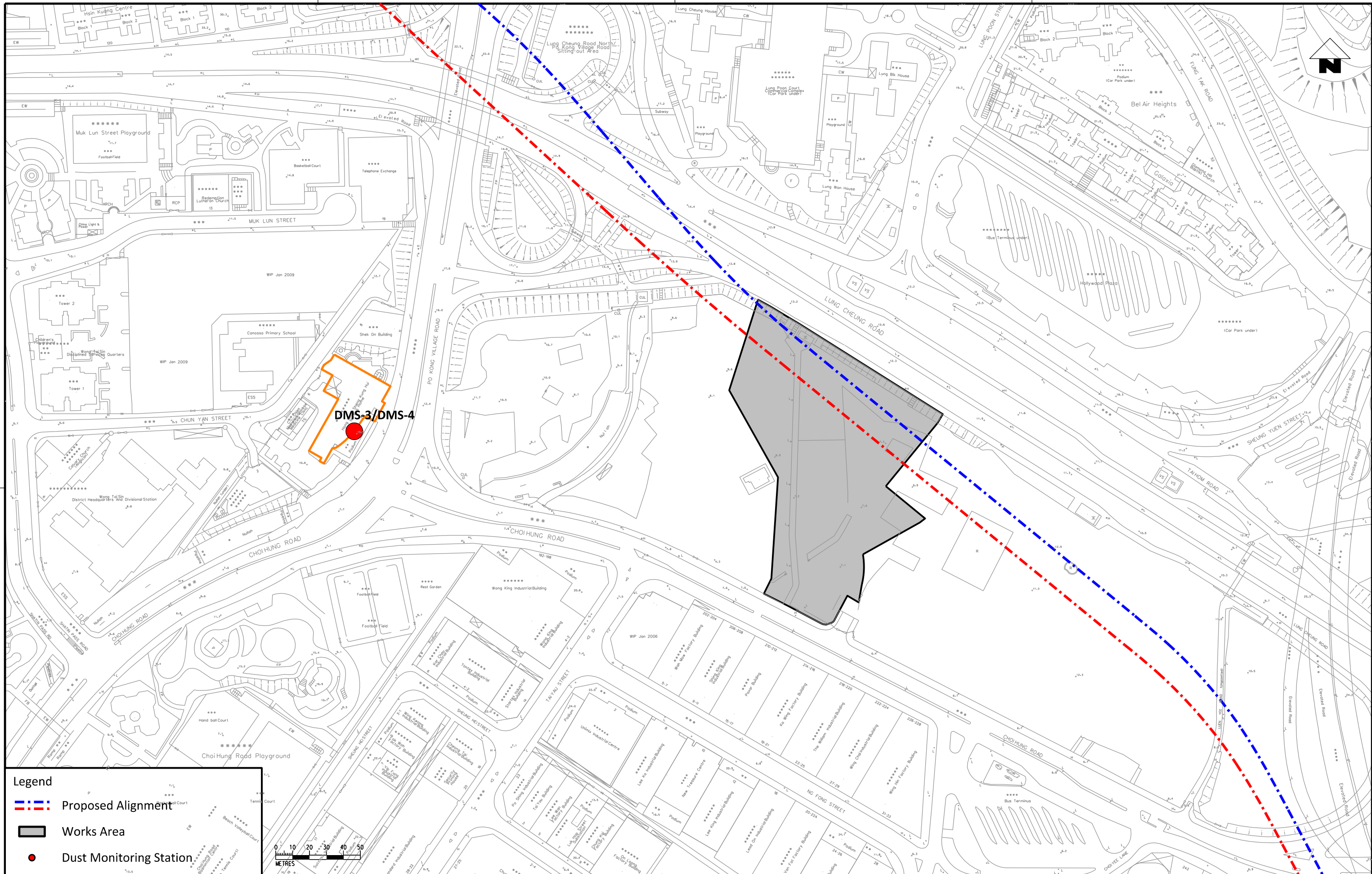
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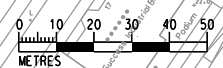




DMS-3/DMS-4

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



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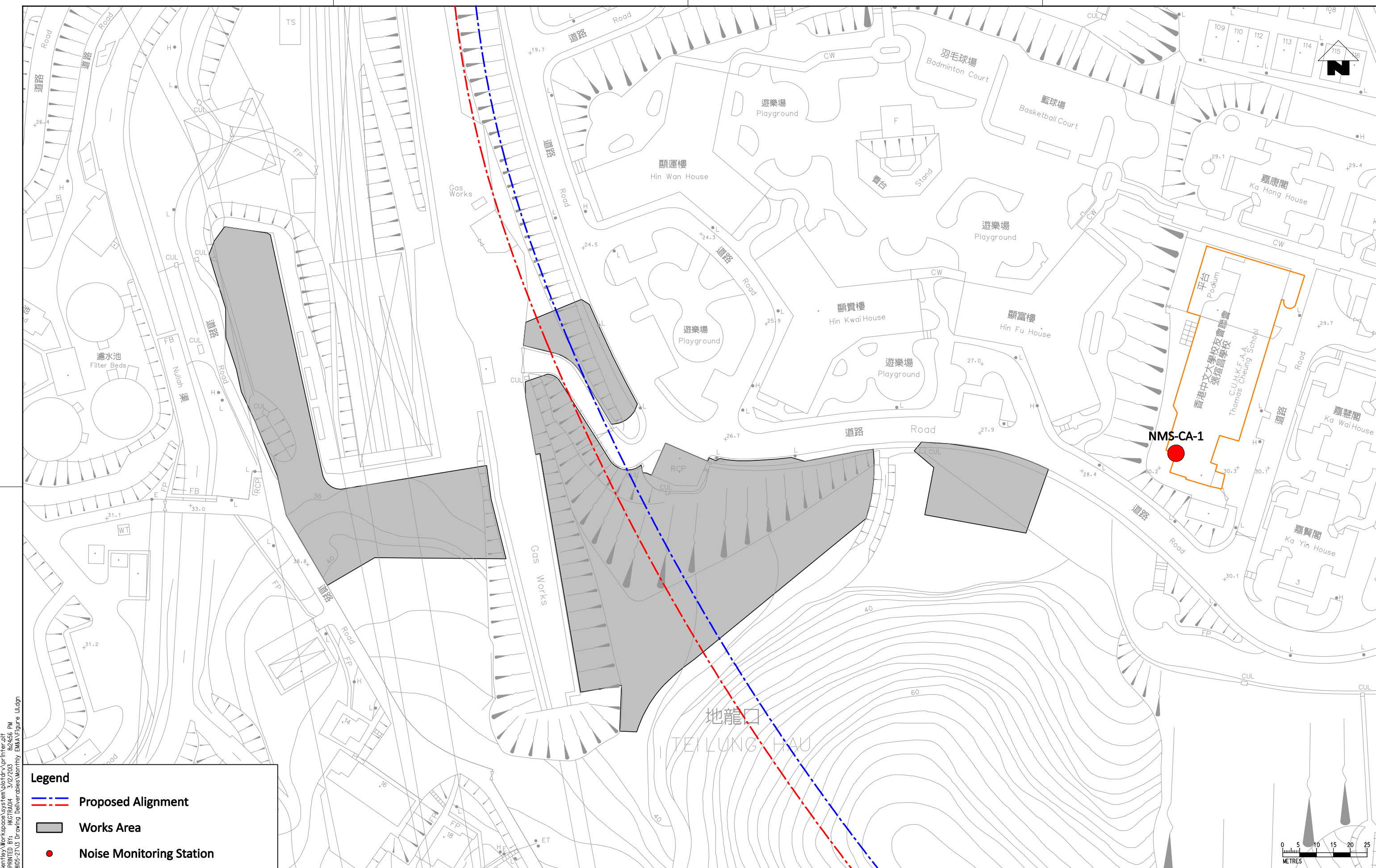
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CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
 Locations of Proposed Dust Monitoring Stations
 (Sheet 3 of 3)

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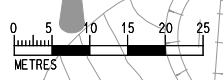
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- --- **Proposed Alignment**
- Works Area**
- **Noise Monitoring Station**



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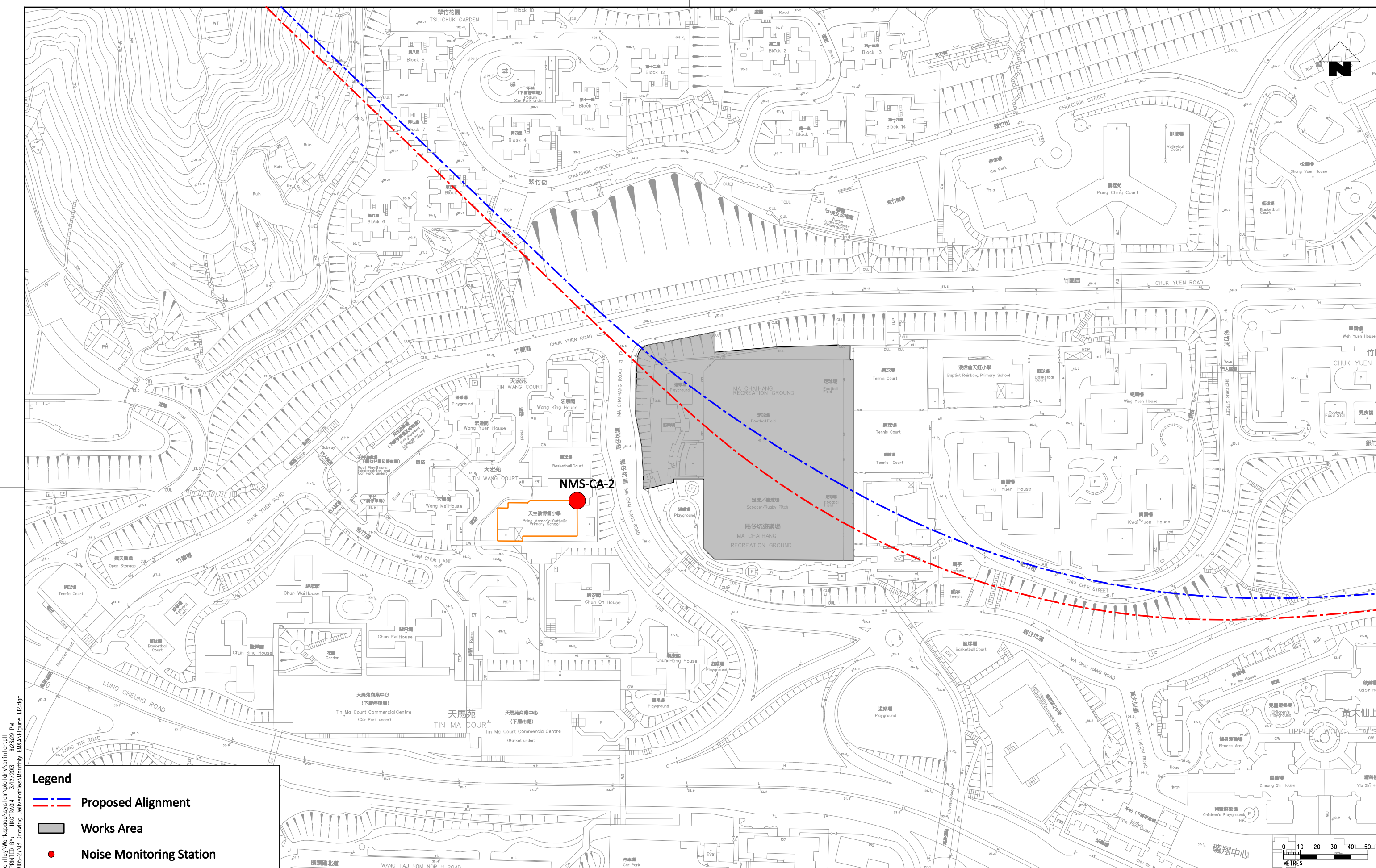
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TITLE
 CONTRACT 1103
 HIN KENG TO DIAMOND HILL TUNNELS
 Locations of Noise Monitoring Stations
 (Construction Airborne Noise)
 (Sheet 1 of 3)

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

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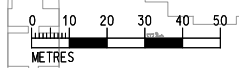
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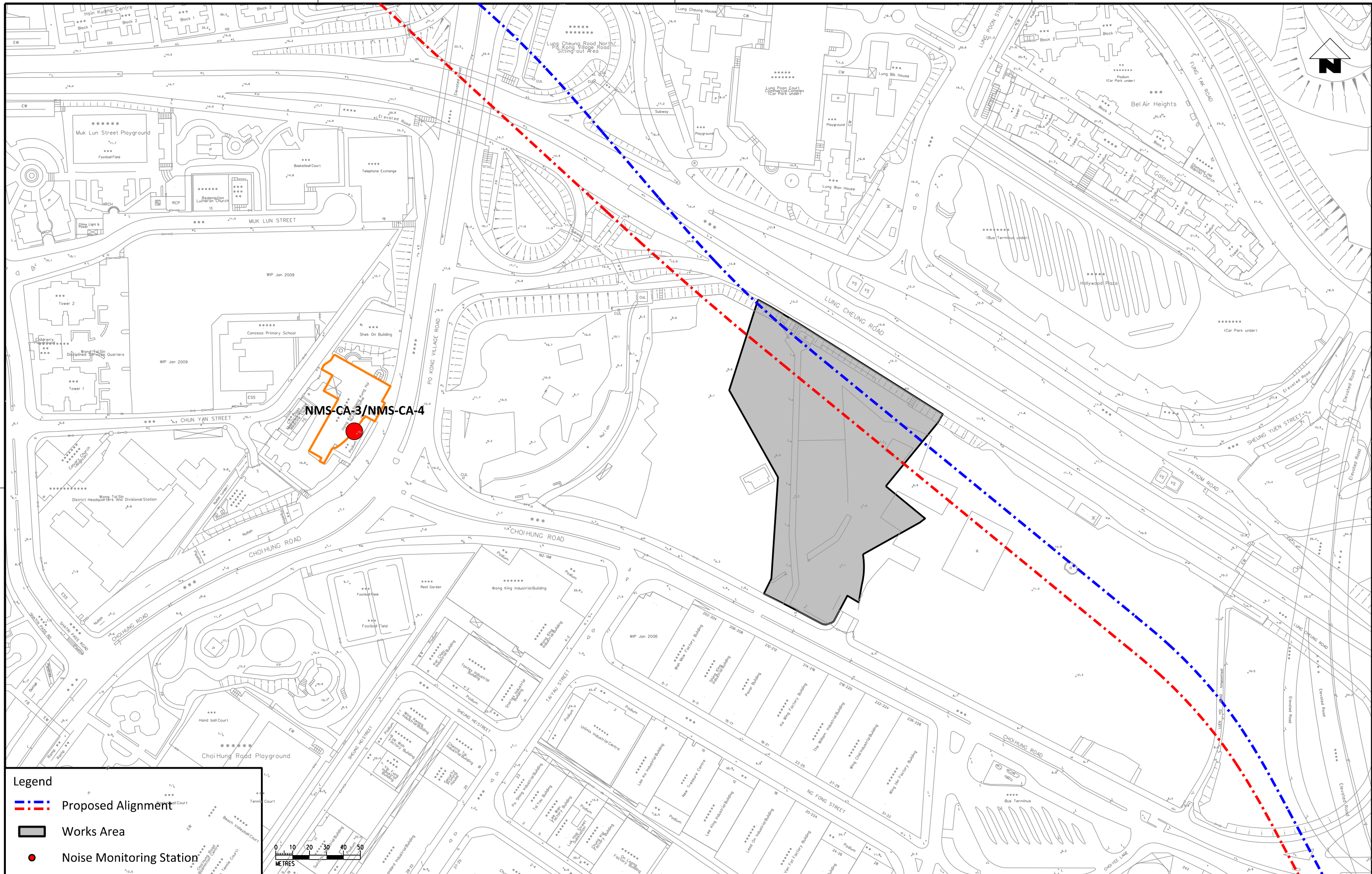
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TITLE
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 HIN KENG TO DIAMOND HILL TUNNELS
 Locations of Noise Monitoring Stations
 (Construction Airborne Noise)
 (Sheet 2 of 3)

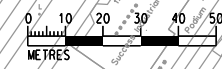
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- - - Proposed Alignment
- Works Area
- Noise Monitoring Station



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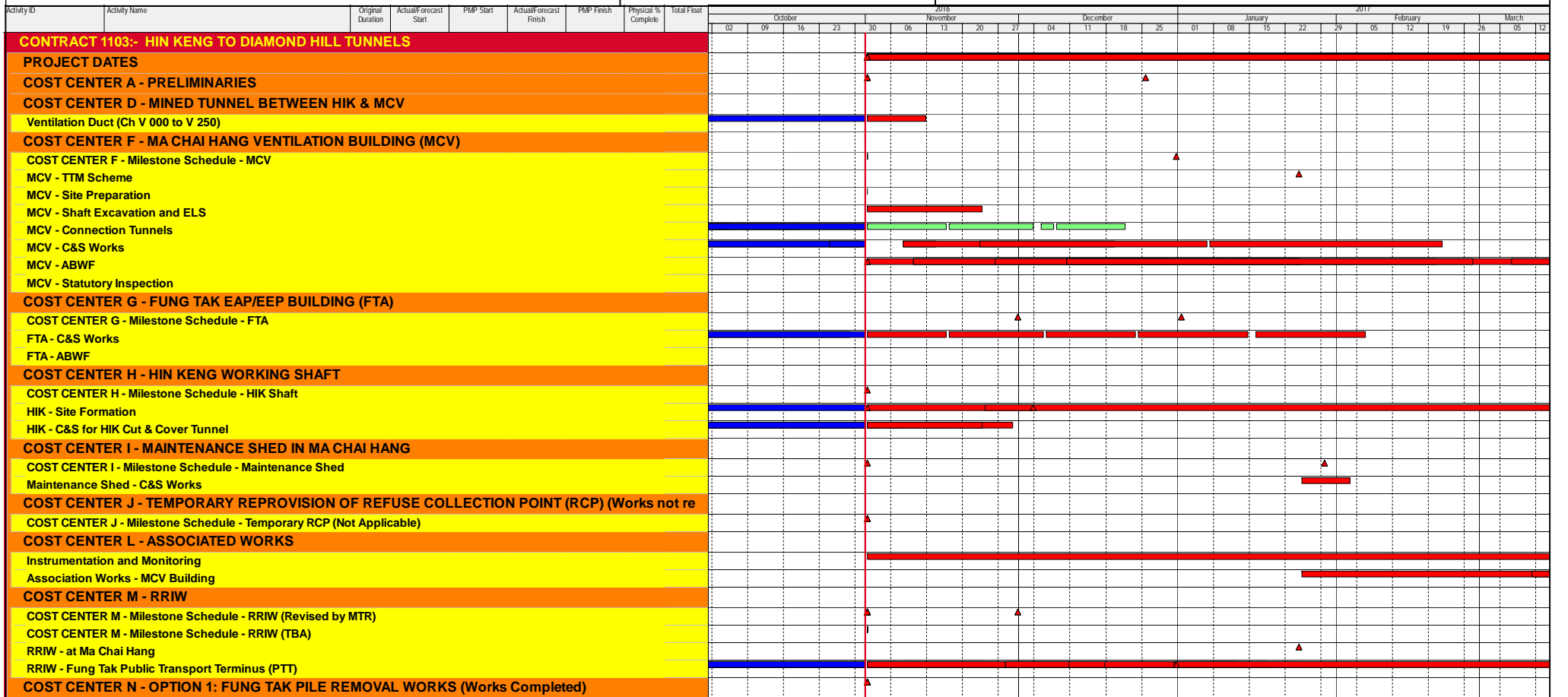
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CONTRACT 1103
HIN KENG TO DIAMOND HILL TUNNELS
 Locations of Noise Monitoring Stations
 (Construction Airborne Noise)
 (Sheet 3 of 3)

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Appendix A

Construction Programme



▲	▲ Milestone	■	Remaining Work	■	Baseline (Last Month)
▲	▲ Critical Milestone	▲	Actual MS	■	Actual Work
■	Critical Remaining Work	■	Baseline (PMP)	◆	Baseline Milestone

Three Month Rolling Programme
Data Date: 01-Nov-16

Date	Revision	Checked	Approved
31-Oct-16	Submission of Monthly Report to MTR	QT	EC

Appendix B

Environmental
Monitoring
Programme in
Reporting Month

**SCL Works Contract 1103 - Hin Keng to Diamond Hill Tunnels
Impact Monitoring Schedule - October 2016**

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

	Public Holiday
	Monitoring Day

Monitoring Details

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

Appendix 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	<ul style="list-style-type: none"> •AFCD's requirements •EIAO •Country Parks Ordinance 	✓
	E2	<p><u>Habitat Loss</u></p> <p>A detailed vegetation survey should be conducted in the Hin Keng Portal area to locate and enumerate individuals of <i>Aquilaria sinensis</i> which will potentially be affected by construction and operation of the Portal.</p> <p>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.</p>	Minimize ecological impacts on important species	Hin Keng Portal areas	Prior to site clearance	<ul style="list-style-type: none"> •AFCD's requirements 	✓
S5.7	E3	<p><u>Tree felling and vegetation removal</u></p> <p>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.</p>	Minimize ecological impacts to breeding bird species of conservation interest	Works sites for DIH	Prior to site clearance	<ul style="list-style-type: none"> •AFCD's requirements 	N/A

Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Ecology (Construction Phase)							
S5.7	E5	<p><u>Good Site Practices</u></p> <p>Impact to any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, the containment of contaminated soils for removal from the site, appropriate storage of chemicals and chemical waste away from sites of ecological value and the provision of sanitary facilities for on-site workers. Adoption of such measures should permit waste to be suitably contained within the site for subsequent removal and appropriate disposal.</p> <p>The following good site practices should also be implemented:</p> <ul style="list-style-type: none"> • 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		<p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p>

Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S5.7	E7	<p><u>Water Quality and Hydrology</u></p> <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Avoid indirect water impact to any wetland habitats or wetland fauna Minimize the drawdown of water table 	Works area in Hin Keng	Construction stage	<ul style="list-style-type: none"> TCW No. 5/2005 	<p align="center">✓</p> <p align="center">✓</p>

Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
<i>Landscape and Visual (Construction Phase)</i>							
S6.9.3	LV1	<p>The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:</p> <p><u>Re-use of Existing Soil</u></p> <ul style="list-style-type: none"> 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. <p><u>No-intrusion Zone</u></p> <ul style="list-style-type: none"> 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. <p><u>Protection of Retained Trees</u></p> <ul style="list-style-type: none"> 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	<p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p>

Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		prior to undertaking any works adjacent to all retained trees, including trees in contractor's works sites.					
S6.12	LV2	<ul style="list-style-type: none"> <li data-bbox="353 464 1037 635">• <u>Decorative Hoarding</u> Erection of decorative screen during construction stage to screen off undesirable views of the construction site for visual and landscape sensitive areas. Hoarding should be designed to be compatible with the existing urban context. <li data-bbox="353 659 1037 826">• <u>Management of facilities on work sites</u> To provide proper management of the facilities on the sites, give control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs. <li data-bbox="353 850 1037 1082">• <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	<p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p>

Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Air Quality (Construction Phase)							
-	A1	Emission from Vehicles and Plants <ul style="list-style-type: none"> • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and • plant should be serviced regularly to avoid emission of • black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra-low sulphur diesel fuel (ULSD) 	Reduce air pollution emission from construction vehicles and plants	All construction sites	Construction stage	• APCO	✓
		Open burning shall be prohibited	Reduce air pollution emission from work site	All construction sites	Construction stage	• APCO	✓
Construction Dust Impact							
S7.6.5	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	Rdr
S7.6.5	D2	<ul style="list-style-type: none"> • 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	✓

Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		maintain an equivalent intensity of no less than 1.8 L/m ² to achieve the dust removal efficiency					
S7.6.5	D3	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • APCO • To control the dust impact to meet HKAQO and TM-EIA criteria 	<p align="center">✓</p> <p align="center">Rdr</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p>

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		<p>period;</p> <ul style="list-style-type: none"> • 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; 					<p align="center">✓</p> <p align="center">✓</p> <p align="center">N/A</p> <p align="center">✓</p> <p align="center">✓</p>

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		<ul style="list-style-type: none"> • 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, turving, 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. 					<p align="center">✓</p> <p align="center">✓</p> <p align="center">N/A</p>
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	<p align="center">✓</p>

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Construction Noise (Airborne)							
S8.3.6	N1	Implement the following good site practices: <ul style="list-style-type: none"> • 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	<p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p>
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	<p align="center">✓</p>
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	<p align="center">✓</p>

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		saw.					
S8.3.6	N4	Use “Quiet plants”	Reduce the noise levels of plant items	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	✓
S8.3.6	N5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	All construction sites where practicable	Construction stage	• Annex 5, TM-EIA	✓
S8.3.6	N6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Selected representative noise monitoring station	Construction stage	• TM-EIA	✓

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Water Quality (Construction Phase)							
S10.7.1	W1	<p>In accordance with the Practice Noise for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following:</p> <p><u>Construction Runoff and Site Drainage</u></p> <ul style="list-style-type: none"> 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 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 	To minimize water quality impact from construction site runoff and general construction activities	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> Water Pollution Control Ordinance ProPECC PN1/94 TM-EIAO TM-Water 	<p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p>

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		<p>commencement of construction.</p> <ul style="list-style-type: none"> • 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 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 					<p align="center">✓</p> <p align="center">✓</p> <p align="center">Rdr</p> <p align="center">✓</p> <p align="center">✓</p>

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		<p>adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.</p> <ul style="list-style-type: none"> • 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 					<p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">Rdr</p>

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		<p>and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby.</p> <ul style="list-style-type: none"> 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 					<p>✓</p> <p>✓</p>
S10.7.1	W2	<p><u>Tunnelling Works</u></p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Water Pollution Control Ordinance ProPECC PN 1/94 TM-water TM-EIAO 	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
S10.7.1	W3	<u>Sewage Effluent</u>	To minimize water quality	All construction sites	Construction	• Water Pollution	

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		<p>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.</p>					
S10.7.1	W7	<p>In order to prevent accidental spillage of chemicals, the following is recommended:</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water 	<p align="center">Rdr</p> <p align="center">Rdr</p> <p align="center">✓</p>

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Waste Management (Construction Phase)							
S11.4.1.1	WM1	<p><u>On-site sorting of C&D material</u></p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> DEVB TC(W) No. 6/2010 	✓
S11.5.1	WM2	<p><u>Construction and Demolition Material</u></p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Land (Miscellaneous Provisions) Ordinance Waste Disposal Ordinance 	✓ ✓

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		<p>promote the use of recycled aggregates where appropriate;</p> <ul style="list-style-type: none"> • 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 				<ul style="list-style-type: none"> • ETWB TCW No. 19/2005 	<p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p>
S11.5.1	WM3	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005 	<p align="center">✓</p> <p align="center">✓</p>

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		crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.					
S11.5.1	WM4	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> • 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	<p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p> <p align="center">✓</p>
S11.5.1	WM5	<p><u>Excavated Contaminated Soils</u></p> <p>Details of the mitigation measures on handling of the contaminated soil shall be referred to Section on Land Contamination below.</p>	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.	

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S11.5.1	WM7	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste 	<p align="center">✓</p> <p align="center">Rdr</p> <p align="center">Rdr</p> <p align="center">✓</p>

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S14.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	All construction sites	Construction stage	<ul style="list-style-type: none"> • EIAO Guidance Note No.4/2010 • TM-EIAO 	✓
S14.2 – 14.4	EM2	<p>1) An Environmental Team needs to be employed as per the EM&A Manual.</p> <p>2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures.</p> <p>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.</p>	Perform environmental monitoring & auditing	All construction sites	Construction stage	<ul style="list-style-type: none"> • EIAO Guidance Note No.4/2010 • TM-EIAO 	<p>✓</p> <p>✓</p> <p>✓</p>

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

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

Environmental Mitigation Implementation Schedule – Works Contract 1103

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

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

Environmental Mitigation Implementation Schedule – Works Contract 1103

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

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

Environmental Mitigation Implementation Schedule – Works Contract 1103

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

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

Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
13.13	.2	control measures should be in place.	explosives	alignment	phase		
Chapter 13.13	A13B.7 .2	A speed limit for the diesel vehicle truck and bulk emulsion truck in the tunnel should be enforced. The truck may be escorted while underground to ensure route is clear from hazards and obstructions.	To ensure safe use of explosives	Along tunnel alignment	Construction phase		✓
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
Chapter 13.13	A13C.8	Establishment of emergency response and evacuation plans (co-operation of various parties/departments required. For the operational phase the emergency plan should also include adequate procedures for controlling the tunnel ventilation system and stopping	To reduce the risks to the SCL staff, construction workers and passengers	-	Construction and operation phases		✓

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

Environmental Mitigation Implementation Schedule – Works Contract 1103

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		of the SCL train traffic in order to prevent the trains moving into the affected areas.)					
Chapter 13.13	A13C.8	Safety/emergency response/evacuation training and drills for all personnel	To reduce the risks to the SCL staff, construction workers and passengers	-	Construction and operation phases		✓

Appendix D

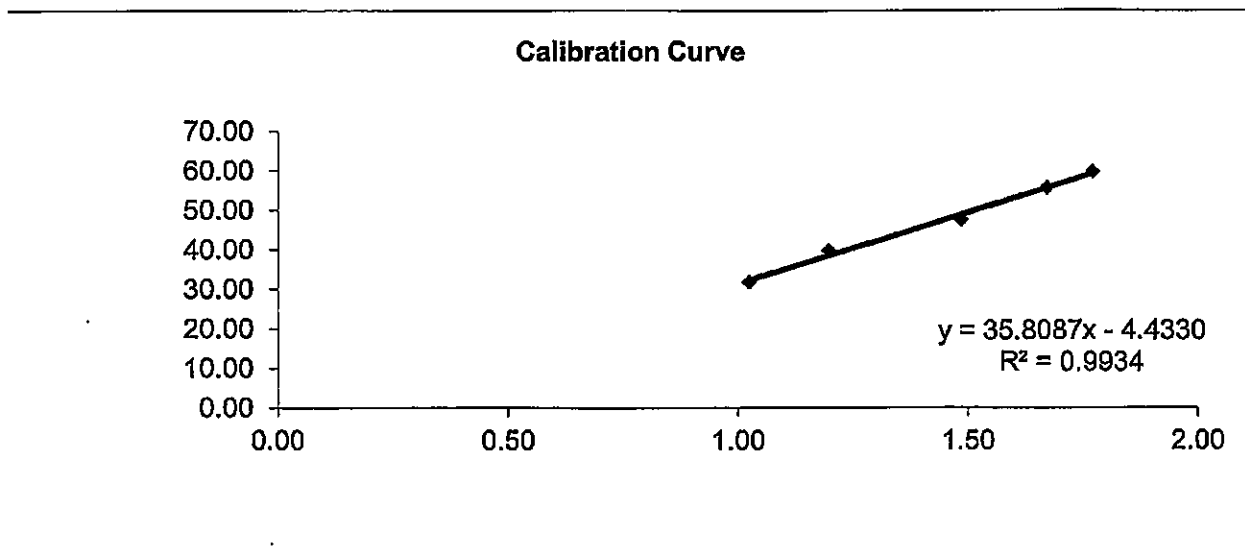
Calibration
Certificates for Air
Monitoring
Equipment

Ove Arup Partners (Hong Kong) Limited

High Volume Air Sampler Calibration Worksheet

Calibration date	8-Sep-16	Barometric pressure	756 mm Hg
Next Calibration date	7-Nov-16	Temperature (°C)	28.1 °C
Sampler location	DMS1 - Thomas Cheung School	Temperature (K)	301.1 K
Sampler model	TE-5170	P _{std}	760 mm Hg
Sampler serial number	3763	T _{std}	298 K
Calibrator model		TE-5025A	
Calibrator serial number		2421	
Slope of the standard curve, m _s		2.07019	
Intercept of the standard curve, b _s		-0.04612	

Resistance Plate No.	Manometer Reading (inch H ₂ O)	Flow Recorder Reading (CFM)	Calculated Q _{std} (m ³ /min)	Continuous Flow Recorder Reading IC (CFM)
5	3.60	32.00	1.02	31.75
7	5.10	40.00	1.20	39.69
10	8.20	48.00	1.49	47.63
13	10.60	56.00	1.67	55.56
18	12.00	60.00	1.77	59.53



Linear Regression

Sampler slope (m) : 35.8087
 Sampler intercept (b) : -4.4330
 Correlation coefficient (R²) : 0.9934

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

Performed by: *nt*
 Checked by: *id*

Date: 8-Sept-2016
 Date: 8-Sept-2016



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

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

CALCULATIONS

$$Vstd = \text{Diff. Vol} [(Pa - \text{Diff. Hg}) / 760] (298 / Ta)$$

$$Qstd = Vstd / \text{Time}$$

$$Va = \text{Diff Vol} [(Pa - \text{Diff Hg}) / Pa]$$

$$Qa = Va / \text{Time}$$

For subsequent flow rate calculations:

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

$$Qa = 1/m \{ [\text{SQRT} \text{H2O}(\text{Ta}/\text{Pa})] - b \}$$

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 (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)
			Start	Finish				Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish					
103534	Oct-16	5-Oct-16	0:00	0:00	DMS1	Fine	Normal Operation	759.4	759.5	26.6	26.5	40.0	40.0	2.8506	2.9137	0.0631	1.2883	1.2885	1.2884	5414.13	5438.13	1440.00	1855.30	34.0	148.7	260.0
103538	Oct-16	11-Oct-16	0:00	0:00	DMS1	Fine	Normal Operation	760.6	760.6	26.2	26.1	38.0	38.0	2.8574	2.9319	0.0745	1.2326	1.2327	1.2327	5438.14	5462.14	1440.00	1775.02	42.0	148.7	260.0
103539	Oct-16	17-Oct-16	0:00	0:00	DMS1	Fine	Normal Operation	760.6	760.6	25.6	25.5	42.0	42.0	2.8616	3.0283	0.1667	1.3486	1.3488	1.3487	5462.15	5486.15	1440.00	1942.13	85.8	148.7	260.0
103541	Oct-16	22-Oct-16	0:00	0:00	DMS1	Fine	Normal Operation	761.3	761.3	24.8	24.7	38.0	38.0	2.8678	2.9390	0.0712	1.2356	1.2358	1.2357	5486.16	5510.16	1440.00	1779.41	40.0	148.7	260.0
103543	Oct-16	28-Oct-16	0:00	0:00	DMS1	Fine	Normal Operation	762.0	762.0	24.0	23.9	42.0	42.0	2.8846	2.9222	0.0376	1.3529	1.3531	1.3530	5510.17	5534.17	1440.00	1948.32	19.3	148.7	260.0

Average (µg/m3)	44.2
Max (µg/m3)	85.8
Min (µg/m3)	19.3

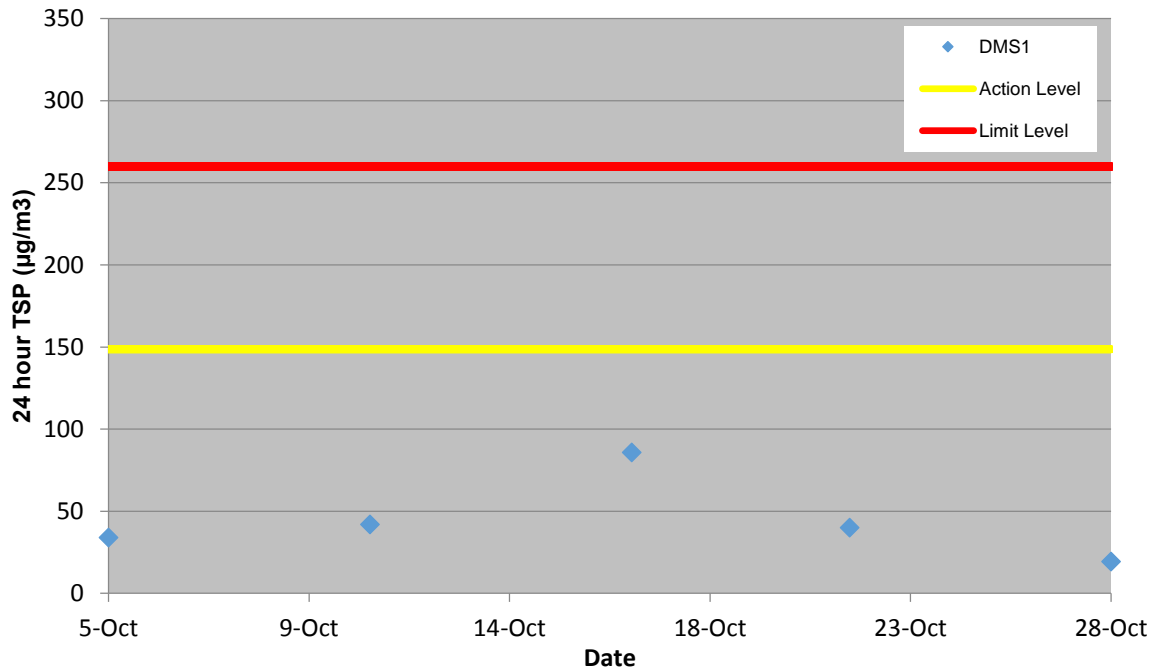
Location: DMS-2 Price Memorial Catholic Primary School

Details of 24-Hour TSP Monitoring

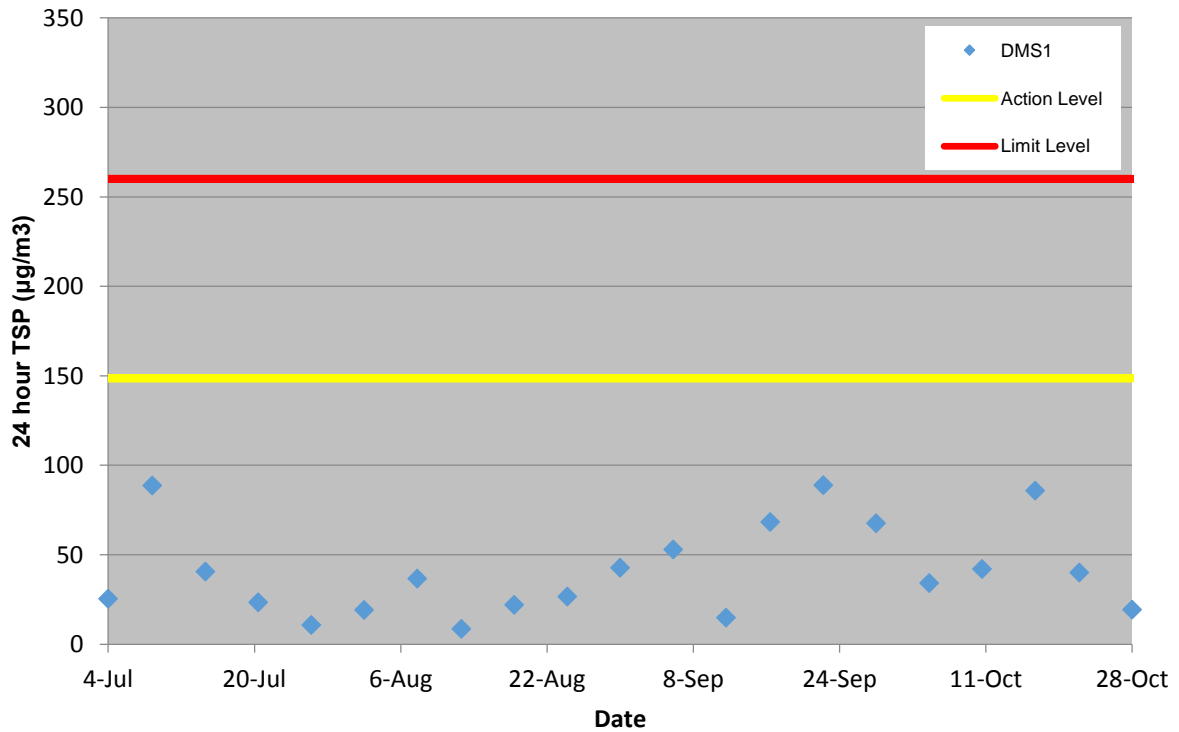
Filter No.	Month	Date	Time periods		Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time (mins.)	Total vol. (m ³)	24-hour TSP Level (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)
			Start	Finish				Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish					
103535	Oct-16	5-Oct-16	0:00	0:00	DMS2	Fine	Normal Operation	759.4	759.5	26.6	26.5	40.0	40.0	2.8591	3.0631	0.2040	1.3318	1.3321	1.3320	4801.2	4825.2	1440.00	1918.0	106.4	167.4	260.0
103537	Oct-16	11-Oct-16	0:00	0:00	DMS2	Fine	Normal Operation	760.6	760.6	26.2	26.1	38.0	38.0	2.8674	2.9247	0.0573	1.2734	1.2736	1.2735	4825.2	4849.2	1440.00	1833.8	31.2	167.4	260.0
103540	Oct-16	17-Oct-16	0:00	0:00	DMS2	Fine	Normal Operation	760.6	760.6	25.6	25.5	42.0	42.0	2.8749	2.9879	0.1130	1.3950	1.3952	1.3951	4849.18	4873.18	1440.00	2008.94	56.2	167.4	260.0
103542	Oct-16	22-Oct-16	0:00	0:00	DMS2	Fine	Normal Operation	761.3	761.3	24.8	24.7	38.0	38.0	2.8695	2.9560	0.0865	1.2766	1.2768	1.2767	4873.19	4897.19	1440.00	1838.45	47.1	167.4	260.0
103544	Oct-16	28-Oct-16	0:00	0:00	DMS2	Fine	Normal Operation	762.0	762.0	24.0	23.9	44.0	44.0	2.8719	2.9380	0.0661	1.4600	1.4602	1.4601	4897.20	4921.20	1440.00	2102.54	31.4	167.4	260.0

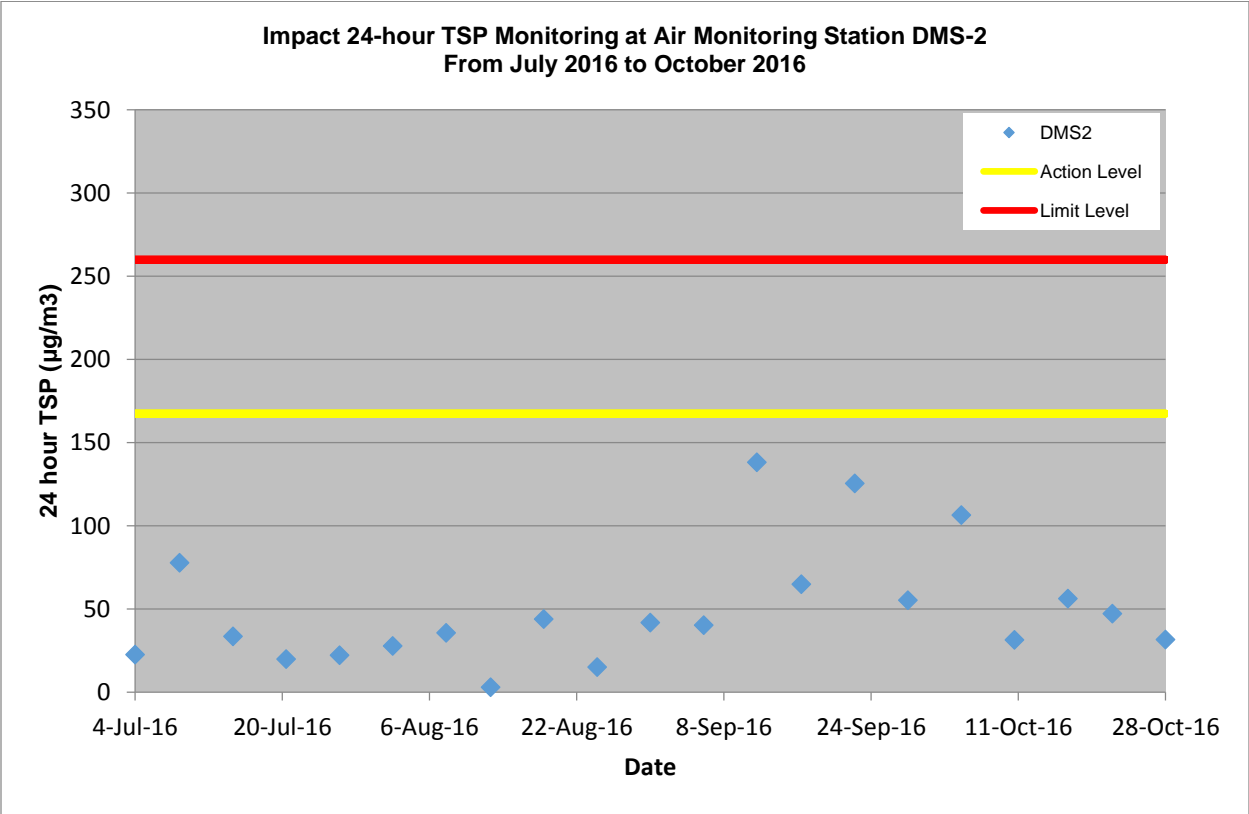
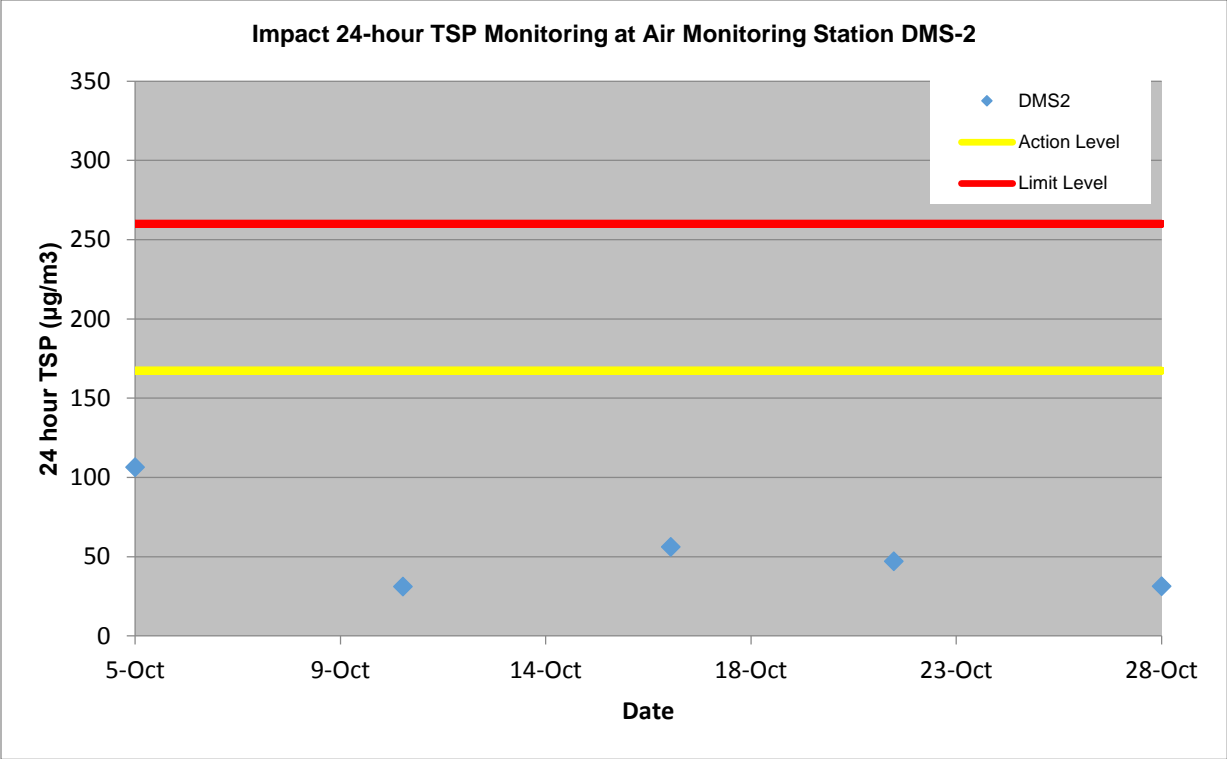
Average (µg/m3)	54.5
Max (µg/m3)	106.4
Min (µg/m3)	31.2

Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-1



Impact 24-hour TSP Monitoring at Air Monitoring Station DMS-1
From July 2016 to October 2016





Appendix F

Wind data

Daily Extract of Meteorological Observations For Hong Kong (October 2016)

Date October	Number of hours of Reduced Visibility# (hours)	Total Bright Sunshine (hours)	Daily Global Solar Radiation (MJ/m ²)	Total Evaporation (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
1	12	5.8	16.05	0.6	090	16.2
2	9	3.0	11.57	4.2	060	17.8
3	0	1.2	8.37	2.0	050	28.5
4	0	4.9	9.68	1.9	050	17.5
5	0	5.7	16.61	4.4	070	18.7
6	0	8.9	18.76	6.8	010	19.3
7	0	3.8	11.82	3.1	010	23.6
8	0	2.1	10.54	3.7	360	35.2
9	0	4.7	15.92	6.1	010	33.0
10	0	6.8	16.51	3.5	020	28.0
11	0	0.7	9.51	3.2	010	29.8
12	0	0.1	4.70	1.3	060	39.7
13	0	6.5	17.41	4.7	080	39.5
14	0	9.0	19.58	3.9	080	34.6
15	0	7.0	15.64	4.5	050	20.3
16	0	7.8	15.66	5.0	020	20.3
17	0	2.2	7.73	N.A.	070	43.5
18	0	-	2.07	N.A.	090	57.5
19	0	0.1	2.27	N.A.	100	36.0
20	7	7.4	14.48	1.9	010	15.8
21	0	-	0.80	N.A.	220	60.8
22	0	5.0	12.47	0.5	220	18.2

Date October	Number of hours of Reduced Visibility# (hours)	Total Bright Sunshine (hours)	Daily Global Solar Radiation (MJ/m²)	Total Evaporation (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
23	0	2.8	10.47	2.1	100	6.0
24	0	4.1	12.90	1.9	120	13.8
25	0	9.2	20.00	4.2	090	16.5
26	0	8.5	17.55	3.2	070	17.1
27	0	9.8	19.82	4.6	060	11.1
28	0	10.3	20.33	3.3	020	8.6
29	0	3.7	11.38	5.3	080	31.5
30	0	3.6	12.46	4.1	020	32.3
31	0	7.9	17.24	5.2	070	24.0
Mean/Total	28	152.6	12.91	95.2 ^{&}	070	26.3
Normal*	142.8 [§]	193.9	14.05	123.9	080	27.4
Station	Hong Kong International Airport	King's Park		Waglan Island [^]		

The minimum pressure recorded at the Hong Kong Observatory was 990.7 hectopascals at 1132 HKT on 21 October.

The maximum air temperature recorded at the Hong Kong Observatory was 32.4 degrees C at 1326 HKT on 6 October.

The minimum air temperature recorded at the Hong Kong Observatory was 22.0 degrees C at 0543 HKT on 11 October.

The maximum gust peak speed recorded at Waglan Island was 115 kilometres per hour from 280 degrees at 1235 HKT on 21 October.

The maximum 1-minute mean rainfall rate recorded at King's Park was 173 millimetres per hour at 1503 HKT on 18 October.

Reduced visibility refers to visibility below 8 kilometres when there is no fog, mist or precipitation.

- The visibility readings at the Hong Kong International Airport are based on hourly observations by professional meteorological observers in 2004 and before, and average readings over the 10-minute period before the clock hour of the visibility meter near the middle of the south runway from 2005

onwards. The change of the data source in 2005 is an improvement of the visibility assessment using instrumented observations following the international trend.

- Before 10 October 2007, the number of hours of reduced visibility at the Hong Kong International Airport in 2005 and thereafter displayed in this web page was based on hourly visibility observations by professional meteorological observers. Since 10 October 2007, the data have been revised using the average visibility readings over the 10-minute period before the clock hour, as recorded by the visibility meter near the middle of the south runway.

^ In case the data are not available from Waglan Island, observations of Cheung Chau or other nearby weather stations will be incorporated in computing the Prevailing Wind Direction and Mean Wind Speed.

* 1981-2010 Climatological Normal, unless otherwise specified

Remark: Graphical presentations for wind speed and wind direction from the nearest HKO's weather station (Shatin and Kai Tak) were not available.

Appendix G

Calibration
Certificates of Noise
Monitoring
Equipment

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

Model : NA - 28

Serial No. : 00162248

Microphone No. : 08922

Preamplifier No. : 52341

Condition : Temperature 24 °C

Humidity 37 %RH

Date : March, 24, 2016

Signature : *Asami*

Pass

1. Frequency weightings (Fig. 1)

- Frequency weighting A
- Frequency weighting C
- Frequency weighting Z

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

Frequency weighting : C

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

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

3. Level linearity error (dB)

1) Sound level meter mode

Frequency weighting : A

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

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

2) Analysis mode (dB)

Reference level : 94.0 dB, Frequency weighting : Z

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

4. Response to repeated to toneburst

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

Input signal level : 130.0 dB + 10 dB

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

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

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

5. Toneburst response (Time weighted sound level)

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

Input signal level : 127 dB

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

Toneburst : Frequency : 4000Hz, duration : 0.25 ms

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

6. Toneburst response (Sound exposure level L_E)

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

Input signal level : 127 dB

Frequency weighting : A

Toneburst : Frequency : 4000Hz, duration : 0.25 ms

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

7. Peak sound level (dB)

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

Input signal level : 137 dB

Frequency weighting : C

Peak sound level	Frequency	Input Signals	Design goal (dB)	Indication (dB)	Deviation (dB)	Tolerance limits (dB)
<i>L_{cpeak}</i>	31.5 Hz	1-cycle	139.5	140.2	0.7	± 2.0
	500 Hz	Half-cycle (Positive-going)	139.4	139.1	-0.3	± 1.0
		Half-cycle (Negative-going)	139.4	139.1	-0.3	

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

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

Input signal level : 120.0 dB (at 1000 Hz)

Frequency weighting : Z

1) 1/1 Octave band filter (singleness)

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

2) 1/3 Octave band filter (singleness)

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

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

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

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

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

9. Inherent noise level (dB)

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

10. Instrumental error

± 0.7dB (Reference level : 84.0dB)

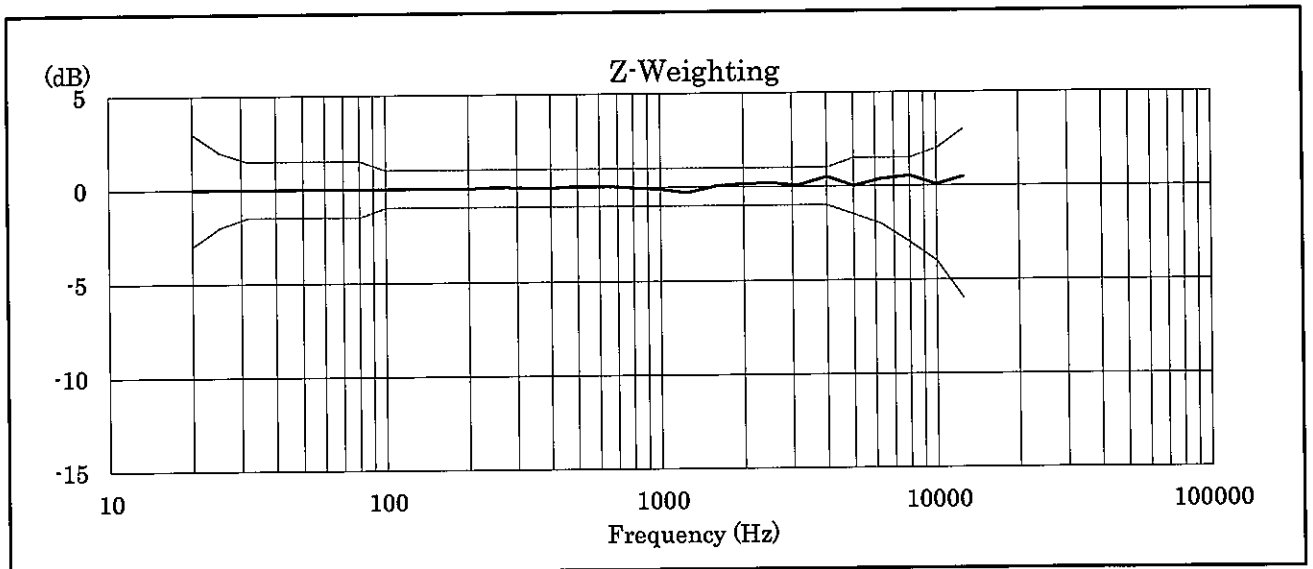
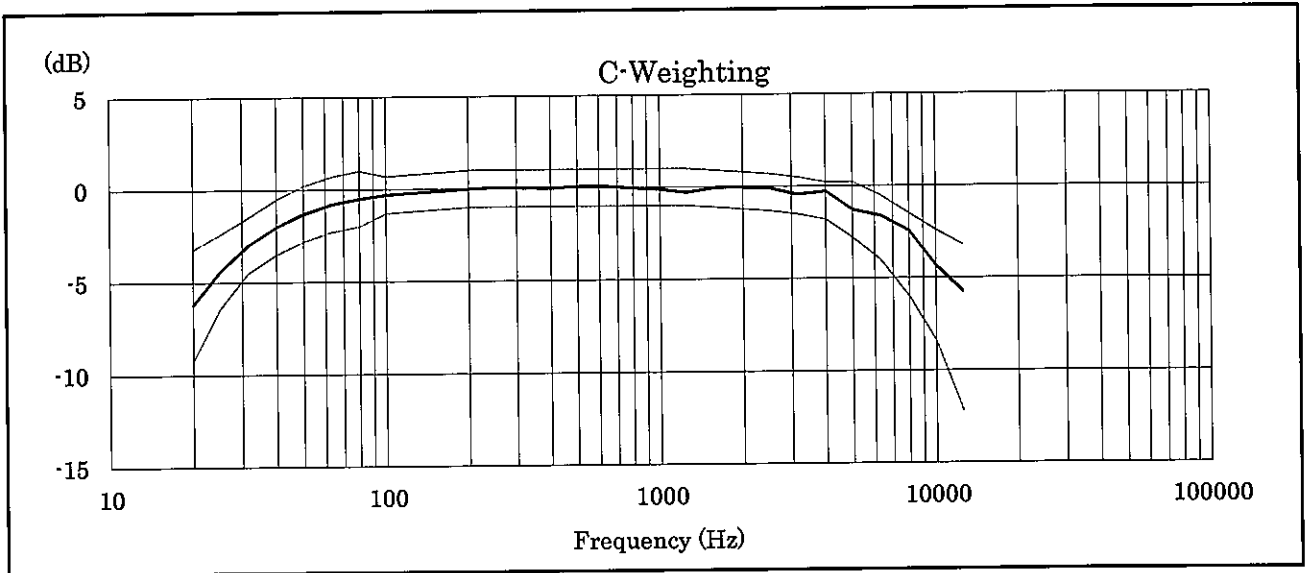
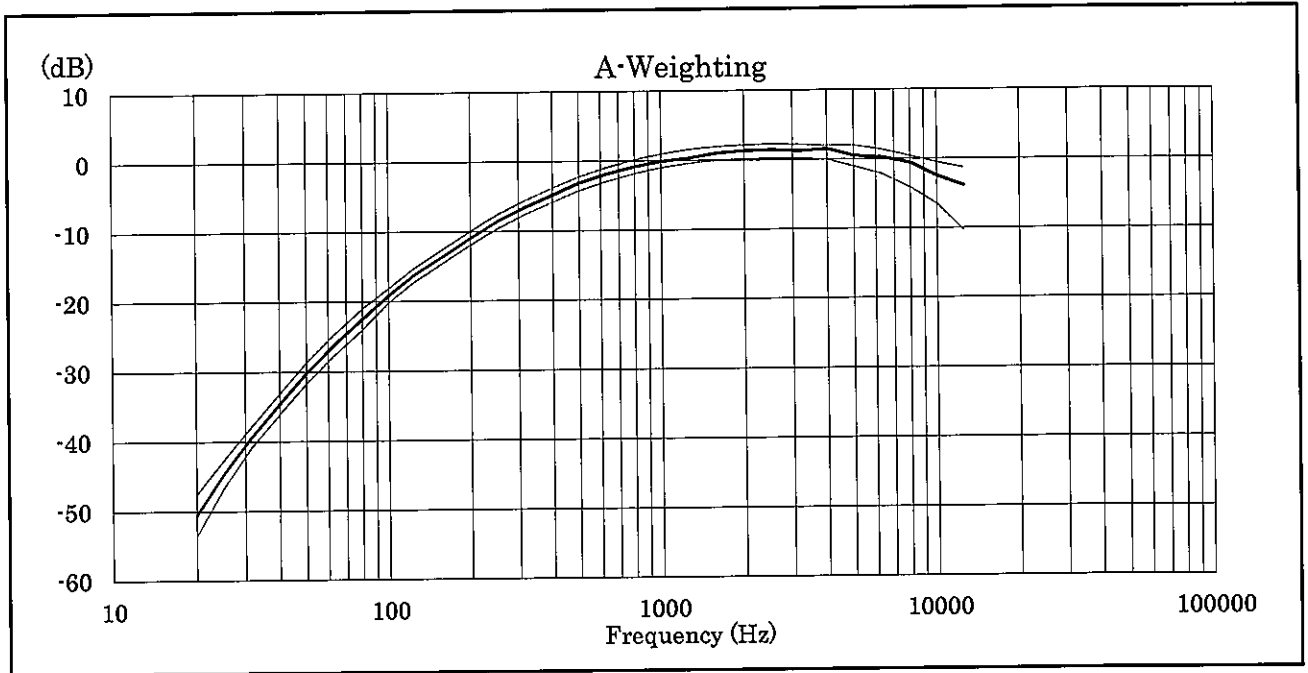
0.1 dB

Applicable standards

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



Relative free field frequency response





CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0323 02-02

Page: 1 of 2

Item tested

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

Item submitted by

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

Date of test: 24-Mar-2016

Reference equipment used in the calibration

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

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 50 ± 10 %
Air pressure: 1015 ± 5 hPa

Test specifications

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

Test results

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

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

Approved Signatory:


Huang Jian Min/Feng Jun Qi

Date: 29-Mar-2016

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

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

1, Measured Sound Pressure Level

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

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	(Output level in dB re 20 μ Pa)	
			Estimated	Expanded Uncertainty dB
1000	94.00	93.84	0.10	

2, Sound Pressure Level Stability - Short Term Fluctuations

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

At 1000 Hz STF = 0.002 dB

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

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

At 1000 Hz Actual Frequency = 1000.1 Hz

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

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

At 1000 Hz TND = 2.4 %

Estimated expanded uncertainty 0.7 %

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

Calibrated by:

Date:

Fung Chi Yip
24-Mar-2016

- End -

Checked by:

Date:

Lam Tze Wai
29-Mar-2016

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

Appendix H

Noise Results

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

Daytime Noise Monitoring Results

Date	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Baseline Corrected Level
		L _{Aeq,30min}	Limit	L _{10,30min}	L _{90,30min}	L _{Aeq,30min}	L _{Aeq,30min}
6-Oct-16	11:15-11:45	55.9	70.0	57.5	53.0	57.0	< Baseline Level
12-Oct-16	11:30-12:00	56.5	70.0	58.5	53.0	57.0	< Baseline Level
18-Oct-16	16:15-16:45	56.1	70.0	57.5	53.5	57.0	< Baseline Level
29-Oct-16	13:00-13:30	56.9	70.0	58.5	54.5	57.0	< Baseline Level

Average L _{Aeq,30min}	56.4
Max L _{Aeq,30min}	56.9
Min L _{Aeq,30min}	55.9

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

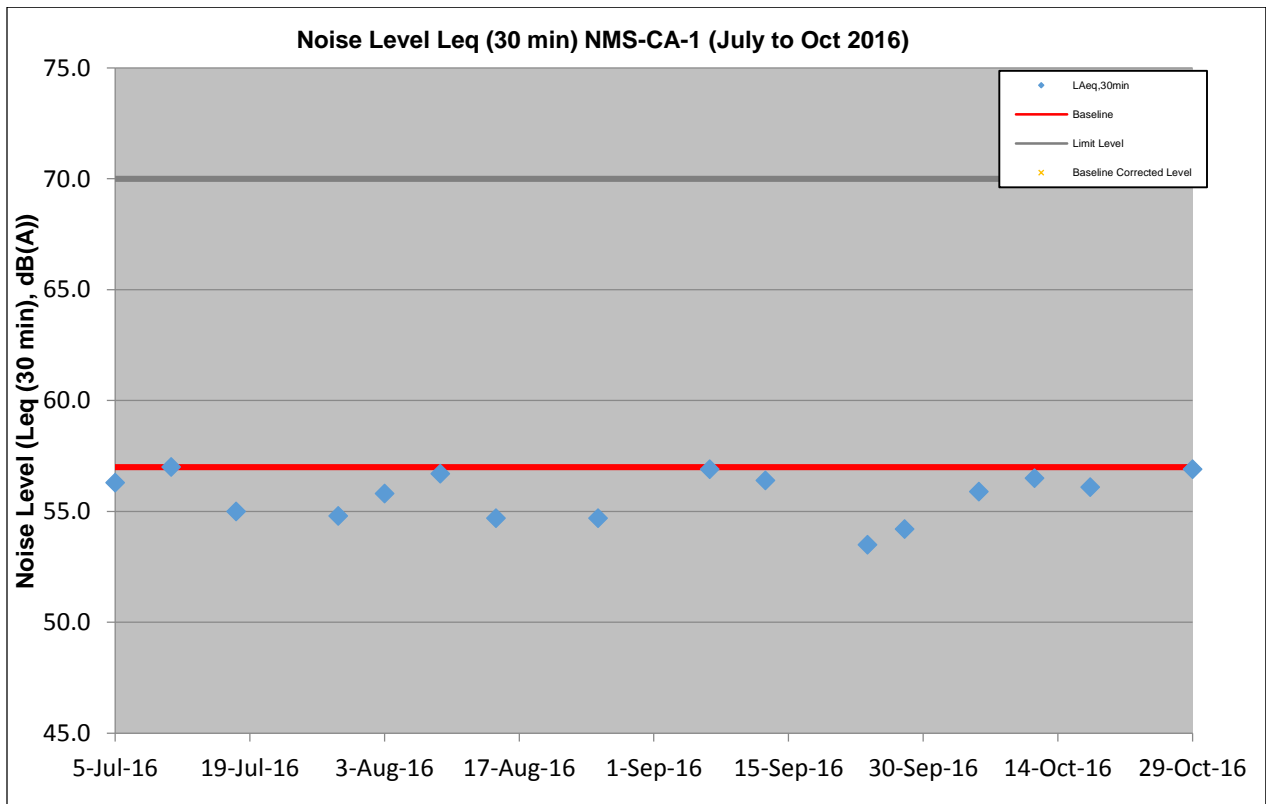
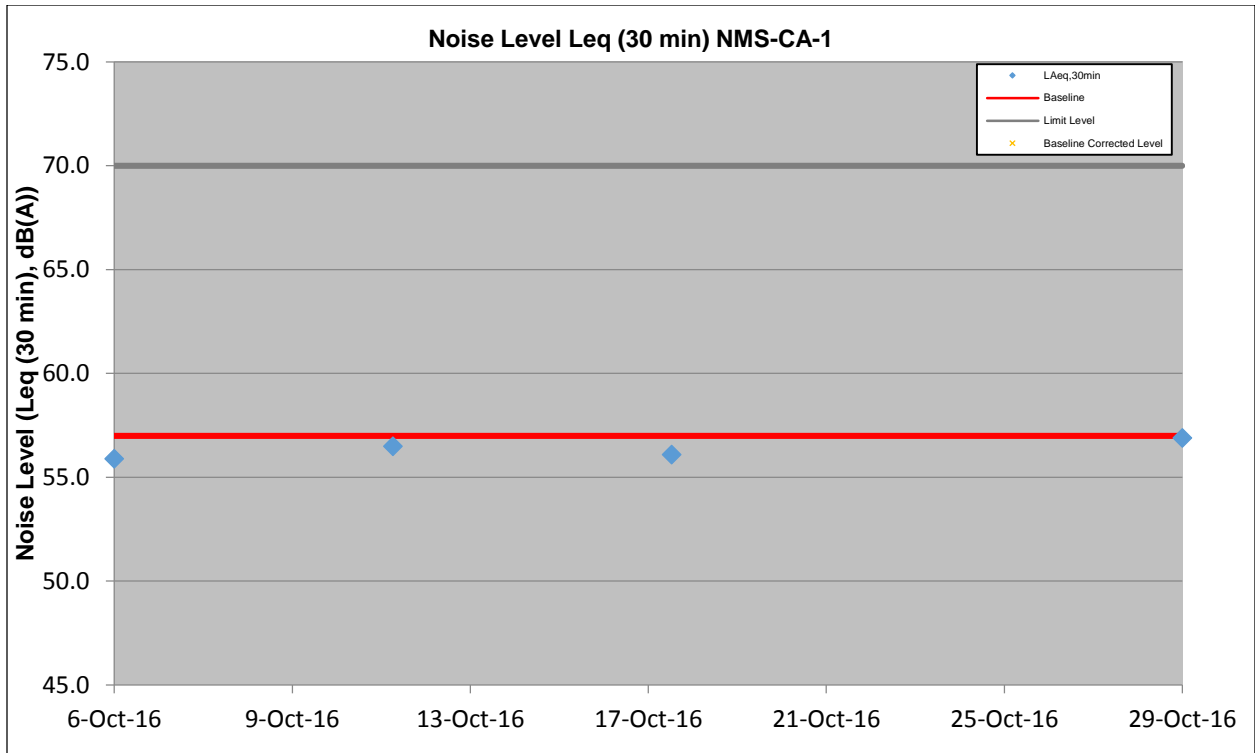
Location: NMS-CA-2 - Price Memorial Catholic Primary School

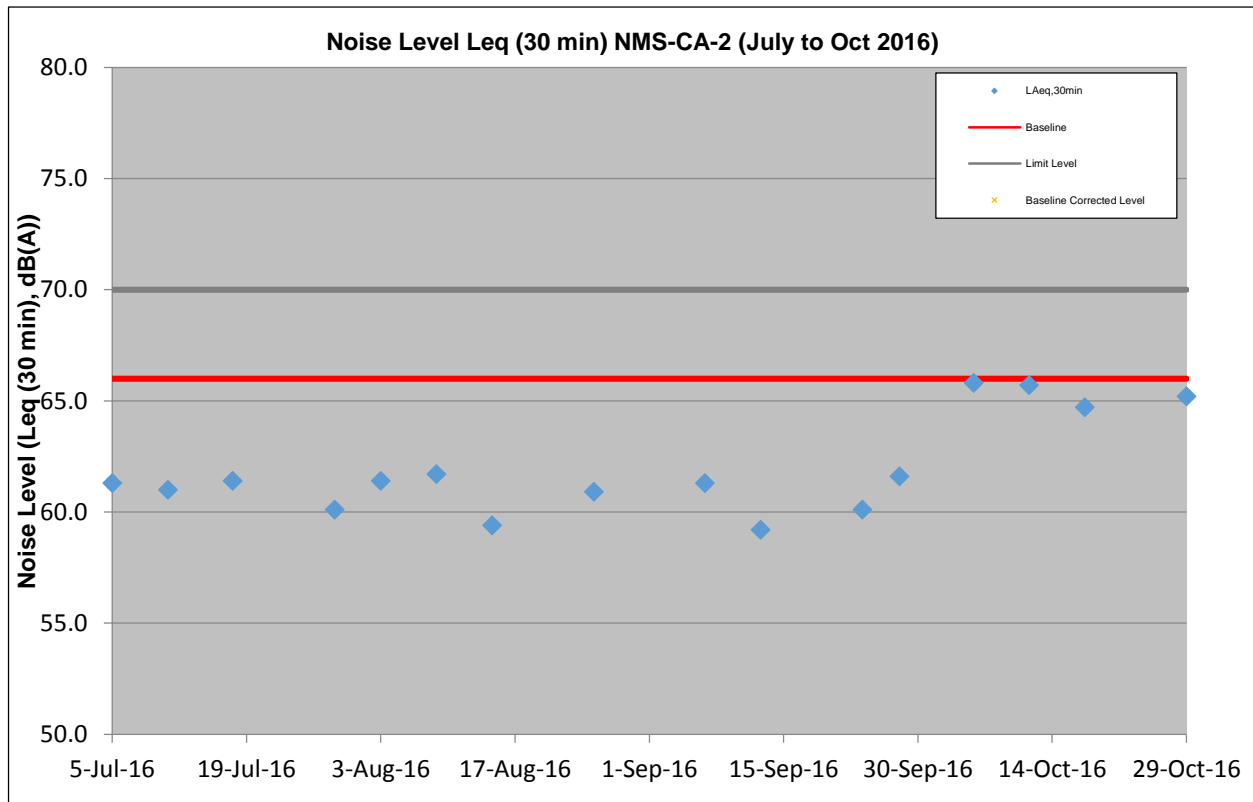
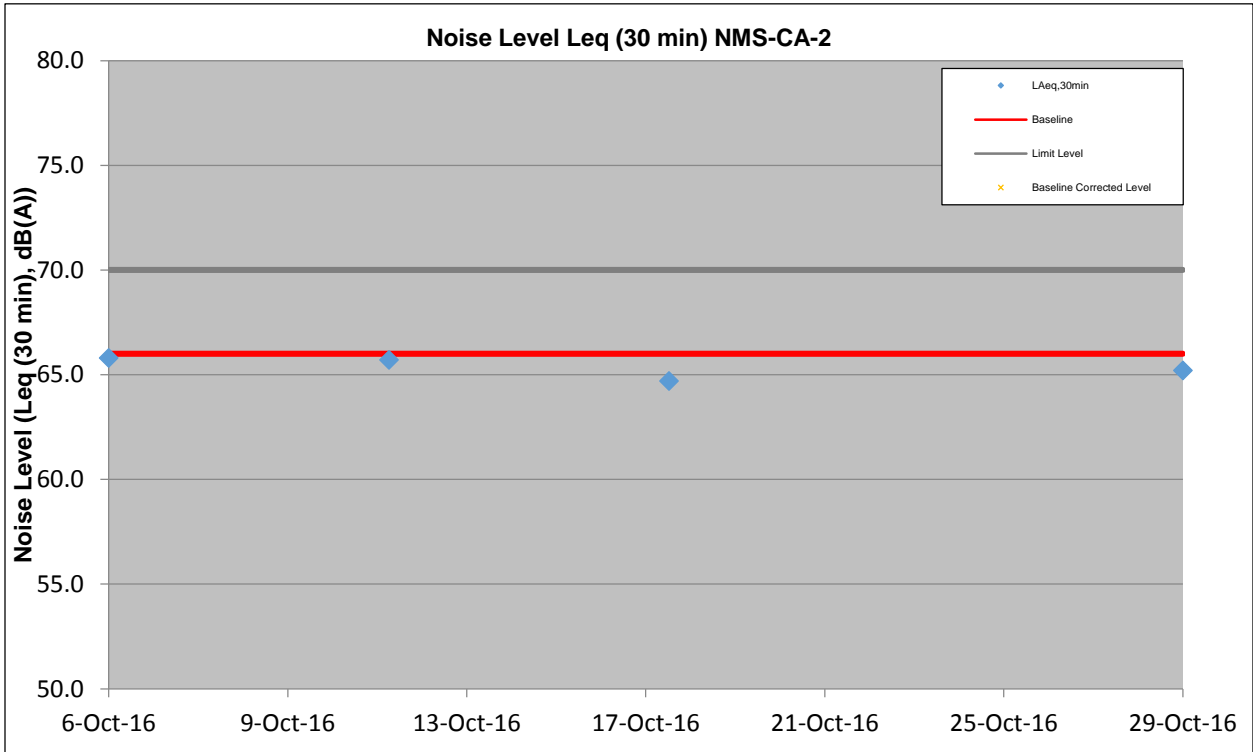
Daytime Noise Monitoring Results

Date	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Baseline Corrected Level
		L _{Aeq,30min}	Limit	L _{10,30min}	L _{90,30min}	L _{Aeq,30min}	L _{Aeq,30min}
6-Oct-16	12:30-13:00	65.8	70.0	67.5	62.5	66.0	< Baseline Level
12-Oct-16	10:15-10:45	65.7	70.0	68.0	62.5	66.0	< Baseline Level
18-Oct-16	15:00-15:30	64.7	70.0	66.5	62.0	66.0	< Baseline Level
29-Oct-16	11:30-12:00	65.2	70.0	67.0	62.5	66.0	< Baseline Level

Average L _{Aeq,30min}	65.4
Max L _{Aeq,30min}	65.8
Min L _{Aeq,30min}	64.7

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





Appendix I

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

Event and Action Plan for Air Quality

Event	Action			
	ET	IEC	ER	Contractor
Action Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal as appropriate.

Limit Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Identify Source and investigate the non-conformity 2. Implement remedial measures 3. Amend working methods agreed with the ER as appropriate 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by the ER until the non-conformity is abated.

Note:

ET – Environmental Team

IEC – Independent Environmental Checker

ER – Engineer's Representative

Appendix J

Waste Flow Table

Monthly Summary Waste Flow Table for 2016

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	21.115	0.000	0.000	14.914	6.201	0.000	0.000	0.000	0.000	0.900	0.198
Feb	20.210	0.000	0.000	15.389	4.821	0.000	0.000	0.000	0.000	0.500	0.213
Mar	20.608	0.000	0.000	15.925	4.682	0.000	0.000	0.000	0.000	1.000	0.230
Apr	19.008	0.000	2.258	10.793	5.958	0.000	0.000	0.000	0.000	0.000	0.342
May	1.406	0.000	0.000	0.146	1.260	0.000	0.000	0.000	0.000	3.140	0.268
Jun	1.330	0.000	0.000	0.000	1.330	0.000	0.000	0.000	0.000	8.000	0.278
Sub-total	83.677	0.000	2.258	57.168	24.252	0.000	0.000	0.000	0.000	13.540	1.530
July	2.190	0.000	0.000	0.000	2.190	0.000	0.000	0.000	0.000	2.600	0.292
August	2.338	0.000	0.000	0.000	2.338	0.000	0.000	0.000	0.000	0.000	0.360
September	1.791	0.000	0.008	0.937	0.846	1.063	0.000	0.000	0.000	0.000	0.562
October	0.635	0.000	0.000	0.000	0.635	0.000	0.000	0.000	0.000	0.000	0.286
November											
December											
Total	90.631	0.000	2.266	58.105	30.261	1.063	0.000	0.000	0.000	16.140	3.030

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 Oct is 31/10/2016 for TKO137FB/TM38FB, NENT/SENT/WENT landfill.
- 3) The amount of waste in Oct is 286.19 tons for NENT/SENT/WENT Landfill, 1269.11 tons for TKO137FB/TM38FB.
- 4) The amount of C&D material reused in the Contract in Oct is 0 trucks, approximately 0 tons, for cut-off date as 31/10/2016.
- 5) The amount of chemical waste in Oct is 0 for cut-off date as 31/10/2016.

Appendix K

Environmental
Monitoring
Programme for
Coming Month

**SCL Works Contract 1103 - Hin Keng to Diamond Hill Tunnels
Tentative Impact Monitoring Schedule - November 2016**

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

	Public Holiday
	Monitoring Day

Monitoring Details

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

Appendix L

Cumulative Log for
Complaints,
Notifications of
Summons and
Successful
Prosecutions

Ove Arup and Partners HK Ltd.

Environmental Complaint Log (Cumulative)

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
February 2013	0	0	0
March 2013	0	0	0
April 2013	0	0	0
May 2013	0	0	0
June 2013	0	0	0
July 2013	0	0	0
August 2013	0	0	0
September 2013	0	0	0
October 2013	0	0	0
November 2013	0	0	0
December 2013	0	0	0
January 2014	0	0	0
February 2014	0	0	0
March 2014	0	0	0
April 2014	0	0	0
May 2014	0	0	0
June 2014	0	0	0
July 2014	0	0	0
August 2014	0	0	0
September 2014	0	0	0
October 2014	0	0	0
November 2014	1	0	0
December 2014	2	0	0
January 2015	0	0	0
February 2015	3	0	0
March 2015	3	0	0
April 2015	0	0	0
May 2015	0	0	0
June 2015	0	0	0
July 2015	1	0	0
August 2015	0	0	0
September 2015	0	0	0
October 2015	1	0	0
November 2015	1	0	0
December 2015	0	0	0
January 2016	0	0	0
February 2016	0	0	0
March 2016	1	0	0
April 2016	1	0	0
May 2016	1	0	0
June 2016	1	0	0
July 2016	0	0	0
August 2016	3	0	0
September 2016	0	0	0
October 2016	0	0	0
Total	19	0	0

Appendix D

**44th 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. 44

[Period from 1 to 31 October 2016]

Works Contract 1106 – Diamond Hill Station

(October 2016)

Certified by: 
_____ Dr. Priscilla Choy

Position: Environmental Team Leader

Date: 11th November 2016

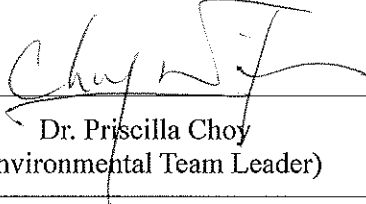
Leader Joint Venture

Shatin to Central Link – Contract 1106 Diamond Hill Station

Monthly Environmental Monitoring and Audit Report For October 2016

(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 44th monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for **MTR Shatin to Central Link (SCL) Works Contract 1106 – Diamond Hill Station**. This report documents the findings of EM&A Works conducted from 1st to 31st October 2016.

Summary of Construction Works undertaken during the Reporting Month

2. The major site activities undertaken in the reporting month include:
 - Construction of Level U1 Wall and Structural Steel Erection;
 - ABWF works at SCL-DIH station area;
 - Foundation works and temporary road works at Lung Cheung Road and Choi Hung Road;
 - Installation of bored pile on Lung Cheung Road;
 - Excavation, strutting, sheet piling and grouting works at MOE near Entrance B;
 - Landscaping and tiling works, and planter reinstatement works at Entrance A1; and
 - Drilling works and install Pre-bored socketed H-Piles at Entrance A2.

Environmental Monitoring and Audit Progress

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

Regular Construction Noise and Construction Dust Monitoring

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

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

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

Remarks:

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

Cultural Heritage

4. An Archaeological Action Plan (AAP) for the survey-cum-excavation at the former Tai Hom Village site was approved by EPD on 8 April 2013. A Licence to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance has been subsequently obtained from Antiquities and Monuments Office (AMO) on 19 April 2013. The archaeological survey-cum-excavation at Former Tai Hom Village

commenced on 25 April 2013 and the fieldwork had been completed in September 2013 in accordance with the Licence granted and the approved AAP. A draft Archaeological Survey-cum-Excavation Report was submitted to AMO for review in March 2014, April 2015, February 2016 and March 2016. Comments from AMO were received in September 2014, December 2015 and June 2016 respectively. The revised draft report was submitted to AMO for review in September 2016.

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 266 m³ of inert C&D materials were generated from the Project, while 225 m³ of those were reused in the Contract and 41 m³ was sent to Tseung Kwan O Area 137 Fill Bank during the reporting month. 127 m³ 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. 251 kg paper/ cardboard packaging, no plastics and metal were generated in this reporting month.

Landscape and Visual

7. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 6 and 20 October 2016. All necessary mitigation measures have been implemented by the Contractor and no finding was spotted during the inspections. 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 October 2016. The representative of the IEC joined the site inspection on 27 October 2016. Details of the audit findings and implementation status are presented in Section 6.

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

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

Future Key Issues

12. Major site activities for the coming reporting month will include:
- Construction of Level U1 Wall and Structural Steel Erection;
 - ABWF works at SCL-DIH station area;
 - Foundation works and temporary road works at Lung Cheung Road and Choi Hung Road;
 - Installation of bored pile, drive sheet piling and grouting works on Lung Cheung Road;
 - Sheet piling, grouting works and pumping test at MOE near Entrance B;
 - Landscaping and tiling works, and planter reinstatement works at Entrance A1; and
 - Drilling works and install Pre-bored socketed H-Piles at Entrance A2.

1 INTRODUCTION

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

Purpose of the Report

1.2 This is the 44th 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 October 2016.

Structure of the Report

1.3 The structure of the report is as follows:

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

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

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

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

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

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

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

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

Section 9: **Conclusions and Recommendations**

2 PROJECT INFORMATION

Background

- 2.1 The Shatin to Central Link – Tai Wai to Hung Hom Section (hereafter referred to as SCL (TAW-HUH)) is an approximately 11 km long extension of the Ma On Shan Line and links up with the West Rail Line at Hung Hom forming a strategic east-west rail corridor. It is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO).
- 2.2 The construction of the SCL (TAW-HUH) has been divided into a series of civil construction Works Contracts. This Works Contract 1106 covers the construction of Shatin-to-Central Link (SCL) station in Diamond Hill (DIH).

General Site Description

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

Construction Programme and Activities

- 2.4 A summary of the major construction activities undertaken in this reporting period is shown as follows. The tentative construction programme is presented in **Appendix A**.
- Construction of Level U1 Wall and Structural Steel Erection;
 - ABWF works at SCL-DIH station area;
 - Foundation works and temporary road works at Lung Cheung Road and Choi Hung Road;
 - Installation of bored pile on Lung Cheung Road;
 - Excavation, strutting, sheet piling and grouting works at MOE near Entrance B;
 - Landscaping and tiling works, and planter reinstatement works at Entrance A1; and
 - Drilling works and install Pre-bored socketed H-Piles at Entrance A2

Project Organisation

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

Status of Environmental Licences, Notification and Permits

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

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

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-438/2012/J	29/02/2016	03/10/2016	Superseded by EP-438/2012/K
EP-438/2012/K	04/10/2016	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
No.: 378656	28/08/2014	N/A	Valid
Billing Account for Construction Waste Disposal			
Account No.: 7016601	27/12/2012	N/A	Valid
Registration of Chemical Waste Producer			
5213-281-S3711-02	28/01/2015	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00014959-2012	14/01/2013	31/01/2018	Valid
WT00016920-2013	06/09/2013	30/09/2018	Valid
Construction Noise Permit (CNP)			
GW-RE0904-16	12/09/2016	11/03/2017	Superseded by GW-RE1043-16
GW-RE1043-16	25/10/2016	23/04/2017	Valid

Summary of EM&A Requirements

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

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Regular Construction Noise Monitoring

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

Table 3.1 Regular Construction Noise Monitoring Location

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

Note:

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

Monitoring Parameter and Frequency

- 3.2 Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed. The monitoring schedule for this reporting period of monitoring stations at Rhythm Garden is shown in **Appendix D**.
- 3.3 The construction noise levels were measured in terms of the A-weighted equivalent continuous sound pressure level (L_{Aeq}) in decibels dB(A). L_{Aeq} (30min) (as six consecutive $L_{eq, 5-min}$ 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**, comply with the IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in **Appendix C**.

Table 3.2 Noise Monitoring Equipment

Monitoring Equipment	Model (Serial no.)
Sound Level Meter	SVAN 955 (Serial no.: 12553)
	SVAN 957 (Serial no.: 23853)
	BSWA 801 (Serial no.: 35924)
Calibrator	SV30A (Serial no.: 24803)
	SV30A (Serial no.: 24791)
	SV30A (Serial no.: 24780)
	4231 (Serial no.: 2412367)

Maintenance and Calibration

3.6 Maintenance and Calibration procedures were as follows:

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

Action & Limit Level for Construction Noise Monitoring

3.7 The Action and Limit Levels are presented in **Appendix B** and the Event / Action Plan (EAP) for noise monitoring is presented in **Appendix I**.

Continuous Noise Monitoring

3.8 With reference to the latest Continuous Noise Monitoring Plan (CNMP) and CNMMP prepared and submitted under EP Condition 2.9 and 2.10, it is predicted that no residual air-borne construction noise impacts exceeding the relevant noise criteria will be anticipated. Therefore, no continuous noise monitoring is required during the construction of the SCL (TAW-HUH) under Works Contract 1106.

Regular Construction Dust Monitoring

3.9 The proposed dust monitoring stations for the construction phase of the Project, as recommended in the approved EM&A Manual, are listed in **Table 3.3** and shown in **Figure 3**. The proposed locations have been agreed with the ER, EPD and IEC.

Table 3.3 Dust Monitoring Location

Regular Dust Monitoring Location	Description
DMS-3 ⁽¹⁾⁽³⁾ / DMS-4 ⁽²⁾⁽³⁾	Hong Kong Sheng Kung Hui Nursing Home
DMS-4 ⁽¹⁾ / DMS-3 ⁽²⁾	Block 1, Rhythm Garden

Note:

- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) Access to the monitoring location at Shek On House (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Hong Kong S.K.H Nursing Home) was proposed and approved by the ER and agreed by the IEC and EPD.

Monitoring Parameter and Frequency

- 3.10 The dust monitoring (in terms of Total Suspended Particulates (TSP)) was conducted at the designated monitoring stations in accordance with the requirements stipulated in the EM&A Manual. The 24-hour TSP levels were monitored at the frequency and duration stated in **Table 3.4**. The TSP monitoring at Rhythm Garden was conducted as per the schedule presented in **Appendix D**.

Table 3.4 Dust Monitoring Parameters and Frequency

Monitoring Period	Duration	Parameter	Frequency
Impact Monitoring ⁽¹⁾	Throughout the construction period	24-hour TSP	Once per 6 days

Note:

- (1) 1- hour TSP shall be conducted when one documented valid complaint is received.

Monitoring Equipment

- 3.11 **Table 3.5** summarizes the equipment used for the dust monitoring.

Table 3.5 Dust Monitoring Equipment

Equipment	Model and Make	Qty.
HVS	Tisch Environmental, Inc.; Model no. TE-5170, Serial no.: 2352	1
HVS	Tisch Environmental, Inc.; Model no. TE-5170, Serial no.: 3223	1
Calibration Orifice	Tisch Environmental, Inc.; Model no. TE – 5025A Orifice ID: 2896	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 $\pm 5\%$. A convenient working RH was 40%.
- 3.16 Wellab Ltd. has a comprehensive quality assurance and quality control programmes.

Operating/Analytical Procedures

- 3.17 Operating/analytical procedures for the TSP monitoring were highlighted as follows:
- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 and 1.4 $\text{m}^3/\text{min.}$) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard.
 - The power supply was checked to ensure the sampler worked properly.
 - The filter holding frame and the area surrounding the filter were cleaned.
 - On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the air quality monitoring station.
 - The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
 - The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts to avoid air leakage at the edges.
 - The shelter lid was closed and secured with the aluminum strip.
 - A new flow rate record chart was set into the flow recorder.
 - The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
 - The flow rate of the HVS sampler would be verified to be constant and recorded on the data sheet before and after sampling.
 - The elapsed time and other relevant information was recorded. After sampling, the sampled filter was removed carefully and folded in half-length so that only surfaces with collected particulate matter were in contact.
 - It was then placed in a clean plastic envelope and sealed and sent to the Wellab Ltd. for weighing.
 - Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment should be between 25°C and 30°C and not vary by more than $\pm 3^\circ\text{C}$; the relative humidity (RH) should be < 50% and not vary by more than $\pm 5\%$. A convenient working RH is 40%. Weighing results were returned to Cinotech for further analysis of TSP concentrations.

Maintenance/Calibration

- 3.18 The following maintenance/calibration was required for the HVS:
- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
 - Calibration of the HVS (five point calibration) using Calibration Kit was carried out every two months. Copies of calibration certificates are attached in **Appendix C**.
 - The HVS calibration orifice will be calibrated annually.

Action and Limit Levels for Dust Monitoring

- 3.19 The Action and Limit levels have been established and are presented in **Appendix B** and the Event / Action Plan (EAP) for dust monitoring is presented in **Appendix I**.

Cultural Heritage

- 3.20 An Archaeological Action Plan (AAP) for the survey-cum-excavation at the former Tai Hom Village site was approved by EPD on 8 April 2013. A Licence to Excavate and Search for Antiquities under Antiquities and Monuments Ordinance has been subsequently obtained from Antiquities and Monuments Office (AMO) on 19 April 2013. The archaeological survey-cum-excavation at Former Tai Hom Village shall be conducted in accordance with the Licence granted and the approved AAP.
- 3.21 The Conservation Plans for the two historic buildings, namely Former Royal Air Force Hangar and the Old Pillbox at the former Tai Hom Village site, were approved by EPD on 24 April 2013. Dismantling works on Former Royal Air Force Hangar and relocation work of the Old Pillbox shall be carried out in accordance with the approved Conservation Plan. Regular maintenance 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 (September 2016)	14 th October 2016

5 MONITORING RESULTS

Regular Construction Noise Monitoring

- 5.1 A total of 15 sets of 30-minute construction noise measurements were carried out at the monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. No exceedance of the limit level was recorded at designated monitoring stations.
- 5.2 The noise monitoring results recorded at NMS-CA-3⁽¹⁾/ NMS-CA-4⁽²⁾ (Hong Kong S.K.H Nursing House) and NMS-CA-5⁽¹⁾/NMS-CA-2⁽²⁾ (Block 1, Rhythm Garden (northern façade)) in October 2016 exceeded the daytime construction noise criterion. However, the results are not considered as exceedance since the measured results or corrected noise levels were below the baseline or limited noise levels. The noise monitoring results recorded at NMS-CA-4⁽¹⁾/NMS-CA-3⁽²⁾ (Block 1, Rhythm Garden (north-eastern façade)) in October 2016 did not exceed the daytime construction noise criterion.
- 5.3 Based on observation during the on-site monitoring, road traffic nearby, piling works in other construction site at 210-212 Choi Hung Road and foundation works in other construction site at former Tai Hom Village in October 2016 are considered as potential noise source other than construction works of the Project that affects the monitoring results in the reporting month.
- 5.4 The noise monitoring results together with their graphical presentations are presented in **Appendix F**⁽³⁾.
- 5.5 No exceedance of the Action and Limit Levels of construction noise due to the Project was recorded during the reporting period. The summary of exceedance in this reporting month is provided in **Appendix G**.

Regular Dust Monitoring

- 5.6 A total of 10 sets of 24-hour TSP monitoring were carried out at the designated monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. The monitoring results together with their graphical presentations are presented in **Appendix E**⁽³⁾ and a summary of the dust monitoring results in this reporting month is given in **Table 5.1**.

Table 5.1 Summary Table of Dust Monitoring Results during the reporting month

Parameter	Minimum µg/m ³	Maximum µg/m ³	Average µg/m ³	Action Level, µg/m ³	Limit Level, µg/m ³
24-hr TSP (DMS-3 ⁽¹⁾ / DMS-4 ⁽²⁾)	31.5	39.1	34.8	159.1	260
24-hr TSP (DMS-4 ⁽¹⁾ / DMS-3 ⁽²⁾)	14.7	33.6	24.0	160.4	260

Remarks:

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

- 5.7 Based on observation during the on-site monitoring, road traffic emission nearby, piling works in other construction site at 210-212 Choi Hung Road and foundation works in other construction site at former Tai Hom Village in October 2016 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, April 2015, February 2016 and March 2016. Comments from AMO were received in September 2014, December 2015 and June 2016 respectively. The revised draft report was submitted to AMO for review in September 2016.
- 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**. 266 m³ of C&D materials was generated during the reporting period, while 225 m³ of those were reused in the Contract and 41 m³ was disposed as public fill. 127 m³ of general refuse were generated during the reporting month. No chemical waste was collected by licensed collector during the reporting month. 251 kg paper/ cardboard packaging and no plastics and metal were generated in this reporting month. Detail of waste management data is presented in **Appendix K**.

Table 5.2 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	C&D Materials (inert) ^(a)	C&D Materials (non-inert) ^(b)				
		General Refuse	Chemical Waste	Recycled materials		
Paper/ cardboard	Plastics			Metals		
October 2016	266 m ³	127 m ³	0 kg	251 kg	0 kg	0 kg
Notes:						
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil, which 225 m ³ was reused in the Contract and 41 m ³ was delivered to Tseung Kwan O Area 137 Fill Bank during the reporting month.						
(b) Non-inert C&D materials include steel, paper/cardboard packaging waste, plastics and other wastes such as general refuse and vegetative wastes. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. General refuse was delivered to designated landfill for disposal.						

Landscape and Visual

- 5.13 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 6 and 20 October 2016. 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 October 2016. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 27 October 2016. EPD site inspection was conducted on 20 October 2016 in reporting month. The details of observations during site audits carried out by ET can refer to **Table 6.1**.

Implementation Status of Environmental Mitigation Measures

- 6.3 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix J**.
- 6.4 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 6.1**

Table 6.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
<i>Water Quality</i>	6 and 13 October 2016	<u>Reminder:</u> Sandbag bunding should be enhanced in A1 area to prevent silty runoff entering public area.	The item was observed outstanding and remarked on 13 October 2016. As observed on 20 October 2016, the site bunding was constructed to retain all the site runoff within the site area.
<i>Noise</i>	---	---	---
<i>Landscape and Visual</i>	---	---	---
<i>Cultural Heritage</i>	---	---	---
<i>Air Quality</i>	29 September 2016, 6 October 2016	<u>Observation:</u> NRMM label of designated format should be provided to the generator found near the station.	The item was observed outstanding and remarked on 6 October 2016. As observed on 13 October 2016, the generator was removed.
	6 and 13 October 2016	<u>Reminder:</u> Water spraying should be performed more frequently in all work area within the site for dust suppression.	The item was observed outstanding and remarked on 13 October 2016. As observed on 20 October 2016, sufficient water spray was provided to the exposed area.
	27 October 2016	<u>Reminder:</u> To enhance the 3-sides enclosures to the cement mixing machine near the station.	The follow up action will be reported in the next reporting month.

Parameters	Date	Observations and Recommendations	Follow-up
	27 October 2016	<u>Observation:</u> To cover the stockpile with impervious material. (in ex-1103 site area)	The follow up action will be reported in the next reporting month.
<i>Waste/ Chemical Management</i>	29 September 2016	<u>Reminder:</u> To remove the general refuse accumulated in area near the MBME.	As observed on 6 October 2016, the general refuse near MBME was cleared.
	20 October 2016	<u>Reminder:</u> To remove the general refuse accumulated in area near the MBME.	As observed on 27 October 2016, the general refuse near MBME was cleared frequently and accumulation was avoided.
<i>Permits/ Licenses</i>	---	---	---

7 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

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

Summary of Environmental Non-Compliance

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

Summary of Environmental Complaint

- 7.3 No environmental Project-related complaints were received in the reporting month. The Cumulative Complaint Log since the commencement of the Project is presented in **Appendix L**.

Summary of Environmental Summon and Successful Prosecution

- 7.4 There was no successful environmental prosecution or notification of summons received since the Project commencement. The Cumulative Log for environmental summon and successful prosecution since the commencement of the Project is presented in **Appendix L**.

8 FUTURE KEY ISSUES

Construction Programme for the Next Month

- 8.1 A tentative construction programme is provided in **Appendix A**. The major construction activities in the coming month will include:
- Construction of Level U1 Wall and Structural Steel Erection;
 - ABWF works at SCL-DIH station area;
 - Foundation works and temporary road works at Lung Cheung Road and Choi Hung Road;
 - Installation of bored pile, drive sheet piling and grouting works on Lung Cheung Road;
 - Sheet piling, grouting works and pumping test at MOE near Entrance B;
 - Landscaping and tiling works, and planter reinstatement works at Entrance A1; and
 - Drilling works and install Pre-bored socketed H-Piles at Entrance A2.

Key Issues in the Next Month

- 8.2 Key issues to be considered in the coming month include:
- Dust arising from loading, unloading, transfer, handling or storage of bulk cement or dry PFA and excavated materials;
 - Control of silty surface runoff;
 - Preservation of Former Royal Air Force Hangar and Old Pillbox after dismantling and relocation;
 - Preservation and protection of retained and transplanted trees; and
 - Implementation of mitigation measures for noise nuisance from construction works.

Monitoring Schedule in the Next Month

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

9 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 9.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1st to 31st October 2016 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, and no successful prosecution or notification of summons received during the reporting month.
- 9.5 The ET will keep track on the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Recommendations

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

Water Quality

- Channel or bunding should be provided at the site boundary to retain all the site runoff within the site area.

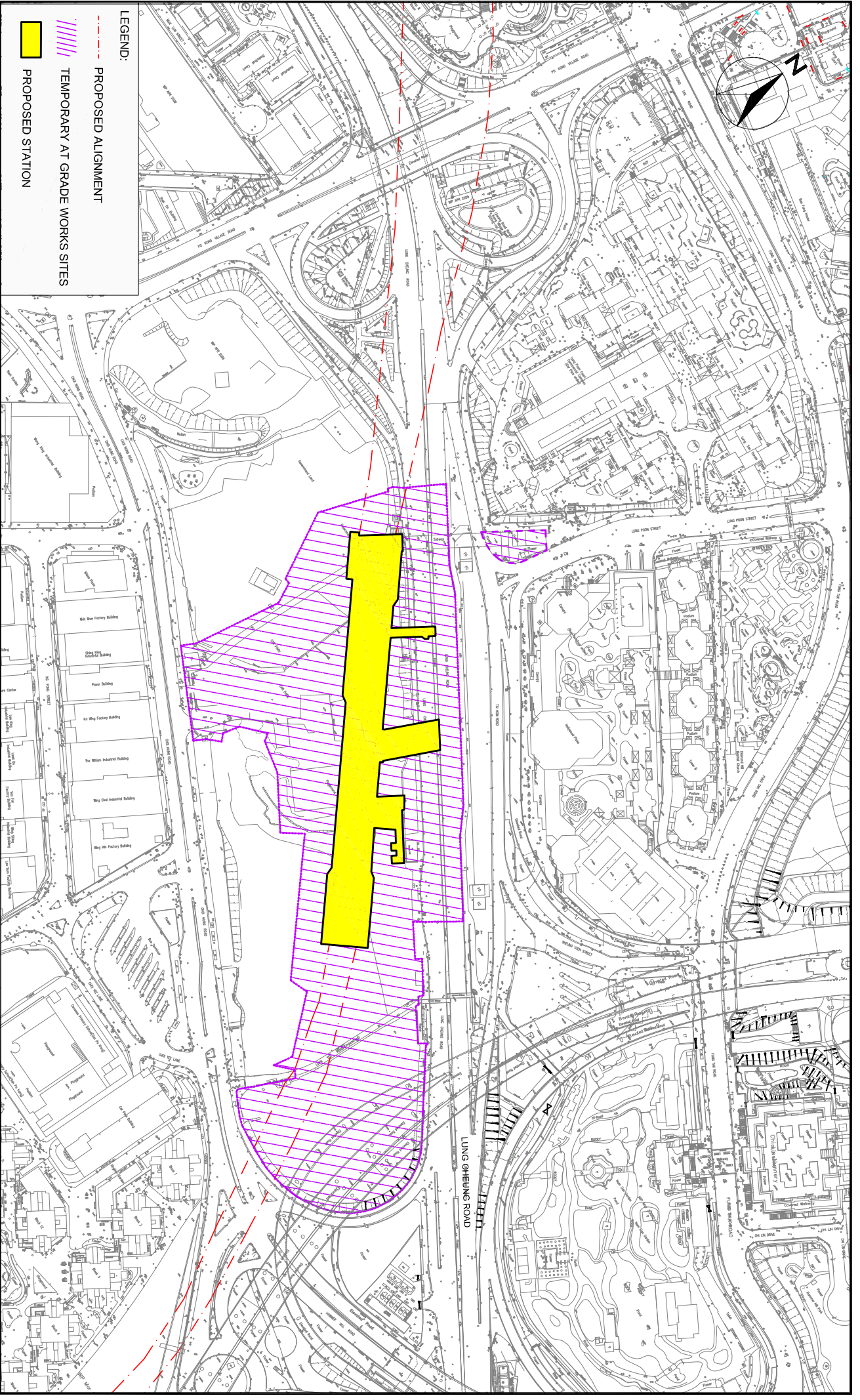
Air Quality

- Dusty stockpile should be provided with sufficient water spray / covered with impervious material properly for dust suppression;
- NRMM label of designated format should be provided to the non-road mobile machineries;
- Sufficient water spray should be provided to all work area within the site for dust suppression; and
- 3 sides enclose should be provided to the cement mixing machine.

Waste/ Chemical Management

- The general refuse should be removed frequently to avoid accumulation.

FIGURES

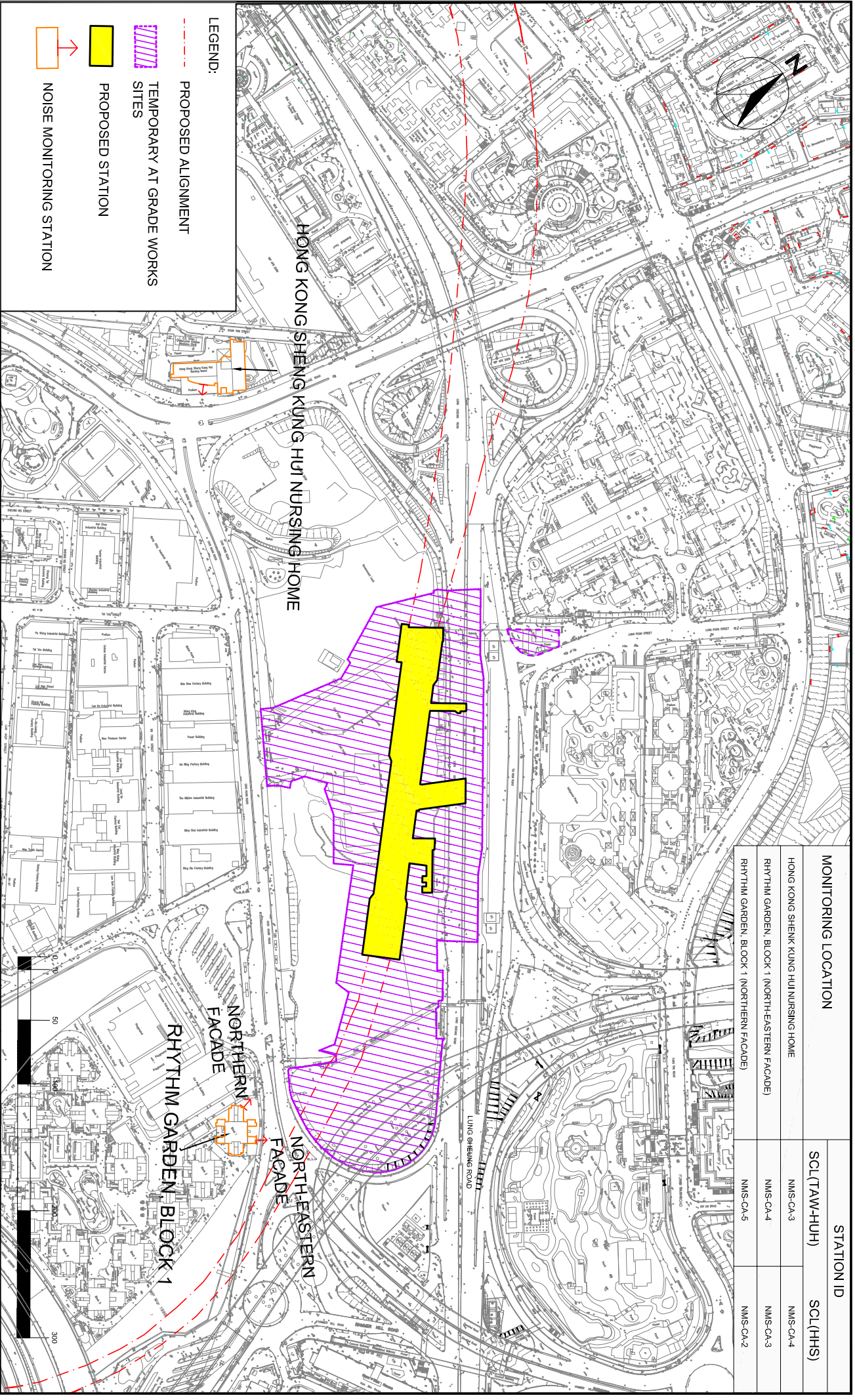


LEGEND:

- - - PROPOSED ALIGNMENT
- ||||| TEMPORARY AT GRADE WORKS SITES
- PROPOSED STATION

SHATIN TO CENTRAL LINK CONTRACT 1106
DIAMOND HILL STATION
SITE LAYOUT PLAN

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

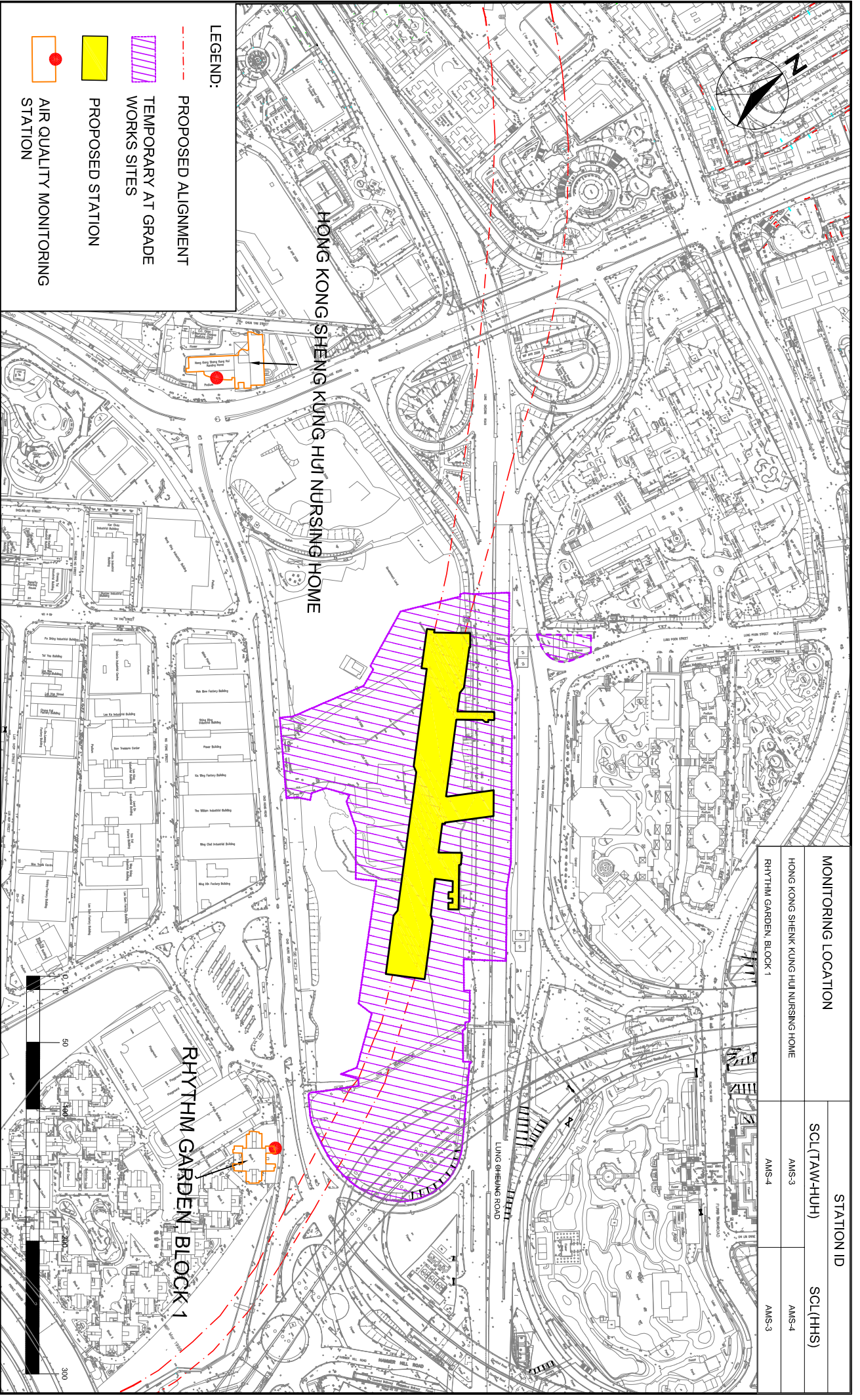


MONITORING LOCATION	STATION ID
HONG KONG SHENG KUNG HUI NURSING HOME	SC1(TAW-HUH)
RHYTHM GARDEN, BLOCK 1 (NORTH-EASTERN FACADE)	SC1(HHS)
RHYTHM GARDEN, BLOCK 1 (NORTHERN FACADE)	NMS-CA-3
	NMS-CA-4
	NMS-CA-3
	NMS-CA-2

LEGEND:

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

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

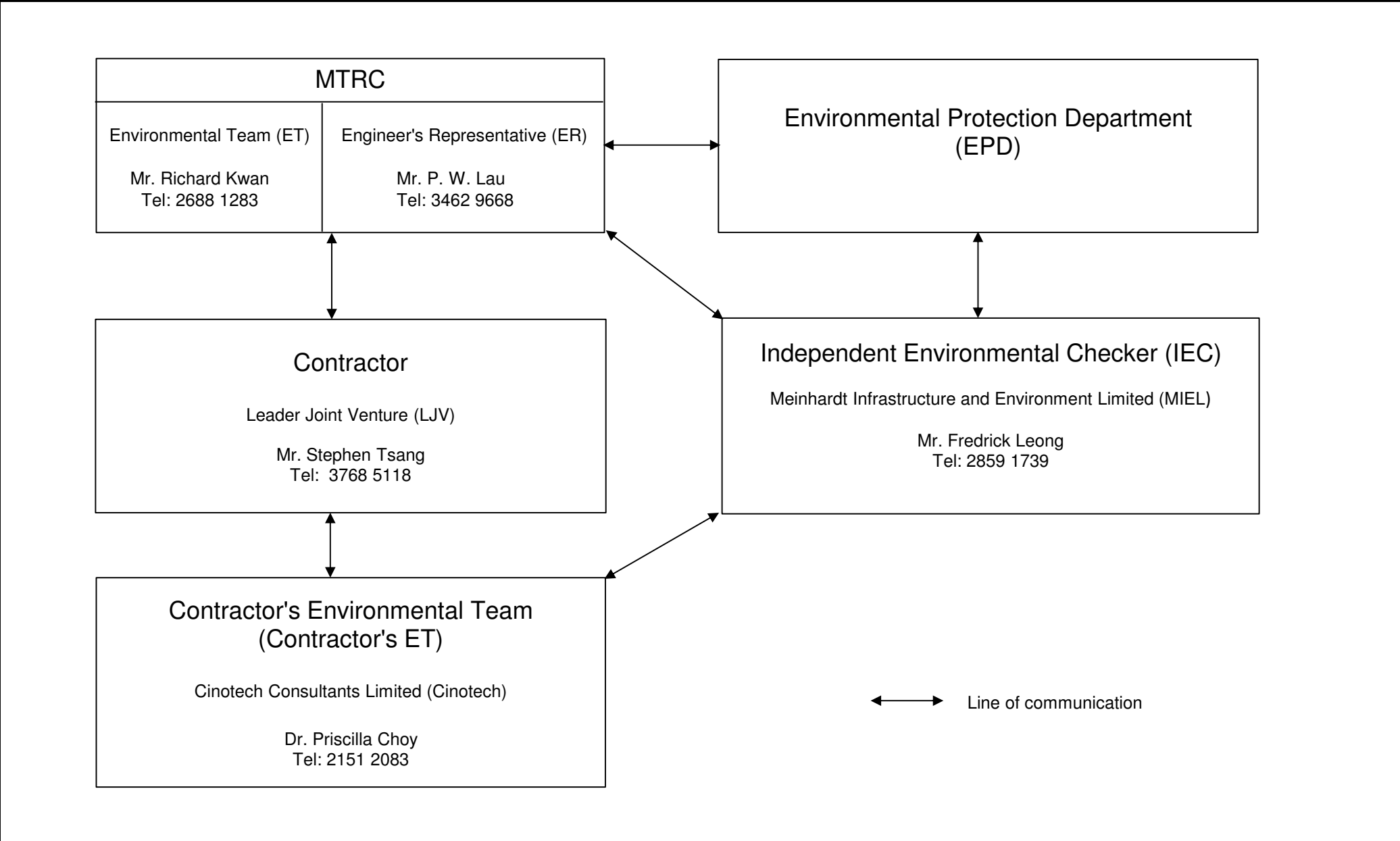


- LEGEND:**
- - - PROPOSED ALIGNMENT
 - TEMPORARY AT GRADE WORKS SITES
 - PROPOSED STATION
 - AIR QUALITY MONITORING STATION

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

SHATIN TO CENTRAL LINK CONTRACT 1106
DIAMOND HILL STATION
LOCATION OF AIR QUALITY MONITORING STATIONS

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



Title	MTR SCL Works Contract 1106 Diamond Hill Station		Scale	N.T.S	Proposal	MA12051	CINOTECH
	Organisation Chart and Key Contact of the Project		Date	Feb-16	Figure	4	

**APPENDIX A
TENTATIVE CONSTRUCTION
PROGRAMME**



Contract 1106 - Diamond Hill Station



Activity ID	Activity Name	Orig Dur	Forecast Start	Forecast Finish	% Complete	October				November				December				January			
						03 199	10 200	17 201	24 202	31 203	07 204	14 205	21 206	28 207	05 208	12 209	19 210	26 211	02 212	09 213	16 214
Cost Centre B: SCL- DIH Station, Entrances and Adits																					
TTMS Implementation																					
Lung Cheung Road																					
TTA Implementation																					
C1106.TMS0582	TTA for the construction of SCL DIH MOE at Diamond Hill Station Entrance B (SLG/1106/017/DIH/004/001a)	166	14-Jul-16 A	26-Dec-16	70%	TTA for the construction of SCL DIH MOE at Diamond Hill Station Entrance B (S															
C1106.TMS0584	TTA for Road Crossing Modification and Planter Reinstatement work(SLG/1106/004/DIH/017/001B-002B,019/001A)	75	18-Jul-16 A	31-Dec-16	65%	TTA for Road Crossing Modification and Planter Reinstatement work															
C1106.TMS0592	TTA for Temporary Lung Cheung Road Diversion (Stage 3) (SLG/1106/005/DIH/012/001G-002G)	147	07-Aug-16 A	31-Dec-16	55%	TTA for Temporary Lung Cheung Road Diversion (Stage 3) (SLG/11															
C1106.TMS0594	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-Westbound Middle & Fast Lane) (SLG/1106/019/DIH/012/001A-004A)	122	01-Sep-16 A	31-Dec-16	50%	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-We															
C1106.TMS0596	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-Westbound Middle & Slow Lane) (SLG/1106/019/DIH/013/001A-004A)	122	01-Sep-16 A	31-Dec-16	50%	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-We															
C1106.TMS0598	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-Eastbound Middle & Slow Lane) (SLG/1106/019/DIH/014/001A-004A)	108	15-Sep-16 A	31-Dec-16	40%	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-Eas															
C1106.TMS0600	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-Eastbound Fast & Middle Lane) (SLG/1106/019/DIH/015/001A-004A)	108	15-Sep-16 A	31-Dec-16	40%	TTA for Repair Works at Lung Cheung Road Diversion(Stage 3-Eas															
Choi Hung Road																					
TTA Implementation																					
C1106.TMS0369	TTA for Site Access and Temporary Footpath diversion at Ex-Tai Hom Village (SLG/001/DIH/003/001A)	185	04-Jul-16 A	04-Jan-17	65%	TTA for Site Access and Temporary Footpath diversion at E															
Structural Works																					
First Floor Level (Level U1)																					
Wall & Column																					
C1106.BFW7675	GL 49.1-51.6 Construct Level U1 Wall & Structural Steel Erection	8	30-Jun-16 A	05-Nov-16	80%	GL 49.1-51.6 Construct Level U1 Wall & Structural Steel Erection															
ABWF & Miscellaneous Works																					
Track and Trackside Areas																					
Platform Level (Track and Trackside Areas)																					
C1106.PTA5420	GL 31-53 ABWF Deg.1 Platform Down Track and Trackside Areas	30	24-Nov-15 A	07-Nov-16	92%	GL 31-53 ABWF Deg.1 Platform Down Track and Trackside Areas															
Platform Level (Level L5)																					
Passenger Areas																					
C1106.BAF1114	GL 36-49 ABWF Deg.2 Works Platform Passenger Areas	70	18-Jan-16 A	04-Nov-16	95%	GL 36-49 ABWF Deg.2 Works Platform Passenger Areas															
C1106.BAF1116	GL 36-49 Allow E&M Contractor for Second Fix	71	19-Feb-16 A	17-Nov-16	93%	GL 36-49 Allow E&M Contractor for Second Fix															
C1106.BAF1122	GL 36-49 ABWF Deg.3 Works Platform Passenger Areas	191	25-Apr-16 A	17-Feb-17	31%																
C1106.BAF1137	GL 49-51 ABWF Deg.2 Works Platform Passenger Areas	48	18-May-16 A	04-Nov-16	95%	GL 49-51 ABWF Deg.2 Works Platform Passenger Areas															
C1106.BAF1124	GL 36-49 Allow E&M Contractor for System Final Fix	138	05-Aug-16 A	23-Mar-17	6%																
C1106.BAF1145	GL 49-51 Allow E&M Contractor for Second Fix	8	05-Nov-16	14-Nov-16	0%	GL 49-51 Allow E&M Contractor for Second Fix															
C1106.BAF1152	GL 49-51 ABWF Deg.3 Works Platform Passenger Areas	108	15-Nov-16	27-Mar-17	0%																
Back of House & Plant Rooms																					
C1106.BAF1520	GL 49-53 ABWF Deg.2 Works Platform BOH Areas & Plant Rooms	63	05-Jan-16 A	04-Nov-16	95%	GL 49-53 ABWF Deg.2 Works Platform BOH Areas & Plant Rooms															
C1106.BAF1140	GL 36-40 ABWF Deg.2 Works Platform BOH Areas & Plant Rooms	48	18-Jan-16 A	04-Nov-16	95%	GL 36-40 ABWF Deg.2 Works Platform BOH Areas & Plant Rooms															
C1106.BAF1525	GL 49-53 Allow E&M Contractor for Second Fix	62	18-Jan-16 A	17-Nov-16	93%	GL 49-53 Allow E&M Contractor for Second Fix															
C1106.BAF1141	GL 36-40 Allow E&M Contractor for Second Fix	54	19-Jan-16 A	11-Nov-16	93%	GL 36-40 Allow E&M Contractor for Second Fix															
C1106.BAF1155	GL 42-49 ABWF Deg.2 Works Platform BOH Areas & Plant Rooms	54	16-Feb-16 A	04-Nov-16	95%	GL 42-49 ABWF Deg.2 Works Platform BOH Areas & Plant Rooms															
C1106.BAF1535	GL 49-53 ABWF Deg.3 Works Platform BOH Areas & Plant Rooms	116	26-Apr-16 A	29-Dec-16	50%	GL 49-53 ABWF Deg.3 Works Platform BOH Areas & Plant Rooms															
C1106.BAF1158	GL 42-49 Allow E&M Contractor for Second Fix	54	30-Apr-16 A	17-Nov-16	90%	GL 42-49 Allow E&M Contractor for Second Fix															
C1106.BAF1540	GL 49-53 Allow E&M Contractor for System Final Fix	168	01-Jun-16 A	25-Feb-17	20%																
C1106.BAF1142	GL 36-40 ABWF Deg.3 Works Platform BOH Areas & Plant Rooms	55	18-Nov-16	24-Jan-17	0%	GL 36-40 ABWF Deg.3 Works Platform BOH Areas & Plant Rooms															
C1106.BAF1162	GL 42-49 ABWF Deg.3 Works Platform BOH Areas & Plant Rooms	70	18-Nov-16	14-Feb-17	0%																
C1106.BAF1144	GL 36-40 Allow E&M Contractor for System Final Fix	56	22-Nov-16	01-Feb-17	0%																
C1106.BAF1173	GL 42-49 Allow E&M Contractor for System Final Fix	45	07-Jan-17	03-Mar-17	0%																
Mezzanine Level (Level L4)																					
Back of House & Plant Rooms																					
C1106.BMF3070	GL 36-49 Mezzanine Construct Blockwork Walls, Plinth (TER. Chiller Plant Rm, BOH & Plant Rooms)	72	11-Jan-16 A	08-Nov-16	98%	GL 36-49 Mezzanine Construct Blockwork Walls, Plinth (TER. Chiller Plant Rm, BOH & Plant Rooms)															
C1106.BMF3080	GL 36-49 ABWF Deg.2 Works Mezzanine BOH & Plant Rooms	158	21-Mar-16 A	04-Nov-16	85%	GL 36-49 ABWF Deg.2 Works Mezzanine BOH & Plant Rooms															
C1106.BMF3082	GL 36-49 Allow E&M Contractor for Second Fix	170	05-Apr-16 A	08-Dec-16	65%	GL 36-49 Allow E&M Contractor for Second Fix															
C1106.BMF3330	GL 49-53 ABWF Deg.2 Works Mezzanine BOH & Plant Rooms	106	16-May-16 A	04-Nov-16	85%	GL 49-53 ABWF Deg.2 Works Mezzanine BOH & Plant Rooms															
C1106.BMF3333	GL 49-53 Allow E&M Contractor for Second Fix	124	23-May-16 A	05-Dec-16	65%	GL 49-53 Allow E&M Contractor for Second Fix															
C1106.BMF3085	GL 36-49 ABWF Deg.3 Works Mezzanine BOH & Plant Rooms	206	01-Jun-16 A	25-Apr-17	20%																
C1106.BMF3090	GL 36-49 Allow E&M Contractor for System Final Fix	220	13-Jun-16 A	17-May-17	17%																
C1106.BMF3335	GL 49-53 ABWF Deg.3 Works Mezzanine BOH & Plant Rooms	178	22-Aug-16 A	25-May-17	3%																
C1106.BMF3337	GL 49-53 Allow E&M Contractor for System Final Fix	181	01-Nov-16	14-Jun-17	0%																
Concourse Level (Level L2)																					
Passenger Areas																					
C1106.BCF5258	GL 36-40 ABWF Deg.1 Works Concourse Passenger Areas	66	20-Apr-16 A	14-Nov-16	86%	GL 36-40 ABWF Deg.1 Works Concourse Passenger Areas															
C1106.BCF5215	GL 40-47 ABWF Deg.1 Works Concourse Passenger Areas	92	06-May-16 A	03-Dec-16	60%	GL 40-47 ABWF Deg.1 Works Concourse Passenger Areas															
C1106.BCF5218	GL 40-47 Allow E&M Contractor for First Fix	44	18-May-16 A	16-Dec-16	60%	GL 40-47 Allow E&M Contractor for First Fix															
C1106.BCF5261	GL 36-40 Allow E&M Contractor for First Fix	18	18-May-16 A	19-Nov-16	80%	GL 36-40 Allow E&M Contractor for First Fix															

- Remaining Work
- Critical Remaining Work
- Actual Work
- ◆ Baseline Milestone
- ◆ Milestone

MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 31 October 2016

3 Month Rolling Programme			
Date	Revision	Checked	Approved
31-Oct-16	C-1106-3MRP/ 46		



Contract 1106 - Diamond Hill Station



Activity ID	Activity Name	Orig Dur	Forecast Start	Forecast Finish	% Complete	October				November				December				January				
						03 199	10 200	17 201	24 202	31 203	07 204	14 205	21 206	28 207	05 208	12 209	19 210	26 211	02 212	09 213	16 214	23 215
C1106.BIA8425	IA - Excavation and ELS Installation SC1, SC2, SE1 & SE2 to +10.0mPD (Total=1,175 m3)	25	13-Jan-17	14-Feb-17	0%																	
Construction of West Unpaid Link Adit																						
West Adit Link - Middle Section & North Section																						
Adit Cofferdam																						
C1106.BWA8541	WUL - Breaking up Existing Concrete Slab	8	08-Aug-16 A	03-Nov-16	80%																	
C1106.BWA8549	WUL - Install Bored Pile including Test and Coring	27	13-Sep-16 A	12-Nov-16	90%																	
C1106.BWA8543	WUL - Preboring Works, Drive Sheetpiling and Grouting Works	26	01-Nov-16	30-Nov-16	0%																	
C1106.BWA8545	WUL - Installation of Observation Wells & Recharge Wells and Carry-out Pump	18	01-Dec-16	21-Dec-16	0%																	
Adit - Excavation																						
C1106.BWA8555	WUL - Excavation and ELS Installation SB1, SB2, SE1 & SE2 (Total=815 m3)	24	22-Dec-16	21-Jan-17	0%																	
C1106.BWA8559	WUL - Excavation and ELS Installation SB3, SB4, SE3 & SE4 (Total=1,100 m3)	29	23-Jan-17	28-Feb-17	0%																	
Construction of East MOE (Entrance B)																						
Submissions																						
General																						
C1106.BEB8710	Review & Approve Cofferdam Design	30	16-Jun-16 A	14-Nov-16	85%																	
East MOE																						
Piling Works																						
C1106.BEB8734	East MOE - Sheetpiling and Grouting Works	40	24-Jun-16 A	29-Oct-16 A	100%																	
C1106.BEB8755	East MOE - Install Instrument and Wells	7	01-Nov-16	08-Nov-16	0%																	
C1106.BEB8760	East MOE - Carry Out Pumping Test	7	09-Nov-16	16-Nov-16	0%																	
MOE-Excavation																						
C1106.BEB8775	East MOE - Excavation and Strutting	80	17-Nov-16	24-Feb-17	0%																	
Cost Centre C: KTL - DIH Modification and Refurbishment Works																						
Entrance A1 (24 hr Walkway and New Lift)																						
Structural Works																						
T&C, External Works, Inspections & Handover																						
C1106.CEA4257	Landscaping & Tiling Works and Planter Reinstatement	21	21-Dec-15 A	31-Oct-16 A	100%																	
Entrance A2 (Alteration Works)																						
Existing Entrance A2																						
General																						
C1106.BEA1925	Drilling Works and Install Pre-bored socketed H-Piles 610mm (AP3, AP4, AP5, AP7 & AP9; Total = 5nos)	45	12-Oct-16 A	16-Dec-16	10%																	
C1106.BEA1935	GL 31-34 (N-R) Load Test for Socketed H-Pile	12	17-Dec-16	03-Jan-17	0%																	
C1106.BEA1928	Setting-out and Predrilling Works(PD17) for Stage1	7	25-Jan-17	04-Feb-17	0%																	
Civil & Structural Works																						
C1106.BEA2010	Preparation Works, Erect Hoarding(within Subway) for Temp Bulk Head Wall Construction	12	01-Nov-16	14-Nov-16	0%																	
C1106.BEA2015	Construct Temp 190mm Thick Bulkhead Walls for Stage1	10	15-Nov-16	25-Nov-16	0%																	
C1106.BEA2030	Falsework Erection Underneath Roof Slab for Stage1	6	26-Nov-16	02-Dec-16	0%																	
C1106.BEA2040	Install ELS with Planking and Shoring with Kicker Support on Roof Slab Stage1	14	03-Dec-16	19-Dec-16	0%																	
C1106.BEA2020	Demolition Existing Roof Slab and Partial Side Wal of Entrance A2 Stage1	10	20-Dec-16	03-Jan-17	0%																	
C1106.BEA2042	Shoring Modification and Falsework Removal for Stage1	10	04-Jan-17	14-Jan-17	0%																	
C1106.BEA2020	Demolition of Existing Base Slab for Stage1	8	16-Jan-17	24-Jan-17	0%																	

- Remaining Work
- Critical Remaining Work
- Actual Work
- ◆ Baseline Milestone
- ◆ Milestone

3 of 3

MTR Contract 1106 - Diamond Hill Station
Three Month Rolling Programme
As of 31 October 2016

3 Month Rolling Programme			
Date	Revision	Checked	Approved
31-Oct-16	C-1106-3MRP/ 46		

**APPENDIX B
ACTION AND LIMIT LEVELS**

APPENDIX B – Action and Limit Levels

24-Hour TSP

Regular Dust Monitoring Location	Description	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
DMS-3 ⁽¹⁾⁽³⁾ / DMS-4 ⁽²⁾⁽³⁾	Hong Kong Sheng Kung Hui Nursing Home	159.1	260
DMS-4 ⁽¹⁾ / DMS-3 ⁽²⁾	Block 1, Rhythm Garden	160.4	

Note:

- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) Access to the monitoring location at Shek On House (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Hong Kong S.K.H Nursing Home) was proposed and approved by the ER and agreed by the IEC and EPD.

Construction Noise

Regular Construction Noise Monitoring Location ⁽¹⁾	Description	Time Period	Action Level	Limit Level (Leq (30-min))
NMS-CA-3 ⁽¹⁾⁽³⁾ / NMS-CA-4 ⁽²⁾⁽³⁾	Hong Kong Sheng Kung Hui Nursing Home	0700-1900 hrs on normal weekdays	When one documented complaint is received	70 dB(A)
NMS-CA-4 ⁽¹⁾ / NMS-CA-3 ⁽²⁾	Block 1, Rhythm Garden (north-eastern façade)			75 dB(A)
NMS-CA-5 ⁽¹⁾⁽⁴⁾ / NMS-CA-2 ⁽²⁾⁽⁴⁾	Block 1, Rhythm Garden (northern façade)			65 / 70 dB(A) ⁽⁵⁾

Note:

- (1) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) Access to the monitoring location at Shek On House (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Hong Kong S.K.H Nursing Home) was proposed and approved by the ER and agreed by the IEC and EPD.
- (4) Access to the monitoring location at Canossa Primary School (San Po Kong) (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Block 1, Rhythm Garden (northern façade)) was proposed and approved by the ER and agreed by the IEC and EPD.
- (5) Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period.

**APPENDIX C
CALIBRATION CERTIFICATES FOR
MONITORING EQUIPEMENT**

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

File No. MA12051/64/0001

Station DMS-3 - Hong Kong Sheng Kung Hui Nursing Hon Operator: WK
 Date: 4-Oct-16 Next Due Date: 3-Dec-16
 Equipment No.: A-01-64 Serial No. 3223

Ambient Condition			
Temperature, Ta (K)	300.3	Pressure, Pa (mmHg)	758.2

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

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	16.4	4.03	68.24	10.4	3.21
2	14.2	3.75	63.56	8.9	2.97
3	10.1	3.16	53.74	6.7	2.58
4	6.8	2.59	44.25	4.5	2.11
5	4.3	2.06	35.36	2.8	1.66

By Linear Regression of Y on X

Slope, mw = 0.0464 Intercept, bw = 0.0475

Correlation coefficient* = 0.9992

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.21

Remarks: _____

Conducted by: wk. Tang Signature: [Signature] Date: 4/10/16
 Checked by: [Signature] Signature: [Signature] Date: 4 October 2016

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

 File No. MA12051/57/0022

 Station DMS-4 - Rhythm Garden, Block 1 Operator: WK
 Date: 26-Sep-16 Next Due Date: 25-Nov-16
 Equipment No.: A-01-57 Serial No. 2352

Ambient Condition			
Temperature, Ta (K)	302.8	Pressure, Pa (mmHg)	758.3

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	11.6	3.37	57.30	7.4	2.70
2	9.8	3.10	52.73	6.4	2.51
3	7.8	2.77	47.14	5.1	2.24
4	5.3	2.28	39.01	3.4	1.83
5	3.3	1.80	30.96	2.0	1.40

By Linear Regression of Y on X

 Slope, mw = 0.0494 Intercept, bw = -0.1120

 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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.13

Remarks: _____

 Conducted by: Wk Tang Signature: Kwai
 Checked by: Az Signature: _____

 Date: 26/9/16
 Date: 26 September 2016



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0001	0.6974	1.4173	0.9957	0.6944	0.8836
0.9959	0.9716	2.0044	0.9915	0.9674	1.2496
0.9938	1.0861	2.2410	0.9894	1.0814	1.3971
0.9928	1.1320	2.3503	0.9885	1.1271	1.4653
0.9875	1.3696	2.8346	0.9831	1.3636	1.7672
Qstd slope (m) = 2.11176			Qa slope (m) = 1.32235		
intercept (b) = -0.05079			intercept (b) = -0.03166		
coefficient (r) = 0.99982			coefficient (r) = 0.99982		
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}

TEST REPORT

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

Test Report No.:	C/N/160917B
Date of Issue:	2016-09-19
Date Received:	2016-09-17
Date Tested:	2016-09-17
Date Completed:	2016-09-19
Next Due Date:	2017-09-18

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 12553
Microphone No.	: 35222
Equipment No.	: N-08-02

Test conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 57%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Laboratory Manager

TEST REPORT

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

Test Report No.:	C/N/151127/1
Date of Issue:	2015-11-30
Date Received:	2015-11-27
Date Tested:	2015-11-27
Date Completed:	2015-11-30
Next Due Date:	2016-11-29

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 23853
Microphone No.	: 48530
Equipment No.	: N-08-10

Test conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 62%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

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



PATRICK TSE
Laboratory Manager

TEST REPORT

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

Test Report No.:	C/N/151215-1
Date of Issue:	2015-12-18
Date Received:	2015-12-15
Date Tested:	2015-12-15
Date Completed:	2015-12-18
Next Due Date:	2016-12-17

ATTN: Mr. W. K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Sound & Vibration Analyser
Manufacturer	: BSWA
Model No.	: BSWA 801
Serial No.	: 35924
Equipment No.	: N-13-01

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 56%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

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


PATRICK TSE
Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:


The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 58%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Laboratory Manager

APPENDIX D
IMPACT MONITORING SCHEDULE

**Shatin to Central Link – Contract 1106 Diamond Hill Station
Impact Air Quality and Noise Monitoring Schedule for October 2016**

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

Air Quality Monitoring Station

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

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

Noise Monitoring Station

NMS-CA-3⁽¹⁾/4⁽²⁾: - Hong Kong Sheng Kung Hui Nursing Home

NMS-CA-4⁽¹⁾/3⁽²⁾: - Block 1, Rhythm Garden (north-eastern façade)

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

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

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

**Shatin to Central Link – Contract 1106 Diamond Hill Station
Tentative Impact Air Quality and Noise Monitoring Schedule for November 2016**

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

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

Air Quality Monitoring Station

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

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

Noise Monitoring Station

NMS-CA-3⁽¹⁾/4⁽²⁾: - Hong Kong Sheng Kung Hui Nursing Home

NMS-CA-4⁽¹⁾/3⁽²⁾: - Block 1, Rhythm Garden (north-eastern façade)

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

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

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

**APPENDIX E
24-HOUR TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATIONS**

Appendix E - 24-hour TSP Monitoring Results

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

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
5-Oct-16	17:10	Cloudy	302.5	756.6	3.2658	3.3298	0.0640	1898.3	1922.3	24.0	1.21	1.21	1.21	1740.8	36.8
11-Oct-16	9:00	Cloudy	297.8	760.5	3.2594	3.3149	0.0555	1922.3	1946.3	24.0	1.22	1.22	1.22	1759.3	31.5
17-Oct-16	9:00	Cloudy	300.7	759.2	3.2535	3.3102	0.0567	1946.3	1970.3	24.0	1.21	1.21	1.21	1749.2	32.4
22-Oct-16	9:00	Cloudy	302.5	758.2	3.3144	3.3826	0.0682	1970.3	1994.3	24.0	1.21	1.21	1.21	1742.7	39.1
28-Oct-16	9:00	Sunny	300.5	762.6	3.3004	3.3602	0.0598	1994.3	2018.3	24.0	1.22	1.22	1.22	1753.8	34.1
														Min	31.5
														Max	39.1
														Average	34.8

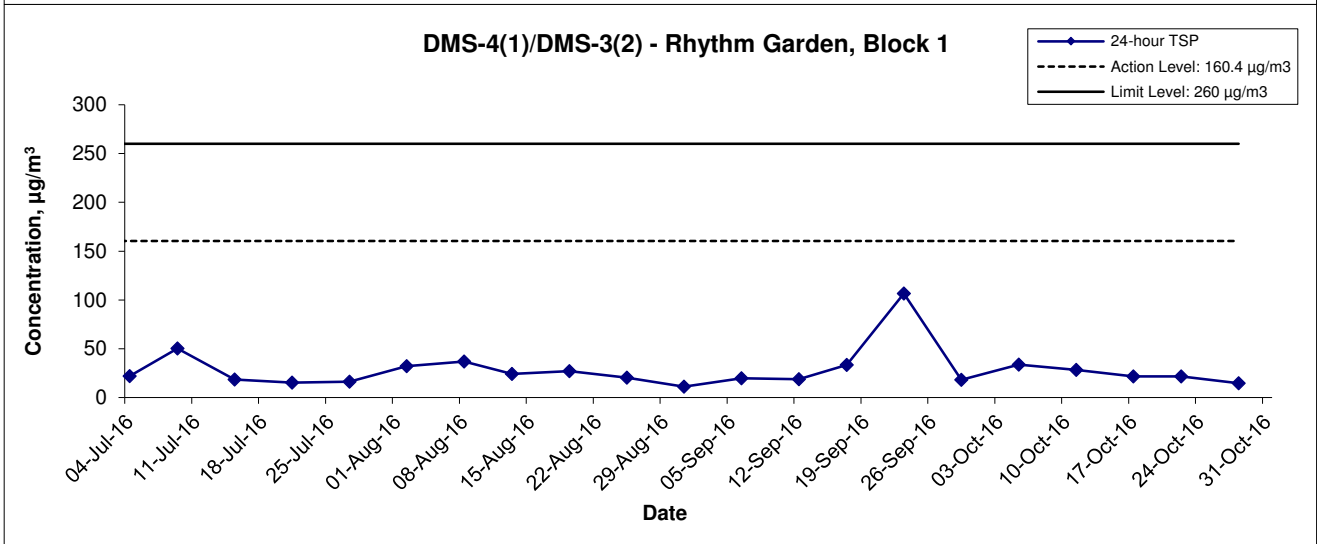
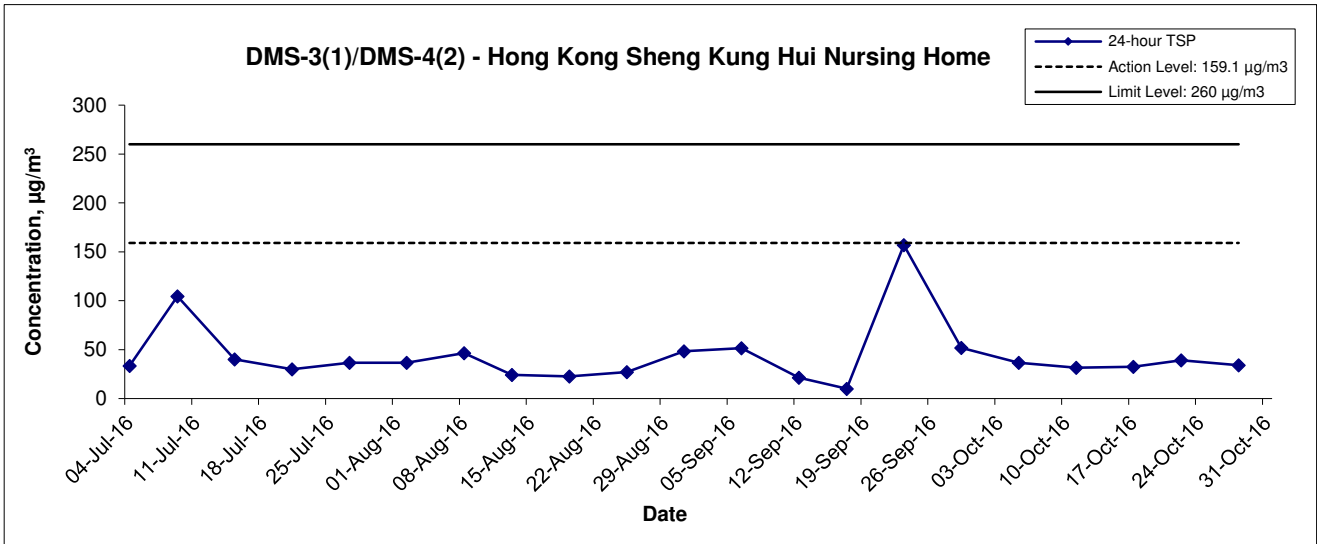
Location DMS-4(1)/DMS-3(2) - Rhythm Garden, Block 1

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
5-Oct-16	9:00	Sunny	301.5	759.1	3.3028	3.3617	0.0589	6406.4	6430.4	24.0	1.22	1.22	1.22	1752.1	33.6
11-Oct-16	9:00	Cloudy	297.8	760.5	3.2986	3.3487	0.0501	6430.4	6454.4	24.0	1.23	1.22	1.22	1763.8	28.4
17-Oct-16	9:00	Cloudy	300.7	759.2	3.6141	3.6522	0.0381	6454.4	6478.4	24.0	1.22	1.22	1.22	1754.4	21.7
22-Oct-16	9:00	Cloudy	302.5	758.2	3.3103	3.3480	0.0377	6478.4	6502.4	24.0	1.21	1.21	1.21	1748.3	21.6
28-Oct-16	9:00	Sunny	300.5	762.6	3.6037	3.6295	0.0258	6502.4	6526.4	24.0	1.22	1.22	1.22	1758.6	14.7
														Min	14.7
														Max	33.6
														Average	24.0

Remarks:

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

24-hour TSP Concentration Levels



Remarks:

- (1) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) ASR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) 24 hours TSP concentration level of DMS-3⁽¹⁾/4⁽²⁾ from July to September 2016 were extracted from the Project SCL 1103.

Title Shatin to Central Link – Contract 1106 Diamond Hill Station Graphical Presentation of 24-hour TSP Monitoring Results	Scale	N.T.S	Project No.	MA12051	CINOTECH
	Date	Oct 16	Appendix	E	

EXTRACT OF METEOROLOGICAL OBSERVATIONS FOR HONG KONG, OCTOBER 2016 (Table 2)

Date October	Number of hours of Reduced Visibility# (hours)	Total Bright Sunshine (hours)	Daily Global Solar Radiation (MJ/m²)	Total Evaporation (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
1	12	5.8	16.05	0.6	090	16.2
2	9	3.0	11.57	4.2	060	17.8
3	0	1.2	8.37	2.0	050	28.5
4	0	4.9	9.68	1.9	050	17.5
5	0	5.7	16.61	4.4	070	18.7
6	0	8.9	18.76	6.8	010	19.3
7	0	3.8	11.82	3.1	010	23.6
8	0	2.1	10.54	3.7	360	35.2
9	0	4.7	15.92	6.1	010	33.0
10	0	6.8	16.51	3.5	020	28.0
11	0	0.7	9.51	3.2	010	29.8
12	0	0.1	4.70	1.3	060	39.7
13	0	6.5	17.41	4.7	080	39.5
14	0	9.0	19.58	3.9	080	34.6
15	0	7.0	15.64	4.5	050	20.3
16	0	7.8	15.66	5.0	020	20.3
17	0	2.2	7.73	N.A.	070	43.5
18	0	-	2.07	N.A.	090	57.5
19	0	0.1	2.27	N.A.	100	36.0
20	7	7.4	14.48	1.9	010	15.8
21	0	-	0.80	N.A.	220	60.8
22	0	5.0	12.47	0.5	220	18.2
23	0	2.8	10.47	2.1	100	6.0
24	0	4.1	12.90	1.9	120	13.8
25	0	9.2	20.00	4.2	090	16.5
26	0	8.5	17.55	3.2	070	17.1
27	0	9.8	19.82	4.6	060	11.1
28	0	10.3	20.33	3.3	020	8.6

29	0	3.7	11.38	5.3	080	31.5
30	0	3.6	12.46	4.1	020	32.3
31	0	7.9	17.24	5.2	070	24.0
Mean/Total	28	152.6	12.91	95.2 ^{&}	070	26.3
Normal*	142.8 [§]	193.9	14.05	123.9	080	27.4
Station	Hong Kong International Airport	King's Park			Waglan Island [^]	

The minimum pressure recorded at the Hong Kong Observatory was 990.7 hectopascals at 1132 HKT on 21 October.

The maximum air temperature recorded at the Hong Kong Observatory was 32.4 degrees C at 1326 HKT on 6 October.

The minimum air temperature recorded at the Hong Kong Observatory was 22.0 degrees C at 0543 HKT on 11 October.

The maximum gust peak speed recorded at Waglan Island was 115 kilometres per hour from 280 degrees at 1235 HKT on 21 October.

The maximum 1-minute mean rainfall rate recorded at King's Park was 173 millimetres per hour at 1503 HKT on 18 October.

Reduced visibility refers to visibility below 8 kilometres when there is no fog, mist or precipitation.

- The visibility readings at the Hong Kong International Airport are based on hourly observations by professional meteorological observers in 2004 and before, and average readings over the 10-minute period before the clock hour of the visibility meter near the middle of the south runway from 2005 onwards. The change of the data source in 2005 is an improvement of the visibility assessment using instrumented observations following the international trend.

- Before 10 October 2007, the number of hours of reduced visibility at the Hong Kong International Airport in 2005 and thereafter displayed in this web page was based on hourly visibility observations by professional meteorological observers. Since 10 October 2007, the data have been revised using the average visibility readings over the 10-minute period before the clock hour, as recorded by the visibility meter near the middle of the south runway.

[^] In case the data are not available from Waglan Island, observations of Cheung Chau or other nearby weather stations will be incorporated in computing the Prevailing Wind Direction and Mean Wind Speed.

* 1981-2010 Climatlogical Normal, unless otherwise specified

Remark: Graphical presentations for wind speed and wind direction from the nearest HKO's weather station (Kai Tak) were not available.

**APPENDIX F
NOISE MONITORING RESULTS AND
GRAPHICAL PRESENTATIONS**

Appendix F - Noise Monitoring Results

Location NMS-CA-3(1)/ NMS-CA-4(2)- Hong Kong S.K.H Nursing Home								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}	L _{eq}
6-Oct-16	Cloudy	17:05	72.6	75.3	69.3	73.1	73	56.7
		17:10	73.3	75.5	70.1			
		17:15	72.6	74.8	69.5			
		17:20	73.2	75.6	70.4			
		17:25	74.2	76.5	69.6			
		17:30	72.6	74.9	68.8			
12-Oct-16	Cloudy	14:00	71.8	73.9	68.8	72.3	73	72.3 Measured ≤ Baseline Level
		14:05	72.5	74.9	69.5			
		14:10	72.4	73.4	70.0			
		14:15	73.4	75.2	70.9			
		14:20	70.8	72.7	68.6			
		14:25	72.2	73.9	70.2			
18-Oct-16	Cloudy	10:30	74.2	76.8	70.0	74.0	73	67.1
		10:35	74.5	75.9	70.2			
		10:40	73.3	74.9	70.5			
		10:45	74.3	76.2	69.1			
		10:50	74.1	76.3	69.3			
		10:55	73.2	74.4	70.8			
24-Oct-16	Cloudy	11:30	70.7	72.7	67.5	70.5	73	70.5 Measured ≤ Baseline Level
		11:35	71.1	73.8	68.3			
		11:40	69.9	72.3	66.6			
		11:45	70.6	72.7	67.8			
		11:50	70.7	73.7	64.6			
		11:55	69.9	72.3	66.3			
31-Oct-16	Sunny	15:05	72.3	74.2	69.7	72.6	73	72.6 Measured ≤ Baseline Level
		15:10	72.6	74.8	70.1			
		15:15	72.4	74.7	70.1			
		15:20	73.0	74.9	69.8			
		15:25	73.0	74.8	70.6			
		15:30	72.2	74.7	69.0			

Remarks:

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

Appendix F - Noise Monitoring Results

Location NMS-CA-4(1)/NMS-CA-3(2) - Block 1, Rhythm Garden (north-eastern façade)								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}	L _{eq}
6-Oct-16	Cloudy	14:35	71.8	73.4	70.1	72.0	71	65.1
		14:40	71.6	73.5	70.2			
		14:45	72.6	74.5	70.4			
		14:50	72.2	74.0	70.0			
		14:55	72.1	73.7	70.2			
		15:00	71.5	72.8	70.0			
12-Oct-16	Cloudy	15:30	72.3	73.6	71.0	72.6	71	67.5
		15:35	72.2	73.3	71.0			
		15:40	72.8	73.9	71.5			
		15:45	72.6	73.7	71.6			
		15:50	72.9	74.3	71.3			
		15:55	72.9	73.9	71.4			
18-Oct-16	Cloudy	11:05	71.8	73.0	70.2	71.9	71	64.6
		11:10	72.1	73.3	70.6			
		11:15	71.4	72.7	69.8			
		11:20	71.3	72.3	70.3			
		11:25	72.2	73.1	70.4			
		11:30	72.7	73.9	70.5			
24-Oct-16	Cloudy	10:35	72.6	73.7	71.5	71.9	71	64.6
		10:40	72.2	73.4	70.7			
		10:45	71.6	73.2	70.0			
		10:50	71.8	73.1	70.6			
		10:55	72.0	73.1	70.7			
		11:00	71.0	72.1	69.7			
31-Oct-16	Sunny	13:40	72.0	73.0	70.8	72.3	71	66.4
		13:45	72.4	73.6	70.7			
		13:50	72.2	73.7	70.8			
		13:55	72.5	73.6	71.2			
		14:00	72.2	73.5	71.1			
		14:05	72.6	73.8	71.8			

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).

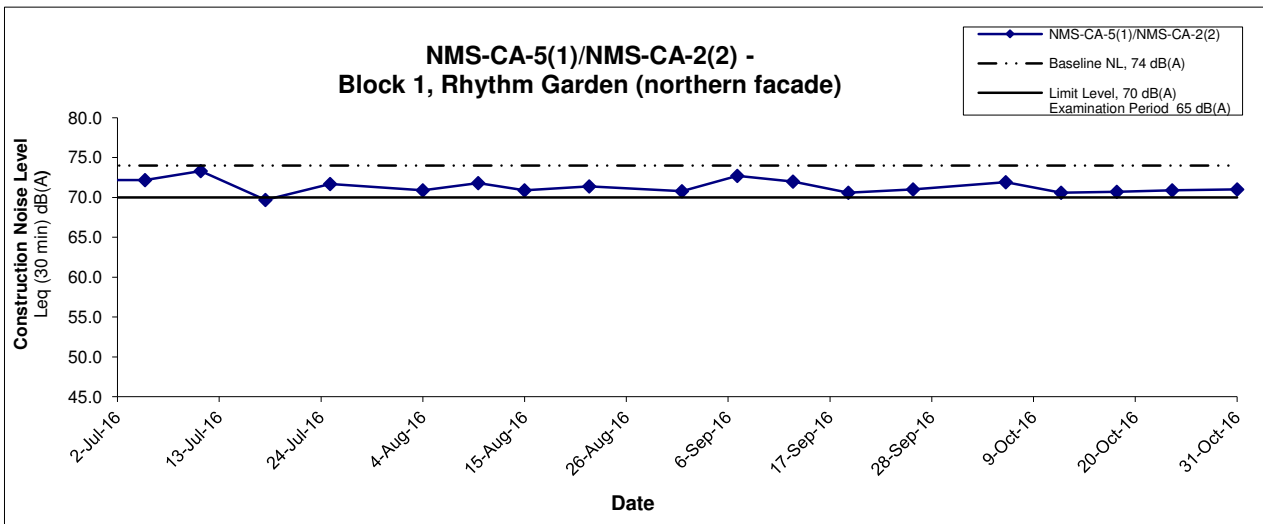
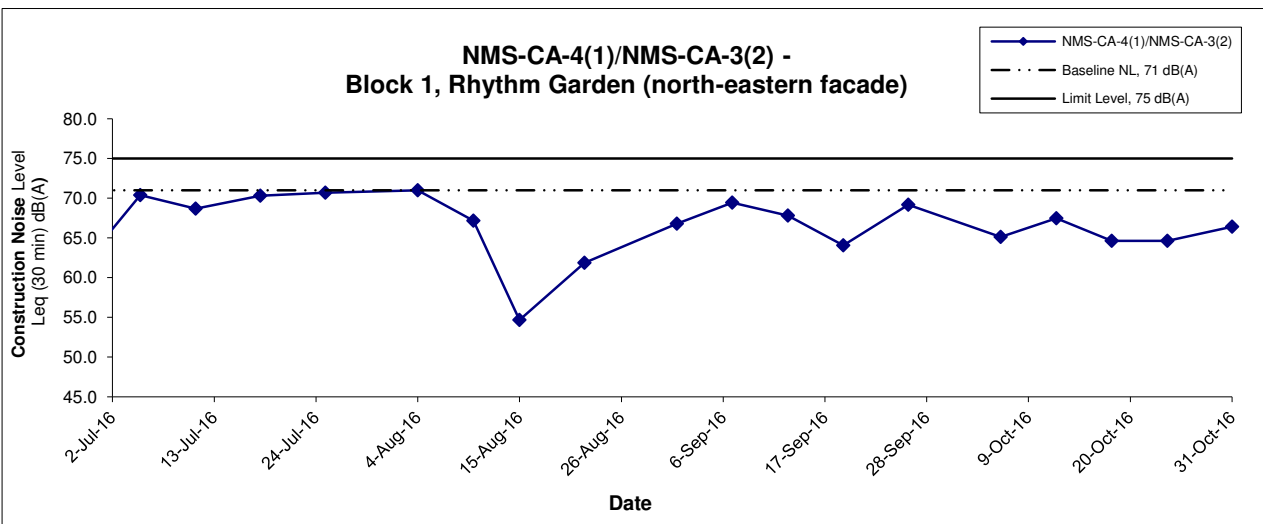
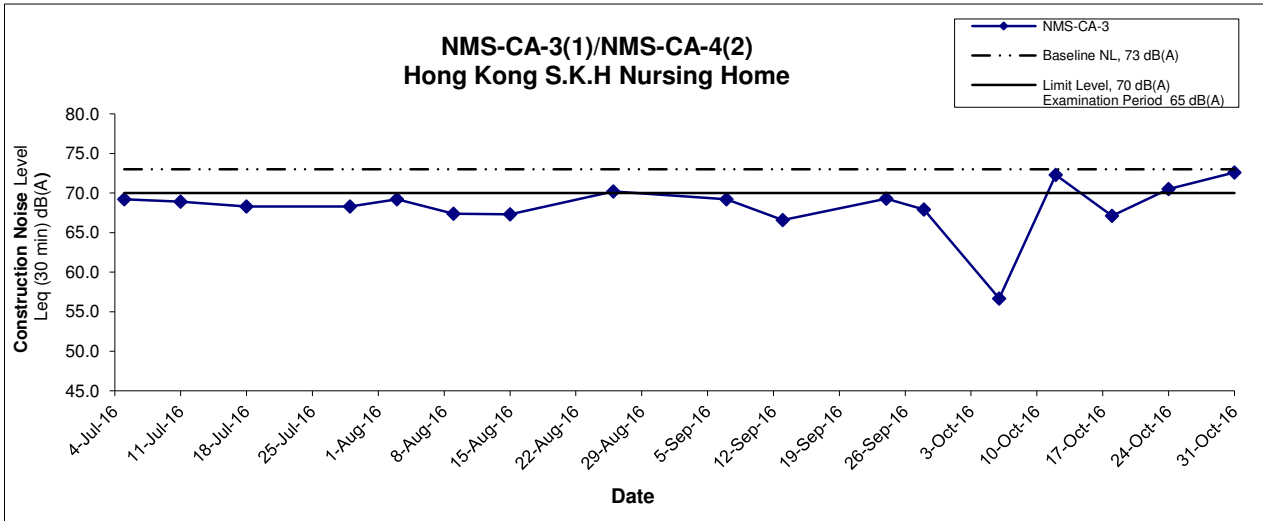
Appendix F - Noise Monitoring Results

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-Oct-16	Cloudy	14:00	71.8	74.7	69.1	71.9	74	71.9 Measured ≤ Baseline Level
		14:05	71.8	74.8	68.4			
		14:10	72.4	75.5	69.0			
		14:15	72.1	74.6	68.7			
		14:20	71.5	74.4	68.3			
		14:25	71.5	74.8	68.1			
12-Oct-16	Cloudy	14:45	71.2	72.3	70.1	70.6	74	70.6 Measured ≤ Baseline Level
		14:50	70.6	72.0	69.2			
		14:55	70.3	71.6	69.1			
		15:00	70.4	70.9	69.0			
		15:05	70.8	71.8	69.7			
		15:10	70.1	71.4	68.9			
18-Oct-16	Cloudy	10:30	71.6	72.9	69.5	70.7	74	70.7 Measured ≤ Baseline Level
		10:35	70.4	71.5	69.3			
		10:40	70.9	71.6	68.9			
		10:45	70.7	72.1	69.1			
		10:50	69.9	70.5	68.5			
		10:55	70.6	72.1	69.1			
24-Oct-16	Cloudy	10:00	70.2	71.4	68.7	70.9	74	70.9 Measured ≤ Baseline Level
		10:05	70.6	71.7	69.5			
		10:10	70.7	72.1	68.9			
		10:15	70.7	71.8	69.6			
		10:20	71.5	72.9	69.8			
		10:25	71.4	72.5	69.8			
31-Oct-16	Sunny	13:05	71.5	72.7	70.0	71.0	74	71.0 Measured ≤ Baseline Level
		13:10	70.8	71.9	69.4			
		13:15	70.9	71.8	69.5			
		13:20	70.9	71.9	69.7			
		13:25	70.8	71.9	69.2			
		13:30	71.3	72.5	69.8			

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 \leq Baseline Level, only Measured Level is presented on the graphical presentation.
- (4) Noise levels of NMS-CA-3⁽¹⁾/4⁽²⁾ from July to September 2016 were extracted from the Project SCL 1103.

Title Shatin to Central Link - Contract 1106 - Diamond Hill Station Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA12051	CINOTECH
	Date Oct 16	Appendix F	

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENDIX G – SUMMARY OF EXCEEDANCE

Reporting Month: October 2016

a) Exceedance Report for Dust Monitoring (NIL)

b) Exceedance Report for Noise Monitoring (NIL)

APPENDIX H
SITE AUDIT SUMMARY

Shatin to Central Link -

Contract 1106 Diamond Hill Station



Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161006
Date	6 October 2016 (Thursday)
Time	13:30-15:00

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

Ref. No.	Remarks/Observations	Related Item No.
161006-R02	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> Sandbag bunding should be enhanced in A1 area to prevent silty runoff entering public area. 	B 20
161006-O03	<p>Part C – Ecology</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. 	E 19
161006-R01	<p>Part D – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E – Air Quality</p> <ul style="list-style-type: none"> NRMM label of designated format should be provided to the generator found near the station. Water spraying should be performed more frequently in all work area within the site for dust suppression. <p>Part F – Cultural Heritage</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part I – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part J – Others</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.: 160929), the item 160929-O01 was remarked as 161006-O03 and follow up action is needed to be reviewed. 	E 5

	Name	Signature	Date
Recorded by	Kelvin Koo		6 October 2016
Checked by	Dr. Priscilla Choy		6 October 2016

Shatin to Central Link -

Contract 1106 Diamond Hill Station

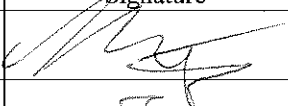

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161013
Date	13 October 2016 (Thursday)
Time	13:30-15:00

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

Ref. No.	Remarks/Observations	Related Item No.
161013-R02	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> To provide sand bag bund to the A1 entrance to retain all the site runoff within the site. 	B 20
161013-R01	<p>Part C – Ecology</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E – Air Quality</p> <ul style="list-style-type: none"> To provide sufficient water spray to the exposed area near the station. <p>Part F – Cultural Heritage</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part I – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part J – Others</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.: 161006), the item 161006-R01 and 161006-R02 were remarked as 161013-R01 and 161013-R02 respectively. Follow up action is needed to be reviewed. 	E 5

	Name	Signature	Date
Recorded by	Benjamin Wong		13 October 2016
Checked by	Dr. Priscilla Choy		13 October 2016

Shatin to Central Link -

Contract 1106 Diamond Hill Station

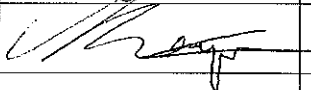
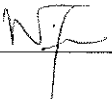
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161020
Date	20 October 2016 (Thursday)
Time	13:30-15:00

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

Ref. No.	Remarks/Observations	Related Item No.
161020-R01	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C – Ecology</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E – Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F – Cultural Heritage</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Waste/Chemical Management</p> <ul style="list-style-type: none"> To remove the general refuse found accumulated in the area near MBME. <p>Part I – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part J – Others</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.: 161013), all the environmental deficiencies were rectified/ improved by the Contractor. 	H 1i

	Name	Signature	Date
Recorded by	Benjamin Wong		20 October 2016
Checked by	Dr. Priscilla Choy		20 October 2016

Shatin to Central Link -

Contract 1106 Diamond Hill Station

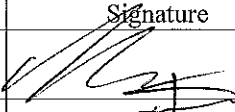

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161027
Date	27 October 2016 (Thursday)
Time	13:30-15:00

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

Ref. No.	Remarks/Observations	Related Item No.
161027-R01 161027-002	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C – Ecology</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E – Air Quality</p> <ul style="list-style-type: none"> To enhance the 3-sides enclosures to the cement mixing machine near the station. To cover the stockpile with impervious material. (in ex-1103 site area) <p>Part F – Cultural Heritage</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part I – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part J – Others</p> <ul style="list-style-type: none"> Follow-up on previous audit section (Ref. No.: 161020), all the environmental deficiencies were rectified/ improved by the Contractor. 	E 17iii E 6

	Name	Signature	Date
Recorded by	Benjamin Wong		27 October 2016
Checked by	Dr. Priscilla Choy		27 October 2016

**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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal as appropriate.

LIMIT LEVEL

1.Exceedance for one sample	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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
<i>Cultural Heritage Impact (Construction Phase)</i>								
S4.8.1	CH1	Submit an Archaeological Action Plan. Survey-cum-excavation shall be conducted prior to the construction works at the former Tai Hom Village site.	Salvage cultural remains at the Former Tai Hom Village Site	Contractor	Former Tai Hom Village Site	Prior to the Construction Phase of DIH site	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • AMO's requirements • Principles for the Conservation of Heritage Sites in China • Burra Charter, the Australia's ICOMOS Charter for Places of Cultural Significance 	^
<i>Ecology (Construction Phase)</i>								
S5.7	E1	<u>Good Site Practices</u> Impact to any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, appropriate storage of chemicals and chemical waste away from sites of ecological value and the provision of sanitary facilities for	Minimise ecological impacts	Contractor	All construction sites	During Construction	<ul style="list-style-type: none"> • ProPECC PN 1/94 	^

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>control on the height and disposition/ arrangement of all facilities on the works site to minimize visual impact to adjacent VSRs.</p> <p><u>Tree Transplanting</u></p> <ul style="list-style-type: none"> Trees of medium to high survival rate that would be affected by the works shall be transplanted where possible and practicable. <p>Tree transplanting proposal including final location for transplanted trees shall be submitted separately to seek relevant government department's approval, in accordance with ETWB TCW No 3/2006.</p>						^
<i>Air Quality (Construction Phase)</i>								
/	A1	<p>Emission from Vehicles and Plants</p> <ul style="list-style-type: none"> 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) 	<p>Reduce air pollution emission from construction vehicles and plants</p>	Contractor	All construction sites	Construction stage	• APCO	^ * ^
/	A2	Open burning shall be prohibited	<p>Reduce air pollution emission from work site</p>	Contractor	All construction sites	Construction stage	APCO	^
<i>Construction Dust Impact</i>								
S7.6.6	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	<p>Minimize dust impact at the nearby sensitive receivers</p>	Contractor	All Construction Sites	Construction stage	<p>• APCO</p> <p>• To control the dust</p>	*

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
							impact to meet HKAQO and TM-EIA criteria	
S7.6.6	D2	Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road in the Kowloon area should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.8 L/m ² to achieve the dust removal efficiency	Minimize dust impact at the nearby sensitive receivers	Contractor	All Construction Sites	Construction stage	<ul style="list-style-type: none"> • APCO • To control the dust impact to meet HKAQO and TM-EIA criteria 	*
S7.6.6	D3	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • APCO • To control the dust impact to meet HKAQO and TM-EIA criteria 	* ^ ^ ^

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<ul style="list-style-type: none"> • 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 						<p style="text-align: center;">^</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<ul style="list-style-type: none"> 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	^
<i>Construction Airborne Noise</i>								
S8.5.6	AN1	Implement the following good site practices: <ul style="list-style-type: none"> 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	^ ^ ^ ^ ^

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>and practicable;</p> <ul style="list-style-type: none"> 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	^

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
			noise					
S8.5.6	AN6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction stage	•TM-EIA	^
Water Quality (Construction Phase)								
S10.7.1	W1	<p>In accordance with the Practice Noise for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following:</p> <p><u>Construction Runoff and Site Drainage</u></p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water 	^

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates.</p> <p>The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 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.</p> <ul style="list-style-type: none"> • 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 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers</p> <ul style="list-style-type: none"> • 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 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">N/A</p>

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>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.</p> <ul style="list-style-type: none"> • 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. 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>
S10.7.1	W3	<p><u>Sewage Effluent</u></p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Water Pollution Control Ordinance • TM-water 	^

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
		appropriate disposal and maintenance.						
S10.7.1	W5	<p><u>Accidental Spillage</u></p> <p>In order to prevent accidental spillage of chemicals, the following is recommended:</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water 	<p>^</p> <p>^</p> <p>^</p> <p>^</p>
<i>Waste Management (Construction Waste)</i>								
S11.4.1.1	WM1	<p><u>On-site sorting of C&D material</u></p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • DEVB TC(W) No. 6/2010 	N/A

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>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.</p>						
S11.5.1	WM2	<p><u>Construction and Demolition Material</u></p> <ul style="list-style-type: none"> • 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; 	<p>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</p>	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> • Land (Miscellaneous Provisions) • Waste Disposal Ordinance 	<p>^</p> <p>^</p> <p>^</p>

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<ul style="list-style-type: none"> • 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				<ul style="list-style-type: none"> • ETWB TCW No. 19/2005 	N/A ^ ^ ^
S11.5.1	WM3	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW 	^

SCL Works Contract 1106 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>materials will be carefully planned in order to avoid over ordering and wastage.</p> <ul style="list-style-type: none"> 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	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> 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	^ * ^

**APPENDIX K
WASTE GENERATION IN THE
REPORTING MONTH**

Monthly Summary Waste Flow Table for 2016

Monthly	Actual Quantities of C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly					Remarks
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects (See Note 2)	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste (See Note 3)	Others, e.g. general refuse	
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)	
Jan	0.722	0.000	0.000	0.000	0.722	0.000	0.000	0.300	0.000	0.000	0.310	
Feb	0.337	0.000	0.000	0.000	0.337	0.000	0.000	0.100	0.000	0.000	0.149	
Mar	0.538	0.000	0.000	0.000	0.538	0.000	0.000	0.340	0.000	0.000	0.212	
Apr	0.474	0.000	0.000	0.000	0.474	0.000	0.000	0.370	0.000	0.000	0.245	
May	0.785	0.000	0.000	0.000	0.785	1.095	0.000	0.000	0.000	0.000	0.202	
Jun	0.588	0.000	0.000	0.000	0.588	1.478	0.000	0.230	0.000	0.000	0.347	
Sub-total	3.444	0.000	0.000	0.000	3.444	2.573	0.000	1.340	0.000	0.000	1.465	
Jul	0.197	0.000	0.000	0.000	0.197	0.473	0.000	0.410	0.000	0.000	0.275	
Aug	0.074	0.000	0.000	0.000	0.074	0.000	0.000	0.252	0.000	0.000	0.168	
Sept	0.458	0.000	0.278	0.000	0.180	0.000	0.000	0.249 *	0.000	0.000	0.154	
Oct	0.266	0.000	0.225	0.000	0.041	1.403	0.000	0.251	0.000	0.000	0.127	
Nov												
Dec												
Total	4.439	0.000	0.503	0.000	3.936	4.449	0.000	2.253	0.000	0.000	2.189	

Notes:

- 1) Assume the densities of Rock, Soil, Mix Rock and Soil, are Regular Spoil to be 2.0 tonnes/m³. Assumption the densities of general refuse is 1.0 tonnes/m³
- 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
- 5) * The amount of Paper/cardboard packaging in Sep 2016 was updated.

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

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

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



June 2016	1	0	0
July 2016	0	0	0
August 2016	3	0	0
September 2016	0	0	0
October 2016	0	0	0
Total	10	0	0

Environmental Complaint Log (October 2016)

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 (October 2016)

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

Log for Successful Prosecutions (October 2016)

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

Appendix E

**42nd EM&A Report for Works Contract 1107 –
Diamond Hill to Kai Tak Tunnels**

MTR Corporation Limited

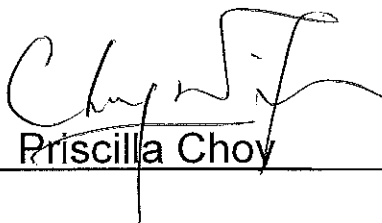
**Shatin to Central Link –
Tai Wai to Hung Hom Section**

Monthly EM&A Report No. 42

[Period from 1 to 31 October 2016]

Works Contract 1107 – Diamond Hill to Kai Tak Tunnels

(November 2016)

Certified by: 
Priscilla Choy

Position: Environmental Team Leader

Date: 11th November 2016

Chun Wo – SELI Joint Venture

**Shatin to Central Link –
Contract 1107
Diamond Hill to Kai Tak Tunnels**

**Monthly Environmental
Monitoring and Audit Report
For October 2016**

(Version 1.0)

Certified By

DRAFT

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 42nd 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 October 2016.

Summary of Construction Works undertaken during Reporting Month

2. The major site activities undertaken in the reporting month include:
 - Backfilling works at cut and cover tunnels; and
 - Reinstatement and Backfilling works of Drainage.

Variation in Construction Method

3. Environmental Monitoring and Audit Progress:

As of the reporting month, an alignment section of approximately 90m long between DIH and KAT under this Works Contract 1107 will be constructed by the cut-and-cover method, instead of bored tunnelling method as assessed in the approved Environmental Impact Assessment (EIA) Report of Shatin to Central Link - Stabling Sidings at Hung Hom Freight Yard (hereafter referred to as SCL (HHS)) [Register No.: AEIAR-164/2012] due to increased construction risk caused by potential left-in piles. Also, pile removal works would be conducted if reinforced bored piles are identified along the bored tunnelling section. Application for variation of Environmental Permit (VEP) was approved by the EPD for the varied construction method. The updated EP (EP No.: EP-438/2012/F) was issued by EPD on 15 July 2014. Application for variation of Environmental Permit (VEP) was approved by the EPD for including the installation and operation of a Mobile Batching Machinery Equipment at Diamond Hill during the construction of SCL (TAW-HUH). The updated EP (EP No.: EP-438/2012/G) was issued by EPD on 14 August 2014. Application for variation of Environmental Permit (VEP) was approved by the EPD for varying Figure 11 of the previous Environment Permit. The variation of EP (EP No.: EP-438/2012/H) was issued by EPD on 10 September 2014, and superseded by an updated EP (EP No.: EP-438/2012/I) issued by EPD on 14 October 2015. The variation of EP (EP No.: EP-438/2012/J) was issued by EPD on 29 February 2016 for including the decommissioning of temporary magazine site at Tseung Kwun O Area 137.

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

Regular Construction Noise and Construction Dust Monitoring

- Regular construction noise monitoring during normal working hours
Noise Monitoring Station ID
- NMS-CA-4⁽¹⁾⁽³⁾/NMS-CA-3⁽²⁾⁽³⁾ (Block 1, Rhythm Garden (north-eastern façade)) 5 times
- NMS-CA-5⁽¹⁾⁽⁴⁾/NMS-CA-2⁽²⁾⁽⁴⁾ (Block 1, Rhythm Garden (northern façade)) 5 times
- Construction Dust (24-hour TSP) Monitoring
Dust Monitoring Station ID
- DMS-4⁽¹⁾⁽⁵⁾/ DMS-3⁽²⁾⁽⁵⁾ (Block 1, Rhythm Garden) 5 times

Remarks:

- (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) Noise monitoring on NMS-CA-4⁽¹⁾/ NMS-CA-3⁽²⁾ (Block 1, Rhythm Garden (north-eastern façade) is carried out by Environmental Team of SCL Works Contract 1106.
- (4) Noise monitoring on NMS-CA-5⁽¹⁾/ NMS-CA-2⁽²⁾ (Block 1, Rhythm Garden (northern façade) is carried out by Environmental Team of SCL Works Contract 1106.
- (5) Dust monitoring on DMS-4⁽¹⁾/ DMS-3⁽²⁾ (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.

Waste Management

5. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. Details of waste management data is presented in Section 5 and **Appendix K**.

Landscape and Visual

6. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 13th and 27th October 2016. 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 27th October 2016. The representative of the IEC joined the site inspection on 6th November 2016. 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:
 - Backfilling works at cut and cover tunnels; and
 - Reinstatement and Backfilling works of drainage.

1 INTRODUCTION

- 1.1 Cinotech Consultants Limited (Cinotech) was appointed by Chun Wo – SELI Joint Venture (CSJV) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the MTR Shatin to Central Link (SCL) Works Contract 1107 – Diamond Hill to Kai Tak Tunnels (hereafter referred to as the Project).

Purpose of the Report

- 1.2 This is the 42nd 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 October 2016. The major construction works for Contract 1107 commenced on 27th May 2013.

Structure of the Report

- 1.3 The structure of the report is as follows:

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

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

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

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

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

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

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

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

Section 9: **Conclusions and Recommendations**

2 PROJECT INFORMATION

Background

- 2.1 The Shatin to Central Link – Tai Wai to Hung Hom Section (hereafter referred to as SCL (TAW-HUH)) is an approximately 11 km long extension of the Ma On Shan Line and links up with the West Rail Line at Hung Hom forming a strategic east-west rail corridor. It is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO).
- 2.2 The construction of the SCL (TAW-HUH) and SCL (HHS) have been divided into a series of civil construction works contracts. This Works Contract 1107 covers the construction of running tunnel from Kai Tak (KAT) North to SCL Diamond Hill (DIH) Station which is under the approved SCL (HHS) EIA Report. This construction contract was awarded to Chun Wo - SELI Joint Venture (CSJV) in March 2013.

General Site Description

- 2.3 The construction of tunnel from KAT to DIH will employ either cut-and-cover method or bored tunneling. The alignment and works area for the Works Contract 1107 are shown in **Figure 1**.

Construction Programme and Activities

- 2.4 A summary of the major construction activities undertaken in this reporting period is shown as follows. The tentative construction programme is presented in **Appendix A**.
- Backfilling works at cut and cover tunnels; and
 - Reinstatement and Backfilling works of Drainage.

Project Organisation

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

Status of Environmental Licences, Notification and Permits

- 2.6 A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project is presented in **Table 2.1**. No new Construction Noise Permit (CNP) was granted under the Project in the reporting month.

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

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-438/2012/J	29/02/2016	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
Ref no.: 357051	18/03/2013	N/A	Valid
Billing Account for Construction Waste Disposal			
Account No. 7017163	26/03/2013	N/A	Valid
Registration of Chemical Waste Producer			
5213-286-C3798-01	29/04/2013	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00015861-2013	13/05/2013	31/05/2018	Valid
WT00016009-2013	23/05/2013	31/05/2018	Valid
Construction Noise Permit (CNP)			
GW-RE0618-16	22/06/2016	2/12/2016	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, works period, methodology and QA/QC procedures of the required monitoring parameters, namely construction noise & dust monitoring as well as audit works for the Project in the reporting month.

3 ENVIRONMENTAL MONITORING REQUIREMENTS

Regular Construction Noise Monitoring

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

Table 3.1 Regular Construction Noise Monitoring Location

Regular Construction Noise Monitoring Location⁽⁴⁾⁽⁵⁾	Description	Type of Measurement
NMS-CA-4 ⁽¹⁾ / NMS-CA-3 ⁽²⁾	Block 1, Rhythm Garden (north-eastern façade)	Façade
NMS-CA-5 ⁽¹⁾⁽³⁾ / NMS-CA-2 ⁽²⁾⁽³⁾	Block 1, Rhythm Garden (northern façade)	Façade

Note:

- (1) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) NSR ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) Access to the monitoring location at Canossa Primary School (San Po Kong) (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (Block 1, Rhythm Garden (northern façade)) was proposed and approved by the ER and agreed by the IEC and EPD.
- (4) Noise monitoring on NMS-CA-4⁽¹⁾/ NMS-CA-3⁽²⁾ (Block 1, Rhythm Garden (north-eastern façade)) is carried out by Environmental Team of SCL Works Contract 1106.
- (5) Noise monitoring on NMS-CA-5⁽¹⁾/ NMS-CA-2⁽²⁾ (Block 1, Rhythm Garden (northern façade)) is carried out by Environmental Team of SCL Works Contract 1106.

Monitoring Parameter and Frequency

- 3.2 Weekly construction noise monitoring was conducted in accordance with the requirements stipulated in the EM&A Manual. If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed. The monitoring schedule for this reporting period of monitoring stations at Rhythm Garden is shown in **Appendix D**.
- 3.3 The construction noise levels were measured in terms of the A-weighted equivalent continuous sound pressure level (L_{Aeq}) in decibels dB(A). L_{Aeq} (30min) (as six consecutive $L_{eq, 5-min}$ 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**, comply with the IEC 651: 1979 and 804:1985 (Type 1) specification. The calibration certificates of the sound level meters are included in **Appendix C**.

Table 3.2 Noise Monitoring Equipment

Monitoring Equipment	Model (Serial no.)
Sound Level Meter	SVAN 955 (Serial no.: 12553) SVAN 957 (Serial no.: 23853) BSWA 801 (Serial no.: 35924)
Calibrator	SV30A (Serial no.: 24803, 24791 and 24780) B&K 4231 (Serial no.: 2412367)

Maintenance and Calibration

3.6 Maintenance and Calibration procedures were as follows:

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

Action & Limit Level for Construction Noise Monitoring

3.7 The Action and Limit Levels are presented in **Appendix B** and the Event / Action Plan (EAP) for noise monitoring is presented in **Appendix I**.

Continuous Noise Monitoring

3.8 With reference to the latest Continuous Noise Monitoring Plan (CNMP) and 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 m³/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 (September 2016)	14 th October 2016

5 MONITORING RESULTS

Regular Construction Noise Monitoring

- 5.1 A total of 10 sets of 30-minute construction noise measurements were carried out at the monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. No exceedance of the limit level was recorded at designated monitoring stations.
- 5.2 All noise monitoring results recorded at NMS-CA-5⁽¹⁾/NMS-CA-2⁽²⁾ (Block 1, Rhythm Garden (northern façade)) in October 2016 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 October 2016 did not exceed the daytime construction noise criterion.
- 5.3 The noise monitoring results together with their graphical presentations are presented in **Appendix F**.
- 5.4 No exceedance of the Action and Limit Levels of construction noise due to the Project was recorded during the reporting period.

Regular Dust Monitoring

- 5.5 A total of 5 sets of 24-hour TSP monitoring were carried out at the designated monitoring stations during normal weekdays of the reporting period by ET of SCL Works Contract 1106. The monitoring results together with their graphical presentations are presented in **Appendix E** and a summary of the dust monitoring results in this reporting month is given in **Table 5.1**.

Table 5.1 Summary Table of Dust Monitoring Results during the reporting month

Parameter	Minimum µg/m ³	Maximum µg/m ³	Average µg/m ³	Action Level, µg/m ³	Limit Level, µg/m ³
24-hr TSP (DMS-4 ⁽¹⁾⁽³⁾ / DMS-3 ⁽²⁾⁽³⁾)	14.7	33.6	24.0	160.4	260

Remarks:

- (1) Station ID as identified in approved EM&A Manual / EIA Report for SCL(TAW-HUH).
- (2) Station ID as identified in approved EM&A Manual / EIA Report for SCL(HHS).
- (3) Dust monitoring on DMS-4⁽¹⁾/DMS-3⁽²⁾ (Block 1, Rhythm Garden) is carried out by Environmental Team of SCL Works Contract 1106.
- 5.6 Based on observation during the on-site monitoring, road traffic emission nearby is considered as a potential dust source other than construction works of the Project that affects the monitoring results of the reporting month.
- 5.7 Meteorological data were obtained from the Kai Tak Meteorological Station of Hong Kong Observatory and was shown on **Appendix E**.
- 5.8 No exceedance of the Action and Limit Levels of the 24-hour TSP was recorded during the reporting period.

Waste Management

- 5.9 Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, vegetative wastes and recyclable wastes like plastics and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in **Table 5.2**. 5m³ of C&D materials and 80 tonnes of general refuse were generated and disposed in the reporting month; no chemical waste, paper/cardboard packaging, plastics and metals were generated during this reporting month. Details of waste management data is presented in **Appendix K**.

Table 5.2 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	C&D Materials (inert) ^(a)	C&D Materials (non-inert) ^(b)				
		General Refuse	Chemical Waste	Recycled materials		
Paper/ cardboard	Plastics			Metals		
October 2016	5 m ³	80 tonnes	0 litres	0 kg	0 kg	0 kg
Notes:						
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil,						
(b) Non-inert C&D materials include steel, paper/cardboard packaging waste, plastics and other wastes such as general refuse and vegetative wastes. Steel materials generated from the project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.						

Landscape and Visual

- 5.10 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 13th and 27th October 2016. 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 27th October 2016 by ET. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 6th October 2016. 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
<i>Water Quality</i>	---	---	---
<i>Noise</i>	---	---	---
<i>Landscape and Visual</i>	---	---	---
<i>Air Quality</i>	29 th September 2016	<u>Reminder:</u> Open stockpile should be covered properly to prevent dust generation.	Please refer to the remark on 6 th October 2016.
	6 th October 2016	<u>Reminder:</u> Open stockpile should be covered properly to prevent dust generation.	As observed on 13 th October 2016, stockpiles of dusty material were covered properly.
<i>Waste / Chemical Management</i>	13 th October 2016	<u>Reminder:</u> The chemical containers should be provided with the drip tray to prevent the oil/chemical spillage.	As observed on 20 th October 2016, the identified chemical containers had been removed.
<i>Permits/Licenses</i>	---	---	---

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:
- Backfilling works at cut and cover tunnels; and
 - Reinstatement and Backfilling works of drainage.

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 October 2016 in accordance with EM&A Manual and the requirement under EP.
- 9.2 No exceedance of the Action and Limit Levels of regular construction noise and 24-hour TSP monitoring was recorded at the designated monitoring stations during the reporting month.
- 9.3 4 times of joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET and 2 times of bi-weekly inspection of the implementation of landscape and visual mitigation measures were conducted during the reporting period.
- 9.4 There was no Project related environmental complaint, successful prosecution or notification of summons received during the reporting month.
- 9.5 The ET will keep track on the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Recommendations

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

Water Quality

- N/A

Landscape and Visual

- N/A

Noise

- N/A.

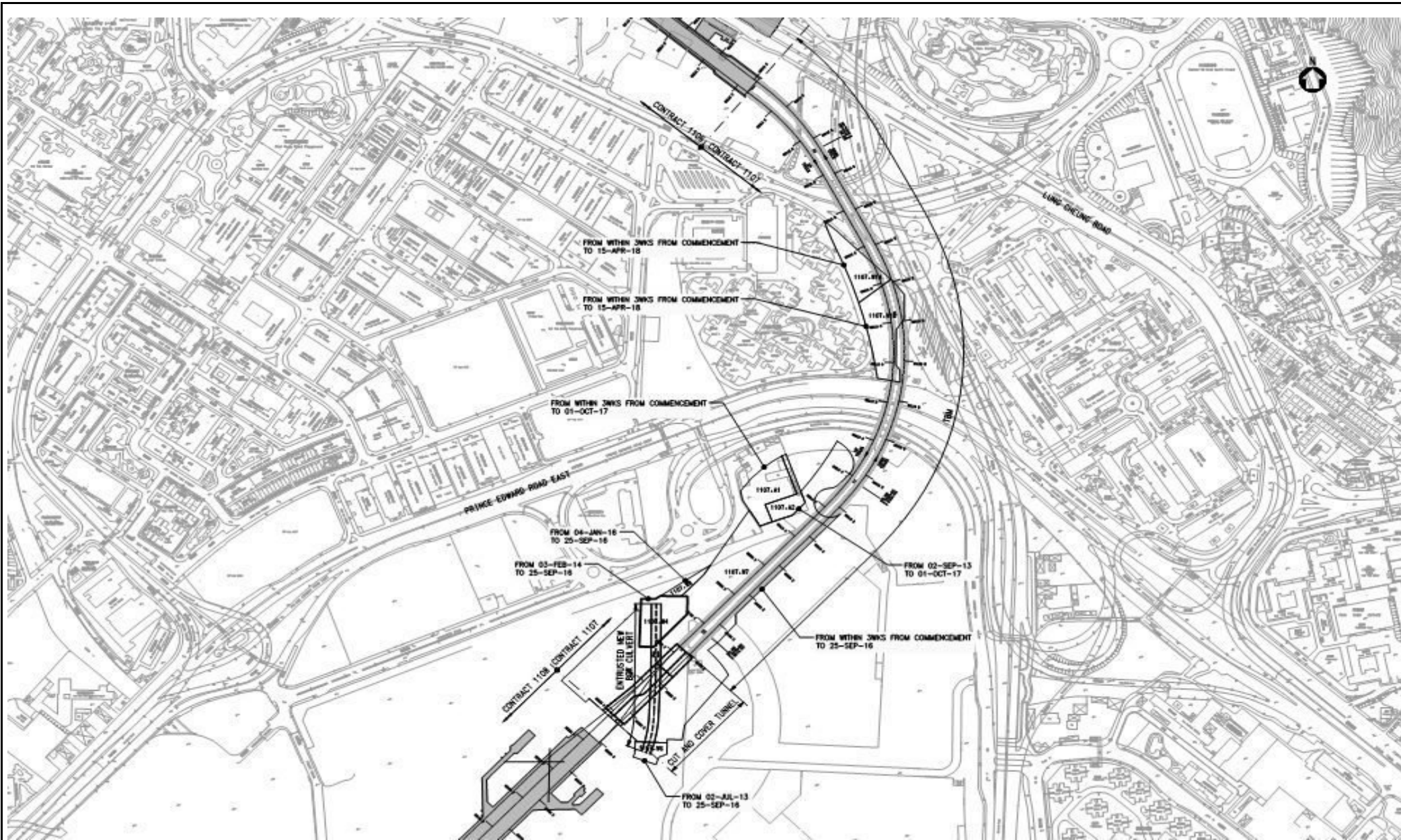
Air Quality

- Stockpile of dusty material should be covered or sprayed with water when it is not in-use.

Waste/Chemical Management

- Chemical containers should be provided with the drip tray to prevent the chemical spillage in the site.

FIGURES



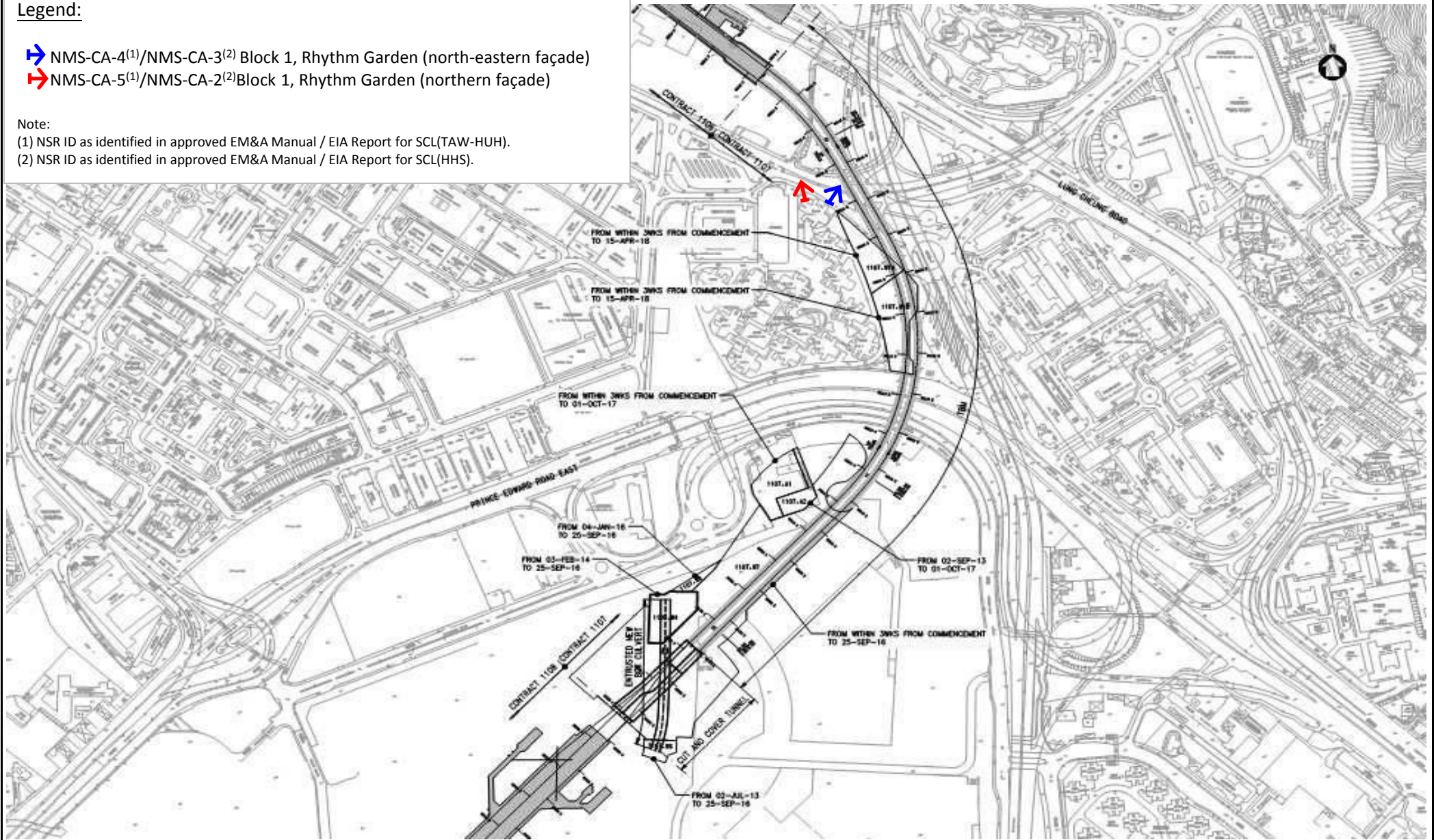
Title	MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Site Layout Plan	Scale	N.T.S	Project No.	MA13018	CINOTECH
		Date	May-13	Figure	1	

Legend:

- ➔ NMS-CA-4⁽¹⁾/NMS-CA-3⁽²⁾ Block 1, Rhythm Garden (north-eastern façade)
- ➔ NMS-CA-5⁽¹⁾/NMS-CA-2⁽²⁾ Block 1, Rhythm Garden (northern façade)

Note:

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



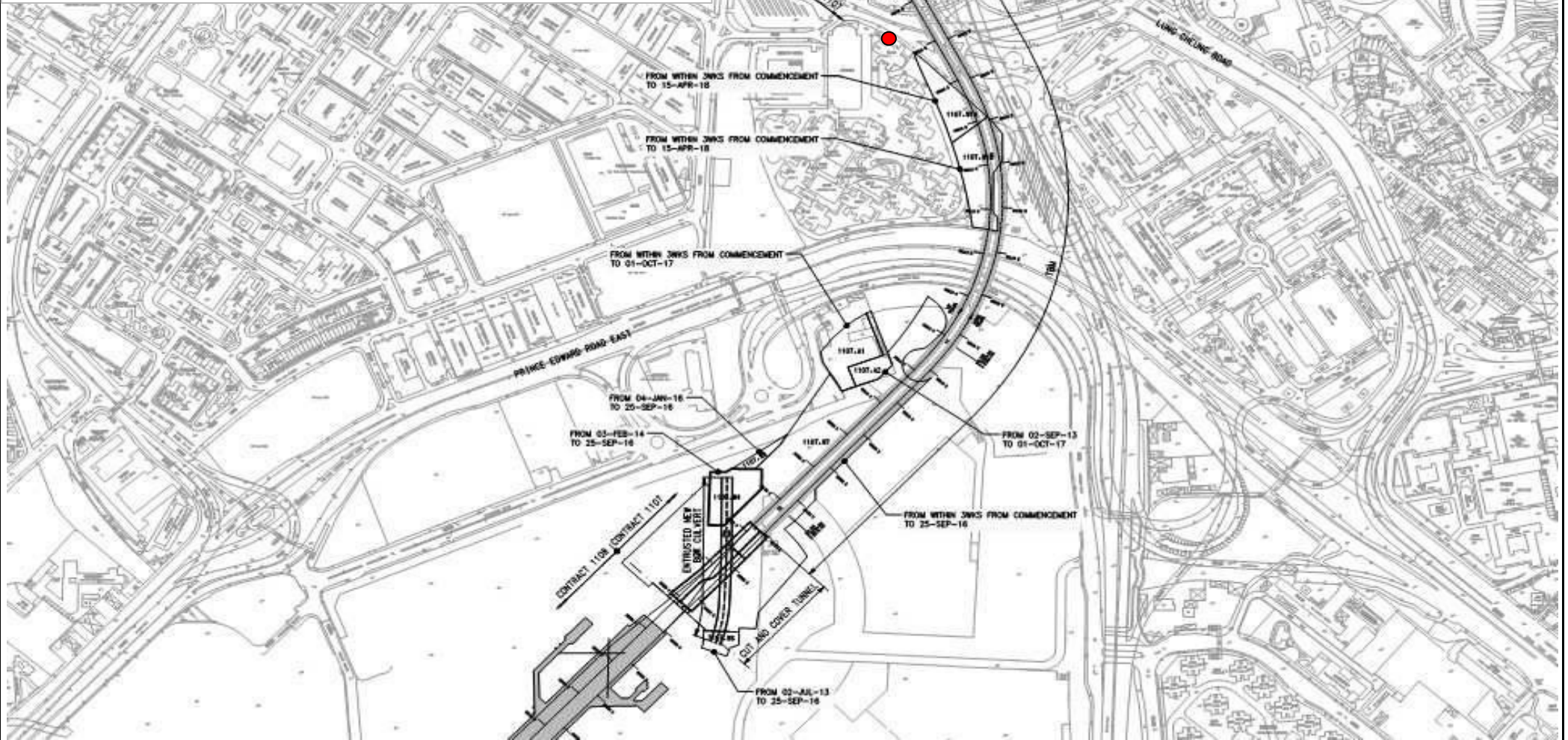
Title MTR SCL Works Contract 1107 Diamond Hill to Kai Tak Tunnels Locations of Construction Noise Monitoring	Scale N.T.S	Project No. MA13018	
	Date May-13	Figure 2	

Legend:

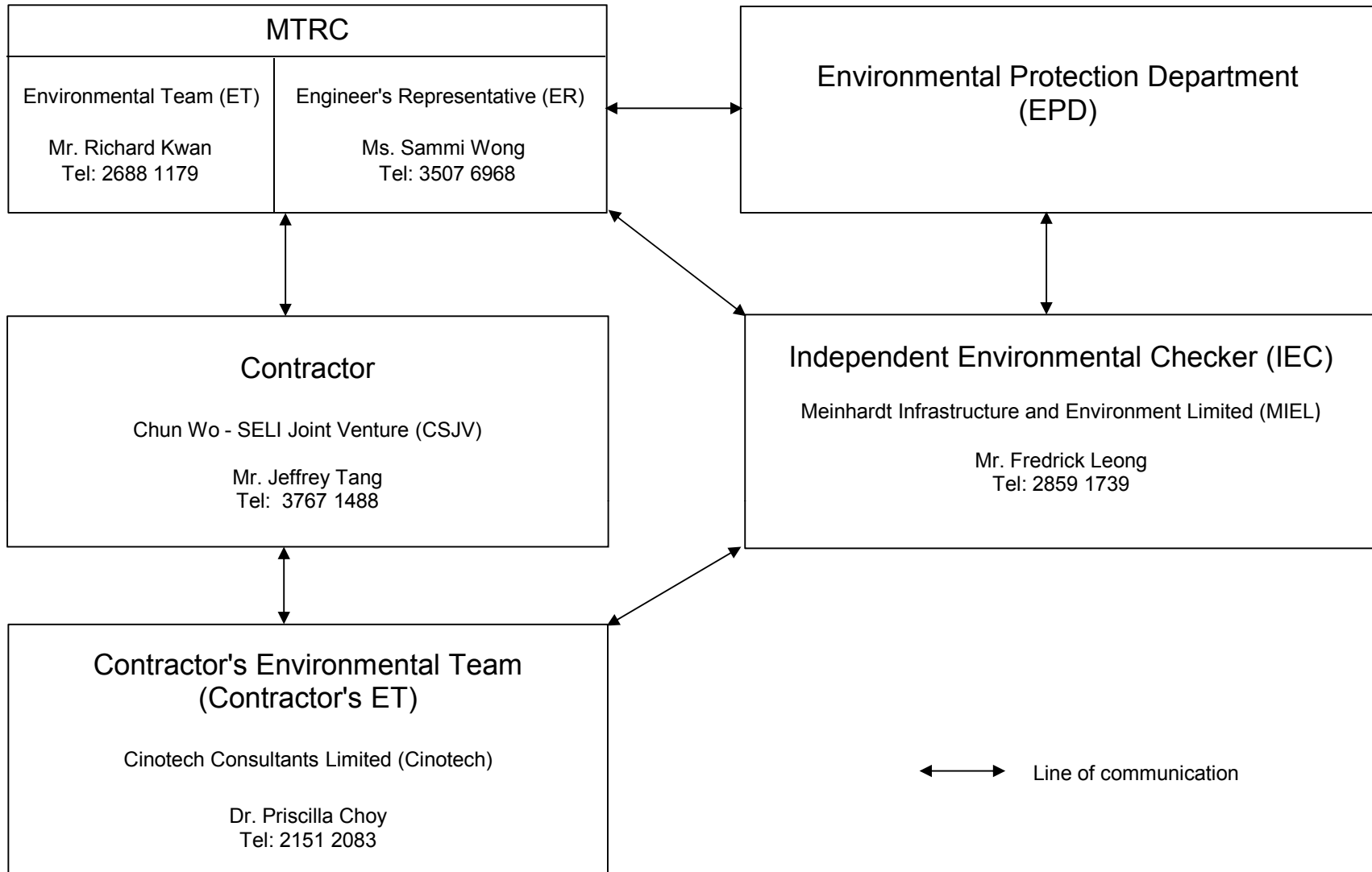
- DMS-4⁽¹⁾/DMS-3⁽²⁾ Block 1, Rhythm Garden

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	Project No.	MA13018	CINOTECH
		Date	May-13	Figure	3	



Title

MTR SCL Works Contract 1107
Diamond Hill to Kai Tak Tunnels

Organisation Chart and Key Contact of the Project

Scale

N.T.S

Date

Jul 2014

Proposal

No. MA13018

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	2016					2
									Sep	Oct	Nov	Dec	Jan	
MTRC SCL 1107 DIH to KAT Tunnels 3 M		208	11-Sep-15	31-Mar-17	25-Jul-16	31-Mar-17	25-Jul-16 A	31-Mar-17						
Schedule of Completion Obligation & Otl		8	04-Mar-16	25-Dec-16	25-Dec-16	25-Jan-17	05-Sep-16 A	30-Dec-16						30-
Schedule of Milestone Dates - Cost Centre A		0	25-Dec-16	25-Dec-16	25-Dec-16	25-Dec-16	25-Dec-16	25-Dec-16						▼ 25-Dec- ◆ A14 Eng
1107.MS10290	A14 Engr confirm satisfactory implementation of quality requirements in accordance with Approved Specified Plans	0		25-Dec-16		25-Dec-16		25-Dec-16*						
Schedule of Milestone Dates - Cost Centre D		0	04-Mar-16	04-Mar-16	18-Jan-17	18-Jan-17	05-Sep-16 A	05-Sep-16 A						▼ 05-Sep-16 A, Schedule of Milestone Dates - Cost Centre D ◆ D8 Complete int struct, tunnel invert & walkway of C&C tunnel 31JAN16 proposed to be changed to 27MAR16
1107.MS10620	D8 Complete int struct, tunnel invert & walkway of C&C tunnel 31JAN16 proposed to be changed to 27MAR16	0		04-Mar-16		18-Jan-17		05-Sep-16 A						
Schedule of Vacate Dates for Works Areas		0	25-Sep-16	25-Sep-16	25-Jan-17	25-Jan-17	30-Dec-16	30-Dec-16						▼ 30- ◆ Vac
1107.HD11120	Vacate Date for 1107.W7	0		25-Sep-16		25-Jan-17		30-Dec-16*						
Cost Centre A - Preliminaries		208	25-Jul-16	31-Mar-17	25-Jul-16	31-Mar-17	25-Jul-16 A	31-Mar-17						
As Built Drawings & O&M Manuals		156	25-Jul-16	27-Jan-17	25-Jul-16	27-Jan-17	25-Jul-16 A	27-Jan-17						
1107.12580	Preparation & Submission of draft O&M & As Built drawings	78	25-Jul-16	26-Oct-16	25-Jul-16	26-Oct-16	25-Jul-16 A	26-Oct-16	Preparation & Submission of draft O&M & As Built drawings					
1107.12581	Preparation & Submission of draft O&M & As Built drawings	78	27-Oct-16	27-Jan-17	27-Oct-16	27-Jan-17	27-Oct-16	27-Jan-17						
Project Audit		24	23-Nov-16	20-Dec-16	23-Nov-16	20-Dec-16	23-Nov-16	20-Dec-16						20-Dec-16, P
1107.12540	3rd Audit of quality plan	24	23-Nov-16	20-Dec-16	23-Nov-16	20-Dec-16	23-Nov-16*	20-Dec-16	3rd Audit of q					
Site Enabling Works		181	03-Oct-16	31-Mar-17	25-Aug-16	31-Mar-17	25-Aug-16 A	31-Mar-17						
Site Setup		181	03-Oct-16	31-Mar-17	25-Aug-16	31-Mar-17	25-Aug-16 A	31-Mar-17						
Misc Items		181	03-Oct-16	31-Mar-17	25-Aug-16	31-Mar-17	25-Aug-16 A	31-Mar-17						
1107.190803	Provision of Site General Staff (Drivers, Amahs, etc) - 25Aug16 to 12Sep16	16			25-Aug-16	12-Sep-16	25-Aug-16 A	12-Sep-16 A	Provision of Site General Staff (Drivers, Amahs, etc) - 25Aug16 to 12Sep16					
1107.190804	Provision of Site General Staff (Drivers, Amahs, etc) - 13Sep16 to 30 Sep16	15			13-Sep-16	30-Sep-16	13-Sep-16 A	30-Sep-16 A	Provision of Site General Staff (Drivers, Amahs, etc) - 13Sep16 to 30 Sep16					
1107.19090	Provision of Site General Staff (Drivers, Amahs, etc) - 3Oct16 to 20Oct16	15	03-Oct-16	31-Dec-16	03-Oct-16	20-Oct-16	03-Oct-16	20-Oct-16	Provision of Site General Staff (Drivers, Amahs, etc) - 21O					P
1107.19090a	Provision of Site General Staff (Drivers, Amahs, etc) - 21Oct16 to 7Nov16	15			21-Oct-16	07-Nov-16	21-Oct-16	07-Nov-16	Provision of Site General Staff (Drivers, Amahs, etc) - 21O					
1107.19090b	Provision of Site General Staff (Drivers, Amahs, etc) - 8Nov16 to 25Nov16	16			08-Nov-16	25-Nov-16	08-Nov-16	25-Nov-16	Provision of Site General Staff (Drivers,					
1107.19090c	Provision of Site General Staff (Drivers, Amahs, etc) - 26Nov16 to 13Dec16	15			26-Nov-16	13-Dec-16	26-Nov-16	13-Dec-16	Provision of Site Ger					
1107.19090d	Provision of Site General Staff (Drivers, Amahs, etc) - 14Dec16 to 31Dec16	15			14-Dec-16	31-Dec-16	14-Dec-16	31-Dec-16	Pro					
1107.19100	Provision of Site General Staff (Drivers, Amahs, etc) - First Quarter of 2017	74	03-Jan-17	31-Mar-17	03-Jan-17	31-Mar-17	03-Jan-17	31-Mar-17						
1107.192703	Provision of Site General Labour for Temporary Works - 25Aug16 to 12Sep16	16			25-Aug-16	12-Sep-16	25-Aug-16 A	12-Sep-16 A	Provision of Site General Labour for Temporary Works - 25Aug16 to 12Sep16					
1107.192704	Provision of Site General Labour for Temporary Works - 13Sep16 to 30Sep16	15			13-Sep-16	30-Sep-16	13-Sep-16 A	30-Sep-16 A	Provision of Site General Labour for Temporary Works - 13Sep16 to 30Sep16					
1107.19280	Provision of Site General Labour for Temporary Works - 3Oct16 to 20Oct16	15	03-Oct-16	31-Dec-16	03-Oct-16	20-Oct-16	03-Oct-16	20-Oct-16	Pro					P
1107.19280a	Provision of Site General Labour for Temporary Works - 21Oct16 to 7Nov16	15			21-Oct-16	07-Nov-16	21-Oct-16	07-Nov-16	Provision of Site General Labour for Temporary Works - 21O					
1107.19280b	Provision of Site General Labour for Temporary Works - 8Nov16 to 25Nov16	16			08-Nov-16	25-Nov-16	08-Nov-16	25-Nov-16	Provision of Site General Labour for Tem					
1107.19280c	ProProvision of Site General Labour for Temporary Works - 26Nov16 to 13Dec16	15			26-Nov-16	13-Dec-16	26-Nov-16	13-Dec-16	ProProvision of Site					
1107.19280d	Provision of Site General Labour for Temporary Works - 14Dec16 to 31Dec16	15			14-Dec-16	31-Dec-16	14-Dec-16	31-Dec-16	P					
1107.19290	Provision of Site General Labour for Temporary Works - First Quarter of 2017	74	03-Jan-17	31-Mar-17	03-Jan-17	31-Mar-17	03-Jan-17	31-Mar-17						
Cost Centre D - KAT Cut & Cover Tunne		111	11-Sep-15	04-Mar-16	12-Aug-16	18-Jan-17	12-Aug-16 A	22-Dec-16						22-Dec-16,
Excavation & C&C Tunnel Structure		111	11-Sep-15	04-Mar-16	12-Aug-16	18-Jan-17	12-Aug-16 A	22-Dec-16						22-Dec-16,
Launch Shaft (DN Track) - Post TBM Works		111	11-Sep-15	04-Mar-16	12-Aug-16	18-Jan-17	12-Aug-16 A	22-Dec-16						22-Dec-16,
1107.16250	Remove Noise Enclosure Panels GL1-12	24	11-Sep-15	21-Sep-15	12-Aug-16	08-Sep-16	12-Aug-16 A	30-Aug-16 A	Remove Noise Enclosure Panels GL1-12					
1107.16251	Remove Noise Enclosure GL8-12	18			09-Sep-16	30-Sep-16	31-Aug-16 A	08-Sep-16 A	Remove Noise Enclosure GL8-12					



Data Date 01-Oct-16
Page 1 of 2
SCL1107 M-3MR-043
Printed 27-Sep-16 11:11

MTRC SCL 1107 DIH to KAT Tunnels 3
Month Rolling Programme 043 with Phase 1
DRM
Data Date 01-Oct-16

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

Activity ID	Activity Name	O Dur	MP Start	MP Finish	Last Mth Start	Last Mth Finish	Start	Finish	2016				2	
									Sep	Oct	Nov	Dec		
1107.16252	Remove Noise Enclosure GL4-8	12			03-Oct-16	17-Oct-16	09-Sep-16 A	15-Sep-16 A						
1107.16253	Remove Noise Enclosure GL1-4	12			18-Oct-16	31-Oct-16	15-Sep-16 A	05-Oct-16						
1107.16330	Backfill to Strut S2 level (Mass Concrete fill - 5 layers)	18	28-Dec-15	08-Jan-16	01-Nov-16	21-Nov-16	06-Oct-16	27-Oct-16						
1107.16340	Remove Strut S2	6	09-Jan-16	14-Jan-16	22-Nov-16	28-Nov-16	28-Oct-16	03-Nov-16						
1107.16350	Backfill to Strut S1 level	12	15-Jan-16	26-Jan-16	29-Nov-16	12-Dec-16	04-Nov-16	17-Nov-16						
1107.16360	Remove Strut S1	6	27-Jan-16	01-Feb-16	13-Dec-16	19-Dec-16	18-Nov-16	24-Nov-16						
1107.16370	Demolish Top 2m of Temp D-Walls	18	02-Feb-16	22-Feb-16	20-Dec-16	11-Jan-17	25-Nov-16	15-Dec-16						
1107.16380	Backfill to Original Ground Level	6	23-Feb-16	04-Mar-16	12-Jan-17	18-Jan-17	16-Dec-16	22-Dec-16						
Cost Centre F4 - Landscaping		6	26-Aug-16	01-Sep-16	19-Jan-17	25-Jan-17	23-Dec-16	30-Dec-16						
1107.17760	Hydroseeding	6	26-Aug-16	01-Sep-16	19-Jan-17	25-Jan-17	23-Dec-16	30-Dec-16						
Cost Centre G CEDD Entrusted Works		18	06-Apr-16	26-Apr-16	27-Aug-16	17-Sep-16	27-Aug-16 A	17-Sep-16 A						
Demolition & Diversion of Nullah 2		18	06-Apr-16	26-Apr-16	27-Aug-16	17-Sep-16	27-Aug-16 A	17-Sep-16 A						
Reinstatement		18	06-Apr-16	26-Apr-16	27-Aug-16	17-Sep-16	27-Aug-16 A	17-Sep-16 A						
1107.18120	Demolish Downstream Section & Backfill	18	06-Apr-16	26-Apr-16	27-Aug-16	17-Sep-16	27-Aug-16 A	17-Sep-16 A						

**APPENDIX B
ACTION AND LIMIT LEVELS**

APPENDIX B – Action and Limit Levels**24-Hour TSP**

Regular Dust Monitoring Location	Description	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
DMS-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**

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

 File No. MA12051/57/0022

 Station DMS-4 - Rhythm Garden, Block 1 Operator: WK
 Date: 26-Sep-16 Next Due Date: 25-Nov-16
 Equipment No.: A-01-57 Serial No. 2352

Ambient Condition			
Temperature, Ta (K)	302.8	Pressure, Pa (mmHg)	758.3

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

Calibration of TSP Sampler					
Calibration Point	Orifice			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	11.6	3.37	57.30	7.4	2.70
2	9.8	3.10	52.73	6.4	2.51
3	7.8	2.77	47.14	5.1	2.24
4	5.3	2.28	39.01	3.4	1.83
5	3.3	1.80	30.96	2.0	1.40

By Linear Regression of Y on X

 Slope, mw = 0.0494 Intercept, bw = -0.1120

 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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.13

Remarks: _____

 Conducted by: Wk Tang Signature: Kwai

 Checked by: Az Signature: _____

 Date: 26/9/16
 Date: 26 September 2016



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0001	0.6974	1.4173	0.9957	0.6944	0.8836
0.9959	0.9716	2.0044	0.9915	0.9674	1.2496
0.9938	1.0861	2.2410	0.9894	1.0814	1.3971
0.9928	1.1320	2.3503	0.9885	1.1271	1.4653
0.9875	1.3696	2.8346	0.9831	1.3636	1.7672
Qstd slope (m) = 2.11176			Qa slope (m) = 1.32235		
intercept (b) = -0.05079			intercept (b) = -0.03166		
coefficient (r) = 0.99982			coefficient (r) = 0.99982		
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}

TEST REPORT

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

Test Report No.:	C/N/160917B
Date of Issue:	2016-09-19
Date Received:	2016-09-17
Date Tested:	2016-09-17
Date Completed:	2016-09-19
Next Due Date:	2017-09-18

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 12553
Microphone No.	: 35222
Equipment No.	: N-08-02

Test conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 57%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Laboratory Manager

TEST REPORT

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

Test Report No.:	C/N/151127/1
Date of Issue:	2015-11-30
Date Received:	2015-11-27
Date Tested:	2015-11-27
Date Completed:	2015-11-30
Next Due Date:	2016-11-29

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 23853
Microphone No.	: 48530
Equipment No.	: N-08-10

Test conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 62%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

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



PATRICK TSE
Laboratory Manager

TEST REPORT

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

Test Report No.:	C/N/151215-1
Date of Issue:	2015-12-18
Date Received:	2015-12-15
Date Tested:	2015-12-15
Date Completed:	2015-12-18
Next Due Date:	2016-12-17

ATTN: Mr. W. K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Sound & Vibration Analyser
Manufacturer	: BSWA
Model No.	: BSWA 801
Serial No.	: 35924
Equipment No.	: N-13-01

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 56%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:

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


PATRICK TSE
Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:


The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 58%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**


PATRICK TSE
Laboratory Manager

APPENDIX D
IMPACT MONITORING SCHEDULE

**Shatin to Central Link – Contract 1107 Diamond Hill to Kai Tak Tunnels
Impact Air Quality and Noise Monitoring Schedule for October 2016**

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

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

Air Quality Monitoring Station

DMS-4: - Rhythm Garden, Block 1

Noise Monitoring Station

NMS-CA-4: - Block 1, Rhythm Garden (north-eastern façade)

NMS-CA-5: - Block 1, Rhythm Garden (northern façade)

**Shatin to Central Link – Contract 1106 Diamond Hill Station
Tentative Impact Air Quality and Noise Monitoring Schedule for November 2016**

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

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

Air Quality Monitoring Station

DMS-4: - Rhythm Garden, Block 1

Noise Monitoring Station

NMS-CA-4: - Block 1, Rhythm Garden (north-eastern façade)

NMS-CA-5: - Block 1, Rhythm Garden (northern façade)

**APPENDIX E
24-HOUR TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATIONIS**

Appendix E - 24-hour TSP Monitoring Results

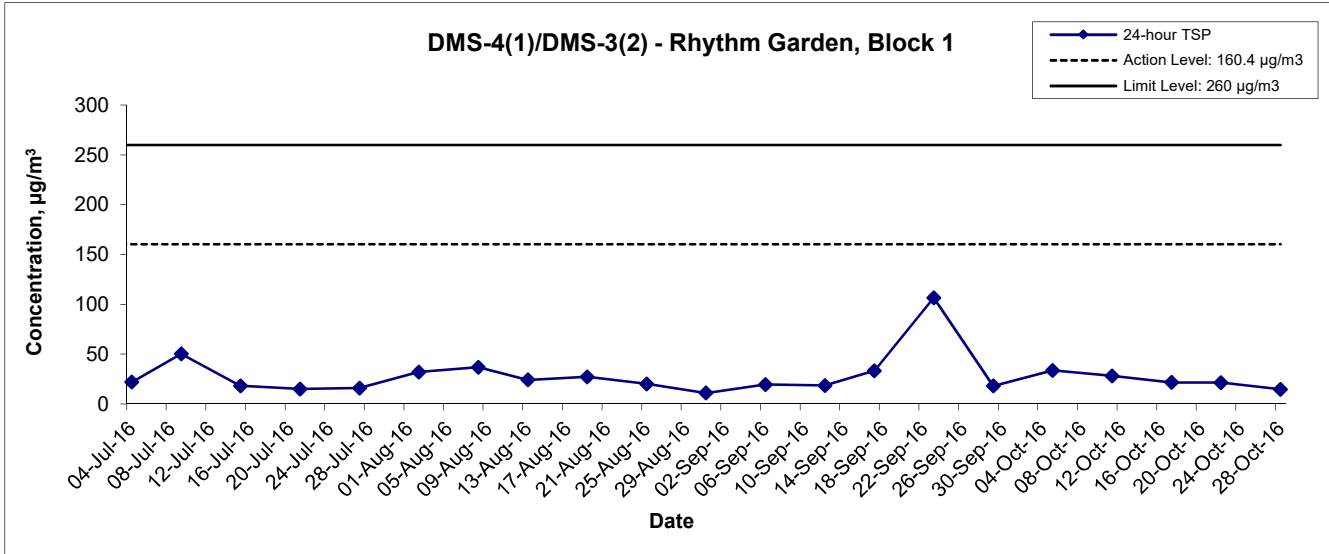
Location DMS-4(1)/DMS-3(2) - Rhythm Garden, Block 1

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
05-Oct-16	09:00	Sunny	301.5	759.1	3.3028	3.3617	0.0589	6406.4	6430.4	24.0	1.22	1.22	1.22	1752.1	33.6
11-Oct-16	09:00	Cloudy	297.8	760.5	3.2986	3.3487	0.0501	6430.4	6454.4	24.0	1.23	1.22	1.22	1763.8	28.4
17-Oct-16	09:00	Cloudy	300.7	759.2	3.6141	3.6522	0.0381	6454.4	6478.4	24.0	1.22	1.22	1.22	1754.4	21.7
22-Oct-16	09:00	Cloudy	302.5	758.2	3.3103	3.3480	0.0377	6478.4	6502.4	24.0	1.21	1.21	1.21	1748.3	21.6
28-Oct-16	09:00	Sunny	300.5	762.6	3.6037	3.6295	0.0258	6502.4	6526.4	24.0	1.22	1.22	1.22	1758.6	14.7
														Min	14.7
														Max	33.6
														Average	24.0

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 Oct 16	Appendix E	

Daily Meteorological Data (October 2016)

Day	Total Rainfall (mm)*	Prevailing Wind Direction (degrees)^	Mean Wind Speed (km/h)^
1	95.5	90	16.2
2	Trace	60	17.8
3	0.2	50	28.5
4	-	50	17.5
5	Trace	70	18.7
6	16.7	10	19.3
7	17.3	10	23.6
8	Trace	360	35.2
9	-	10	33
10	-	20	28
11	0.1	10	29.8
12	0.9	60	39.7
13	Trace	80	39.5
14	Trace	80	34.6
15	-	50	20.3
16	-	20	20.3
17	16.7	70	43.5
18	178.7	90	57.5
19	223.4	100	36
20	-	10	15.8
21	72.5	220	60.8
22	1.9	220	18.2
23	-	100	6
24	Trace	120	13.8
25	Trace	90	16.5
26	-	70	17.1
27	-	60	11.1
28	-	20	8.6
29	0.5	80	31.5
30	-	20	32.3
31	-	70	24

Remark:

Graphical presentations for wind speed and wind direction from the nearest HKO's weather station were not available.

* The above information was extracted from the extract of meteorological observations for Hong Kong by Hong Kong Observatory.

^ In case the data are not available from Waglan Island, observations of Cheung Chau or other nearby weather stations will be incorporated in computing the Prevailing Wind Direction and Mean Wind Speed.

**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-Oct-16	Cloudy	14:35	71.8	73.4	70.1	72.0	71	65.1
		14:40	71.6	73.5	70.2			
		14:45	72.6	74.5	70.4			
		14:50	72.2	74.0	70.0			
		14:55	72.1	73.7	70.2			
		15:00	71.5	72.8	70.0			
12-Oct-16	Cloudy	15:30	72.3	73.6	71.0	72.6	71	67.5
		15:35	72.2	73.3	71.0			
		15:40	72.8	73.9	71.5			
		15:45	72.6	73.7	71.6			
		15:50	72.9	74.3	71.3			
		15:55	72.9	73.9	71.4			
18-Oct-16	Cloudy	11:05	71.8	73.0	70.2	71.9	71	64.6
		11:10	72.1	73.3	70.6			
		11:15	71.4	72.7	69.8			
		11:20	71.3	72.3	70.3			
		11:25	72.2	73.1	70.4			
		11:30	72.7	73.9	70.5			
24-Oct-16	Cloudy	10:35	72.6	73.7	71.5	71.9	71	64.6
		10:40	72.2	73.4	70.7			
		10:45	71.6	73.2	70.0			
		10:50	71.8	73.1	70.6			
		10:55	72.0	73.1	70.7			
		11:00	71.0	72.1	69.7			
31-Oct-16	Sunny	13:40	72.0	73.0	70.8	72.3	71	66.4
		13:45	72.4	73.6	70.7			
		13:50	72.2	73.7	70.8			
		13:55	72.5	73.6	71.2			
		14:00	72.2	73.5	71.1			
		14:05	72.6	73.8	71.8			

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).

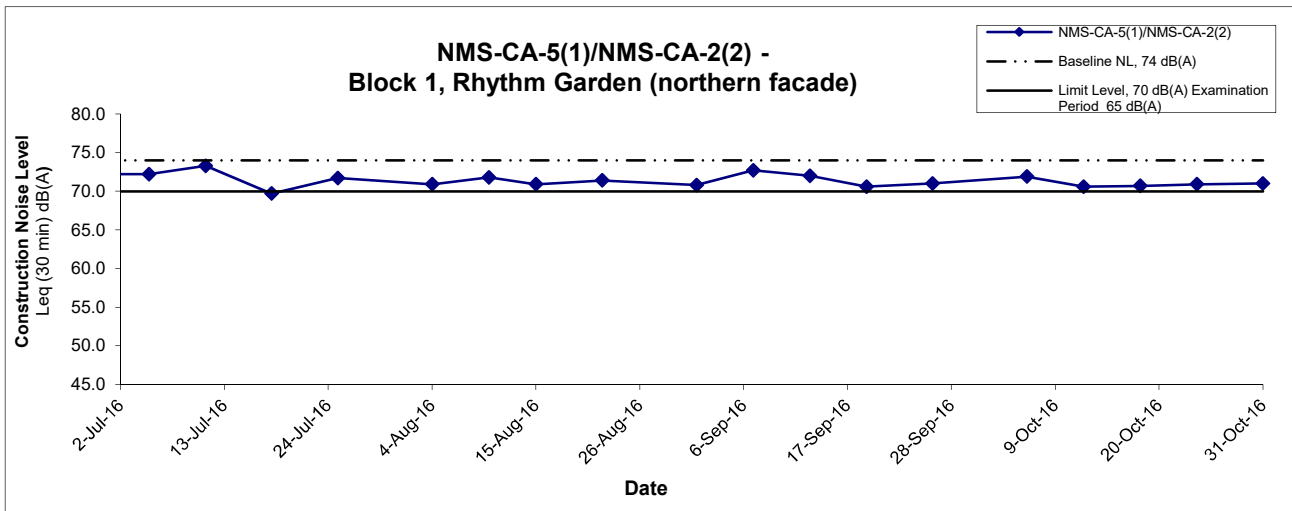
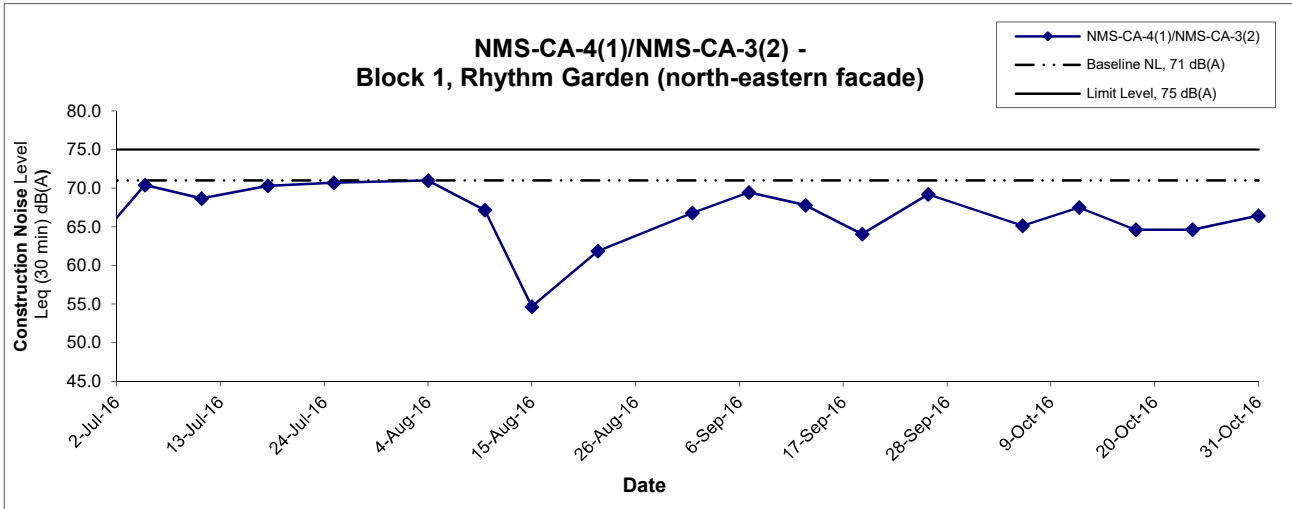
Appendix F - Noise Monitoring Results

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-Oct-16	Cloudy	14:00	71.8	74.7	69.1	71.9	74	71.9 Measured ≤ Baseline Level
		14:05	71.8	74.8	68.4			
		14:10	72.4	75.5	69.0			
		14:15	72.1	74.6	68.7			
		14:20	71.5	74.4	68.3			
		14:25	71.5	74.8	68.1			
12-Oct-16	Cloudy	14:45	71.2	72.3	70.1	70.6	74	70.6 Measured ≤ Baseline Level
		14:50	70.6	72.0	69.2			
		14:55	70.3	71.6	69.1			
		15:00	70.4	70.9	69.0			
		15:05	70.8	71.8	69.7			
		15:10	70.1	71.4	68.9			
18-Oct-16	Cloudy	10:30	71.6	72.9	69.5	70.7	74	70.7 Measured ≤ Baseline Level
		10:35	70.4	71.5	69.3			
		10:40	70.9	71.6	68.9			
		10:45	70.7	72.1	69.1			
		10:50	69.9	70.5	68.5			
		10:55	70.6	72.1	69.1			
24-Oct-16	Cloudy	10:00	70.2	71.4	68.7	70.9	74	70.9 Measured ≤ Baseline Level
		10:05	70.6	71.7	69.5			
		10:10	70.7	72.1	68.9			
		10:15	70.7	71.8	69.6			
		10:20	71.5	72.9	69.8			
		10:25	71.4	72.5	69.8			
31-Oct-16	Sunny	13:05	71.5	72.7	70.0	71.0	74	71.0 Measured ≤ Baseline Level
		13:10	70.8	71.9	69.4			
		13:15	70.9	71.8	69.5			
		13:20	70.9	71.9	69.7			
		13:25	70.8	71.9	69.2			
		13:30	71.3	72.5	69.8			

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

Title	Shatin to Central Link - Contract 1107 - Diamond Hill to Kai Tak Tunnels	Scale	N.T.S	Project No.	MA13018	CINOTECH
	Graphical Presentation of Construction Noise Monitoring Results	Date	Oct 16	Appendix	F	

APPENDIX G
SUMMARY OF EXCEEDANCE

APPENDIX G – SUMMARY OF EXCEEDANCE

Reporting Month: October 2016

a) Exceedance Report for Dust Monitoring (NIL)

b) Exceedance Report for Noise Monitoring (NIL)

APPENDIX H
SITE AUDIT SUMMARY

*Shatin to Central Link -
Contract 1107 Diamond Hill to Kai Tak Tunnels*

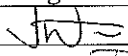
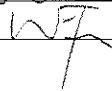
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161006
Date	6 October 2016
Time	09:00-10:00

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

Ref. No.	Remarks/Observations	Related Item No.
161006-R01	<p>Part B - Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C - Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none"> Open stockpile should be covered properly to prevent dust generation. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F - Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H - Others</p> <ul style="list-style-type: none"> Follow-up action on previous audit section (Ref. No.: 160929), item 160929-R01 was remarked as 161006-R01 and should be reviewed during next site inspection. 	D 6

	Name	Signature	Date
Recorded by	Janet Wai		6 October 2016
Checked by	Dr. Priscilla Choy		6 October 2016

**Shatin to Central Link -
Contract 1107 Diamond Hill to Kai Tak Tunnels**

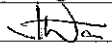

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161013
Date	13 October 2016
Time	09:30-10:30

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

Ref. No.	Remarks/Observations	Related Item No.
161013-R01	<p>Part B - Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C - Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F - Waste/Chemical Management</p> <ul style="list-style-type: none"> The chemical containers should be provided with the drip tray to prevent the oil/chemical spillage. <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H - Others</p> <ul style="list-style-type: none"> Follow-up action on previous audit section (Ref. No.: 161006), all environmental deficiencies were observed rectified/improved by the Contractor. 	F 9

	Name	Signature	Date
Recorded by	Janet Wai		13 October 2016
Checked by	Dr. Priscilla Choy		13 October 2016

**Shatin to Central Link -
Contract 1107 Diamond Hill to Kai Tak Tunnels**



Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161020
Date	20 October 2016
Time	09:30-10:00

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

Ref. No.	Remarks/Observations	Related Item No.
	<p>Part B - Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C - Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D - Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E - Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F - Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G - Permit / Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H - Others</p> <ul style="list-style-type: none"> Follow-up action on previous audit section (Ref. No.: 161013), all environmental deficiencies were observed to be rectified/improved by the Contractor. 	

	Name	Signature	Date
Recorded by	Victor Wong		20 October 2016
Checked by	Dr. Priscilla Choy		20 October 2016

*Shatin to Central Link -
Contract 1107 Diamond Hill to Kai Tak Tunnels*

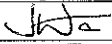

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161027
Date	27 October 2016
Time	09:30-10:00

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

Ref. No.	Remarks/Observations	Related Item No.
	<p><i>Part B - Water Quality</i></p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p><i>Part C - Landscape & Visual</i></p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p><i>Part D - Air Quality</i></p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p><i>Part E - Construction Noise Impact</i></p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p><i>Part F - Waste/Chemical Management</i></p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p><i>Part G - Permit / Licenses</i></p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p><i>Part H - Others</i></p> <ul style="list-style-type: none"> Follow-up action on previous audit section (Ref. No.: 161020), all environmental deficiencies were observed to be rectified/improved by the Contractor. 	

	Name	Signature	Date
Recorded by	Janet Wai		27 October 2016
Checked by	Dr. Priscilla Choy		27 October 2016

**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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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				
<p>1.Exceedance for one sample</p>	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.
<p>2.Exceedance for two or more consecutive samples</p>	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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
<i>Landscape & Visual (Construction Phase)</i>								
S6.12	LV1	<p>The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:</p> <p><u>Re-use of Existing Soil</u></p> <ul style="list-style-type: none"> 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. <p><u>No-intrusion Zone</u></p> <ul style="list-style-type: none"> 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. <p><u>Protection of Retained Trees</u></p> <ul style="list-style-type: none"> 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	<p>N/A</p> <p>^</p> <p>^</p>

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
		<p>be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and the tree monitoring system.</p> <ul style="list-style-type: none"> 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	<p><u>Decorative Hoarding</u></p> <ul style="list-style-type: none"> 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. <p><u>Management of facilities on work sites</u></p> <ul style="list-style-type: none"> 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. <p><u>Tree Transplanting</u></p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> EIAO – TM ETWB TCW 2/2004 ETWB TCW 3/2006 	<p>N/A</p> <p>N/A</p> <p>N/A</p>

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.						
<i>Air Quality (Construction Phase)</i>								
/	A1	Emission from Vehicles and Plants <ul style="list-style-type: none"> • 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	^
<i>Construction Dust Impact</i>								
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	^

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
		an equivalent intensity of no less than 1.8 L/m ² to achieve the dust removal efficiency						
S7.6.6	D3	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • APCO • To control the dust impact to meet HKAQO and TM-EIA criteria 	* ^ ^ 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
		<p>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;</p> <ul style="list-style-type: none"> • 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; 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">N/A</p>

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
		<ul style="list-style-type: none"> • 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. 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">N/A</p>
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: <ul style="list-style-type: none"> • 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	^

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
		<p>should be serviced regularly during the construction programme;</p> <ul style="list-style-type: none"> • 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	^

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
		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> <ul style="list-style-type: none"> 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	^

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

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
		<ul style="list-style-type: none"> • 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 						<p style="text-align: center;">^</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">^</p> <p style="text-align: center;">N/A</p>

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
		<p>silt removal facilities.</p> <ul style="list-style-type: none"> • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m³ should be covered with tarpaulin or similar fabric during rainstorms. • Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers • Precautions be taken at any time of year when rainstorms are 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 						<p>^</p> <p>^</p> <p>^</p> <p>^</p>

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
		<p>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.</p> <ul style="list-style-type: none"> • 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. 						<p>N/A</p> <p>^</p> <p>^</p> <p>^</p>

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
		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	<p><u>Accidental Spillage</u></p> <p>In order to prevent accidental spillage of chemicals, the following is recommended:</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water 	* ^ ^ N/A
Waste Management (Construction Waste)								
S11.4.1.1	WM1	<p><u>On-site sorting of C&D material</u></p> <ul style="list-style-type: none"> • 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	^

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
		<p>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.</p>	<p>and be turned into concrete for structural use</p>					
S11.5.1	WM2	<p><u>Construction and Demolition Material</u></p> <ul style="list-style-type: none"> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; 	<p>Good site practice to minimize the waste generation and recycle the C&D materials as far as</p>	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance 	^ ^

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
		<ul style="list-style-type: none"> • 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 	<p>practicable so as to reduce the amount for final disposal</p>				<ul style="list-style-type: none"> • Waste Disposal Ordinance • ETWB TCW No. 19/2005 	<p>^</p> <p>N/A</p> <p>^</p> <p>^</p> <p>^</p>
S11.5.1	WM3	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> • 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 	<p>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</p>	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance 	^

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
		<p>hoarding should be used to enhance the possibility of recycling.</p> <p>The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage.</p> <ul style="list-style-type: none"> 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. <p>Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.</p>	disposal				<ul style="list-style-type: none"> ETWB TCW No.19/2005 	^
S11.5.1	WM4	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily 	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Waste Disposal Ordinance 	^ ^ ^

**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 2016

Year	Estimated Quantities of Inert C&D Materials (in '000m ³) (see Note 4)										Estimated Quantities of C&D Wastes										
	Total Quantity Generated		Suitable for Recycled Aggregates		Reused in the Contract		Reused in other Projects		Disposed as Public Fill		Metals		Paper/cardboard packaging		Plastics (see Note 3)		Chemical Waste		Others, e.g. general refuse		
	(a)		(b)		(c)		(d)		(e=a-b-c-d)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000litre)		(in '000 tonne)		
	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	Est.	Act.	
January	0.050	0.145	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.145	0.000	0.000	0.100	0.200	0.000	0.000	0.000	0.000	0.100	0.105
February	0.050	0.105	0.000	0.000	0.010	0.000	0.000	0.000	0.040	0.105	0.000	0.000	0.100	0.326	0.000	0.000	0.000	0.000	0.100	0.035	
March	0.050	0.190	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.190	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.100	0.040	
April	0.050	0.060	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.060	0.000	0.000	0.100	0.183	0.000	0.000	0.100	11.200	0.100	0.025	
May	0.050	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.025	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.100	0.020	
June	0.050	0.015	0.000	0.000	0.020	0.000	0.000	0.000	0.030	0.015	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.100	0.065	
July	0.050	0.020	0.000	0.000	0.020	0.000	0.000	0.000	0.030	0.020	0.000	0.000	0.100	0.000	0.100	0.000	0.000	0.000	0.100	0.090	
August	0.050	0.040	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.040	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.100	0.075	
September	0.050	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.010	1.000	0.000	0.100	0.167	0.000	0.000	0.000	0.000	0.100	0.075	
October	0.050	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.005	1.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.100	0.080	
November	0.050		0.000		0.000		0.000		0.050		0.000		0.100		0.000		0.100		0.100		
December	0.050		0.000		0.000		0.000		0.050		0.000		0.100		0.100		0.000		0.100		
Total	0.600	0.615	0.000	0.000	0.050	0.000	0.000	0.000	0.550	0.615	2.000	0.000	1.200	0.876	0.200	0.000	0.200	11.200	1.200	0.610	

- 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 quantiles of C&D Materials, in m³, was calculated by multiply the no. of truck with the volume of truck, which is 5m³.

**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: <ul style="list-style-type: none"> • 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

<p>SCL Contract 1107's Construction Site near Site Entrance/ Construction Noise and Dust</p>	<p>14-31154</p>	<p>A resident living in Kai Ching Estate/ 15 December 2014</p>	<p>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.</p>	<p>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.</p> <p>To avoid the same incident from happening again, the Contractor has agreed to permanently terminate the alarm bell.</p> <p>The Contractor has provided sufficient measures to minimize the smoke and dust emission. These measures include:</p> <ul style="list-style-type: none"> • 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. <p>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.</p>	<p>Closed</p>
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<p>SCL Contract 1107's Construction Site/ Construction Noise and Dust</p>	<p>15-04622</p>	<p>N/A / 12 March 2015</p>	<p>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.</p>	<p>The Contractor had implemented appropriate and sufficient measures to minimise the noise and dust nuisance to adjacent sensitive receivers.</p> <p>The noise mitigation measures include:</p> <ul style="list-style-type: none"> • 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. <p>The dust mitigation measures include:</p> <ul style="list-style-type: none"> • 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. <p>There was also no non-compliance on construction noise and air quality recorded during the site inspections in March.</p> <p>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.</p>	<p>Closed</p>
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<p>SCL Contract 1107's Construction Site/ Construction Noise and Dust</p>	<p>15-13442</p>	<p>N/A / 9 June 2015</p>	<p>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.</p>	<p>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.</p> <p>The noise mitigation measures include:</p> <ul style="list-style-type: none"> • 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. <p>The dust mitigation measures include:</p> <ul style="list-style-type: none"> • 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; 	<p>Closed</p>
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				<ul style="list-style-type: none"> • 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; <p>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.</p>	
SCL Contract 1107's Construction Site/ Construction Noise and Dust	15-12472	N/A / 30 June 2015	<p>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.</p> <p>Since this Project is within the development area, the complaint was referred to the Contractor of SCL Contract 1107.</p>	<p>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.</p> <p>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</p>	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
--	--	--	--	--	--

Cumulative Log for Successful Prosecutions

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

Appendix F

**41st 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 October 2016]

(November 2016)

Certified by: Vivian Chan



Position: Environmental Team Leader

Date: 11 November 2016



41st Monthly EM&A Report for October 2016

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

November 2016

Project/Deliverable No.	7076187 D95/01 – Revision No. 3
Project Name	Shatin to Central Link – Works Contract 1112 Hung Hom Station and Stabling Sidings
Report Name	41 st Monthly EM&A Report for October 2016
Report Date	November 2016
Report for	Leighton Contractors (Asia) Limited

PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved by
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2.1 (Draft)	November 2016	Samantha KONG	Vivian CHAN	Alexi BHANJA
3.0 (Final)	November 2016	Samantha KONG	Vivian CHAN	Alexi BHANJA

ISSUE REGISTER

Distribution List	Date Issued	Number of Copies
Leighton Contractors (Asia) Limited	November 2016	1 soft copy
MTR Corporation Limited	November 2016	1 soft copy
SMEC Project File:		1 electronic

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EXECUTIVE SUMMARY

Introduction

The construction works of MTRC Shatin to Central Link Works Contract 1112- Hung Hom Station and Stabling Sidings (the Project) comprise permanent works and the necessary temporary works for Hung Hom Station (HUH), Hung Hom Stabling Sidings (HHS), the South Approach Tunnels (SAT) and the North Approach Tunnels (NAT) to the new station, HHS and any reprovisioning remedial and improvement works (RRIW).

Construction works of the Project commenced on 3 June 2013. This is the 41st Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 October 2016 in accordance with the EM&A manual.

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

- Slab construction at HUH, NAT
- Underpinning at HUH
- Utilities diversion at SAT
- Modification works at Concourse level
- Drainage diversion at NAT
- Noise barrier installation at NAT
- Construction of Overhead Track Exhaust (OTE) structures
- Construction of Back of House (BOH) structures

Landscape and Visual Monitoring

Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 5 and 19 October 2016. All necessary mitigation measures have been implemented by the Contractor.

Air Quality Monitoring

Air quality (24-hour TSP) monitoring was carried out on 6, 12, 18, 24 and 29 October 2016. 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, 633,270 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 3,004 m³ inert construction and demolition (C&D) materials were generated from the Project,

3,004 m³ was reused in other projects. No chemical waste was disposed. No Type 1 and Type 2 marine sediments were generated from SCL1112. 442 m³ of paper/cardboard packaging was recycled and 99,790 kg metals were recycled. No asphalt or plastic was recycled from the Project.

Environmental Auditing

A total of 4 weekly environmental site audits were conducted on 5, 12, 19 and 26 October 2016. The IEC joint site audit was undertaken on 19 October 2016.

Complaint, Notification of Summons and Successful Prosecution

No environmental complaint was received during the reporting month.

One summons was received by a worker of Palgo Company Limited, a sub-contractor of Leighton Contractors (Asia) Limited, for violating the Noise Control Ordinance during the reporting month. Neither Palgo Company Limited nor Leighton Contractors (Asia) Limited received any summons.

Future Key Issues

Major site activities for the coming reporting month will include:

- Slab construction at HUH, NAT
- Underpinning at HUH
- Modification works at Concourse level
- Noise barrier installation at NAT
- Construction of Overhead Track Exhaust (OTE) structures
- Construction of Back of House (BoH) structures
- ELS and construction of drainage for HUH BoH
- Construction of cooling tower and Demolition of Bulkhead Wall
- Architectural, Builder's Work & Finishing (ABWF) Works

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

1 INTRODUCTION

1.1 Project Background

1.1.1 The Shatin to Central Link (SCL) is a designated project (DP) under the Environmental Impact Assessment Ordinance (EIAO). For the purposes of the Environmental Impact Assessment (EIA), five EIA studies have been conducted to cover different sections of the SCL. These are Tai Wai to Hung Hom Section (SCL (TAW-HUH)), Mong Kok East to Hung Hom Section (SCL (MKK-HUH)), Hung Hom to Admiralty Section (SCL (HUH-ADM)), Protection Works at Causeway Bay Typhoon Shelter and Stabling Sidings at Hung Hom Freight Yard (SCL (HHS)).

1.1.2 Three EIA reports are of relevance to Works Contract 1112 (the Project), namely EIA for SCL (TAW-HUH) (Register No. AEIAR-167/2012), EIA for SCL (MKK-HUH) (Register No. AEIAR-165/2012) and EIA for SCL (HHS) (Register No. AEIAR-164/2012). These were submitted and subsequently approved with conditions by the Environmental Protection Department (EPD) on 17 March 2012. Two Environmental Permits (EPs), Environmental Permit No. EP-437/2012 for SCL (MKK-HUH) and Environmental Permit No. EP-438/2012 for SCL (TAW-HUH) were subsequently obtained on 22 March 2012. An application for variation of the EP for SCL (TAW-HUH) was approved and a varied EP (EP No. EP-438/2012/K) was issued by Director of Environmental Protection (DEP) on 4 October 2016.

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

1.2 Purpose of the Report

1.2.1 This is the 41st EM&A report which summarizes the monitoring results and audit findings during the reporting period from 1 to 31 October 2016.

1.3 Report Structure

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

2 PROJECT INFORMATION

2.1 General Site Description

2.1.1 The works under Works Contract 1112 comprise permanent works and the necessary temporary works for Hung Hom Station (HUH), Hung Hom Stabling Sidings (HHS), the South Approach Tunnels (SAT) and the North Approach Tunnels (NAT) to the new station, HHS and any reprovisioning remedial and improvement works (RRIW). The major permanent works under Works Contract 1112 generally comprise the following:

- New HUH integrated with the existing HUH station, with associated entrances, ventilation facilities, plant rooms, other ancillary facilities, and ABWF works.
- Modification of the existing HUH station to allow interchange between Existing East Rail Line and SCL(TAW-HUH), and between SCL(MKK-HUH) and SCL(TAW-HUH) comprising alteration and addition works at podium level, mid-level, and platform level.
- Running tunnels of the SCL(TAW-HUH) at the south and north ends of the new HUH to the existing stub tunnel of Existing West Rail and interface with Works Contract 1111.
- Running tunnels of the SCL(MKK-HUH) at the south and north ends of the new HUH to the proposed North Ventilation Building and interface with Works Contract 1111.
- Extensive underpinning and modification of the existing podium structure of HUH and the Hong Kong Coliseum, and associated protection works.
- Diversion, modification and dismantling of existing building services associated with underpinning and modification of existing structures.
- Demolition and clearance of the majority of the existing Hung Hom Freight Terminal infrastructure.
- Protection, diversion, and modification of utilities and services.
- Launching and retrieval track connecting the SCL(TAW-HUH) to HHS from the turnout close to WRL at the south and interface with Works Contract 1111 at the north.
- CLP Transformer Building.
- Demolition of the existing International Mail Centre adjacent to Salisbury Road, the MTR Freight Operations Building within the southern end of the Hung Hom Freight Terminal, and other ancillary buildings.
- Reconstruction of Cheong Wan Road Viaduct.
- Civil, BS and ABWF provisions for designated and interfacing contracts.
- Landscape works.
- Modification to various parts of existing disused Freight Yard structure for provision of HHS, comprising alteration and addition works at underground level, ground level, mezzanine level and podium level including new

accommodation and plant areas and stablings and associated track provisions connecting to the interface with Works Contract 1111.

- Extensive underpinning of the podium structures above the existing disused Freight Yard for provision of HHS and its associated works.
- Construct part of the shunting track.
- Construct the emergency track and its associated works which connect the stabling siding to the mainline which run parallel with the northern approach of HUH.
- Construct the semi-enclosed noise enclosure and its associated works over the entire HHS north fan area.
- Preparation works, operation, and reinstatement of an additional storage area near Muk Chui Street, Kai Tak.

2.1.2 The works area for the Works Contract 1112 is shown in **Appendix A**.

2.2 Construction Programme and Activities

2.2.1 The summary of construction programme is presented in **Appendix B**.

2.2.2 The major construction activities carried out by the Contractor in the reporting period are summarized as below:

- Slab construction at HUH, NAT
- Underpinning at HUH
- Utilities diversion at SAT
- Modification works at Concourse level
- Drainage diversion at NAT
- Noise barrier installation at NAT
- Construction of Overhead Track Exhaust (OTE) structures
- Construction of Back of House (BOH) structures

2.3 Project Organisation

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

Table 2-1 Contact Information of Key Personnel

Company	Position	Name	Telephone	Fax
MTR	Construction Manager	Mr Michael FU	3127 6201	3127 6422
	SCL Project Environmental Team Leader	Mr Richard KWAN	2688 1283	2993 7577
Meinhardt	Independent Environmental	Mr Fredrick LEONG	2859 1739	2540 1580

Company	Position	Name	Telephone	Fax
	Checker			
Leighton	Environmental Manager	Mr Kevin HARMAN	3973 0270	2356 9355
SMEC	ET Leader	Ms Vivian CHAN	3995 8140	3995 8101

2.4 Status of Environmental Licences, Notification and Permits

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

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

Permit / Licence No. / Notification / Reference No.	Valid Period		Status	Remark
	From	To		
Environmental Permit				
EP-437/2012	22 Mar 2012	-	Valid	EP for SCL (MKK-HUH)
EP-438/2012/K	4 Oct 2016	-	Valid	EP for SCL (TAW-HUH)
Construction Noise Permit				
GW-RE0623-16	30 Jun 2016	29 Dec 2016	Valid	Works in concourse
GW-RE0816-16	19 Aug 2016	18 Oct 2016	Valid until cancellation on 18 Oct 2016	Wall breaking at West Rail Line
GW-RE0814-16	20 Aug 2016	20 Oct 2016	Valid until cancellation on 18 Oct 2016	Concrete breaking on the railway track + track 7 ADMS maintenance + stage 2 hoarding installation
GW-RE0862-16	2 Sep 2016	28 Feb 2017	Valid	Under podium
GW-RE0993-16	18 Oct 2016	13 Dec 2016	Valid	Concrete breaking on the railway track + track 7 ADMS maintenance + stage 2 hoarding installation
GW-RE1001-16	22 Oct 2016	18 Dec 2016	Valid	Wall breaking at West Rail Line
GW-RE1029-16	25 Oct 2016	30 Nov 2016	Valid	Cooling tower (PME & PCW at night time)

Wastewater Discharge License				
WT00015983-2013	28 Jun 2013	30 Jun 2018	Valid	-
Chemical Waste Producer Registration				
5213-213-L2603-03	28 Jun 2013	-	Valid	-
Billing Account for Construction Waste Disposal				
7017179	27 Mar 2013	-	Active Account	-
Notification Under Air Pollution Control (Construction Dust) Regulation				
357078	18 Mar 2013	-	Notified	-
Notification of Asbestos Abatement Works				
AX141187	11 Oct 2014 (earliest commencement date)	-	Notified	Demolition of International Mail Centre, 80 Salisbury Road, Hung Hom
AX141235	27 Oct 2014 (earliest commencement date)	-	Notified	Demolition of Freight Operation Building, MTR Hung Hom Depot
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 MONITORING PARAMETERS

3.1 Landscape and Visual Impact Monitoring

3.1.1 In accordance with the EM&A Manual, the landscape and visual mitigation measures shall be implemented and a site inspection shall be conducted once every two weeks throughout the construction period.

3.2 Air Quality Monitoring

Parameter, Frequency and Duration

3.2.1 In accordance with the EM&A Manual, 24-hour Total Suspended Particulates (TSP) level at the designated air quality monitoring station is required throughout the construction period. The monitoring parameters and frequency are provided in **Table 3-1**.

Table 3-1 Air Quality Monitoring Parameters and Frequency

Parameter	Frequency
1-hour TSP	3 times in every 6 days when one documented valid complaint is received
24-hour TSP ^[1]	Once per 6 days

Note:

1. 24-hour TSP will be conducted when project-related construction activities are being undertaken within a radius of 500m from monitoring stations.

Monitoring Location

3.2.2 One air quality monitoring station was set up at the location in accordance with the approved EM&A Manuals. The location of the construction dust monitoring station is summarised in **Table 3-2** and shown in **Appendix D**.

3.2.3 The monitoring location of AM2 has been located on the roof of the Site Office Building next to Harbourfront Horizon since 19 March 2014.

Table 3-2 Air Quality Monitoring Location

ID	Location
AM2 ^[1]	Harbourfront Horizon ^[2]

Note:

1. Different IDs were used in various EM&A Manuals for dust monitoring location at Harbourfront Horizon, DMS-12 was used in EM&A Manual for SCL(TAW-HUH), AM2 were used in EM&A Manual and EIA report for SCL(MKK-HUH), and DMS-1 Works Contract 1112 were used in EM&A Manual and EIA report for HHS. For ease of future reference, AM2 will be adopted for EM&A reporting for Works Contract 1112 when referring to this monitoring location.
2. Air quality monitoring location at Harbourfront Horizon is the same as monitoring station CD6a as proposed in the EM&A Manual for “Kwun Tong Line Extension (KTE)”. Access to Harbourfront Horizon was rejected by the owner during preparation for baseline

monitoring for the KTE in early 2011. A representative monitoring location at the adjacent Finger Pier, at about 25m from Harbourfront Horizon, was adopted as an alternative monitoring location for KTE. This monitoring location is considered the most appropriate alternative monitoring location for AM2 and have been adopted for dust monitoring for Contract 1112.

Monitoring Equipment

3.2.4 The air quality monitoring was performed using High Volume Sampler (HVS). The HVS meets all the requirements of the EM&A Manual. Detail of the HVS used in air quality monitoring is provided in **Table 3-3**.

Table 3-3 Air Quality Monitoring Equipment

Equipment	Brand and Model	Serial Number
High Volume Sampler	GS-2310 Accu-vol	694-0665
Calibration Kit	Tisch (TE-5025A)	1612

3.2.5 The HVS were calibrated in every six months interval using calibration kit which is re-calibrated by the manufacturer after one year of use. The calibration certificate of the calibration kit and the calibration spreadsheet of the HVS is provided in **Appendix E**.

Monitoring Procedures

3.2.6 Specifications of HVS are as follow:

- i. 0.6 - 1.7m³ 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 406cm²
- 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 m³/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m³/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 October 2016 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 October 2016	Submitted
	EP-438/2012/K	14 October 2016	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 5 and 19 October 2016. All necessary mitigation measures have been implemented by the Contractor.

5.1.2 The Event and Action Plan for Landscape and Visual Impact Monitoring is provided in *Appendix I*.

5.2 Air Quality Monitoring

5.2.1 The monitoring results for 24-hour TSP are summarized in *Table 5-1*. Detailed air quality monitoring results are presented in *Appendix J*.

Table 5-1 Summary of 24-hour TSP Monitoring Results

ID	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
AM2	34.8	29.9 – 41.1	182	260

5.2.2 No Action and Limit Level exceedance was recorded in the reporting month.

5.2.3 The Event and Action Plan is provided in *Appendix I*.

5.3 Regular Construction Noise Monitoring

5.3.1 Construction airborne noise monitoring results in the reporting month can be referred to the Monthly EM&A Report for Contract 1111.

5.3.2 The Action and Limit levels for construction noise are summarised in *Table 5-2*.

Table 5-2 Action and Limit Levels

Time Period	Action Level	Limit Level
07:00-19:00 hours on normal weekdays	When one documented valid complaint is received	75dB(A)*

Note: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

* Reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

5.3.3 The Event and Action Plan for construction noise is provided in *Appendix I*.

5.4 Waste Management

5.4.1 Receptacles for collection of general refuse were provided at the site. As advised by the Contractor, 633,270 kg of general refuse was generated from the Project and disposed of at NENT landfill. A total of 3,004 m³ inert construction and demolition (C&D)

materials were generated from the Project, 3,004 m³ was reused in other projects. No chemical waste was disposed. No Type 1 and Type 2 marine sediments were generated from SCL1112. 442 m³ of paper/cardboard packaging was recycled and 99,790 kg 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*.

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

6 ENVIRONMENTAL SITE INSPECTION AND AUDIT

6.1.1 Weekly site audits were conducted by the ET and attended by the ER and the Contractor to monitor the timely implementation of proper environmental management practices and mitigation measures at the site. 4 site audits were carried out on 5, 12, 19 and 26 October 2016 during the reporting month. Representative of the IEC joined the site inspection on 19 October 2016. A summary of the implementation schedule of environmental mitigation measures is provided in **Appendix H**.

6.1.2 No EPD inspections were conducted during the reporting month.

6.1.3 During the weekly site inspections, no non-conformance was identified. Details of observations recorded during site inspection are summarized in **Table 6-1**.

Table 6-1 Observations and Recommendations of Site Audits

Parameters	Description	Works Area	Observation Date	Status
Air Quality	More than 20 cement bags were observed not entirely covered with impervious sheeting. The Contractor should ensure all cement bags were entirely covered with impervious sheeting.	HUH (Area C)	21 September 2016	The item was rectified by the Contractor on 5 October 2016.
		HHS (N42)	21 September 2016	The item was rectified by the Contractor on 12 October 2016.
		HUH (J45)	12 October 2016	The item was rectified by the Contractor on 19 October 2016.
	NRMM labels were found missing. The Contractor should ensure provision of NRMM labels to all non-road mobile machineries.	NSL (44)	15 September 2016	The item was rectified by the Contractor on 19 October 2016.
		HHS (O27)	21 September 2016	The item was rectified by the Contractor on 5 October 2016.
		HHS (O27)	21 September 2016	The item was rectified by the Contractor on 5 October 2016.
		HHS (P/Q-26)	21 September 2016	The item was rectified by the Contractor on 19 October 2016.
		NSL (23)	5 October 2016	The item was rectified by the Contractor on 26 October 2016.
		HHS (P30)	12 October 2016	The item was rectified by the Contractor on 26 October 2016.

Parameters	Description	Works Area	Observation Date	Status
		HUH (M43)	12 October 2016	The item was rectified by the Contractor on 26 October 2016.
		HHS (G10)	26 October 2016	The item will be followed-up in the next reporting month.
	Machinery was observed emitting white smoke. The Contractor should ensure all machineries are under regular maintenance.	NAT	28 September 2016	The item was rectified by the Contractor on 12 October 2016.
		NAT	12 October 2016	The item will be followed-up in the next reporting month.
	Stockpile was observed uncovered. The Contractor should cover the stockpile with impervious sheeting to prevent dust generation.	SAT	28 September 2016	The item was rectified by the Contractor on 5 October 2016.
		NAT	5 October 2016	The item was rectified by the Contractor on 19 October 2016.
	Haul road was observed dry. The Contractor should provide sufficient water spraying to maintain the entire road surface wet.	SAT	28 September 2016	The item was rectified by the Contractor on 5 October 2016.
		NAT	28 September 2016	The item was rectified by the Contractor on 19 October 2016.
		HHS (D40)	5 October 2016	The item was rectified by the Contractor on 19 October 2016.
Water Quality	Accumulated sludge was found at the sedimentation tank. The Contractor should remove the sludge and maintain good water quality at the sedimentation tank.	SAT	12 October 2016	The item was rectified by the Contractor on 19 October 2016.
Waste/ Chemicals Management	General refuse was observed on the ground. The Contractor should provide garbage bins for waste collection and avoid waste accumulation.	HUH (M39)	5 October 2016	The item was rectified by the Contractor on 19 October 2016.
		HHS (H46)	5 October 2016	The item will be followed-up in the next reporting month.

		HHS (P/Q-28)	19 October 2016	The item will be followed-up in the next reporting month.
	Chemical containers and machineries were observed without secondary containment. The Contractor should provide secondary containment to all chemical containers to prevent land contamination.	Area C (NSL)	26 October 2016	The item will be followed-up in the next reporting month.
		Area C (NSL)	26 October 2016	The item will be followed-up in the next reporting month.
		NAT	26 October 2016	The item will be followed-up in the next reporting month.

Note:

1. HUH: Hung Hom Station
2. HHS: Hung Hom Stabling Sidings
3. NAT: North Approach Tunnels
4. SAT: South Approach Tunnels
5. HKC: Hong Kong Coliseum
6. NSL: North South Line

6.1.4 Follow-up actions requested by Contractor’s ET and IEC during site inspections were undertaken by the Contractor and the work were confirmed in the following weekly site inspection. Follow-up actions that are still outstanding in the reporting month will be inspected in site inspections in following month, until the corresponding action has been satisfactorily completed by the Contractor.

7 ENVIRONMENTAL NON-CONFORMANCE

7.1 Summary of Monitoring Exceedances

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

7.2 Summary of Environmental Non-Compliance

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

7.3 Summary of Environmental Complaint

7.3.1 Details and cumulative statistics on environmental complaints can be referred to *Appendix L*.

7.4 Summary of Environmental Summons and Successful Prosecution

7.4.1 A summon was received by Mr. MAK Wong-Chuen on 3 Oct 2016, who was employed by Palgo Company Limited, a sub-contractor of SCL Contract 1112's main's contractor. He operated a hand-held electric breaker at around 0053hr outside the Concourse, in violation of Section 6 (1) (a) and 6 (5) of the Noise Control Ordinance (Cap. 400). The hearing will take place on 3 Nov 2016 at Kwun Tong Magistrates' Courts. The summon was only sent to the individual. Neither Palgo Company Limited nor Leighton Contractors (Asia) Limited received the summons.

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:

- Slab construction at HUH, NAT
- Underpinning at HUH
- Modification works at Concourse level
- Noise barrier installation at NAT
- Construction of Overhead Track Exhaust (OTE) structures
- Construction of Back of House (BoH) structures
- ELS and construction of drainage for HUH BoH
- Construction of cooling tower and Demolition of Bulkhead Wall
- Architectural, Builder's Work & Finishing (ABWF) Works

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 November 2016 is provided in *Appendix G*.

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

- 9.1.1 The construction phase of the Project was commenced on 3 June 2013. The EM&A programme have been implemented to include air quality monitoring and environmental site audits. This is the 41st Monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works carried out during the period from 1 to 31 October 2016.
- 9.1.2 5 nos. of 24-hour TSP monitoring were carried out in the reporting month.
- 9.1.3 No exceedance of the Action and Limit Levels of air quality monitoring was recorded at the designated monitoring stations during reporting period.
- 9.1.4 Two landscape and visual monitoring and four environmental site audits were conducted in the reporting month. Recommendations on remedial actions were provided to the Contractor for deficiencies identified during the site audits.
- 9.1.5 One summons was received by a worker of Palgo Company Limited, a sub-contractor of Leighton Contractors (Asia) Limited, for violating the Noise Control Ordinance during the reporting month. Neither Palgo Company Limited nor Leighton Contractors (Asia) Limited received any summons.
- 9.1.6 The ET will keep track on the EM&A programme to ensure the compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

9.2 Recommendations

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

Air Quality Impact

- Cover the cement bags entirely with impervious sheeting.
- Ensure provision of NRMM labels to all non-road mobile machineries.
- Ensure all machineries are under regular maintenance.
- Cover the stockpile with impervious sheeting to prevent dust generation.
- Provide sufficient water spraying to maintain the entire road surface wet.

Water Quality Impact

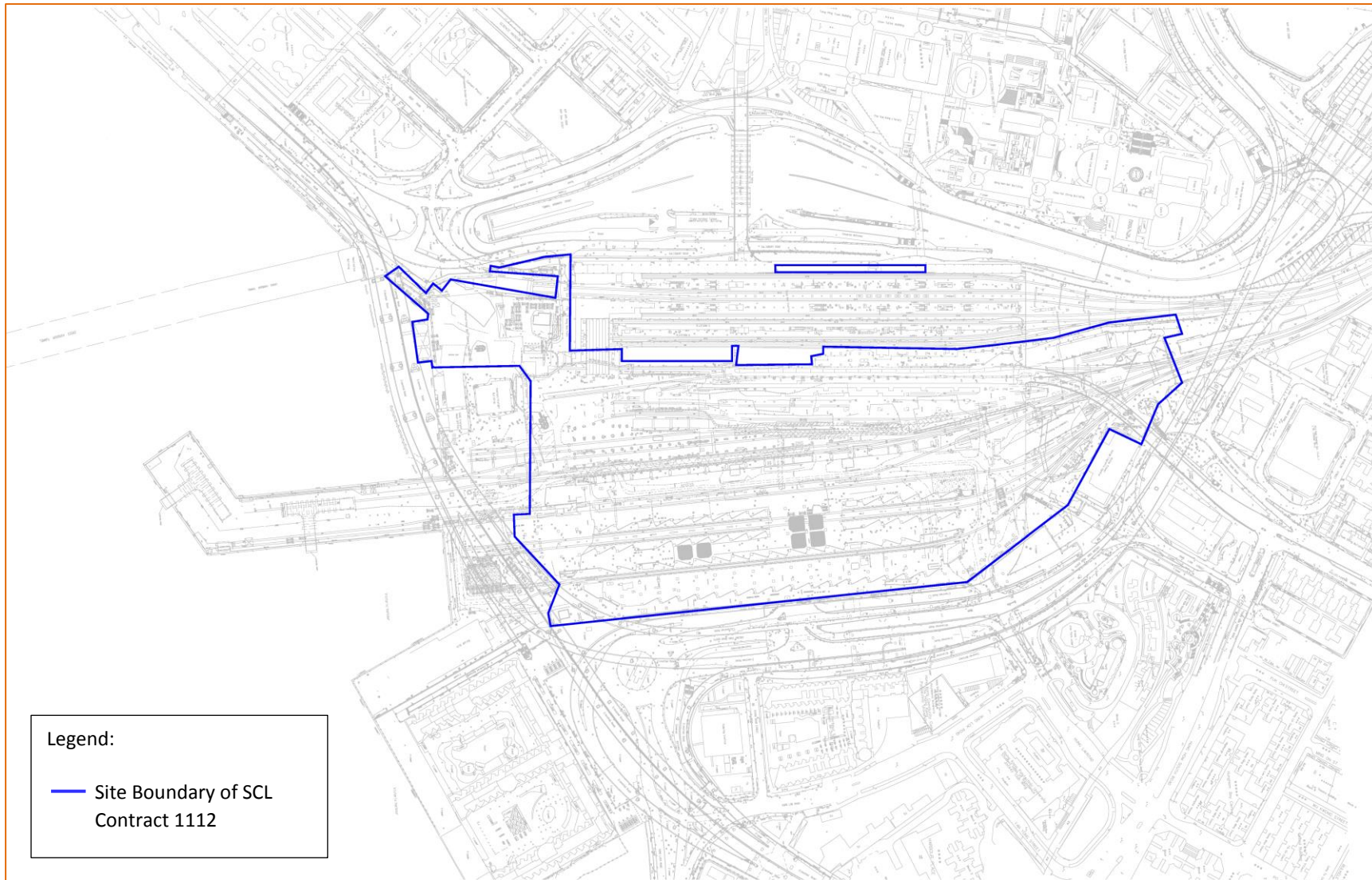
- Remove the sludge and maintain good water quality at the sedimentation tank.

Chemical and Waste Management

- Provide garbage bins for waste collection and avoid waste accumulation.
- Provide secondary containment to all chemical containers to prevent land contamination.

APPENDIX A

Project Works Boundary

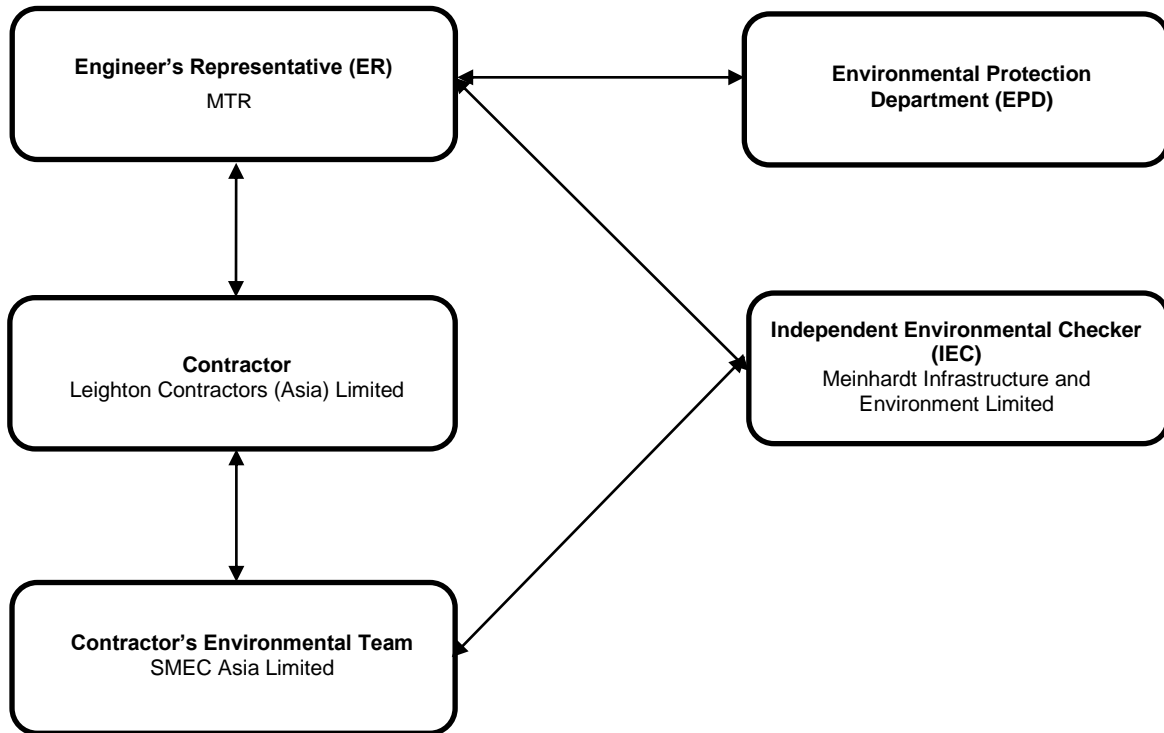


APPENDIX B

Construction Programme

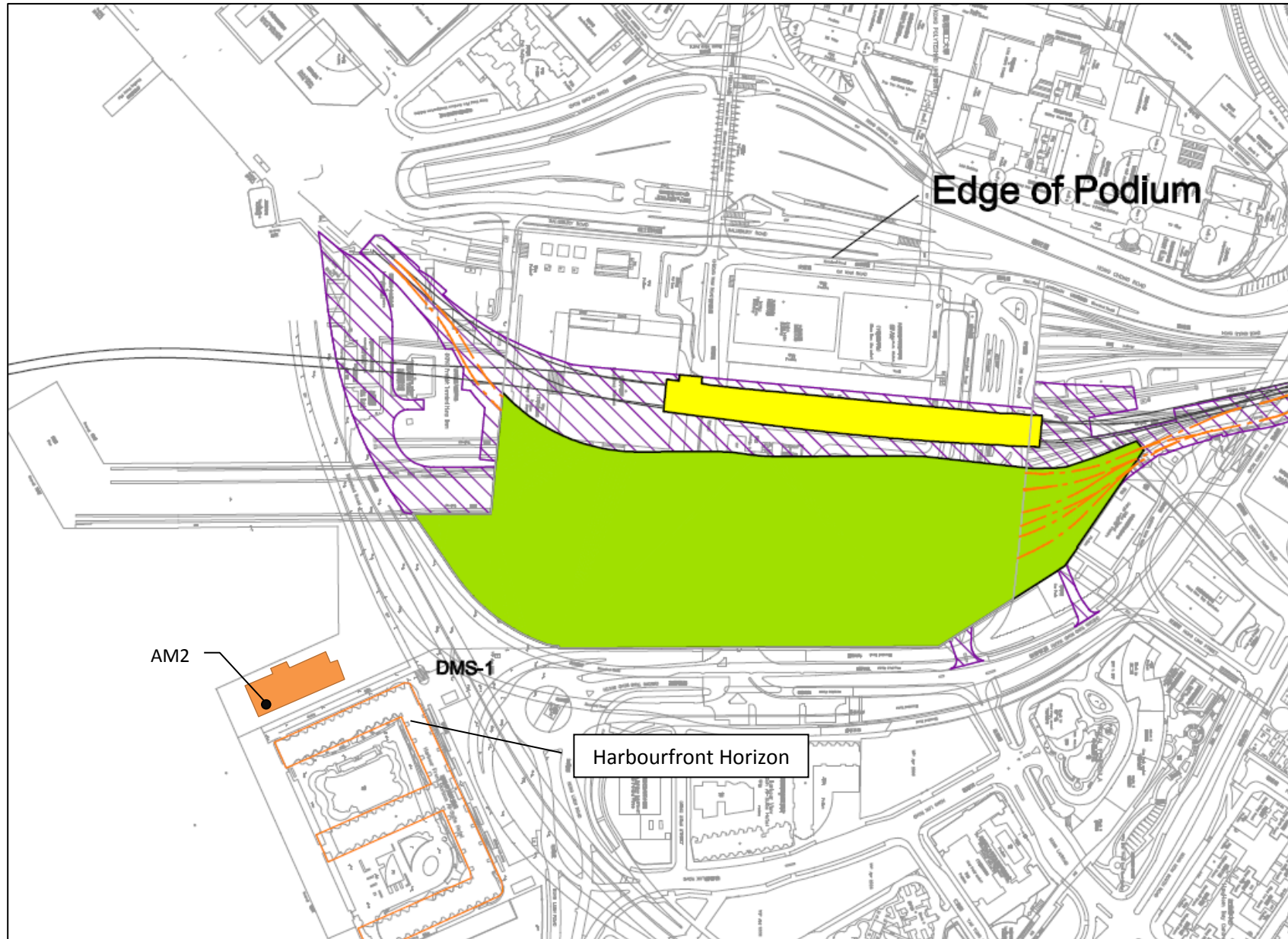
APPENDIX C

Project Organisation for Environmental Works




APPENDIX D

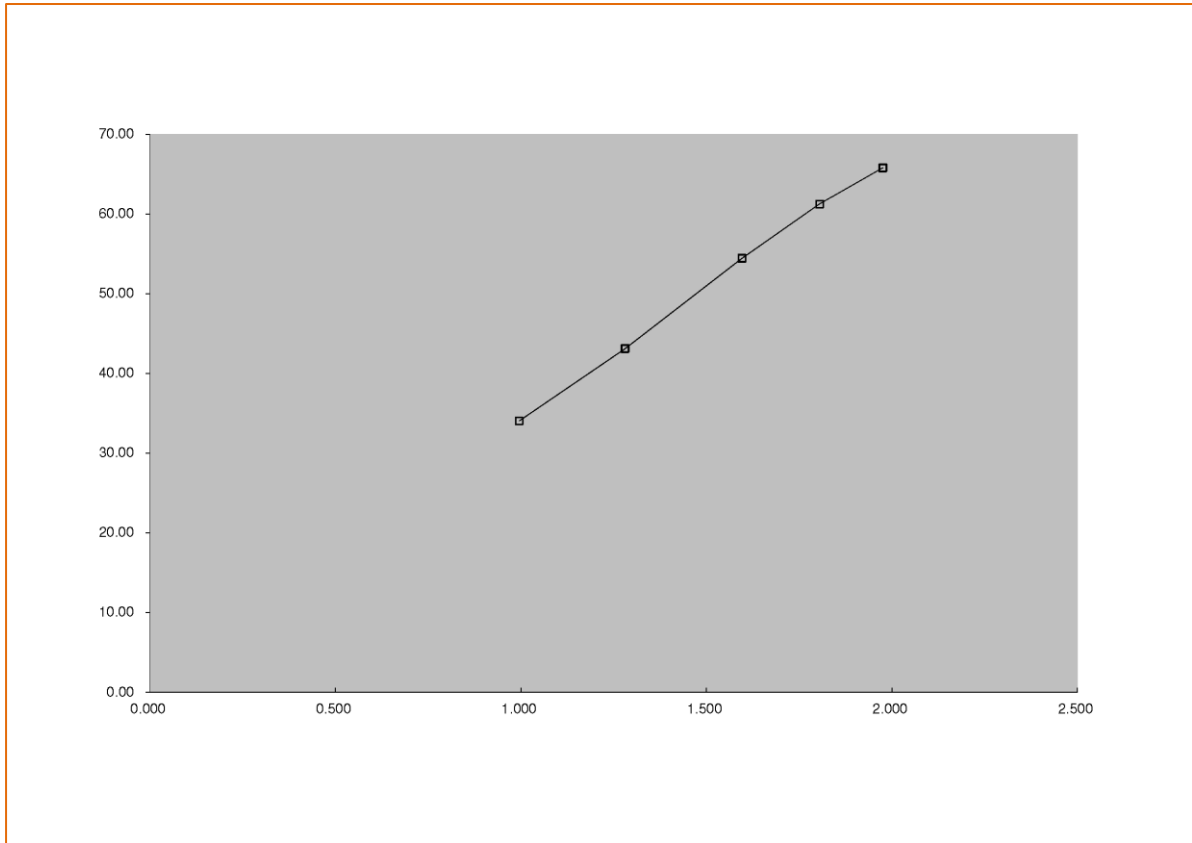
Location of Air Quality Monitoring Station



APPENDIX E

Calibration Certificates for Monitoring Equipment

TSP Sampler Calibration						
SITE						
Location: Hung Hom			Calibration Date: August 8, 2016			
Sampler: Hunghom MTR TSP			Next Calibration Date: October 8, 2016			
Serial No 694-0665			Tech: Sam Wong			
CONDITIONS						
Barometric Pressure (in Hg):	39.50	Corrected Pressure (mm Hg):	1003			
Temperature (deg F):	91	Temperature (deg K):	306			
Average Press. (in Hg):	39.50	Corrected Average (mm Hg):	1003			
Average Temp. (deg F):	91	Average Temp. (deg K):	306			
CALIBRATION ORIFICE						
Make:	Tisch	Qstd Slope:	2.00411			
Model:	TE-5025A	Qstd Intercept:	-0.03059			
Serial#:	1612	Date Certified:	March 14, 2016			
CALIBRATIONS						
Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	12.00	1.976	58.0	65.79	Slope =	33.0024
2	10.00	1.805	54.0	61.25	Intercept =	1.2081
3	7.80	1.596	48.0	54.44	Corr. coeff.=	0.9992
4	5.00	1.281	38.0	43.10		
5	3.00	0.996	30.0	34.03	# of Observations:	5
<p>Calculations</p> <p>Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b] IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]</p> <p>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)</p> <p>m = sampler slope b = sampler intercept I = chart response Tav = daily average temperature Pav = daily average pressure</p>						
Reviewer: <u>Sam Wong</u>			Signature: 		Date: <u>August 8, 2016</u>	



TSP Sampler Calibration

SITE

Location: **Hung Hom** Calibration Date: **October 8, 2016**
 Sampler: **Hunghom MTR TSP** Next Calibration Date: **December 8, 2016**
 Serial No **694-0665** Tech: **Sam Wong**

CONDITIONS

Barometric Pressure (in Hg): **39.70** Corrected Pressure (mm Hg): **1008**
 Temperature (deg F): **82** Temperature (deg K): **301**
 Average Press. (in Hg): **39.70** Corrected Average (mm Hg): **1008**
 Average Temp. (deg F): **82** Average Temp. (deg K): **301**

CALIBRATION ORIFICE

Make: **Tisch** Qstd Slope: **2.00411**
 Model: **TE-5025A** Qstd Intercept: **-0.03059**
 Serial#: **1612** Date Certified: **March 14, 2016**

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	12.00	1.997	58.0	66.50	Slope =	33.0024
2	10.00	1.824	54.0	61.91	Intercept =	1.2266
3	7.80	1.613	48.0	55.03	Corr. coeff.=	0.9992
4	5.00	1.295	38.0	43.57		
5	3.00	1.006	30.0	34.40	# of Observations:	5

Calculations

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pa = actual pressure during calibration (mm Hg)
 Tstd = 298 deg K
 Pstd = 760 mm Hg

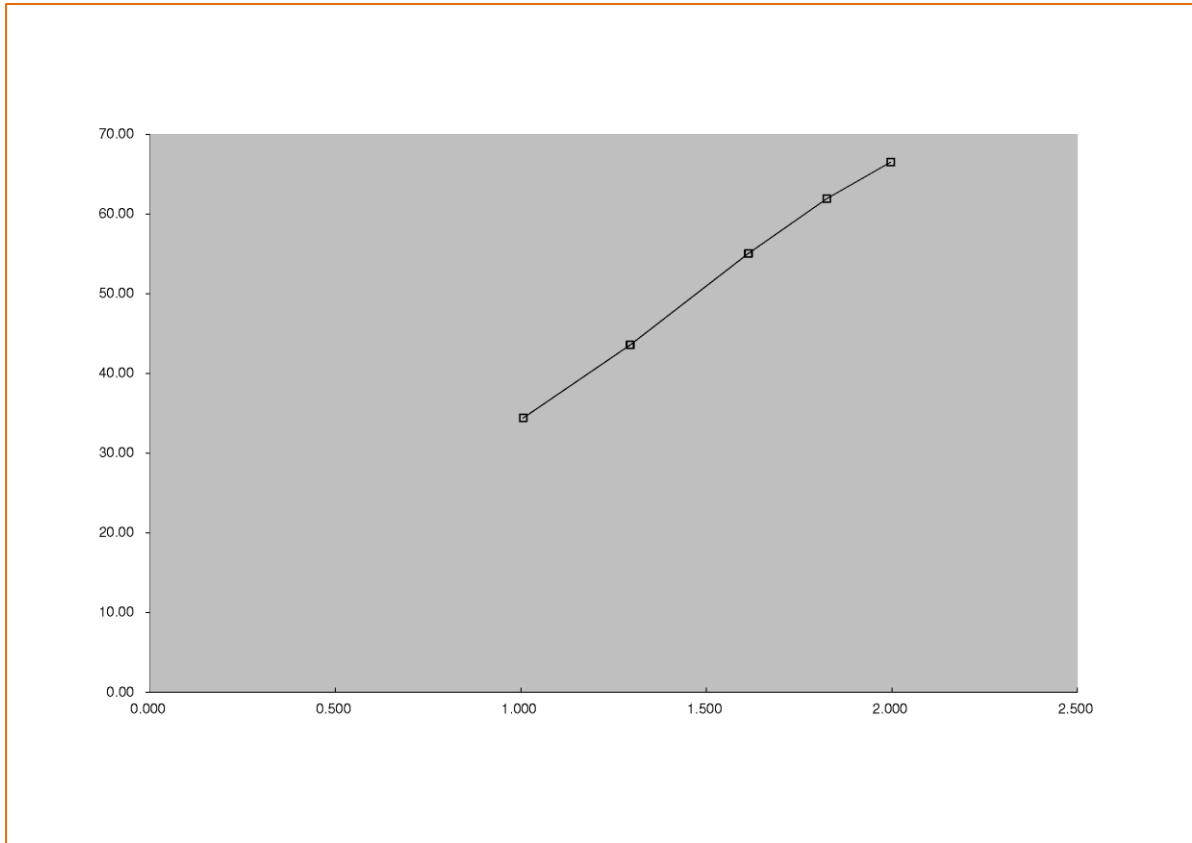
For subsequent calculation of sampler flow:
 $1/m((I) [\text{Sqrt}(298/Tav)(Pav/760)]-b)$

m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure

Reviewer: Sam Wong

Signature: 

Date: October 8, 2016





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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 14, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
 Operator Tisch Orifice I.D. - 1612 Pa (mm) - 745.49

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3770	3.2	2.00
2	NA	NA	1.00	0.9710	6.4	4.00
3	NA	NA	1.00	0.8710	7.8	5.00
4	NA	NA	1.00	0.8310	8.7	5.50
5	NA	NA	1.00	0.6860	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9866	0.7165	1.4078	0.9957	0.7231	0.8896
0.9824	1.0117	1.9909	0.9914	1.0210	1.2581
0.9804	1.1256	2.2259	0.9894	1.1360	1.4066
0.9793	1.1785	2.3345	0.9883	1.1893	1.4753
0.9741	1.4200	2.8155	0.9830	1.4330	1.7792

Qstd slope (m) = 2.00411
 intercept (b) = -0.03059
 coefficient (r) = 0.99995

Qa slope (m) = 1.25494
 intercept (b) = -0.01933
 coefficient (r) = 0.99995

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

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

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

Appendix F

Wind Data

Extract of Meteorological Observations for Hong Kong, October 2016

Date October	Number of hours of Reduced Visibility [#] (hours)	Total Bright Sunshine (hours)	Daily Global Solar Radiation (MJ/m ²)	Total Evaporation (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
1	12	5.8	16.05	0.6	090	16.2
2	9	3.0	11.57	4.2	060	17.8
3	0	1.2	8.37	2.0	050	28.5
4	0	4.9	9.68	1.9	050	17.5
5	0	5.7	16.61	4.4	070	18.7
6	0	8.9	18.76	6.8	010	19.3
7	0	3.8	11.82	3.1	010	23.6
8	0	2.1	10.54	3.7	360	35.2
9	0	4.7	15.92	6.1	010	33.0
10	0	6.8	16.51	3.5	020	28.0
11	0	0.7	9.51	3.2	010	29.8
12	0	0.1	4.70	1.3	060	39.7
13	0	6.5	17.41	4.7	080	39.5
14	0	9.0	19.58	3.9	080	34.6
15	0	7.0	15.64	4.5	050	20.3
16	0	7.8	15.66	5.0	020	20.3
17	0	2.2	7.73	N.A.	070	43.5
18	0	-	2.07	N.A.	090	57.5
19	0	0.1	2.27	N.A.	100	36.0
20	7	7.4	14.48	1.9	010	15.8
21	0	-	0.80	N.A.	220	60.8
22	0	5.0	12.47	0.5	220	18.2
23	0	2.8	10.47	2.1	100	6.0
24	0	4.1	12.90	1.9	120	13.8
25	0	9.2	20.00	4.2	090	16.5
26	0	8.5	17.55	3.2	070	17.1
27	0	9.8	19.82	4.6	060	11.1
28	0	10.3	20.33	3.3	020	8.6
29	0	3.7	11.38	5.3	080	31.5
30	0	3.6	12.46	4.1	020	32.3
31	0	7.9	17.24	5.2	070	24.0
Mean/Total	28	152.6	12.91	95.2 ^{&}	070	26.3
Normal*	142.8 [§]	193.9	14.05	123.9	080	27.4
Station	Hong Kong International Airport	King's Park		Waglan Island [^]		

Reduced visibility refers to visibility below 8 kilometres when there is no fog, mist or precipitation.

- The visibility readings at the Hong Kong International Airport are based on hourly observations by professional meteorological observers in 2004 and before, and average readings over the 10-minute period before the clock hour of the visibility meter near the middle of the south runway from 2005 onwards. The change of the data source in 2005 is an improvement of the visibility assessment using instrumented observations following the international trend.

- Before 10 October 2007, the number of hours of reduced visibility at the Hong Kong International Airport in 2005 and thereafter displayed in this web page was based on hourly

visibility observations by professional meteorological observers. Since 10 October 2007, the data have been revised using the average visibility readings over the 10-minute period before the clock hour, as recorded by the visibility meter near the middle of the south runway.

^ In case the data are not available from Waglan Island, observations of Cheung Chau or other nearby weather stations will be incorporated in computing the Prevailing Wind Direction and Mean Wind Speed.

* 1981-2010 Climatological Normal, unless otherwise specified

§ 1997-2015 Mean value

& Data incomplete

Remarks: The graphical presentations for wind data and wind speed from the nearest weather station were not available. Therefore, the above table has been adopted.

Source: Hong Kong Observatory Extract Of Meteorological Observations For Hong Kong, October 2016 (<http://www.weather.gov.hk/wxinfo/pastwx/metob201610.htm>)

Appendix G

Environmental Monitoring Programme

Environmental Monitoring Schedule for SCL1112 in October 2016

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

Environmental Monitoring Schedule for SCL1112 in November 2016

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

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
	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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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/m² to achieve the removal efficiency. The dust levels would be monitored and managed under an EM&A programme as specified in the 	To minimize the construction dust impacts to the nearby sensitive receivers	Contractor	Barging point at Hung Hom Freight Pier	Construction stage	APCO	N/A N/A

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	EM&A Manual. <ul style="list-style-type: none"> Vehicles leaving the barging facilities – vehicles would be required to pass through the wheel washing facilities to be provided at site exit. 						N/A
S7.6.5 of Ref. 1; S5.50 of Ref. 2; S7.6.6 of Ref. 3	Mitigation measures in form of regular watering under a good site practice will be adopted. Watering once per hour on exposed worksites and haul road will be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but will be sufficient to maintain an equivalent intensity of no less than 1.8 L/m ² to achieve the dust removal efficiency.	Minimise dust impact at the nearby sensitive receivers	Contractor	Active works areas, exposed areas and paved haul roads	Construction stage	APCO To control the dust impact to meet HKAQO and EIAO-TM criteria	*
S7.6.5 of Ref. 1; S5.51 of Ref. 2; S7.6.6 of Ref. 3	<ul style="list-style-type: none"> Any excavated or stockpile of dusty material will be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading. Any dusty materials remaining after stockpiles are removed will be wetted and cleared from the surface of roads. A stockpile of dusty material will not be extended beyond the pedestrian barriers, fencing or traffic cones. The load of dusty materials on a vehicle leaving a construction site will be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle. Where practicable, vehicle washing facilities with high pressure water jet will be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point will be paved with concrete, bituminous materials or hardcore. When there are open excavation and reinstatement works, hoarding of not less than 2.4m high will be provided and properly maintained as far as practicable along the site boundary with provision for public crossing; Good site practice will also be adopted by the contractor to ensure the conditions of the hoardings are properly maintained in construction period. The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit will be kept clear of dusty materials. Surfaces where any pneumatic or power-driven drilling, 	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	APCO Air Pollution Control (Construction Dust) Regulation To control the dust impact to meet HKAQO and EIAO-TM criteria	* ^ ^ ^ ^ ^

EIA Ref.	Recommended mitigation measures for Works Contract 1112	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for measures to achieve?	Status
	<p>cutting, polishing or other mechanical breaking operation takes place will be sprayed with water or a dust suppression chemical continuously.</p> <ul style="list-style-type: none"> 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. 						<p>^</p> <p>^</p> <p>N/A</p> <p>^</p> <p>*</p> <p>^</p> <p>^</p> <p>^</p>
S7.6.5 of Ref. 1; S5.57 of Ref. 2; S7.6.6 of Ref. 3	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Harbourfront Horizon	Construction stage	EIAO-TM APCO	^

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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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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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	<ul style="list-style-type: none"> • 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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	<p>vegetated areas.</p> <ul style="list-style-type: none"> 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 50m³ 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 						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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	<p>the oil interceptors to prevent flushing during heavy rain.</p> <ul style="list-style-type: none"> 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. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S10.7.1 of Ref. 1; S10.7.1 of Ref. 3	<p><u>Tunnelling works</u></p> <ul style="list-style-type: none"> 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	<p>^</p> <p>^</p> <p>^</p> <p>^</p>

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S8.68 of Ref. 2; S10.7.1 of Ref. 1	<p><u>Operation of Barging Facilities</u> The following good practice shall apply for the barging facilities operations:</p> <ul style="list-style-type: none"> 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 <i>construction runoff and site drainage</i> provide above should be applied to minimise water quality impacts from site runoff and open stockpile spoils at the proposed barging facilities where appropriate. 	To minimize water quality impact from operation of barging facility	Contractor	All barging facilities	Construction stage	WPCO TM-EIA	N/A N/A N/A N/A N/A
S8.51 – 8.52 of Ref. 2	<p><u>Bentonite Slurries:</u></p> <ul style="list-style-type: none"> 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	<p><u>Wastewater from Building Construction:</u></p> <ul style="list-style-type: none"> 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	<p><u>Excavation Activities:</u></p> <ul style="list-style-type: none"> 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	<p><u>Diaphragm Wall</u></p> <ul style="list-style-type: none"> 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	<p><u>Sewage effluent</u></p> <p>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.</p>	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	<p><u>Groundwater seepage</u></p> <p>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</p>	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	<p><u>Accidental spillage</u> To prevent accidental spillage of chemicals, the following is recommended:</p> <ul style="list-style-type: none"> • 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	<p><u>Onsite sorting of C&D material</u></p> <p>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.</p>	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	<p><u>Construction and demolition material</u></p> <ul style="list-style-type: none"> 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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S11.5.1 of Ref.1; S9.84 – 9.93 of Ref. 2	<p><u>Land-based sediment</u></p> <ul style="list-style-type: none"> 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

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	<p>according to the Water Pollution Control Ordinance (WPCO).</p> <ul style="list-style-type: none"> In order to minimize the potential odour / dust emissions during excavation and transportation of the sediment, the excavated sediments should be wetted during excavation / material handling and should be properly covered when placed on trucks or barges. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. The barge transporting the sediments to the designated disposal sites should be equipped with tight fitting seals to prevent leakage and should not be filled to a level that would cause overflow of materials or laden water during loading or transportation. In order to minimize the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipment (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site. 						<p>N/A</p> <p>N/A</p> <p>N/A</p>
<p>S11.5.1 of Ref.1; S8.94 – 9.97 of Ref. 2; S11.5.1 of Ref. 3</p>	<p><u>Chemical waste</u></p> <ul style="list-style-type: none"> 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. 	<p>Control the chemical waste and ensure proper storage, handling and disposal.</p>	<p>Contractor</p>	<p>All construction sites</p>	<p>Construction stage</p>	<p>Waste Disposal (Chemical Waste) (General) Regulation</p> <p>Code of Practice on the Packaging, Labelling and Storage of Chemical Waste</p>	<p>^</p> <p>^</p> <p>^</p>

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	<ul style="list-style-type: none"> 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	<p><u>Asbestos wastes</u></p> <ul style="list-style-type: none"> 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

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	<p>sources of ignition or oxidisable items. Handling will be undertaken by personnel with appropriate training and Personal Protective Equipment</p> <ul style="list-style-type: none"> • 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	<p>The Occupation Safety and Health Ordinance (OSHO) (Chapter 509) and its subsidiary Regulations should be followed by all site personnel working on the site at all times. In addition, the following basic health and safety measures should be implemented as far as possible:</p> <p>Set up a list of safety measures for site workers.</p> <p>Provide written information and training on safety for site workers.</p> <p>Keep a log-book and plan showing the contaminated zones and clean zones.</p> <p>Maintain a hygienic working environment.</p> <p>Avoid dust generation.</p> <p>Provide face and respiratory protection gear to site workers.</p> <p>Provide personal protective clothing (e.g. chemical resistant jackboot, liquid tight gloves) to site workers.</p> <p>Provide first aid training and materials to site workers.</p>	To minimise the potentially adverse effects on health and safety of construction workers during the course of site remediation.	Contractor	All construction sites	Site remediation and prior to construction phase	<p>"Guidance Note for Contaminated Land Assessment and Remediation"</p> <p>"Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management"</p> <p>"Occupation Safety and Health Ordinance (Chapter 509)"</p>	N/A
EM&A Project							
S14.2 – 14.4 of Ref. 1; S13.2 – 13.4 of Ref. 3 1.	<ul style="list-style-type: none"> • 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Identify source(s) and investigate the causes of exceedance 2. Take immediate action to avoid further exceedance 3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification 4. Implement the agreed proposals 5. Revise and resubmit proposals if problem still not under control 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Construction Noise

Event	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify the IEC, Contractor and ER 2. Discuss with the ER, IEC and contractor on the remedial measures and assess the effectiveness. 3. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the investigation results submitted by Contractor. 2. Review and advise the ER and ET on the effectiveness of Contractor's remedial measures. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Investigate the complaint and propose remedial measure. 2. Report the results of investigation to the IEC, ET and ER. 3. Submit noise mitigation proposals to ER with a copy to ET and IEC within three working days of notification 4. Implement noise mitigation proposal.
Limit Level	<ol style="list-style-type: none"> 1. Notify IEC, Contractor & EPD 2. Repeat measurement to confirm findings 3. Increase monitoring frequency to daily 4. Carry out analysis of the Contractor's working procedures with the ER to determine possible mitigation to be implemented 5. Arrange meeting with the IEC, Contractor and ER to discuss the remedial measures to be taken 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances. 7. Assess effectiveness of the Contractor's remedial measures and keep IEC, ER and EPD informed of the results. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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

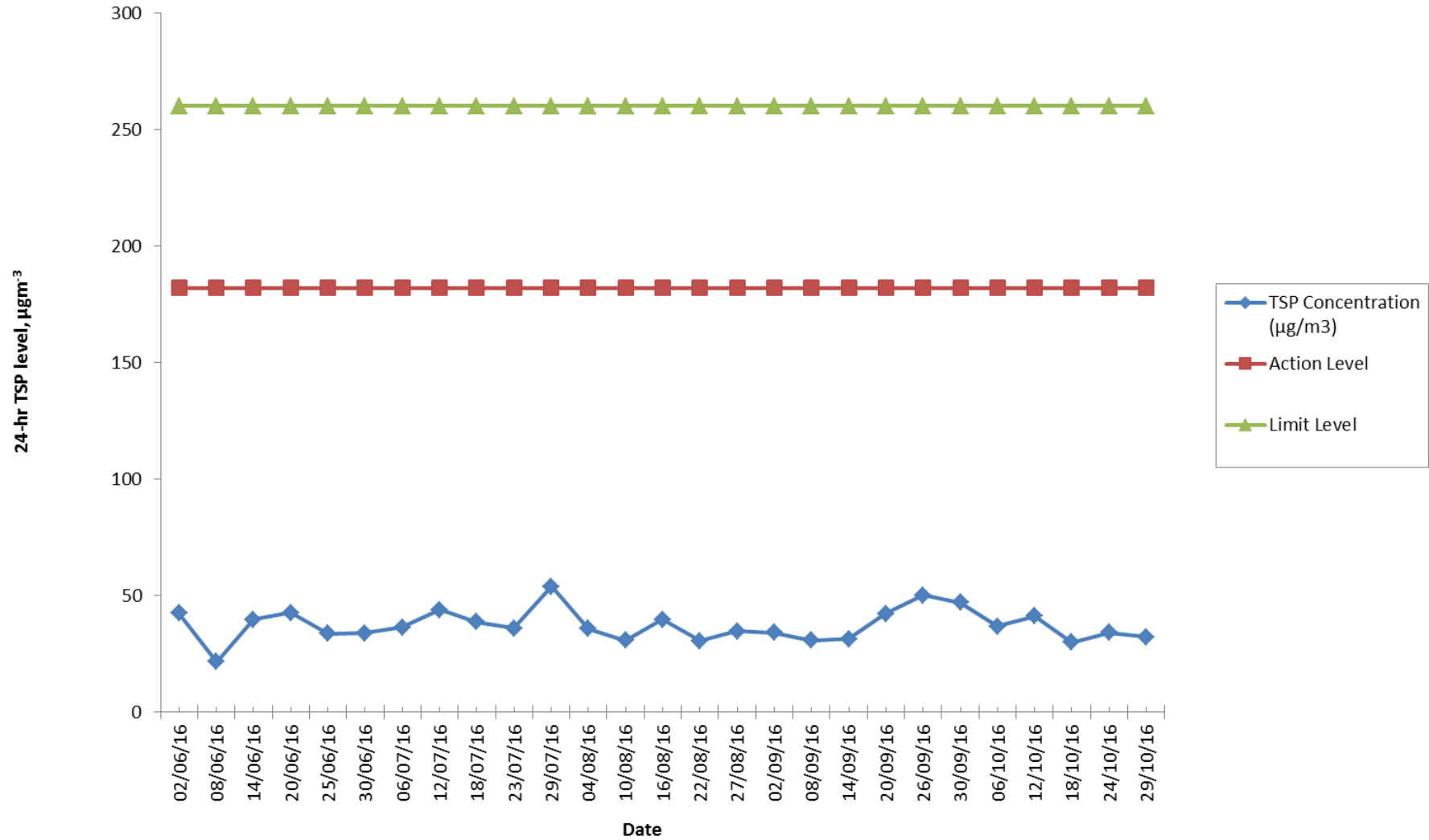
APPENDIX J

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/m ³)	Weather	Remark
	Paper No.	Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate				
06/10/16	C237	2.8564	2.9165	0.0601	14793.30	14817.30	24.00	40	40	40.0	1631.05	36.8474	Rainy	-
12/10/16	C280	2.8424	2.9094	0.0670	14817.30	14841.30	24.00	40	40	40.0	1631.05	41.0778	Cloudy	-
18/10/16	CC226	2.8705	2.9193	0.0488	14841.30	14865.30	24.00	40	40	40.0	1631.05	29.9194	Heavy Rainfall	-
24/10/16	CC240	2.8527	2.9081	0.0488	14865.30	14889.30	24.00	40	40	40.0	1631.05	33.9658	Cloudy	-
29/10/16	CC241	2.8678	2.9203	0.0525	14889.30	14913.30	24.00	40	40	40.0	1631.05	32.1879	Cloudy	-

Construction Dust Monitoring Results for AM2 (Harbourfront Horizon)



APPENDIX K

Waste Flow Table

Waste Flow Table																
Month	Actual Quantities of Inert C&D Materials Generated Monthly									Actual Quantities of non-inert C&D Wastes Generated Monthly						
	Generated				Disposed					Recycled				Disposed		
	Imported from SCL1111	Imported from SCL1121	Total Quantity Generated	Hard Rock and Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fills at HH Barging Point	Disposed as Public Fills at TKO137	Disposed as Public Fills at TM38	Metals	Paper/ Cardboard Packaging	Asphalt	Plastics	Chemical Waste		General Refuse
Unit	(in '000m ³)									(in '000Kg)				(in '000Kg)	(in '000L)	(in '000Kg)
Jun-13	0	-	0	0	0	0	0	0	0	137.3	0	0	0	0	-	6.55
Jul-13	0	-	0.36	0	0	0	0	0	0.36	365.34	0	0	0	0	-	16.87
Aug-13	0	-	1.68	0	0	0	0.05	0	1.63	69.98	0.25	0	0	0	-	12.67
Sep-13	0	-	3.39	0	0	0	0.20	0	3.19	131.18	0.22	0	0.46	0	-	16.25
Oct-13	0	-	4.04	0	0	0	0.78	0	3.26	179.97	0.63	8.28	2.04	0	-	39.87
Nov-13	0	-	6.09	0	0	0	2.09	0.18	3.82	125.70	0.45	160.35	0	0	-	28.69
Dec-13	0	-	5.69	0	0	0	1.74	0.01	3.94	72.15	0.39	4.13	0	0	-	18.04
Jan-14	0	-	4.58	0	0	0	0	0.27	4.31	117.57	0.26	147.67	0.26	0	-	30.09
Feb-14	0	-	3.80	0	0	0.14 ^[Note1]	0	0.19	3.46	28.32	0.29	414.67	0	0	-	15.73
Mar-14	0	-	10.10	0	0	6.18 ^[Note2]	0	0.29	3.63	96.26	0.25	0	0	0	-	47.76
Apr-14	0	-	6.67	0	0	4.82 ^[Note3]	0	0.0053	1.85	75.43	0.23	1,322.39	0	0.2	-	78.63
May-14	0.52	-	5.77	0	0.43	2.00 ^[Note4]	0	0.12	3.65	48.86	0.28	501.45	0	0	-	66.03
Jun-14	0.47	-	4.56	0	0	1.73 ^[Note5]	0	0.29	2.54	42.95	0.25	0	0	0.4	-	45.97
Jul-14	0.34	-	8.61	0	0	2.89 ^[Note6]	0	0.87	4.84	70.99	0	0	0	0	-	40.50
Aug-14	0.20	-	8.57	0	0	3.56 ^[Note7]	0	0.44	4.57	227.86	0	0	0	0	-	76.93
Sep-14	0.23	-	11.11	0	0	5.82 ^[Note8]	0	0.23	5.06	220.85	0.29	0	0	0	-	43.01
Oct-14	0.54	-	12.79	0	0	6.04 ^[Note9]	0	0.06	6.69	174.82	0.71	329.16	0	0	-	97.92
Nov-14	0.93	-	10.63	0	0	3.78 ^[Note10]	0	0.15	6.70	163.72	0.56	376.40	0	0	-	81.91
Dec-14	3.72	-	8.59	0	0	2.97 ^[Note11]	0	0	5.62	385.80	0.53	166.98	0	5.4	-	130.83
Jan-15	3.72	-	19.29	0	0	10.03 ^[Note12]	0	0	9.26	543.40	0.80	179.01	0	0	1.60	318.66

Waste Flow Table																
Month	Actual Quantities of Inert C&D Materials Generated Monthly									Actual Quantities of non-inert C&D Wastes Generated Monthly						
	Generated				Disposed					Recycled				Disposed		
	Imported from SCL1111	Imported from SCL1121	Total Quantity Generated	Hard Rock and Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fills at HH Barging Point	Disposed as Public Fills at TKO137	Disposed as Public Fills at TM38	Metals	Paper/ Cardboard Packaging	Asphalt	Plastics	Chemical Waste		General Refuse
Unit	(in '000m ³)									(in '000Kg)				(in '000Kg)	(in '000L)	(in '000Kg)
Feb-15	3.03	-	13.96	0	0	8.41 ^[Note13]	0	0	5.54	263.10	0.46	168.82	0	0	0	180.27
Mar-15	5.68	-	22.28	0	0	12.45 ^[Note14]	0	0	9.82	346.70	0.61	11.45	0	0	0	429.13
Apr-15	4.71	-	18.51	0	0	11.25 ^[Note15]	0	0.23	7.26	275.99	0.32	0	0	0	0	376.98
May-15	4.62	-	20.64	0	0	11.53 ^[Note16]	0	0	9.10	353.88	0.67	0	0	0	0	266.43
Jun-15	5.04	-	13.49	0	0	6.29 ^[Note17]	0	0	7.20	317.14	0.43	0	0	0.20	1.00	258.01
Jul-15	6.21	0.09	21.64	0	0	16.15 ^[Note18]	0	0	5.50	706.38	0.69	0	0	0	0	270.73
Aug-15	0.40	0	26.43	0	0	19.29 ^[Note19]	0	0	7.14	45.53	0.57	0	0	0	0	261.04
Sep-15	-	-	20.91	0	0	13.16 ^[Note20]	0	0	7.75	317.36	0.58	0	0	0.45	0	240.74
Oct-15	-	-	26.22	0	0	14.19 ^[Note21]	0	0	12.03	251.95	0.48	0	0	0	0	422.80
Nov-15	-	-	18.66	0	0	7.03 ^[Note22]	0	0	11.64	446.80	0.53	0	0	0	0	283.46
Dec-15	-	-	17.02	0	0	9.81 ^[Note23]	0	0	7.21	198.11	0.50	0	0	0	0	355.24
Jan-16	-	-	24.58	0	0	13.22 ^[Note24]	0	0	11.37	273.64	0.62	0	0	0	0	347.67
Feb-16	-	-	9.34	0	0	4.31 ^[Note25]	0	0	5.04	269.58	0.46	0	0	0	0	251.30
Mar-16	-	-	9.75	0	0	3.48 ^[Note26]	0	0	6.27	750.85	0	0	0	0	0	288.35
Apr-16	-	-	12.83	0	0	5.68 ^[Note27]	0	0	7.15	549.43	0.65	0	0	0.09	1.30	282.05
May-16	-	-	7.22	0	0	2.08 ^[Note28]	0	0	5.14	356.66	0.55	0	0	0	0	318.75
Jun-16	-	-	2.83	0	0	2.38 ^[Note29]	0	0	0.45	228.10	0.40	0	0	0	4.21	410.03
Jul-16	-	-	8.67	0	0	8.50 ^[Note30]	0	0.01	0.16	172.90	0.16	0	0	0	0	418.44
Aug-16	-	-	2.08	0	0	1.95 ^[Note31]	0	0	0.12	334.40	0.30	0	0	0	0	542.00
Sep-16	-	-	1.44	0	0	1.44 ^[Note32]	0	0	0	47.10	0.37	0	0	0	0	542.44

Waste Flow Table																
Month	Actual Quantities of Inert C&D Materials Generated Monthly									Actual Quantities of non-inert C&D Wastes Generated Monthly						
	Generated				Disposed					Recycled				Disposed		
	Imported from SCL1111	Imported from SCL1121	Total Quantity Generated	Hard Rock and Broken Concrete	Reused in the Contract	Reused in Other Projects	Disposed as Public Fills at HH Barging Point	Disposed as Public Fills at TKO137	Disposed as Public Fills at TM38	Metals	Paper/ Cardboard Packaging	Asphalt	Plastics	Chemical Waste	General Refuse	
Unit	(in '000m ³)									(in '000Kg)				(in '000Kg)	(in '000L)	(in '000Kg)
Oct-16	-	-	3.00	0	0	3.00 ^[Note33]	0	0	0	99.79	0.44	0	0	0	0	633.27
TOTAL	40.35	0.09	438.81	0	0.42	225.54	4.86	3.36	205.28	9557.63	17.34	3790.76	2.76	6.74	8.11	8602.68

Note:

- 137 m³ of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904.
- 267 m³ of the Inert C&D materials were reused in SIL Project Contract 904; 3,998 m³ 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 m³ of the Inert C&D materials were reused in Tuen Mun – Chek Lap Kok Link (TM-CLKL) and Tuen Mun Western Bypass (TMWB) Project Contract HY/2012/08.
- 1,728 m³ 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 m³ of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
- 184 m³ of the Inert C&D materials were reused in South Island Line (SIL) Project Contract 904; and 1814 m³ of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
- 1,021 m³ of the Inert C&D materials were reused in Wan Chai Development Phase II – Central – Wan Chai Bypass at Wan Chai West Project Contract HK/2012/08; and 707 m³ of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
- 2,894 m³ of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08.
- 575.5m³ 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 m³ of the Inert C&D materials were reused in TM-CLKL and TMWB Project Contract HY/2012/08; and 76.0 m³ 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.
- 4,905.4 m³ of the Inert C&D materials were reused in TM-CLKL and 912.3 m³ of the Inert C&D materials were reused in SIL Project Contract 904.
- 5,522.9 m³ of the Inert C&D materials were reused in TM-CLKL and 515.9 m³ of the Inert C&D materials were reused in SIL Project Contract 904.
- 3,774.6 m³ of the Inert C&D materials were reused in TM-CLKL.
- 2,968.9 m³ of the Inert C&D materials were reused in TM-CLKL (HY/2012/08).
- 9,988.1 m³ of the Inert C&D materials were reused in WENT (SITA) and 46.34 m³ of the Inert C&D materials were reused in SIL Project Contract 904.
- 8,212.8 m³ of the Inert C&D materials were reused in WENT (SITA) and 200.9 m³ of the Inert C&D materials were reused in SIL Project Contract 904.

14. 11,757 m³ of the Inert C&D materials were reused in WENT (SITA), 23.41 m³ of the Inert C&D materials were reused in SIL Project Contract 904 and 672.78 m³ of the Inert C&D materials were reused in XRL822.
15. 10,633 m³ of the Inert C&D materials were reused in WENT (SITA) and 0.61176 m³ of the Inert C&D materials were reused in XRL822.
16. 11,533 m³ of the Inert C&D materials were reused in WENT (SITA).
17. 6,290 m³ of the Inert C&D materials were reused in WENT (SITA).
18. 16,145 m³ of the Inert C&D materials were reused in WENT (SITA).
19. 878 m³ of the Inert C&D materials were reused in WENT (SITA) and 18,415 m³ of the Inert C&D materials were reused in SCL1121.
20. 13,163 m³ of the Inert C&D materials were reused in SCL1121.
21. 14,189 m³ of the Inert C&D materials were reused in SCL1121.
22. 7,030 m³ of the Inert C&D materials were reused in SCL1121.
23. 9,811 m³ of the Inert C&D materials were reused in SCL1121.
24. 13,218 m³ of the Inert C&D materials were reused in SCL1121.
25. 4,306 m³ of the Inert C&D materials were reused in SCL1121.
26. 3,478 m³ of the Inert C&D materials were reused in SCL1121.
27. 5,680 m³ of the Inert C&D materials were reused in SCL1121.
28. 2,080 m³ of the Inert C&D materials were reused in SCL1121.
29. 2,380 m³ of the Inert C&D materials were reused in SCL1121.
30. 8,500 m³ of the Inert C&D materials were reused in SCL1121.
31. 1,950 m³ of the Inert C&D materials were reused in SCL1121.
32. 1,440 m³ of the Inert C&D materials were reused in SCL1121.
33. 3,004 m³ of the Inert C&D materials were reused in SCL1121.

Marine Sediment Flow Table						
Month	Actual Quantities of Marine Dumping Monthly					
	Type 1			Type 2		
	Generated from SCL1111 [Note1]	Generated from SCL1112 [Note3]	Disposed	Generated from SCL1111 [Note2]	Generated from SCL1112 [Note4]	Disposed
Unit	(in '000m ³)			(in '000m ³)		
Jan-15	0	0	0	2.22	0.06	2.28
Feb-15	1.29	0	0.82	0	0	0
Mar-15	2.43	0	2.48	0	0	0
Apr-15	3.97	0.14	5.27	0	0	0
May-15	8.26	0.09	8.35	0	0	0
Jun-15	9.71	0.12	9.83	0	0	0
Jul-15	5.29	0	5.18	0	0	0
Aug-15	0	0	0	0	0	0
Sep-15	-	0	0	-	1.94	1.94
Oct-15	-	0.53	0.53	-	0	0
Nov-15	-	5.67	5.67	0	2.32	2.32
Dec-15	-	14.44	-	-	1.02	-
Jan-16	-	16.59	-	-	0.02	-
Feb-16	-	1.25	-	-	4.04	-
Mar-16	-	3.85	-	-	2.30	-
Apr-16	-	0	-	-	0.36	-
May-16	-	0	-	-	4.06	-
Jun-16	-	0	-	-	6.45	-
Jul-16	-	0	-	-	0	-
Aug-16	-	0	-	-	0	-
Sep-16	-	0	-	-	0	-
Oct-16	-	0	-	-	0	-

Marine Sediment Flow Table						
Month	Actual Quantities of Marine Dumping Monthly					
	Type 1			Type 2		
	Generated from SCL1111 ^[Note1]	Generated from SCL1112 ^[Note3]	Disposed	Generated from SCL1111 ^[Note2]	Generated from SCL1112 ^[Note4]	Disposed
Unit	(in '000m ³)			(in '000m ³)		
TOTAL	31.69	42.67	38.11	2.22	22.57	6.54

Note:

1. Type 1 Marine Sediment generated from SCL1111 was delivered to the Barging Point at SCL1121 for disposal.
2. Type 2 Marine Sediment generated from SCL1111 was delivered to the Barging Point at SCL1121 for disposal.
3. Type 1 Marine Sediment generated from SCL1112 was delivered to the Barging Point at SCL1121 for disposal.
4. Type 2 Marine Sediment generated from SCL1112 was delivered to the Barging Point at SCL1121 for disposal.

APPENDIX L

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Reference No.	Subject	Location of Concern	Status
Environmental Complaints	8 April 2016	Public comment received by EPD, EPD's Ref. No. K01/RE/00008018-16	Air nuisance, other than dark smoke, from construction machine	Hung Hom Station, Tsim Sha Tsui	<ul style="list-style-type: none"> ET conducted inspection to examine the environmental performance of the site on 14 April 2016. Both the site and machineries were in normal operation during the site inspection. No air nuisance or smell of diesel exhaust was noticed at the concourse by any of the attending personnel. No diesel powered equipment was found at the concourse, as all of the powered mechanical equipment was powered by electricity. It is confirmed that the fresh air intake location of the air conditioning system serving the concourse level is located above the podium at the southern façade of the concourse, away from the construction work under the podium. It is also confirmed that the sealed system is totally separated from the construction site under the podium. No air from the construction area under the podium will be drawn into the air conditioning system for distribution within the station. The source of strong diesel exhaust smell at the concourse, as mentioned by the complainant, could not be identified. Investigation report submitted to EPD on 26 April 2016.
	11 April 2016	Public comment received by EPD, EPD's Ref. No. K01/RE/00008149-16	Complaint of other air nuisance at Hung Hom Station, Tsim Sha Tsui	Hung Hom Station, Tsim Sha Tsui	<ul style="list-style-type: none"> Complaint confirmed to be irrelevant to the construction works of the Project, no follow up required.

	Date Received	Reference No.	Subject	Location of Concern	Status
Environmental Complaints	24 March 2016	Public comment received by EPD, EPD's Ref. No. K01/RE/00006851-16	"General construction noise except renovation (within Restricted Hours) from Hung Hom Station , Tsim Sha Tsui"	Hung Hom Station, Tsim Sha Tsui	<ul style="list-style-type: none"> • The Contractor confirmed that only mobilization, i.e. transportation of the equipment itself, of the scissor lift platforms were carried out during night time. During scissor lift platforms mobilization, safety warning signal (the "beeping" noise) would be emitted. The audible warning signal device cannot be switched off so as to alert nearby workers of the movement of the equipment. Silencing the device could induce safety concern and not advisable. • At night time of 22 and 23 March 2015, a forklift was deployed for the transportation of concrete blocks to be used as the footings for hoarding construction outside the concourse area (Photo 2). Backward movement of the forklift would also generate safety warning signal. • There is another valid CNP (CNP No. GW-RE0176-16) for construction works to be carried out inside the concourse during night time. However, this is not applicable to the works of concern, located outside the concourse area. Whereas CNP No. GW-RE0207-16, effective from 10 March 2016 to 28 April 2016, allows mobilization of scissor lift platforms and use of forklift for transportation of construction material outside the MTR Hung Hom Station. • Investigation report submitted to EPD on 20 April 2016.

	Date Received	Reference No.	Subject	Location of Concern	Status
Environmental Complaints	28 September 2015	Public comment received by EPD, K01/RE/00024658-15	Complaint of general construction noise except renovation (within Restricted Hours) from construction site at Hung Hom	Harbour Plaza Metropolis, Tsim Sha Tsui	<ul style="list-style-type: none"> • A valid construction noise permit (CNP) (CNP no. GW-RN0969-15) was granted for such works from 25 September 2015 to 24 March 2016. • Noise mitigation measures were implemented at the site. • Due to the limited construction works being carried out during the evening period and most of the active construction works being carried out under the podium which had no direct line of sight from the nearest sensitive receiver, Harbour Plaza Metropolis, construction noise nuisance from Shatin to Central Link (SCL) Contract 1112 should not be anticipated. • Investigation report submitted to EPD on 3 November 2015.
	10 March 2015	Public comment received by EPD, K01/RE/00005632-15	Complaint of malodour from Hung Hom Station (near Exit B1)	Hung Hom Station, Tsim Sha Tsui	<ul style="list-style-type: none"> • ET conducted inspection to examine the environmental performance of the site on 12 Mar 2015 • No odour was noticed by all attending parties. It was observed that excavation, predrilling, welding, box culvert construction and installation of TAM grout pipeworks were carried out at the NAT works area, located to the west and east of the footbridge • The source of malodour could not be identified • A barrier was erected on the eastern side of footbridge, with the barrier already in place on the western side of the footbridge since November 2014, so now both sides of the footbridge contain barriers to shield off any dust or odour from the site • No noticeable malodour was observed and the air quality control was found to be satisfactory according to conversation between EPD and the Contractor • Investigation Report submitted to EPD on 26 Mar 2015

	Date Received	Reference No.	Subject	Location of Concern	Status
Environmental Complaints	7 Feb 2015	Public comment received by EPD, EPD's Ref. No. K01/RE/00003309 -15	Complaint of construction dust from the construction site at MTR Hung Hom Building, 8-8 Cheong Wan Road, Tsim Sha Tsui	MTR Hung Hom Station Building, 8-8 Cheong Wan Road	<ul style="list-style-type: none"> 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
	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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Barrier was erected on the side of footbridge facing the construction site ET conducted followed-up inspection of the implemented mitigation measures on 20 Nov 2014 and air quality control was found to be satisfactory Investigation Report submitted to EPD on 3 Dec 2014
Notification of Summons	3 Oct 2016	Summon received by Mr. MAK Wong-Chuen, Case No.: KTS16747/2016	On 1 April 2016, Mr. MAK Wong-Chuen operated a hand-held electric breaker at around 0053hr outside the Concourse, in	Entrance C2 of Hung Hom Station	<ul style="list-style-type: none"> The hearing will take place on 3 Nov 2016 at Kwun Tong Magistrates' Courts. <p>Remarks: The summon was only sent to the individual. Neither Palgo Company Limited nor Leighton Contractors (Asia) Limited received the summons.</p>

	Date Received	Reference No.	Subject	Location of Concern	Status
Successful Prosecution			violation of Section 6 (1) (a) and 6 (5) of the Noise Control Ordinance (Cap. 400). Mr. Mak Wong-Chuen was employed by Palgo Company Limited, which is a sub-contractor for SCL Contract 1112's main contractor, Leighton Contractors (Asia) Limited.		
	-	-	-	-	-

Appendix G

**41st 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. 41

[Period from 1 to 31 October 2016]

Works Contract 1108 – Kai Tak Station and Associated
Tunnels

(November 2016)

Certified by: Goldie Fung 

Position: Environmental Team Leader

Date: 9 November 2016

Kaden – Chun Wo Joint Venture (KCJV)

Shatin to Central Link –

Contract 1108

Kai Tak Station and Associated Tunnels

Monthly Environmental Monitoring & Auditing Report for

October 2016

The Contents of this report have been certified by:



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Executive Summary

This is the forty first 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 October 2016 to 31st October 2016.

Summary of the Construction Works undertaken during the Reporting Month

The major site activities in this reporting period were including:

- Open cut tunnel: DT and UT general cleaning and defect rectification, stitch joint PU grouting, sheetpile extraction, 1108/1109 TAM grouting.
- Cut and cover tunnel: Receiving shaft backfilling, DT and UT general cleaning and defect rectification, receiving shaft S2 and S1 shoring dismantling, (option 3) make good soil surface at nullah.
- Station: Erection of formworks for oil interceptor and manholes at SVS & NVS, drainage work at all area, backfilling for DCS cable ducting, installation of roof cladding at Entrance D, installation of 5W at all area, installation of brackets for roof cladding and reflected ceiling at Entrance B.

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 44080m³ of inert C&D materials were generated and received from other construction site, which 0m³ were disposed to the receiving facility of Contract 1108A and 44080m³ were reused in the contract. 131m³ of general refuse were generated and disposed at landfill site. 76kg of paper and 0kg of plastic, 0kg of metal and 0kg of chemical waste were sent to recyclers for recycling.

Environmental Site Inspection

Joint weekly inspections were conducted by representatives of the Contractor, Engineer and ET on 4th, 11th, 18th and 25th October 2016. The representative of the IEC joined the site inspection on 11th October 2016. EPD had carried out the site inspections/investigations in October 2016. Details of the audit findings and implementation status are presented in Section 6.

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

A complaints received on 13th September 2016 was referred from EPD on 4th October 2016 regarding the dust emission from the construction work and he requested the site provide enough preventive measures such as enough water spraying to reduce the dust emission. ET carried out the investigation on 4th October 2016 to resolve the concern.

No breaches of Action and Limits levels, non-compliance event and notification of summons and successful prosecution against the Project were received in this reporting month.

Future Key Issues

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

- Open cut tunnel: DT&UT general cleaning and defect rectification, re-bar fixing at uptrack stitch joint will be commenced, sheetpile extraction, 1108/09 TAM grouting.
- Cut and cover tunnel: Receiving shaft backfill up to ground level, tunnel tracks defect rectification.
- Station: Erection of formworks for oil interceptor and manholes at SVS and NVS, concreting of base of oil interceptor and manholes at NVS, drainage works at all area, backfilling for DCS cable ducting, installation of steel roof frame at Entrance A, installation of brackets for roof cladding and reflected ceiling at Entrance B, installation of roof cladding at Entrance D, plumbing works at all area, installation of 5W at all area.

1 Introduction

The Environmental Team (ET), Environmental Pioneers & Solutions Limited (EPSL), was appointed by Kaden – Chun Wo Joint Venture (KCJV) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the MTR Shatin to Central Link (SCL) Works Contract 1108 – Kai Tak Station and Associated Tunnels (the Project). The project commenced on 17th June 2013.

1.1 Purpose of the Report

This is the forty first monthly EM&A Report which summarises the audit findings for the EM&A programme during the reporting period from 1st October 2016 to 31st October 2016.

1.2 Structure of the Report

The structure of the report is as follow:

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

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

Section 3: Environmental Monitoring Requirement – summarises the monitoring

requirements and environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.

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

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

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

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

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

Section 9: Conclusions and Recommendations

2 Project Information

2.1 Background

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

The construction of the SCL (TAW-HUH) and SCL (HHS) have been divided into a series of civil construction works contracts. This Works Contract 1108 covers the construction of Kai Tak Station (KAT) and the section of tunnel between KAT and Sung Wong Toi Station (SUW) plus a short section of tunnel from KAT towards Diamond Hill Station (DIH). This construction contract was awarded to Kaden – Chun Wo Joint Venture (KCJV) in April 2013.

2.2 General Site Description

The works area includes work sites in the Kai Tak New Development Area. The construction of tunnel will employ cut & cover method. The alignment and works area for the Project is shown in **Appendix A**.

2.3 Construction Programme and Activities

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

- Open cut tunnel: DT and UT general cleaning and defect rectification, stitch joint PU grouting, sheetpile extraction, 1108/1109 TAM grouting.
- Cut and cover tunnel: Receiving shaft backfilling, DT and UT general cleaning and defect rectification, receiving shaft S2 and S1 shoring dismantling, (option 3) make good soil surface at nullah.
- Station: Erection of formworks for oil interceptor and manholes at SVS & NVS, drainage work at all area, backfilling for DCS cable ducting, installation of roof cladding at Entrance D, installation of 5W at all area, installation of brackets for roof cladding and reflected ceiling at Entrance B.

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/J	29/02/2016	N/A	Valid	Valid until superseded by EP-438/2012/K on 4 Oct 2016
EP-438/2012/K	04/10/2016	N/A	Valid	/
Notification pursuant to Air Pollution Control (Construction Dust) Regulation				
Ref. Number 359540	16/05/2013	N/A	Valid	/
Construction Noise Permit for the Carrying Out of Percussive Piling				
N/A				
Construction Noise Permit for General Works				
GW-RE0710-16	12/07/2016	11/01/2017	Valid	/
GW-RE0476-16	20/06/2016	19/12/2016	Valid	/
GW-RE0484-16	18/05/2016	17/11/2016	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	Fortieth Monthly EM&A Report	14 th October 2016

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
October 2016	0 m ³	131 m ³	0 kg	76 kg	0 kg	0 kg

Notes:

- (a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.
- (b) Non-inert C&D materials include steel, paper/cardboard packaging waste, plastics and other wastes such as general refuse and vegetative wastes. Steel metal generated from the Project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.

According to the approved Sediment Management Plan, a portion of the excavated marine sediment, which is classified as uncontaminated Type 1 sediment and suitable for Open Sea Disposal, should be reused on site for backfilling material. The uncontaminated sediment is mixed with cement and general materials to Cement Stabilized Marine Mud (CSMM). There are total 125.12m³ of CSMM were cumulatively backfilled.

During this reporting period, no CSMM backfilling work was conducted.

6 Environmental Site Inspection

6.1 Site Audit

Site audit was carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.

Joint weekly inspections were conducted by representatives of the Contractor, Engineer and ET on 4th, 11th, 18th and 25th October 2016. The representative of the IEC joined the site inspection on 11th October 2016. EPD had carried out the site inspections/investigations in October 2016. The details of observations during site audit can refer to Table 6.1.

6.2 Implementation Status of Environmental Mitigation Measures

According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. Updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix G**.

During site inspections in the reporting month, no non-conformance was identified. The observations, reminders and recommendations made during the audit sessions are summarized in Table 6.1.

Table 6.1 Summary results of site inspections findings

Parameters	Date	Findings	Advice from ET	Action taken	Closing date	Remarks
Noise	N/A	N/A	N/A	N/A	N/A	/
Air	11 Oct 16	Dusty haul road was observed at Area 1.	Contractor was reminded to increase the watering frequency for dust suppression at Area 1.	Dusty haul road was kept in wet for dust reduction.	18 Oct 16	/
	25 Oct 16	Exposed area was observed at Area 1.	Contractor was reminded to increase the watering frequencies on the dusty area for dust suppression.	Follow-up action will be inspected during next reporting month.	N/A	/
Water	27 Sep 16	Slurry was observed near the edge of Kai Tak Nullah.	Contractor was reminded to remove and clear up the slurry to prevent surface run-off.	Slurry near the edge of Kai Tak Nullah was removed by contractor.	4 Oct 16	/
	11 Oct 16	Chemical containers without drip tray were observed at Area 3.	Contractor was advised to provide the drip tray for all chemical materials to prevent chemical leakage.	Chemical containers were removed by contractor at Area 3.	18 Oct 16	/
Waste / Chemical Management	N/A	N/A	N/A	N/A	N/A	/
Cultural Heritage	13, 20 & 27 Sep 16 4 Oct 16	Construction materials were observed within the FKCP area.	Contractor was advised to remove the construction materials and fence off the FKCP area after removal of construction materials.	Construction materials within the FKCP area were removed by contractor.	11 Oct 16	/
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

A complaints received on 13th September 2016 was referred from EPD on 4th October 2016 regarding the dust emission from the construction work and he requested the site provide enough preventive measures such as enough water spraying to reduce the dust emission. ET carried out the investigation on 4th October 2016 to resolve the concern.

7.4 Summary of Environmental Summon and Successful Prosecution

No successful environmental prosecution or notification of summons was received in the reporting period.

The cumulative log for environmental exceedance, non-compliance, complaint, summons and successful prosecution since the commencement of the Project is presented in Appendix H.

8 Future Key Issues

The major construction activities in the coming month will include:

- Open cut tunnel: DT&UT general cleaning and defect rectification, re-bar fixing at uptrack stitch joint will be commenced, sheetpile extraction, 1108/09 TAM grouting.
- Cut and cover tunnel: Receiving shaft backfill up to ground level, tunnel tracks defect rectification.
- Station: Erection of formworks for oil interceptor and manholes at SVS and NVS, concreting of base of oil interceptor and manholes at NVS, drainage works at all area, backfilling for DCS cable ducting, installation of steel roof frame at Entrance A, installation of brackets for roof cladding and reflected ceiling at Entrance B, installation of roof cladding at Entrance D, plumbing works at all area, installation of 5W at all area.

Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise, water quality and waste management. The Contractor has been reminded to properly implement dust, construction noise and water quality control measures as well as proper waste management in order to minimize the potential environmental impacts due to the construction works of the Project.

9 Conclusions and Recommendations

9.1 Conclusions

This is the forty first monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works undertaken during 1st October 2016 to 31st October 2016 in accordance with the EM&A Manual and the requirement under EP-438/2012/J and EP-438/2012/K.

4 nos. of environmental site inspections were carried out in this reporting month. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.

A complaints received on 13th September 2016 was referred from EPD on 4th October 2016 regarding the dust emission from the construction work and he requested the site provide enough preventive measures such as enough water spraying to reduce the dust emission. ET carried out the investigation on 4th October 2016 to resolve the concern.

No exceedances, non-compliance event 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

- N/A

Air Quality Impact

- Keep the dusty haul road in wet for dust reduction.
- Increase the watering frequencies on the dusty area for dust suppression.

Water Quality Impact

- Provided the drip tray for all chemical materials to prevent chemical leakage.

Chemical Management

- N/A

Waste Management

- N/A

Cultural Heritage

- Remove the construction materials within the FKCP area and fenced off the FKCP area after removal of construction materials.

Appendix A – Site Location Plan



LEGEND:
 - - - - - SITE BOUNDARY

PLOT DRW: \\Site Layout Plan.dgn
 MODELNAME: E:\1008\Kai Tak Station and Associated Tunnels Site Layout Plan.dgn
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 DATE: 8/27/2014 8:53:35 AM

DRAWN		CC			SHATIN TO CENTRAL LINK	TITLE	CONTRACT 1108 KAI TAK STATION AND ASSOCIATED TUNNELS SITE LAYOUT PLAN				
DESIGNED		KW				ORIGINATOR	 Kaden - Chun Wo Joint Venture	SCALE	1 : 1500 (A1)		
CHECKED		ET				CADD REF.		DRAWING NO.		REV.	
APPROVED		BW				Site Layout Plan.dgn		SITE LAYOUT PLAN		A	
DATE		11/AUG/2014		<small>DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE. IN THE EVENT OF A DISCREPANCY BETWEEN THE DRAWING AND THE FIELD, THE FIELD SHALL PREVAIL. NO REPRODUCTION OF THIS DRAWING OR DOCUMENT IS PERMITTED WITHOUT THE WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.</small>							
REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED		
A	FIRST SUBMISSION	KW	11/08/14	BW							

Appendix B – Construction Programme

Activity ID	Activity Name	Activity % Complete	Start	Finish	October					November					December					January					February	
					43					44					45					46					47	
					02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05			
Contract 1108 Kai Tak Station and Associated Tunnels																										
Contractual Dates and Project Key Dates																										
Critical Dates																										
Schedule of Options																										
Latest Exercising Date																										
01108.CDO1a-ED	Option 1a - Temporary passenger access roads within KTD & EVA above KAT-	0%	31-Oct-16*																							
01108.CDO1b-ED	Option 1b - Temporary passenger access road to connect Entrance D - Lates	0%	31-Oct-16*																							
01108.CDO2a-ED	Option 2a - Roads L9 & L16 & Associated Works, except the works in Optic	0%	31-Oct-16*																							
01108.CDO2b-ED	Option 2b - Landscape hardwork, irrigation facilities, softworks & pavers - l	0%	31-Oct-16*																							
01108.CDO2c-ED	Option 2c - Establishment works of the landscape softworks in Option 2b -	0%	31-Oct-16*																							
Specified Parts Completion of the Works (General Damages Applicable)																										
01108.CD3C	3C - Complete backfill of KAT station (Grid 12-19)&ready for EMSD/ DCScoi	0%		31-Oct-16*																						
01108.CD3D	3D - Complete backfill to ex.ground level of necessary station area for CLP	0%			01-Nov-16*																					
Specified Degrees of Completion (General Damages / * Liquidated Damages Applicable)																										
Structures																										
01108.CD4F2	4F2 - Deg2, Sung Wong Toi Emergency Egress Point (Week No. 39/15, 27-Si	0%																								
01108.CD4A3	4A3 - Deg3, KAT Platform level (Week No. 48/15, 29-Nov-15)	0%																								
01108.CD4C1	4C1 - Deg1, KAT Entrances & Supplementary Emergency Entrance (Week Nc	0%																								
Trackwork Accesses																										
01108.CD4D1	4D1 - Deg1, Trackwork Access,crane p'form&P-way access opn'g-D/T Tunnel	0%																								
01108.CD4E1	4E1 - Deg1, Trackwork Access,crane p'form&P-way access opn'g-U/T Tunnel	0%																								
IPS Milestone Dates																										
Cost Centre B - Kai Tak Station, Entrances and Adits																										
01108.MSB07b	B7 - Complete backfill to Ground Level (Week No. 33/15, 16-Aug-15)	0%																								
01108.MSB08	B8 - Complete all structural works for Above-Ground Level (Week No. 42/1	0%																								
Cost Centre D - Associated Works																										
01108.MSD020	D2 - Complete External Drainage (Week No. 52/15, 27-Dec-15)	0%																								
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 Materi	0%																								
01108.MSF02	F2 - Shop drawings & material submissions approved (Week No. 50/15, 13	0%																								
Cost Centre G - Option 3 - CEDD Entrusted Works for Reconstruction & Upgrading of Kai Tak Nullah																										
01108.MSG03	G3 - Complete works for reconstruction & upgrading of Kai Tak Nullah-MTI	0%																								
Schedule of Access & Vacate Dates for Works Areas																										
Possession Dates																										
Works Areas																										
01108.ACW05	Works Area 1108.W5 (04-Jan-16)	0%	31-Oct-16*																							
Vacation Dates																										
Works Areas																										
01108.VAW08	Works Area 1108.W8 (31-Jul-15)	0%																								
01108.VAW10	Works Area 1108.W10 (31-Jul-15)	0%																								
01108.VAWA3	Works Area 1108.A3 (31-Dec-14)	0%																								
01108.VAWA1	Works Area 1108.A1 (31-Dec-16)	0%																								
Schedule of Access Dates for Designated Contractors																										
Various Systems - DC1152, DC1153, DC1154, DC1155, DC1166, DC1169A, DC1162A & DC1163																										
01108.IF1163	DC1163 AFC & SAM Systems - KAT - Platform level, Concourse Level (Week	0%	20-Dec-16*																							
DC 1174 Building Services																										
01108.IF1174.3	DC1174 BS for KAT - KAT - All Entrances (Week No. 44/15, 01-Nov-15)	0%	24-Jan-17*																							
A - Preliminaries																										
B - Kai Tak Station, Entrances and Adits																										
B1 KAT Station																										
B1.3 Station - U/G C&S Works (Below Concourse Level Soffit)																										
Metalworks, BWIC with Services and BS Works																										
01108.STN.BW12-24	GL 12~24 BWIC and BS works	90%	28-Feb-15 A	08-Nov-16																						
01108.STN.BW04-12	GL 04~12 BWIC and BS works	90%	28-Feb-15 A	05-Nov-16																						

▲	▲ Milestone	—	RMP Rev F
▲	▲ Critical Milestone	▨	Last Report
▨	Critical Remaining Work	█	Actual Work
█	Remaining Work	█	Remaining Level of Effort

Contract 1108
Kai Tak Station and Associated Tunnels
3-months Rolling Programme (Oct 2016)

Activity ID	Activity Name	Activity % Complete	Start	Finish	October					November					December					January					February	
					43					44					45					46					47	
					02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05			
01108.STN.BW00-04	GL 00-04 BWIC and BS works	0%	07-Nov-16	24-Dec-16	[Gantt chart bar]																					
B1.4 Station U/G C&S Works (Concourse Level and Above)																										
Backfilling																										
Backfilling to Finish Ground Level																										
01108.STN.BF12-14.3	GL 12~14 Backfill and compaction, 8240 m3	99%	03-Mar-15 A	31-Oct-16	[Gantt chart bar]																					
01108.STN.BF10-12.3	GL 10~12 Backfill and compaction, 8240 m3	99%	03-Mar-15 A	31-Oct-16	[Gantt chart bar]																					
01108.STN.BF06-08.3	GL 06~08 Backfill and compaction, 8240 m3	99%	03-Mar-15 A	31-Oct-16	[Gantt chart bar]																					
01108.STN.BF14-16.3	GL 14~16 Backfill and compaction, 8240 m3	99%	08-Apr-15 A	31-Oct-16	[Gantt chart bar]																					
01108.STN.BF16-19.3	GL 16~19 Backfill and compaction, 8240 m3	98%	18-Apr-15 A	31-Oct-16	[Gantt chart bar]																					
01108.STN.BF04-06.3	GL 04~06 Backfill and compaction, 8240 m3	98%	30-Jul-15 A	31-Oct-16	[Gantt chart bar]																					
01108.STN.BF00-02.3	GL 00~02 Backfill and compaction, 6040 m3	95%	03-Oct-15 A	01-Nov-16	[Gantt chart bar]																					
01108.STN.BF02-04.3	GL 02~04 Backfill and compaction, 7240 m3	95%	03-Oct-15 A	31-Oct-16	[Gantt chart bar]																					
01108.MSB07bP	Completion of Station backfill and compaction for outside works - Progran	0%		01-Nov-16	[Gantt chart bar]																					
01108.CD3DP	Completion of Station backfill to ex. ground level of necessary atation for C	0%		01-Nov-16	[Gantt chart bar]																					
Water Tanks & CLP Transformer Rooms																										
CLP Transformer Rooms																										
01108.STN.CP215	CLP Transformer Rooms Dedicated Access 2 - AWBF Works	80%	23-Feb-16 A	05-Nov-16	[Gantt chart bar]																					
01108.STN.CP115	CLP Transformer Rooms Dedicated Access 2 - BS Works	0%	31-Oct-16	03-Dec-16	[Gantt chart bar]																					
CLP Interface Works																										
01108.STN.CP620	CLP Transformer Rooms 1~2 - Installation Works (By CLP)	0%	14-Mar-16 A	11-Jan-17	[Gantt chart bar]																					
Metalworks, BWIC with Services and BS Works																										
01108.STN.BW120	KAT Concourse level - BWIC with services	60%	15-Jul-15 A	22-Nov-16	[Gantt chart bar]																					
01108.STN.BW130	KAT Concourse level - BS works	60%	15-Jul-15 A	22-Nov-16	[Gantt chart bar]																					
01108.STN.BW220	KAT Concourse level - BWIC with services	60%	15-Jul-15 A	22-Nov-16	[Gantt chart bar]																					
01108.STN.BW230	KAT Concourse level - BS works	60%	15-Jul-15 A	16-Nov-16	[Gantt chart bar]																					
B1.5 Station - A/G C&S Works (Vent Shaft)																										
Souther Vent Shaft																										
01108.STN.SS030	Drainage	60%	04-Dec-15 A	10-Nov-16	[Gantt chart bar]																					
B1.6 Station - Station - A/G C&S Works (Entrance D & DEE)																										
Entrance D																										
01108.STN.ED040	Metal works	0%	01-Nov-16	13-Jan-17	[Gantt chart bar]																					
Designated Emergency Entrance (DEE)																										
01108.STN.DE030	Drainage	0%	31-Oct-16	19-Nov-16	[Gantt chart bar]																					
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	95%	28-Feb-15 A	02-Nov-16	[Gantt chart bar]																					
ABWF Works - Degree 2 of Completion																										
01108.STN.CD4A2P3a	KAT Platform level - GL 4~1 Degree 2 of completeion - Door,wall&ceiling fr	95%	02-Jun-15 A	03-Nov-16	[Gantt chart bar]																					
01108.STN.CD4A2P2a	KAT Platform level - GL 12~4 Degree 2 of completeion - Door frame, m. sta	95%	03-Aug-15 A	02-Nov-16	[Gantt chart bar]																					
01108.STN.CD4A2P1a	KAT Platform level - GL 24~12 Degree 2 of completeion - Door frame, m. st	95%	03-Aug-15 A	02-Nov-16	[Gantt chart bar]																					
01108.CD4A2P	KAT Platform level - Degree 2 of completion (Week No. 33/15, 16-Aug-15)	0%		24-Dec-16	[Gantt chart bar]																					
ABWF Works - Degree 3 of Completion																										
01108.STN.CD4A3P1a	KAT Platform level GL 24~12 Degree 3 of completeion - Int.&ext. to ceiling	42%	03-Oct-15 A	01-Dec-16	[Gantt chart bar]																					
01108.STN.CD4A3P2a	KAT Platform level GL 12~4 Degree 3 of completeion - Int.&ext. to ceiling/	57%	07-Oct-15 A	23-Nov-16	[Gantt chart bar]																					
01108.STN.CD4A3P3a	KAT Platform level GL 4~1 Degree 3 of completion - Int&ext. to ceiling/ wa	42%	11-Nov-15 A	17-Dec-16	[Gantt chart bar]																					
01108.STN.CD4A3P1b	KAT Platform level GL 24~12 Degree 3 of completeion - Glazing, permanen	10%	29-Aug-16 A	20-Dec-16	[Gantt chart bar]																					
01108.STN.CD4A3P2b	KAT Platform level GL 12~4 Degree 3 of completeion - Glazing, permanent	10%	29-Aug-16 A	20-Dec-16	[Gantt chart bar]																					
01108.CD4A3P	KAT Platform level - Degree 3 of completion (Week No. 48/15, 29-Nov-15)	0%		20-Dec-16	[Gantt chart bar]																					
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 - Bloc	85%	10-Feb-15 A	09-Nov-16	[Gantt chart bar]																					
01108.STN.CD4B1P2a	KAT Concourse level, exclude 4G - GL 12~4 Degree 1 of completion - Block	90%	10-Feb-15 A	05-Nov-16	[Gantt chart bar]																					
01108.STN.CD4B1P3a	KAT Concourse level, exclude 4G- GL 4~1 Degree 1 of completion- Blockwo	75%	03-Oct-15 A	16-Nov-16	[Gantt chart bar]																					
01108.STN.CD4B1P2b	KAT Concourse level, exclude 4G - GL 12~4 Degree 1 of completion - E&M	75%	17-May-16 A	16-Nov-16	[Gantt chart bar]																					
01108.STN.CD4B1P1b	KAT Concourse level, exclude 4G - GL 24~12 Degree 1 of completion - E&M	75%	17-May-16 A	16-Nov-16	[Gantt chart bar]																					
01108.CD4B1P	KAT Concourse level, exclude 4G - Degree 1 of completion (Week No. 36/15)	0%		22-Nov-16	[Gantt chart bar]																					

▲ Milestone
 ▲ Critical Milestone
 [Pink bar] Critical Remaining Work
 [Green bar] Remaining Work
 [Blue bar] Remaining Level of Effort
 [Yellow bar] RMP Rev F
 [Hatched bar] Last Report
 [Blue bar] Actual Work

Contract 1108
Kai Tak Station and Associated Tunnels
3-months Rolling Programme (Oct 2016)



Activity ID	Activity Name	Activity % Complete	Start	Finish	October					November					December					January					February	
					43					44					45					46					47	
					02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05			
ABWF Works - Degree 2 of Completion																										
01108.STN.CD4B2P2a	KAT Concourse level, exclude 4G - GL 12~4 Degree 2 of completion - Bloc	50%	22-Sep-15 A	03-Dec-16																						
01108.STN.CD4B2P1a	KAT Concourse level, exclude 4G - GL 24~12 Degree 2 of completion - Blo	50%	22-Sep-15 A	03-Dec-16																						
01108.STN.CD4B2P3a	KAT Concourse level, exclude 4G - GL 4~1 Degree 2 of completion - Block	45%	20-Oct-15 A	07-Dec-16																						
01108.STN.CD4B2P1b	KAT Concourse level, exclude 4G - GL 24~12 Degree 2 of completion - E&I	35%	20-Jun-16 A	14-Dec-16																						
01108.STN.CD4B2P2b	KAT Concourse level, exclude 4G - GL 12~4 Degree 2 of completion - E&M	35%	20-Jun-16 A	14-Dec-16																						
01108.STN.CD4B2P3b	KAT Concourse level, exclude 4G - GL 4~1 Degree 2 of completion - E&M	0%	08-Dec-16	22-Feb-17																						
ABWF Works - Degree 3 of Completion																										
01108.STN.CD4B3P2a	KAT Concourse level, exclude 4G - GL 12~4 Degree 3 of completion - Int.&	65%	20-Oct-15 A	28-Dec-16																						
01108.STN.CD4B3P3a	KAT Concourse level, exclude 4G - GL 4~1 Degree 3 of completion - Int.&E	65%	20-Oct-15 A	06-Feb-17																						
01108.STN.CD4B3P1a	KAT Concourse level, exclude 4G - GL 24~12 Degree 3 of completion - Int.	65%	20-Oct-15 A	21-Nov-16																						
01108.STN.CD4B3P1b	KAT Concourse level, exclude 4G - GL 24~12 Degree 3 of completion - Gla	35%	18-Apr-16 A	04-Jan-17																						
01108.STN.CD4B3P2b	KAT Concourse level, exclude 4G - GL 12~4 Degree 3 of completion - Glazi	0%	28-Dec-16	06-Mar-17																						
B1.9 Station- ABWF Works (A/G Vent Shaft)																										
01108.STN.VS120	Wall finishes	30%	25-Apr-16 A	28-Dec-16																						
01108.STN.VS140	External wall finishes	45%	13-Jun-16 A	07-Dec-16																						
01108.STN.VS130	Ceiling finishes	0%	31-Oct-16	23-Jan-17																						
01108.STN.VS110	Floor finishes	0%	31-Oct-16	23-Jan-17																						
01108.STN.VS150	External roof finishes	0%	08-Dec-16	22-Feb-17																						
01108.STN.VS160	Metal works and architectural elements	0%	24-Jan-17	22-Apr-17																						
B1.10 Station - ABWF (A/G Entrance D & DEE)																										
01108.STN.DE060	Lift - ABWF Works	0%	31-Oct-16	11-Jan-17																						
01108.STN.ED060	Escalators - ABWF Works	0%	08-Nov-16	20-Jan-17																						
01108.STN.DE070	E&M Works for Lift installation	0%	28-Nov-16	11-Feb-17																						
01108.STN.ED070	E&M Works for Escalators installation	0%	13-Dec-16	28-Feb-17																						
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-Oct-16	29-Nov-16																						
01108.STN.DN04.3.3	Entrance A & SEE - Design No-adverse-comment by RDO/ BD/ GEO	0%	30-Nov-16	06-Jan-17																						
B2.2 Entrance A, Adit & SEE - C&S Works																										
Entrance A, Adit and SEE																										
01108.STN.PF610	Backfill and compaction, 3165 m3 for Adit & See	85%	01-Apr-16 A	05-Nov-16																						
01108.STN.PF600	Backfill and compaction, 3165 m3 for Entrance A	85%	01-Apr-16 A	02-Nov-16																						
01108.STN.EA90	Metal works and finishes for Adit & See	0%	31-Oct-16	23-Jan-17																						
01108.STN.EA030	Drainage for Entrance A	0%	31-Oct-16	09-Dec-16																						
01108.STN.EA040	Metal works and finishes for Entrance A	0%	31-Oct-16	29-Dec-16																						
01108.STN.EA100	Drainage for Adit & See	0%	31-Oct-16	09-Dec-16																						
B2.3 Entrance A, Adit & SEE - ABWF Works																										
Entrance A, Adit and SEE																										
01108.STN.EA050	ABWF Works	25%	31-May-16 A	04-Jan-17																						
01108.STN.EA070	E&M Works for Escalators installation	0%	24-Jan-17	25-Apr-17																						
KAT Entrances & SEE ABWF																										
01108.STN.CD4C1	KAT Entrances & SEE - Works for Degree 1 of completion	0%	31-Oct-16	23-Jan-17																						
01108.CD4C1P	KAT Entrances & SEE - Degree 1 of Completion (01-Nov-15) - Programmed	0%		23-Jan-17																						
01108.STN.CD4C2	KAT Entrances & SEE - Works for Degree 2 of completion	0%	24-Jan-17	22-Apr-17																						
B3 Entrance B and Adit																										
B3.1 Entrance B and Adit - C&S Works																										
Entrance B and Adit																										
01108.STN.EB050	Drainage	0%	31-Oct-16	03-Dec-16																						
01108.STN.EB060	Metal works and finishes	0%	05-Dec-16	04-Mar-17																						
B3.2 Entrance B and Adit - ABWF Works																										
Entrance B and Adit																										
01108.STN.EB110	ABWF Works	55%	04-Jan-16 A	30-Nov-16																						
01108.STN.EB120	E&M Works for Escalators installation	0%	24-Jan-17	07-Apr-17																						

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

Contract 1108
Kai Tak Station and Associated Tunnels
3-months Rolling Programme (Oct 2016)

3 of 7

基利
Kaden – Chun Wo Joint Venture

Activity ID	Activity Name	Activity % Complete	Start	Finish	October					November					December					January					February	
					43					44					45					46					47	
					02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05			
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-advers	90%	24-Apr-15 A	02-Nov-16																						
Dewatering and Observation Wells																										
01108.OCT.DW0020	Ch 99080 to Ch 99185 Dewatering operations & maintenance, additional	70%	30-Apr-14 A	07-Apr-17																						
01108.OCT.DW0030	Ch 99185 to Ch 99218 Dewatering operations & maintenance, additional	80%	01-Nov-14 A	07-Feb-17																						
C1.3 C&S Works																										
Tunnel Construction CH 98975 to CH99217																										
Drainage																										
01108.OCT.DR9227	CH 98975~99217 U-channel, pipe laying, catch pits	5%	17-Jun-16 A	07-Jan-17																						
Tunnel Construction CH 99217 to CH 99257 (Interface with C1109)																										
Drainage																										
01108.OCT.DR9247	CH 98248~98996 U-channel, pipe laying, catch pits	0%	31-Oct-16	26-Nov-16																						
01108.OCT.DR9257	CH 99217~99257 U-channel, pipe laying, catch pits	0%	31-Oct-16	19-Nov-16																						
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	95%	23-Jan-15 A	01-Nov-16																						
01108.OCT.BF9122	CH 99101~99122 Backfill and compaction	95%	03-Feb-15 A	01-Nov-16																						
01108.OCT.BF9059	CH 99038~99059 Backfill and compaction	95%	31-Mar-15 A	01-Nov-16																						
01108.OCT.BF9101	CH 99080~99101 Backfill and compaction	95%	31-Mar-15 A	01-Nov-16																						
01108.OCT.BF9080	CH 99059~99080 Backfill and compaction	95%	31-Mar-15 A	01-Nov-16																						
01108.OCT.BF9038	CH 99017~99038 Backfill and compaction	95%	24-Jun-15 A	01-Nov-16																						
01108.OCT.BF8996	CH 98975~98996 Backfill and compaction	95%	10-Oct-15 A	01-Nov-16																						
01108.OCT.BF9017	CH 98996~99017 Backfill and compaction	95%	16-Oct-15 A	01-Nov-16																						
01108.OCT.BF9206	CH 99185~99206 Backfill and compaction	95%	11-Apr-16 A	31-Oct-16																						
01108.OCT.BF9185	CH 99164~99185 Backfill and compaction	95%	18-Apr-16 A	31-Oct-16																						
01108.OCT.BF9164	CH 99143~99164 Backfill and compaction	95%	18-Apr-16 A	01-Nov-16																						
CSMM Backfill																										
01108.OCT.BF9059c	CH 99038~99059 CSMM backfill, 21mL x 78m2, total 1638 m3	50%	17-Sep-15 A	05-Nov-16																						
01108.OCT.BF9101c	CH 99080~99101 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Oct-16	12-Nov-16																						
01108.OCT.BF9122c	CH 99101~99122 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Oct-16	12-Nov-16																						
01108.OCT.BF8996c	CH 98975~98996 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Oct-16	12-Nov-16																						
01108.OCT.BF9017c	CH 98996~99017 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Oct-16	12-Nov-16																						
01108.OCT.BF9143c	CH 99122~99143 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Oct-16	12-Nov-16																						
01108.OCT.BF9164c	CH 99143~99164 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Oct-16	12-Nov-16																						
01108.OCT.BF9185c	CH 99164~99185 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Oct-16	12-Nov-16																						
01108.OCT.BF9206c	CH 99185~99206 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Oct-16	12-Nov-16																						
01108.OCT.BF9038c	CH 99017~99038 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Oct-16	12-Nov-16																						
01108.OCT.BF9080c	CH 99059~99080 CSMM backfill, 21mL x 78m2, total 1638 m3	0%	31-Oct-16	12-Nov-16																						
Backfill and Compaction Works CH 98578 to CH 98636																										
Formation Level to Finish Ground Level																										
CSMM Backfill																										
01108.OCT.BF8599c	CH 98578~98599 CSMM backfill, 21mL x 72.8m2, total 1529 m3	0%	01-Nov-16	11-Nov-16																						
01108.OCT.BF8620c	CH 98599~98620 CSMM backfill, 21mL x 72.8m2, total 1529 m3	0%	11-Nov-16	22-Nov-16																						
01108.OCT.BF8636c	CH 98620~98636 CSMM backfill, 21mL x 72.8m2, total 1529 m3	0%	22-Nov-16	02-Dec-16																						
Backfill and Compaction Works CH 99217 to CH 99257 and C1109 Interface Area																										
Formation Level to -0.625mPD																										
01108.OCT.BF9257	CH 99238~99257 Backfill and compaction, 19.64mL	95%	11-Apr-16 A	31-Oct-16																						
01108.OCT.BF9257a	CH 99257~C1109 Interface area - Backfill and compaction from -2.5 to -0.	95%	11-Apr-16 A	07-Feb-17																						
01108.OCT.BF9238	CH 99217~99238 Backfill and compaction	95%	11-Apr-16 A	31-Oct-16																						
CSMM Backfill																										
01108.OCT.BF9257c	CH99217~99257 CSMM backfill, 40mL x 72.8m2, total 2912 m3	0%	31-Oct-16	22-Nov-16																						

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

Contract 1108
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Activity ID	Activity Name	Activity % Complete	Start	Finish	October					November					December					January					February	
					43					44					45					46					47	
					02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05			
C2 Mined Tunnels (U=20m; D=19m)																										
C2.2 C&S Works																										
C2.2.4 Tunnel Stitch Joints																										
01108.MT.BF8876	Backfilling to GL within receiving shaft	0%		01-Nov-16																						
01108.MIT.BF8877	Backfilling to GL within launching shaft	0%		01-Nov-16																						
01108.MIT.TC8866s20	U/T CH 98870 Stitch joint at tunnel	0%	01-Nov-16	07-Nov-16																						
01108.MIT.TC8898s20	D/T CH 98882 Stitch joint at tunnel	0%	01-Nov-16	07-Nov-16																						
01108.MIT.TC8897s20	U/T CH 98900 Stitch joint at tunnel	0%	07-Nov-16	14-Nov-16																						
01108.MIT.TC8899s20	D/T CH 98910 Stitch joint at tunnel	0%	14-Nov-16	19-Nov-16																						
01108.MSC07p20	C7 Complete tunnel structures (Week No. 13/15, 29-Mar-15) - Programmed	0%		19-Nov-16																						
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/ E	95%	20-Aug-13 A	01-Nov-16																						
01108.CCT.DN05.2.3	CCT ELS (CH 98750 to 98976) - Design No-adverse-comment by RDO/ BD/ I	95%	23-Dec-13 A	31-Oct-16																						
C3.3 C&S Works																										
Tunnel Construction CH 98650 to CH 98840																										
Top Slabs																										
01108.CCT.TR8750	Trackwork access shaft	0%	01-Nov-16	22-Nov-16																						
Drainage																										
01108.CCT.DR9005	CH98755~98840 U-channel, pipe laying, catch pits, 210mL	0%	01-Nov-16	04-Jan-17																						
Tunnel Construction CH 98928 to CH 98975																										
Drainage																										
01108.CCT.DR8985	CH98928~98975 U-channel, pipe laying, catch pits, 50mL	0%	31-Oct-16	28-Nov-16																						
Tunnel Construction CH 98840 to CH 98866 & CH 98907 to CH 98928																										
Base Slabs																										
01108.MSC05PP	C5 - Complete mined tunnels included lining (Week. No. 42/14, 19-Oct-14)	0%		31-Oct-16																						
Top Slabs																										
01108.CCT.TR8985	Closing of Opening at top Slab at Receiving shaft	0%	31-Oct-16	07-Nov-16																						
01108.CCT.TR8995	Closing of Opening at top Slab at Launching shaft	0%	31-Oct-16	07-Nov-16																						
Drainage																										
01108.CCT.DR8995	CH98840~98866 & 98907~98928 U-channel, pipe laying, catch pits, 41 mL	0%	29-Nov-16	19-Dec-16																						
Backfill and Compaction																										
Backfill and Compaction CH 98650 to CH 98840																										
01108.CCT.BF8678	CH98671~98692 Backfill, compaction & remove strut, 8470m3	95%	04-Sep-14 A	31-Oct-16																						
01108.CCT.BF8720	CH98713~98734 Backfill, compaction & remove strut, 8470m3	95%	30-Sep-14 A	31-Oct-16																						
01108.CCT.BF8657	CH98650~98671 Backfill, compaction & remove strut, 8470m3	95%	30-Sep-14 A	31-Oct-16																						
01108.CCT.BF8741	CH98734~98755 Backfill, compaction & remove strut, 8470m3	95%	16-Oct-14 A	31-Oct-16																						
01108.CCT.BF8762	CH98755~98776 Backfill, compaction & remove strut, 8470m3	95%	07-Aug-15 A	31-Oct-16																						
01108.CCT.BF8783	CH98776~98797 Backfill, compaction & remove strut, 8470m3	95%	10-Mar-16 A	31-Oct-16																						
01108.CCT.BF8804	CH98797~98818 Backfill, compaction & remove strut, 8470m3	95%	10-Mar-16 A	01-Nov-16																						
01108.CCT.BF8825	CH98818~98840 Backfill, compaction & remove strut, 8470m3	95%	10-Mar-16 A	01-Nov-16																						
CSMM Backfill CH 98650 to CH 98840																										
01108.CCT.BF8720c	CH98707~98720 CSMM backfill, 13mL x 42m2, total 546 m3	0%	31-Oct-16	05-Nov-16																						
01108.CCT.BF8741c	CH98720~98741 CSMM backfill, 21mL x 42m2, total 882 m3	0%	07-Nov-16	16-Nov-16																						
01108.CCT.BF8757c	CH98741~98757 CSMM backfill, 16mL x 42m2, total 672 m3	0%	17-Nov-16	24-Nov-16																						
01108.CCT.BF8786c	CH98779~98786 CSMM backfill, 7mL x 42m2, total 294 m3	0%	25-Nov-16	29-Nov-16																						
01108.CCT.BF8804c	CH98786~98804 CSMM backfill, 18mL x 42m2, total 756 m3	0%	30-Nov-16	09-Dec-16																						
01108.CCT.BF8825c	CH98804~98825 CSMM backfill, 21mL x 42m2, total 882 m3	0%	09-Dec-16	20-Dec-16																						
01108.CCT.BF8836c	CH98825~98840 CSMM backfill, 21mL x 42m2, total 882 m3	0%	20-Dec-16	03-Jan-17																						
Backfill and Compaction CH 98928 to CH 98975																										
01108.CCT.BF8947	CH98928~98947 Backfill, compaction & remove strut, 6992m3	95%	09-Dec-15 A	01-Nov-16																						
01108.CCT.BF8966	CH98947~98966 Backfill, compaction & remove strut, 6992m3	95%	09-Dec-15 A	01-Nov-16																						
01108.CCT.BF8975	CH98966~98975 Backfill, compaction & remove strut, 3496m3	95%	09-Dec-15 A	31-Oct-16																						
CSMM Backfill CH 98928 to CH 98975																										

▲	▲ Milestone	—	RMP Rev F
▲	▲ Critical Milestone	▨	Last Report
■	■ Critical Remaining Work	■	Actual Work
■	■ Remaining Work		
■	■ Remaining Level of Effort		

Contract 1108
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3-months Rolling Programme (Oct 2016)



Activity ID	Activity Name	Activity % Complete	Start	Finish	October				November				December				January				February		
					43				44				45				46				47		
					02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05
01108.CCT.BF8947c	CH98903~98947 CSMM backfill, 37mL x 39.2m2 + 7mL x 78m2, total 19	0%	31-Oct-16	26-Nov-16																			
01108.CCT.BF8966c	CH 98947~98966 CSMM backfill, 19mL x 78m2, total 1482 m3	0%	28-Nov-16	28-Dec-16																			
01108.CCT.BF8975c	CH 98966~98975 CSMM backfill, 10mL x 78m2, total 780 m3	0%	28-Dec-16	17-Jan-17																			
Backfill and Compaction CH 98840 to CH 98864 & CH 98900 to CH 98928																							
01108.CCT.BF8928	CH98907~98928 Backfill, compaction & remove strut, 7729m3	95%	09-Dec-15 A	31-Oct-16																			
01108.CCT.BF8866	CH98846~98866 Backfill, compaction & remove strut, 7341m3	95%	09-Dec-15 A	31-Oct-16																			
CSMM Backfill CH 98846 to CH 98866 & CH 98907 to CH 988928																							
01108.CCT.BF8860c	CH98846~98860 CSMM backfill, 14mL x 42m2, total 588 m3	0%	03-Jan-17	10-Jan-17																			
C5 SUA																							
C5.2 SUA - ABWF Works																							
01108.OCT.SU310	At CH99088/GL A1~A2 SUA - ABWF works & works for Degree 2 of comple	43%	30-Apr-16 A	09-Dec-16																			
01108.OCT.SU320	At CH99088/GL A2~C2 SUA - ABWF works& works for Degree 2 of complet	43%	30-Apr-16 A	09-Dec-16																			
01108.OCT.SU410	At CH99088/GL A1~A2 SUA - ABWF works & works for Degree 3 of comple	0%	09-Dec-16	08-Mar-17																			
C6 Access Shafts																							
C&S Works																							
C6.1.1 External Walls																							
01108.OCT.AS050	CH98746~98768 Access shaft - Temporary Wall 0.4mT 200mm above exist	0%	31-Oct-16	03-Dec-16																			
D - Associated Works																							
D1 Utilities																							
Fresh and Salt Watermains																							
01108.AWW.F010	Fresh watermain, 309m	50%	20-May-16 A	03-Dec-16																			
01108.AWW.S010	Salt watermain, 299m	50%	20-May-16 A	11-Jan-17																			
D2 Drainage																							
Sewerage and Stormwater																							
01108.AWD.S010	Storm sewer, S1.2~S1.3~S1.6, S1.4~S1.3, S2.1~S2.4~S1.6; DP-7~S2.4: 633n	60%	15-Dec-15 A	20-Dec-16																			
01108.AWD.F010	Foul sewer, F1.3~F1.4~MH10, F1.7~F.14: 180m, 6 nr. MH	70%	15-Dec-15 A	16-Nov-16																			
01108.AWD.F020	Foul sewer, F1.1~F1.3, 100m, 2 nr. MH	100%	03-Oct-16 A	17-Oct-16 A																			
01108.AWD.S020	Storm sewer, S1.1~S1.2: 35m, 1 nr. MH	0%	01-Nov-16	14-Nov-16																			
01108.AWD.C010	U-channels, 197 m straight, 24 m curved	0%	16-Nov-16	21-Dec-16																			
D3 Instrumentation and Monitoring																							
Instrumentation Installation and Monitoring																							
01108.AWM.0030	Regular Monitorings and Submit Monitoring Reports (weekly for 50 months)	78%	01-Aug-13 A	09-Sep-17																			
D4 Landscape																							
External Road and Paving																							
01108.AWR.0010	Filling to road formation level, 5430 m3	0%	10-Dec-16	25-Feb-17																			
01108.AWR.0020	Kerb foundation, concrete kerbs & edgings, 830 m	0%	04-Jan-17	18-Mar-17																			
01108.AWR.0030	Type 1 granular sub-base, road base, sand base, geotextile soil & copping l	0%	25-Jan-17	10-Apr-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-Oct-16																			
01108.AWD.DN09.5.3	KTND Temporary Channel - Design - No-adverse-comment by DSD & RDO/ I	98%	16-Jan-14 A	31-Oct-16																			
E Option 1 SCL Works																							
Option 1a Temp. Passenger Access Roads connecting Station Entrances with Carriageways																							
Preliminaries																							
01108.O1A.PRE.010	Submission of drawings & permanent works material control schedules	0%	31-Oct-16	26-Nov-16																			
01108.O1A.PRE.020	Submission of shop drawings & materials & Approval	0%	28-Nov-16	24-Dec-16																			
Temporary Passenage Access Road ER3, 4, 5, 7 & 8																							
01108.O1A.TPA.010	Formation leveling, 2280 m2	0%	31-Oct-16	25-Jan-17																			
01108.O1A.TPA.020	Kerb foundation, concrete kerbs & edgings, 976 m	0%	14-Nov-16	11-Feb-17																			
01108.O1A.TPA.030	Type 1 granular sub-base, sand base, geotextile soil & copping layer, 2280	0%	28-Nov-16	25-Feb-17																			
01108.O1A.TPA.040	Recycle aggregate concrete blocks, 2280 m2	0%	28-Dec-16	11-Mar-17																			
01108.O1A.TPA.050	Chain link fence & 1m r/c concrete footing, 976m, & temporary lighting ai	0%	16-Jan-17	29-Mar-17																			
Option 1b Temp. Passenger Access Roads connecting Entrance D with Pedestrian Strip																							

△ Milestone	— RMP Rev F
▲ Critical Milestone	▬ Last Report
█ Critical Remaining Work	█ Actual Work
█ Remaining Work	
█ Remaining Level of Effort	

Contract 1108
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Activity ID	Activity Name	Activity % Complete	Start	Finish	October					November					December					January					February	
					43					44					45					46					47	
					02	09	16	23	30	06	13	20	27	04	11	18	25	01	08	15	22	29	05			
Temporary Passenage Acces Road ER6																										
01108.CDO1B.EDP	Option 1b SCL Works - Temp. Passenger Access Road - Latest Exercinsg Date	0%	31-Oct-16																							
01108.O1B.TPA.010	Formation leveling, 2343 m2	0%	05-Dec-16	04-Mar-17																						
01108.O1B.TPA.020	Kerb foundation, concrete kerbs & edgings, 368 m	0%	23-Dec-16	23-Mar-17																						
01108.O1B.TPA.030	Type 1 granular sub-base, sand base, geotextile soil & copping layer, 2343 m2	0%	10-Jan-17	07-Apr-17																						
01108.O1B.TPA.040	Recycle aggregate concrete blocks, 2343 m2	0%	24-Jan-17	25-Apr-17																						
F Option 2 CEDD Entrusted Works for Roads L9 & L16 & Associated Works																										
G Option 3 CEDD Entrusted Works for Reconstruction of Kai Tak Nullah																										
Fencing																										
Fencing																										
01108.O3.DEM010	Chainlink fence, 373 m	0%	31-Oct-16	03-Dec-16																						
Drainage & Duct																										
01108.O3.DRP020	PC drainage pipes, connections	0%	31-Oct-16	03-Dec-16																						
01108.O3.DRP010	Balancing hole chamber ladder, covers, etc.	0%	12-Jan-17	04-Mar-17																						
Construction of Nullah																										
Nullah - Twin-cell Box Culvert (SOL 01)																										
01108.O3.SL3070	Inpection manhole with balancing hole chamber (within W9)	0%	31-Oct-16	11-Jan-17																						
01108.O3.SL1030	Vacation Date for Works Area 1108.W8 (31-Jul-15) programmed	0%		31-Oct-16*																						
01108.O3.SL1040	Vacation Date for Works Area 1108.W10 (31-Jul-15) programmed	0%		31-Oct-16*																						
Nullah - Twin-cell Box Culvert (SOL 03)																										
01108.O3.SL3040	Inpection manhole with balancing hole chamber (within W9)	0%	31-Oct-16	11-Jan-17																						
Backfill																										
01108.O3.ERW120	Backfill & compaction to finish ground level - Remaining	99%	06-Jun-16 A	31-Oct-16																						
01108.O3.ERW110	Backfill & compaction to finish ground level in/ at Works Areas 1108.W8 & W10 (31-May-15) - Pr	99%	06-Jun-16 A	31-Oct-16																						
01108.CDO.CDa1P	Completion of works in/ at Works Areas 1108.W8 & W10 (31-May-15) - Pr	0%		31-Oct-16																						
01108.O3.ERW130	Defective works & reinstatement works	0%	31-Oct-16	05-Dec-16																						

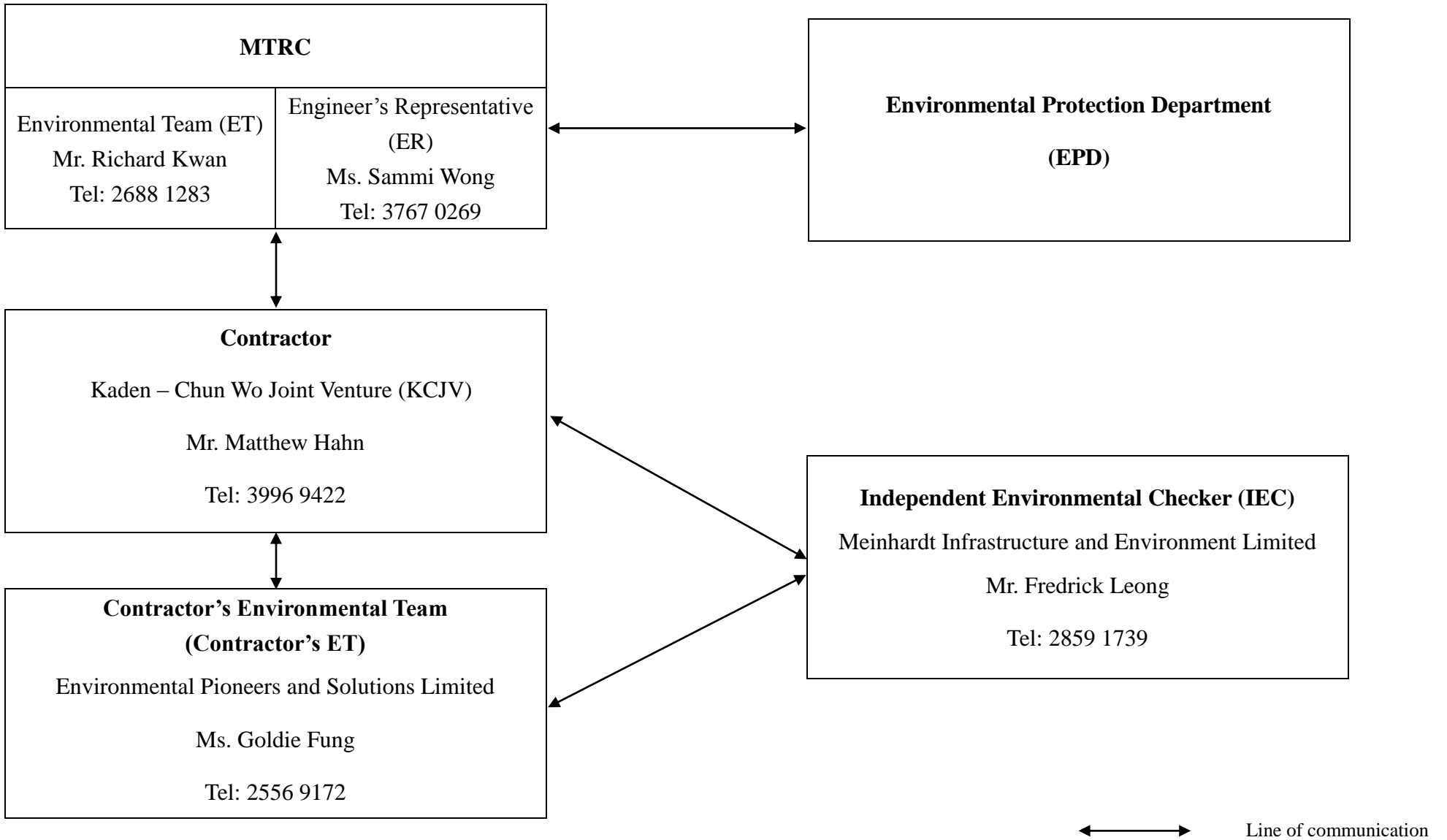
△ Milestone	— RMP Rev F
▲ Critical Milestone	▨ Last Report
█ Critical Remaining Work	█ Actual Work
█ Remaining Work	
█ Remaining Level of Effort	

Contract 1108
Kai Tak Station and Associated Tunnels
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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)
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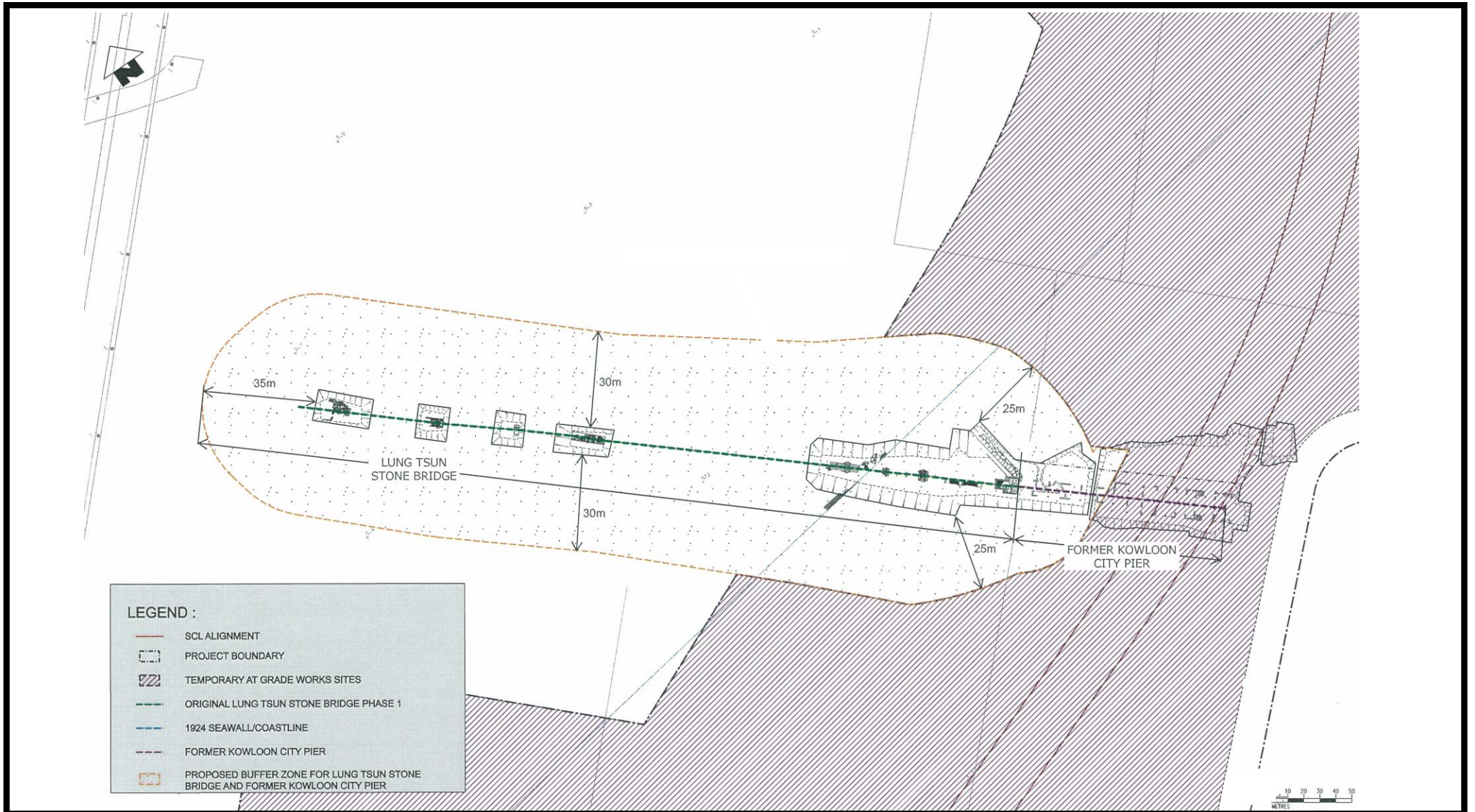
Contractor Kaden – Chun Wo Joint Venture (KCJV) Mr. Matthew Hahn Tel: 3996 9422

Contractor's Environmental Team (Contractor's ET) Environmental Pioneers and Solutions Limited Ms. Goldie Fung Tel: 2556 9172

Independent Environmental Checker (IEC) Meinhardt Infrastructure and Environment Limited Mr. Fredrick Leong Tel: 2859 1739
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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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 <u>2016</u> (year)											
Month	<u>Actual Quantities of Inert C&D Materials Generated Monthly</u>						<u>Actual Quantities of Non-inert C&D Materials Generated Monthly</u>				
	Total Quantity Generated/ Received	Hard Rocks & Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill		Metals	Paper / cardboard packaging	Plastics	Chemical waste	Others (general refuse)
					1108A*	CEDD [#]					
(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	46.690	0.000	46.690	0.000	0.000	0.000	0.003	0.177	0.001	0.000	0.195
Feb	574.005	0.000	574.005	0.000	0.000	0.000	11.952	0.065	0.000	0.000	0.119
Mar	38.926	0.000	38.926	0.000	0.000	0.000	8.620	0.000	0.000	0.000	0.121
Apr	38.352	0.000	38.352	0.000	0.000	0.000	13.060	0.094	0.000	0.000	0.093
May	12.298	0.000	12.298	0.000	0.000	0.000	17.532	0.053	0.001	0.000	0.099
Jun	52.734	0.000	52.734	0.000	0.000	0.000	0.003	0.049	0.002	0.000	0.096
Sub-total	763.005	0.000	763.005	0.000	0.000	0.000	51.170	0.438	0.004	0.000	0.723
July	53.274	0.000	53.274	0.000	0.000	0.000	14.834	0.098	0.002	1.000	0.116
August	42.262	0.000	42.262	0.000	0.000	0.000	0.000	0.087	0.001	0.000	0.150
September	31.306	0.000	31.306	0.000	0.000	0.000	0.000	0.070	0.000	0.000	0.098
October	44.080	0.000	44.080	0.000	0.000	0.000	0.000	0.076	0.000	0.000	0.131
November											
December											
Total	933.927	0.000	933.927	0.000	0.000	0.000	66.004	0.769	0.007	1.000	1.218
Year 2015	368.534	0.000	322.676	0.000	45.857		208.770	1.042	0.163	1.280	2.171
Year 2014	311.876	0.000	39.476	0.000	272.400		103.280	0.855	0.056	1.540	1.484
Year 2013	144.512	0.000	0.000	0.000	144.512		93.330	0.030	0.000	0.480	2.568
Grand Total	1758.849	0.000	1296.079	0.000	462.769		471.384	2.696	0.226	4.300	7.441

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
<i>Cultural Heritage Impact (Construction and Operational Phase)</i>							
S4.9	CH1	Maintain a buffer distance as shown in Appendix D . A 1.8-2.2m vertical separation distance shall be maintained between the top of tunnel and the piles of the Former Kowloon City Pier.	Reserve sufficient area for necessary archaeological conservation and display works for Lung Tsun Stone Bridge in the future. Avoid direct impact on the Lung Tsun Stone Bridge and the Former Kowloon City Pier.	MTR Corporation Contractor	Lung Tsun Stone Bridge & Former Kowloon City Pier.	During the Construction of the tunnel section at Kai Tak	✓
-	-	Adopt best management practices.	-	MTR Corporation Contractor	Former Kowloon City Pier.	During the Construction of the tunnel section at Kai Tak	*
<i>Landscape & Visual (Construction Phase)</i>							
S6.9.3	LV1	The following good site practices and measures for minimisation and avoidance of potential impacts are recommended: <u>Re-use of Existing Soil</u>	Minimize visual & landscape impact	Contractor	Within Project Site	Construction stage	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		<ul style="list-style-type: none"> 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	<p><u>Decorative Hoarding</u></p> <ul style="list-style-type: none"> 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 <p><u>Management of facilities on work sites</u></p> <ul style="list-style-type: none"> 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. <p><u>Tree Transplanting</u></p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> ✓ ✓ N/A

Air Quality (Construction Phase)

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
/	A1	<u>Emission from Vehicles and Plants</u> <ul style="list-style-type: none"> All vehicles shall be shut down in intermittent use. Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD). 	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	✓ ✓ ✓
/	A2	Open burning shall be prohibited.	Reduce air pollution emission from work site	Contractor	All construction sites	Construction stage	✓
Construction Dust Impact							
S7.6.5	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	✓
S7.6.5	D2	Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road in the Kowloon area should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.8 L/m ² to achieve the dust removal efficiency.	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	✓
S7.6.5	D3	<ul style="list-style-type: none"> 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 	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
		<p>the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;</p> <ul style="list-style-type: none"> • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided and properly maintained as far as practicable along the site boundary with provision for public crossing; Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of 					<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>

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
		<p>dusty materials;</p> <ul style="list-style-type: none"> • 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; • 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, 					<p>✓</p> <p>✓</p> <p>N/A</p> <p>✓</p> <p>✓</p> <p>✓</p>

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
		<p>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</p> <ul style="list-style-type: none"> Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies. 					N/A
Construction Noise (Airborne)							
S8.3.6	N1	<p>Implement the following good site practices:</p> <ul style="list-style-type: none"> only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; 	Control construction airborne noise	Contractor	All construction sites	Construction stage	<p>✓</p> <p>✓</p> <p>✓</p>

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
		<ul style="list-style-type: none"> • 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. 					<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>
S8.3.6	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites	Construction stage	✓
S8.3.6	N3	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressor, generators and saw.	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction stage	✓
S8.3.6	N4	Use “Quiet plants”	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	✓
S8.3.6	N5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
<i>Water Quality (Construction Phase)</i>							
S10.7.1	W1	<p>In accordance with the Practice Noise for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following:</p> <p><u>Construction Runoff and Site Drainage</u></p> <ul style="list-style-type: none"> At the start of site establishment (including the barging facilities), perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction. The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates 	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	<p>✓</p> <p>✓</p>

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
		<ul style="list-style-type: none"> <li data-bbox="347 379 1068 790">• 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. <li data-bbox="347 815 1068 1029">• All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces should be covered by tarpaulin or other means. <li data-bbox="347 1054 1068 1321">• The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all traffic areas and access roads protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows. <li data-bbox="347 1347 1068 1417">• All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and 					<ul style="list-style-type: none"> <li data-bbox="1937 379 2150 790">✓ <li data-bbox="1937 815 2150 1029">✓ <li data-bbox="1937 1054 2150 1321">✓ <li data-bbox="1937 1347 2150 1417">✓

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
		<p>efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas.</p> <ul style="list-style-type: none"> • Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m³ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. • Precautions be taken at any time of year when rainstorms are 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 					<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>

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
		<p>attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.</p> <ul style="list-style-type: none"> • 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 					<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>

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
		<p>impacts.</p> <ul style="list-style-type: none"> • 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. 					<p>✓</p> <p>✓</p> <p>*</p>
S10.7.1	W2	<p><u>Tunnelling Works</u></p> <ul style="list-style-type: none"> • 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 	To minimize construction water quality impact from tunneling works	Contractor	All tunneling portion	Construction stage	<p>✓</p> <p>✓</p> <p>✓</p>

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
		<p>oil, lubricants and grease from the wastewater.</p> <ul style="list-style-type: none"> Direct discharge of the bentonite slurry (as a result of D-wall and bored tunnelling construction) is not allowed. It should be reconditioned and reused wherever practicable. Temporary storage locations (typically a properly closed warehouse) should be provided on site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC PN 1/94 should be adhered to in the handling and disposal of bentonite slurries. 					✓
S10.7.1	W3	<p><u>Sewage Effluent</u></p> <ul style="list-style-type: none"> 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	<p><u>Groundwater from Contaminated Area:</u></p> <ul style="list-style-type: none"> 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, 	To minimize groundwater quality impact from contaminated area	Contractor	Excavation areas where contamination is found	Construction stage	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		<p>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.</p> <ul style="list-style-type: none"> • If wastewater treatment is deployed, the wastewater treatment unit shall deploy suitable treatment process (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (e.g. TPH) to undetectable range. All treated effluent from wastewater treatment plant shall meet the requirements as stated in TM-Water and should be discharged into the foul sewers. • If groundwater recharging wells are deployed, recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in the Section 2.3 of TM-Water. The baseline groundwater quality shall be determined prior to the selection of the recharge wells, and submit a working 					<p>N/A</p> <p>N/A</p>

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
		<p>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.</p>					
S10.7.1	W7	<p>In order to prevent accidental spillage of chemicals, the following is recommended:</p> <ul style="list-style-type: none"> • All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains. • The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings. • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical 	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	<p>*</p> <p>✓</p> <p>✓</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		Waste) (General) Regulation.					
<i>Waste Management (Construction Waste)</i>							
S11.4.1.1	WM1	<p>On-site sorting of C&D material</p> <ul style="list-style-type: none"> Geological assessment should be carried out by competent persons on site during excavation to identify materials which are not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc). Volcanic rock and Aplite dyke rock should be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them from delivering to crushing facilities. The crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use Details regarding control measures at source site and crushing facilities should be submitted by the Contractors for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc should also be 	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	Contractor	All construction sites	Construction stage	✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		explored.					
S11.5.1	WM2	<p><u>Construction and Demolition Material</u></p> <ul style="list-style-type: none"> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt ‘Selective Demolition’ technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – “Environmental Management on Construction Sites” to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation. 	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
S11.5.1	WM3	<u>C&D Waste</u>	Good site practice to	Contractor	All construction sites	Construction	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measure	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
		<ul style="list-style-type: none"> Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage. 	minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal			stage	<ul style="list-style-type: none"> ✓ ✓
S11.5.1	WM4	<u>General Refuse</u> <ul style="list-style-type: none"> General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from 	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> ✓ ✓

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
		<p>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.</p> <ul style="list-style-type: none"> • 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. 					<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>
S11.5.1	WM6	<p><u>Land-based and Marine-based Sediment</u></p> <ul style="list-style-type: none"> • 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 	To control pollution due to marine sediment	Contractor	Within Project Site Area	Construction Stage	<p style="text-align: center;">✓</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">N/A</p>

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
		<p>exposed fittings of vessels and the excess materials shall never be dumped into the sea except at the approved locations;</p> <ul style="list-style-type: none"> • Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action. • The Contractors shall monitor all vessels transporting material to ensure that no dumping outside the approved location takes place. The Contractor shall keep and produce logs and other records to demonstrate compliance and that journeys are consistent with designated locations and copies of such records shall be submitted to the engineers; • The Contractors shall comply with the conditions in the dumping licence. • All bottom dumping vessels (Hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material; • The material shall be placed into the disposal pit by bottom dumping; • Contaminated marine mud shall be transported by spit barge of not less than 750m³ 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 					<p>N/A</p> <p>N/A</p> <p>✓</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>

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
		<p>shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site.</p> <ul style="list-style-type: none"> For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit would be a possible arrangement. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfil confined mud disposal. 					N/A
S11.5.1	WM7	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> 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. 	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	<p>✓</p> <p>✓</p>

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
		<ul style="list-style-type: none"> • 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. 					<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>
EM&A Project							
S14.2 – 14.4	EM2	<ol style="list-style-type: none"> 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	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>

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 2016	0	0	1	0
February 2016	0	0	0	0
March 2016	0	1	0	0
April 2016	0	2	0	0
May 2016	0	0	0	0
June 2016	0	1	0	0
July 2016	0	0	0	0
August 2016	0	2	0	0
September 2016	0	0	0	0
October 2016	0	1	0	0
Total	0	7	1	0
Year 2013	0	0	0	0
Year 2014	0	0	0	0
Year 2015	0	16	0	0
Grand Total	0	23	1	0

COMPLAINT / CONCERN LOG

Ref: KFMD0213-CL-20161004

Log Ref	Event Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/Mitigation Action	File Closed
<p>Ref no.: KFMD0213-C L-20161004</p> <p>EPD complaint ref.: 16-23330</p>	<p>Kai Tak Area</p>	<p>A complaint was received on 13th September 2016</p>	<p>A complaint received on 13th September 2016 was referred from EPD on 4th October 2016 regarding the dust emission from the construction work and he requested the site provide enough preventive measures such as enough water spraying to reduce the dust emission.</p>	<p>BACKGROUND</p> <p>1. A complaint received on 13th September 2016 was referred from EPD on 4th October 2016 regarding the dust emission from the construction work and he requested the site provide enough preventive measures such as enough water spraying to reduce the dust emission. Environmental Team (ET) was informed via email by MTRC.</p> <p>INVESTIGATION RESULTS</p> <p>1. According to the Contractor information, the major works on 13th September included backfilling work at Area 1 & Area 2 and formwork at Area 3. And the proper mitigation measures were implemented to mitigate potential dust generation.</p> <ul style="list-style-type: none"> - Water tanker was deployed and water spraying on the haul road and dusty area was provided at least once per hour for dust suppression. - Spoil/dusty material on dump truck were covered with mechanical cover during transportation. <p>2. Routine weekly site inspections were conducted on 6th, 13th, 20th & 27th September 2016 and 4th October 2016. Observation of dusty issue was not noted during the site inspections.</p> <p>3. ET has conducted a site investigation with the representatives from Contractor on 4th October 2016 to resolve the concern. No dust issues were observed during the investigation.</p> <p>4. During the investigation, the following proper mitigation measures were implemented.</p>	<p>Yes</p>

				<ul style="list-style-type: none"> - Water tanker was assigned to implement water spraying on the haul road and dusty area. - Water sprinklers were installed to wet haul road. - Spoil/dusty material on dump truck were covered with mechanical cover during transportation. - Haul Road was maintained in wet to minimize dust nuisance. <p style="text-align: center;">RECOMMENDATIONS & MITIGATION MEASURES</p> <ol style="list-style-type: none"> 1. The Contractor reported that the following precautionary measures were suggested after receiving the complaint from EPD to enhance prevention of dust emission. <ul style="list-style-type: none"> - A dedicated staff was assigned to monitor any dusty works for better control of dusty works. - Increase the frequency of site inspection for dust control. - Conduct toolbox talk on dust suppression to raise the awareness of workers/site staff. 2. The Contractor was still reminded to implement all necessary mitigation measures to avoid dust emission 	
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Filed by Environmental Team Leader: _____  _____

Date: 6th October 2016

Appendix H

**37th Monthly EM&A Report for Works Contract 1102 –
Hin Keng Station and Approach Structures**

MTR Corporation Limited

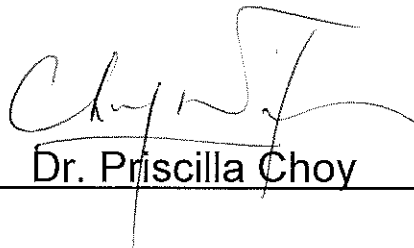
**Shatin to Central Link –
Tai Wai to Hung Hom Section**

Monthly EM&A Report No. 37

[Period from 1 to 31 October 2016]

Works Contract 1102 –
Hin Keng Station and Approach Structures

(November 2016)

Certified by: 
_____ Dr. Priscilla Choy

Position: _____ Environmental Team Leader

Date: _____ 11th November 2016

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)

October 2016

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 37th 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 October 2016.

Summary of Construction Works undertaken during the Reporting Month

2. The major site activities undertaken in the reporting month include:
 - Slope improvement works;
 - External Wall Tiling at Viaduct & At-Grade Box;
 - 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) 5 times

Remarks:

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

Waste Management

4. Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. About 88.3 m³ of inert C&D materials were generated from the Project and sent to Tuen Mun Area 38 Fill Bank during the reporting month. No non-recyclable non-inert C&D materials and 15.3 m³ general refuse were disposed of at NENT Landfill. No chemical wastes, steel material, plastics and paper/cardboard packaging was generated and collected by the recycler during this reporting month.

Landscape and Visual

5. Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted on 11 and 26 October 2016. 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 and 26 October 2016. The joint weekly site inspection scheduled on 21 October 2016 was cancelled due to typhoon events. The representative of the IEC joined the site inspection on 26 October 2016. 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;
 - External Wall Tiling at Viaduct & At-Grade Box;
 - ABWF works at Hin Keng Station; and
 - Modification of Retaining Wall and Installation of Noise Barrier.

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 37th 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 October 2016.

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;
 - External Wall Tiling at Viaduct & At-Grade Box;
 - 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/J	29/2/2016	3/10/2016	Updated to EP-438/2012/K
EP-438/2012/K	4/10/2016	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
Reference No: 362534	29/7/2013	N/A	Valid
Billing Account for Construction Waste Disposal			
A/C No.: 7017900	02/8/2013	N/A	Valid
Registration of Chemical Waste Producer			
Registration No. 5218-759-P1057-03	03/9/2013	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00018589-2014	29/4/2014	30/9/2018	Valid
Construction Noise Permit (CNP)			
GW-RN0424-16	30/6/2016	29/12/2016	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 (September 2016)	14 October 2016

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	< Baseline Level	< Baseline Level	When one documented complaint is received	70/65 ⁽¹⁾

Remarks:

- (1) For normal day-time working hours, the noise criteria is 70 dB(A) and 65 dB(A) for normal teaching period and examination periods respectively.
- (2) The noise monitoring data presented in the table is baseline corrected.

- 5.4 No exceedance of the Action and Limit Levels of construction noise due to the Project was recorded during the reporting period.

Regular Dust Monitoring

- 5.5 A total of 5 sets of 24-hour TSP monitoring were carried out at the designated monitoring station of the reporting period by ET of Works Contract SCL 1103. The monitoring results together with their graphical presentations are presented in Appendix E of SCL 1103 monthly EM&A report and a summary of the dust monitoring results in this reporting month is given in **Table 5.2**.

Table 5.2 Summary Table of Dust Monitoring Results

Parameter	Minimum $\mu\text{g}/\text{m}^3$	Maximum $\mu\text{g}/\text{m}^3$	Average $\mu\text{g}/\text{m}^3$	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
24-hr TSP	19.3	85.8	44.2	148.7	260

- 5.6 Wind monitoring data obtained from Kai Tak Meteorological Station of Hong Kong Observatory is shown in Appendix F of SCL 1103 monthly EM&A report.
- 5.7 Based on observation during the on-site monitoring, road traffic emission nearby is considered as a potential dust source other than construction works of the Project that affects the monitoring results of the reporting month.
- 5.8 No exceedance of the Action and Limit Levels of the 24-hour TSP was recorded during the reporting period.

Waste Management

- 5.9 Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, vegetative wastes and recyclable wastes like plastics and paper/cardboard packaging materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in **Table 5.3**. No chemical waste, steel material, plastics, paper/cardboard packaging was generated during this reporting month. Details of waste management data is presented in **Appendix G**.

Table 5.3 Quantities of Waste Generated from the Project

Reporting Month	Quantity					
	C&D Materials (inert) ^(a)	C&D Materials (non-inert) ^(b)				
		General Refuse	Chemical Waste	Recycled materials		
Paper/cardboard	Plastics			Metals		
October 2016 ^(c)	88.3 m ³	15.3 m ³	0 kg	0 kg	0 kg	0 kg

Notes:

- (a) Inert C&D materials include excavated soil and rock. 88.3 m³ of inert C&D materials were delivered to 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.
- (c) The cut-off date of the waste flow table in reporting month was 31 October 2016.

Landscape and Visual

- 5.10 Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted on 11 and 26 October 2016. 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 and 26 October 2016 by ET. The joint weekly site inspection scheduled on 21 October 2016 was cancelled due to typhoon events. A joint site audit with the representative with IEC, ER, the Contractor and the ET was carried out on 26 October 2016. 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
<i>Water Quality</i>	N/A	There was no observation in the reporting period.	N/A
<i>Noise</i>	N/A	There was no observation in the reporting period.	N/A
<i>Landscape and Visual</i>	26 Oct 2016	Fencing of tree protection zones within the Site should be properly maintained to protect the retained trees.	Follow up actions will be reported in the next month.
<i>Air Quality</i>	27 Sep 2016	<u>Reminder:</u> Water spraying should be enhanced in all exposed works area for dust suppression.	This item was remarked on 4 Oct 2016.
	4 and 11 Oct 2016	<u>Reminder:</u> Tarpaulin coverage or water spraying should be enhanced as far as practicable for all exposed work area within the site for dust suppression.	The exposed work area and haul road were observed wet on 26 Oct 2016.
<i>Waste / Chemical Management</i>	N/A	There was no observation in the reporting period.	N/A
<i>Permits/ Licenses</i>	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;
- External Wall Tiling at Viaduct & At-Grade Box;
- 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;
- Regular removal of silt, mud and sand along drainage channels and sedimentation tanks; and
- Proper storage and mitigation measures for oil/chemical containers.

Monitoring Schedule in the Next Month

8.3 The tentative schedule of regular construction noise monitoring and 24-hour TSP monitoring at in the next reporting period is presented in Appendix K of SCL 1103 monthly EM&A report. The regular construction noise monitoring and 24-hour TSP monitoring will be conducted at the same monitoring locations in the next reporting period.

9 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 9.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 to 31 October 2016 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 3 times of joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET and 2 times of bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted during the reporting period.
- 9.4 There was no Project related environmental complaint, successful prosecution or notification of summons received during the reporting month.
- 9.5 The ET will keep track on the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Recommendations

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

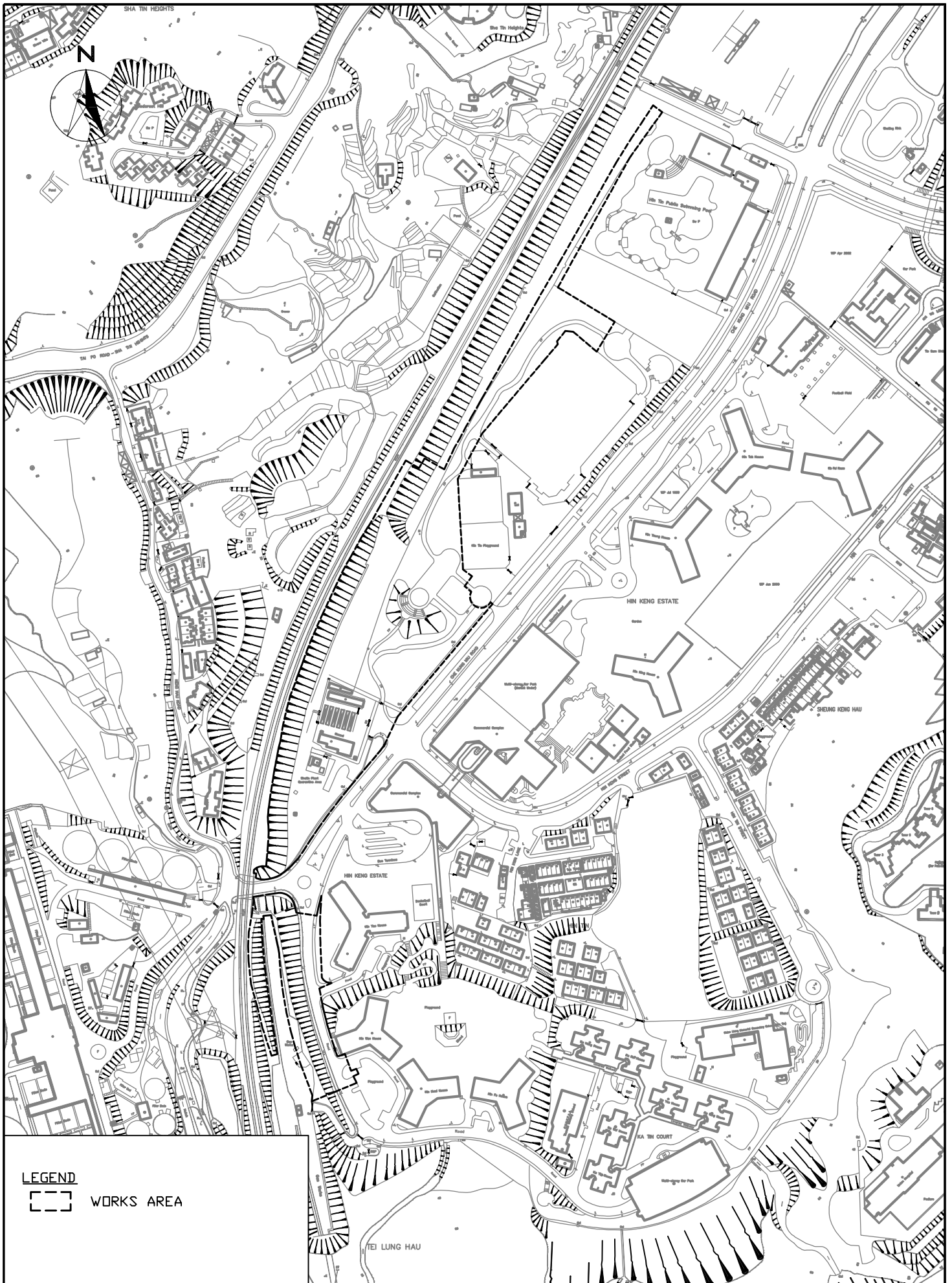
Landscape and Visual

- “No-intrusion zone” should be established and maintained for existing trees as far as practicable. The Contractor is reminded to closely monitor and restrict the site working staff from entering the erected “no-intrusion zone” for existing trees, and handle any construction material near tree protection zone with care to prevent damaging nearby trees.

Air Quality

- Mitigation measures of dust suppression such as water spraying for haul roads and on-site unpaved area should be implemented as per EP requirement.
- Exposed work area should be covered by tarpaulin or impervious sheets in order to reduce dust generation.

FIGURES



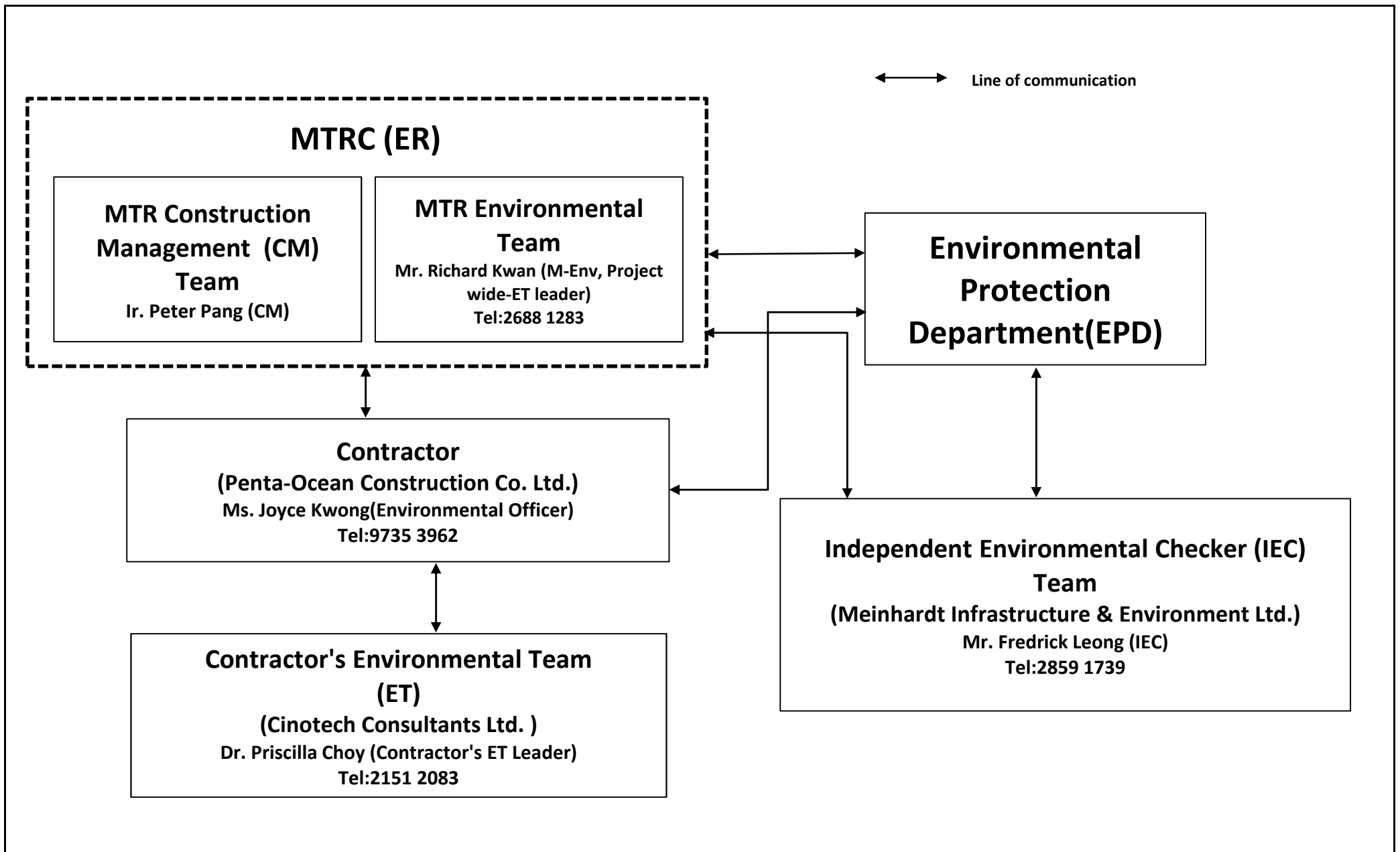
LEGEND

 WORKS AREA

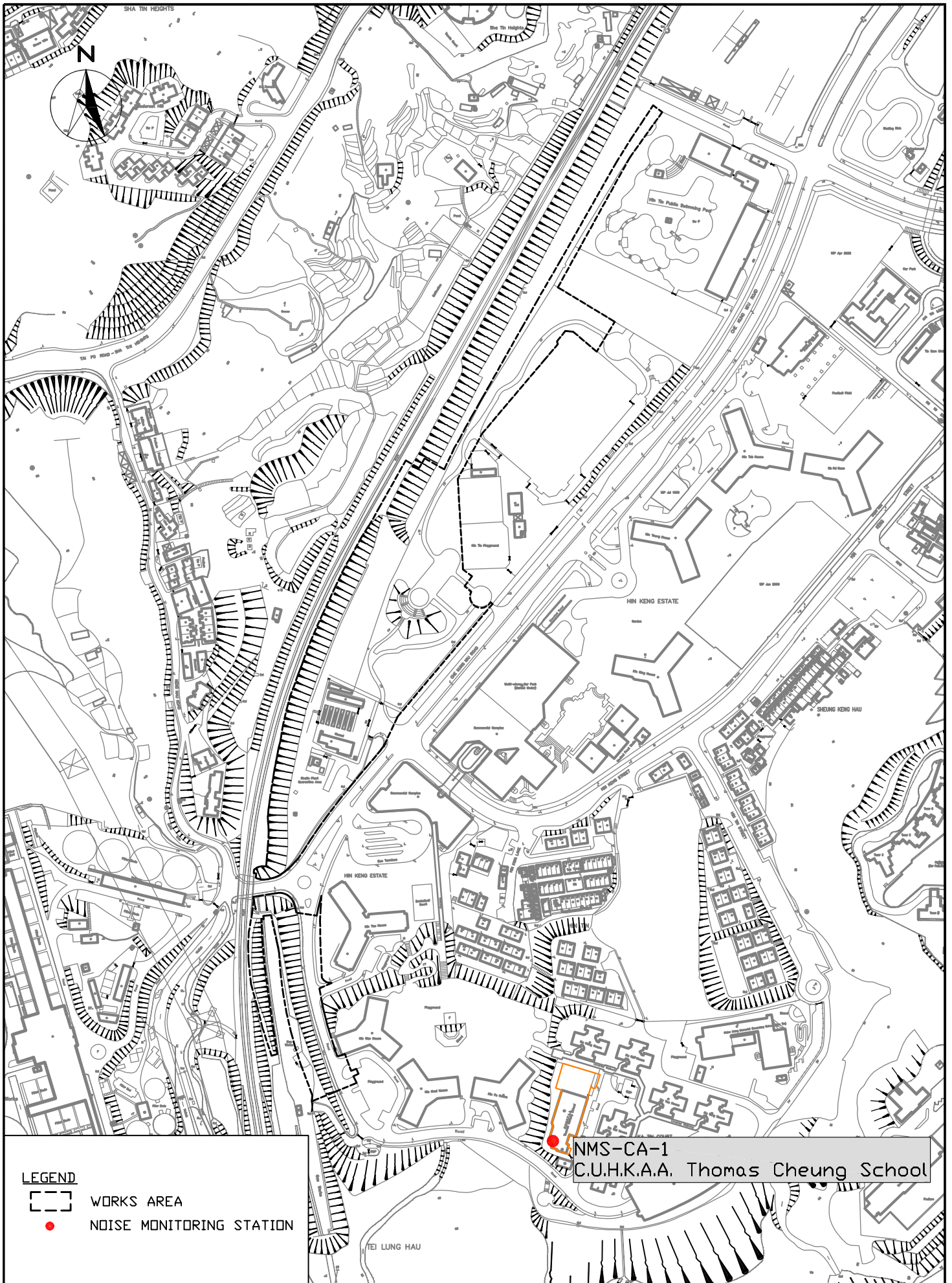


SCL CONTRACT 1102
 THE SHATIN TO CENTRAL LINK -
 HIN KENG STATION AND APPROACH STRUCTURES
**SITE LAYOUT PLAN OF
 WORKS CONTRACT 1102**

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	Project No.	MA13040	
	Date	Oct-13	Figure	2	



LEGEND

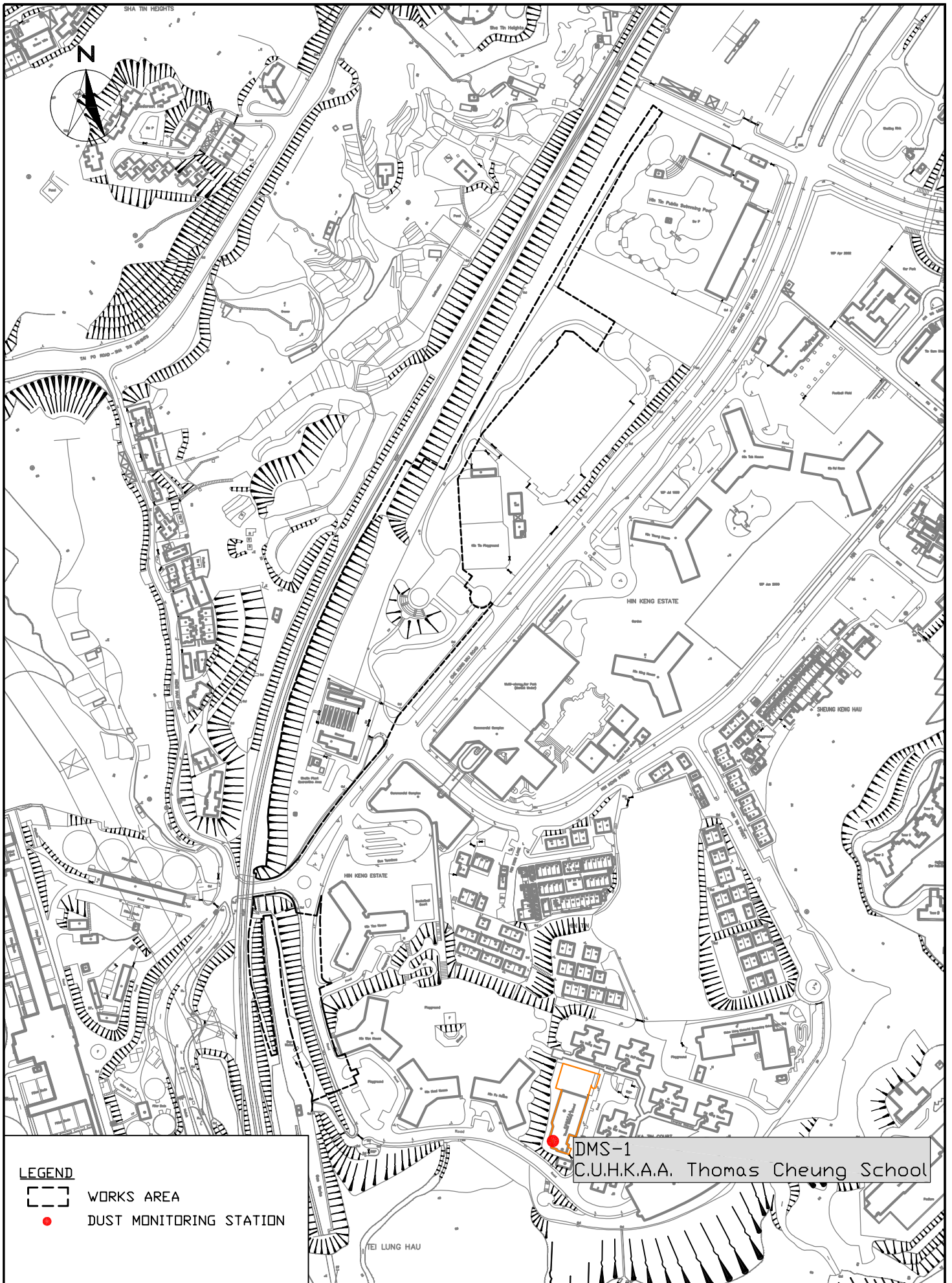
- WORKS AREA
- NOISE MONITORING STATION

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





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	-



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

LEGEND

-  WORKS AREA
-  DUST MONITORING STATION



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	2016			2017	
						Oct	Nov	Dec	Jan	Feb
3-month Rolling Programme Summary (Nov 2016 to		527.00	102.00	21-Oct-13 A	11-Mar-17					
Hin Keng Station		403.00	44.87	04-Mar-15 A	22-Dec-16					
Superstructure		403.00	44.87	04-Mar-15 A	22-Dec-16					
ABWF		403.00	44.87	04-Mar-15 A	22-Dec-16					
Ma On Shan Line & Tail Track		378.00	102.00	21-Oct-13 A	11-Mar-17					
Noise Barrier behind Hin Tin Swimming Pool		378.00	66.93	21-Oct-13 A	20-Jan-17					
Noise Barrier Work		157.00	15.70	15-Jul-14 A	03-Dec-16					
Miscellaneous Items within Operation Area		204.00	102.00	03-Dec-15 A	11-Mar-17					
Overhead Walkway		204.00	102.00	03-Dec-15 A	11-Mar-17					
At-grade Box		180.00	54.00	27-May-16 A	05-Jan-17					
External Wall Tiling		46.00	24.00	27-Aug-16 A	28-Nov-16					
Backfilling Works		180.00	54.00	27-May-16 A	05-Jan-17					
Hin Keng Viaduct		45.00	0.00	31-May-16 A	25-Oct-16 A					
External Wall Tiling		45.00	0.00	31-May-16 A	25-Oct-16 A					
FR63 Slope		85.00	12.40	03-Dec-14 A	15-Nov-16					
Drainage Work		64.00	6.40	03-Dec-14 A	08-Nov-16					
Soft Landscape		60.00	6.00	15-Jul-15 A	15-Nov-16					
FR65 Slope		90.00	9.00	05-Jan-15 A	10-Nov-16					
Soft Landscape		90.00	9.00	05-Jan-15 A	10-Nov-16					
F320 Slope		60.00	60.00	01-Nov-16	12-Jan-17					
Soft Landscaping Works		60.00	60.00	01-Nov-16	12-Jan-17					



- 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 - Nov 2016 to Jan 2017)

Date	Revision	Checked	Approved
01-Nov-16	0		

**APPENDIX B
ACTION AND LIMIT LEVELS**

APPENDIX B – Action and Limit Levels**24-Hour TSP**

Regular Dust Monitoring Station	Description	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
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

APPENDIX C – SUMMARY OF EXCEEDANCE

Reporting Month: October 2016

a) Exceedance Report for Dust Monitoring (NIL)

b) Exceedance Report for Noise Monitoring (NIL)

**APPENDIX D
SITE AUDIT SUMMARY**

*Shatin to Central Link -
Contract 1102 Hin Keng Station and Approach Structures*

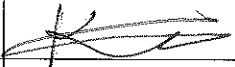

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161004
Date	4 October 2016 (Tuesday)
Time	09:30 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
161004-R01	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C – Ecology</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E – Air Quality</p> <ul style="list-style-type: none"> Tarpaulin coverage or water spraying should be enhanced as far as practicable for all exposed work area within the site for dust suppression. <p>Part F – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G – Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part I – Others</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. 	E 5

	Name	Signature	Date
Recorded by	Kelvin Koo		4 October 2016
Checked by	Dr. Priscilla Choy		4 October 2016

*Shatin to Central Link -
Contract 1102 Hin Keng Station and Approach Structures*


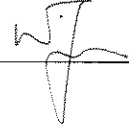
Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161011
Date	11 October 2016 (Tuesday)
Time	09:30 – 11:00

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

Ref. No.	Remarks/Observations	Related Item No.
161011-F01	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C – Ecology</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Landscape & Visual</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part E – Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G – Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part I – Others</p> <ul style="list-style-type: none"> Tarpaulin coverage or water spraying should be enhanced as far as practicable for all exposed work area within the site for dust suppression. 	E 5

	Name	Signature	Date
Recorded by	Kelvin Koo		11 October 2016
Checked by	Dr. Priscilla Choy		11 October 2016

Shatin to Central Link -

Contract 1102 Hin Keng Station and Approach Structures



Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	161026
Date	26 October 2016 (Wednesday)
Time	14:00 – 17:00

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

Ref. No.	Remarks/Observations	Related Item No.
161026-001	<p>Part B – Water Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part C – Ecology</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part D – Landscape & Visual</p> <ul style="list-style-type: none"> Fencing of tree protection zones within the Site should be properly maintained to protect the retained trees. <p>Part E – Air Quality</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part F – Construction Noise Impact</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part G – Waste/Chemical Management</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part H – Permits/Licenses</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. <p>Part I – Others</p> <ul style="list-style-type: none"> No environmental deficiency was identified during the site inspection. 	D 2

	Name	Signature	Date
Recorded by	Kelvin Koo		26 October 2016
Checked by	Dr. Priscilla Choy		26 October 2016

**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	<ul style="list-style-type: none"> • AFCD's requirements • EIAO • Country Parks Ordinance 	^
S5.7	E5	<p><u>Good Site Practices</u></p> <p>Impact to any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, the containment of contaminated soils for removal from the site, appropriate storage of chemicals and chemical waste away from sites of ecological value and the provision of sanitary facilities for on-site workers. Adoption of such measures should permit waste to be suitably contained within the site for subsequent removal and appropriate disposal.</p> <p>The following good site practices should also be implemented:</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • ProPECC PN 1/94 	^
								N/A

SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>waterbodies in particular the Tei Lung Hau stream;</p> <ul style="list-style-type: none"> • 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	<p><u>Water Quality and Hydrology</u></p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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	^
<i>Landscape & Visual (Construction Phase)</i>								
S6.9.3	LV1	<p>The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:</p> <p><u>Re-use of Existing Soil</u></p> <ul style="list-style-type: none"> • 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	^

SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>ground, gathering ground and mixing ground may be set up on-site as necessary.</p> <p><u>No-intrusion Zone</u></p> <ul style="list-style-type: none"> 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. <p><u>Protection of Retained Trees</u></p> <ul style="list-style-type: none"> 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, 						<p style="text-align: center;">*</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
<i>Air Quality (Construction Phase)</i>								
/	A1	Emission from Vehicles and Plants <ul style="list-style-type: none"> • 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	^
<i>Construction Dust Impact</i>								
S7.6.5	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	^
S7.6.5	D2	• Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road in the Kowloon area and once per 1.5hour at those in the Tai Wai area should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact to meet HKAQO and TM-EIA criteria	*

SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>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</p>						
S7.6.5	D3	<ul style="list-style-type: none"> • 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 	<p>Minimize dust impact at the nearby sensitive receivers</p>	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> • APCO • To control the dust impact to meet HKAQO and TM-EIA criteria 	<p>^</p> <p>*</p> <p>^</p> <p>^</p> <p>^</p>

SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>point should be paved with concrete, bituminous materials or hardcores;</p> <ul style="list-style-type: none"> • 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 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

SCL Works Contract 1102 - Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>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;</p> <p>Any skip hoist for material transport should be totally enclosed by impervious sheeting;</p> <ul style="list-style-type: none"> • 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; <p>and</p> <ul style="list-style-type: none"> • 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 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	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: <ul style="list-style-type: none"> • 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	^ ^ ^ ^ ^

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
		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	^

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			representative locations		noise monitoring station			
Water Quality (Construction Phase)								
S10.7.1	W1	<p>In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following:</p> <p><u>Construction Runoff and Site Drainage</u></p> <ul style="list-style-type: none"> 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. <p>Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated</p>	To minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> Water Pollution Control Ordinance ProPECC PN1/94 TM-EIAO TM-Water 	<p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

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		<p>in the permanent drainage channels to enhance deposition rates.</p> <ul style="list-style-type: none"> • 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. 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<ul style="list-style-type: none"> • 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. 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

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		<ul style="list-style-type: none"> • 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 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

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		<p>accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain.</p> <ul style="list-style-type: none"> • 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 						<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S10.7.1	W3	<p><u>Sewage Effluent</u></p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Water Pollution Control Ordinance • TM-water 	^

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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S10.7.1	W7	<p>In order to prevent accidental spillage of chemicals, the following is recommended:</p> <ul style="list-style-type: none"> • All the tanks, containers, storage area should be banded 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	<ul style="list-style-type: none"> • Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-Water 	<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>
Waste Management (Construction Waste)								
S11.4.1.1	WM1	<p><u>On-site sorting of C&D material</u></p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • DEVB TC(W) No. 6/2010 	<p style="text-align: center;">^</p>

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		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	<p><u>Construction and Demolition Material</u></p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005 	<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

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		<ul style="list-style-type: none"> • 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 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>
S11.5.1	WM3	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005 	<p style="text-align: center;">^</p>

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		<ul style="list-style-type: none"> 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	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Waste Disposal Ordinance 	^ ^ ^ ^

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		volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor.						
S11.5.1	WM7	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Waste Disposal (Chemical Waste) (General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste 	<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

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		<ul style="list-style-type: none"> • 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								

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					Keng Street)	phases		
Chapter 13.13	A13C.8	Establishment of emergency response and evacuation plans (cooperation of various parties/departments required. For the operational phase the emergency plan should also include adequate procedures for controlling the tunnel ventilation system and stopping of the SCL train traffic in order to prevent the trains moving into the affected areas.)	To reduce the risks to the SCL staff, construction workers and passengers	MTRC/ Contractor	-	Construction and operation phases		^
Chapter 13.13	A13C.8	Safety/emergency response/evacuation training and drills for all personnel	To reduce the risks to the SCL staff, construction workers and passengers	MTRC/ Contractor	-	Construction and operation phases		^
EM&A Project								

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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Submit proposals for remedial measures to the ER with a copy to ET and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal as appropriate.

LIMIT LEVEL

1.Exceedance for one sample	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 2016

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill (See Note 1)	Disposed as Sorting Facility	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan-16	0.0367	0	0	0	0.0367	0	0	0	0	0.0954	
Feb-16	0.1511	0	0	0	0.1511	0	0	0	0	0.0725	
Mar-16	0.1069	0	0	0	0.1069	0	0	0	0	0.1999	
Apr-16	0.4183	0	0	0	0.4183	0	0	0	0	0.1447	
May-16	0.1738	0	0	0	0.1738	0	0	0	0	0.1492	
Jun-16	1.2267	0	0	0	1.2267	0	0	0	0	0.2254	
Sub-total	2.1135	0	0	0	2.1135	0	0	0	0	0.8871	
Jul-16	0.7840	0	0	0	0.7840	0	0	0	0	0.0238	
Aug-16	0.5080	0	0	0	0.5080	0	0	0	0	0.0234	
Sep-16	0.3151	0	0	0	0.3151	0	0	0	0	0.0404	
Oct-16 (See Note 2)	0.0883	0	0	0	0.0883	0	0	0	0	0.0153	
Nov-16											
Dec-16											
Total	3.8089	0	0	0	3.8089	0	0	0	0	0.9900	

Note: (1) Inert C&D materials include excavated soil and rock. 88.3 m³ of inert C&D materials were delivered to Tuen Mun Area 38 Fill Bank during the reporting month.

Note: (2) The cut-off date of waste flow table in reporting month was 31 Oct 2016.

**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:** October 2016**Complaint Log**

Log Ref.	Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/ Mitigation Action	Status
--	--	--	--	--	--

Log for Notifications of Summons

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

Log for Successful Prosecutions

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

Cumulative Summary Table for Complaints, Notifications of Summons and Successful Prosecution

Reporting Month	Number of Complaints	Number of Notifications of Summons	Number of Successful Prosecution
October 2013	0	0	0
November 2013	0	0	0
December 2013	0	0	0
January 2014	0	0	0
February 2014	0	0	0
March 2014	0	0	0
April 2014	0	0	0
May 2014	0	0	0
June 2014	0	0	0
July 2014	0	0	0
August 2014	0	0	0
September 2014	0	0	0
October 2014	0	0	0
November 2014	1	0	0
December 2014	0	0	0

Reporting Month	Number of Complaints	Number of Notifications of Summons	Number of Successful Prosecution
January 2015	0	0	0
February 2015	0	0	0
March 2015	0	0	0
April 2015	0	0	0
May 2015	0	0	0
June 2015	0	0	0
July 2015	0	0	0
August 2015	0	0	0
September 2015	0	0	0
October 2015	0	0	0
November 2015	0	0	0
December 2015	0	0	0
January 2016	0	0	0
February 2016	0	0	0
March 2016	0	0	0
April 2016	0	0	0

Reporting Month	Number of Complaints	Number of Notifications of Summons	Number of Successful Prosecution
May 2016	0	0	0
June 2016	0	0	0
July 2016	0	0	0
August 2016	0	0	0
September 2016	0	0	0
October 2016	0	0	0
Total	1	0	0

Appendix I

**Final 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**

Final EM&A Review Report

Works Contract 1108A – Kai Tak Barging Point
Facilities

(November 2016)

Certified by: 
Dr. Priscilla Choy

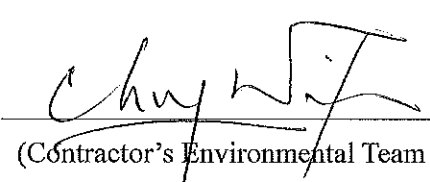
Position: Environmental Team Leader

Date: 11th November 2016

Concentric – Hong Kong River Joint Venture

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

**Final Environmental
Monitoring and Audit Review Report
(Version 2.0)**

Certified By 
(Contractor's Environmental Team Leader)

REMARKS:

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

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

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EXECUTIVE SUMMARY

Introduction

1. This is the Final Environmental Monitoring and Audit (EM&A) Review Report prepared by Cinotech Consultants Limited for **MTR Shatin to Central Link (SCL) Works Contract 1108A – Kai Tak Barging Point Facilities**. This report documents the findings of EM&A Works of the Project over the entire construction period.
2. The major construction works for Contract 1108A were commenced on 1 September 2012.
3. All the construction works for Contract 1108A was completed on 29 September 2016. Subsequently, the whole site was vacated and handed back to MTR after completion of all the construction works under Contract 1108A.
4. The Proposal for Termination of EM&A Programme under Contract 1108A was approved by EPD on 7th October 2016. Therefore, the EM&A Programme of the Contract 1108A, including monthly EM&A reporting and the corresponding environmental monitoring and audit works were terminated.

Summary of Construction Works undertaken in the Construction Period

5. The major site activities undertaken in the construction period include:
 - Construction, 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; and
 - Seabed Dredging and disposal of Type 2 & 3 sediments.

Environmental Monitoring and Audit Works

6. A summary of the monitoring activities is listed below:

Water Quality Monitoring

7. The baseline and impact and post-project water quality monitoring periods are summarized in the table below.

Activity	Monitoring Period
Baseline Monitoring ⁽¹⁾	16 June 2012 – 14 July 2012
Impact Monitoring	22 October 2012 – 12 November 2012

Note: (1) Baseline water quality monitoring was conducted by MTR under consultancy agreement no. NEX/2213.

Waste Management

8. Waste generated from this Project includes mainly inert construction and demolition (C&D) materials, non-inert C&D materials and dredging sediment. Details of waste management data is presented in Section 5 and **Appendix E**.

Landscape and Visual

9. Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted throughout the construction period. The necessary mitigation measures and recommended follow-up actions have been implemented by the Contractor.

Ecology

10. Weekly inspection of the implementation of mitigation measures for ecology was conducted throughout the construction period. The necessary mitigation measures and recommended follow-up actions have been implemented by the Contractor.

Environmental Site Inspection

11. Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET throughout the construction period. The representative of the IEC joined the site inspections once per month.

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

12. No exceedance of the Action and Limit Levels of water quality monitoring was recorded during the dredging period.
13. No non-compliance event was recorded during the construction period.
14. No Project related environmental complaint and notification of summons/successful prosecutions were received in the construction period.

Conclusion

15. The EM&A programme were found to be effective in monitoring impacts arising from the Project. The findings of the environmental monitoring program suggest that no adverse impacts on sensitive receivers at the designated monitoring locations were brought about by the Project. In conclusion the Project was environmentally acceptable.

1 INTRODUCTION

- 1.1 Cinotech Consultants Limited (Cinotech) was appointed by Concentric – Hong Kong River Joint Venture (CCL-HKRJV) 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 1108A – Kai Tak Barging Point Facilities (hereafter referred to as the Project).

Purpose of the Report

- 1.2 This is the Final Environmental Monitoring and Audit (EM&A) Review Report prepared by Cinotech Consultants Limited for **MTR Shatin to Central Link (SCL) Works Contract 1108A – Kai Tak Barging Point Facilities**. This report documents the findings of EM&A Works of the Project over the entire construction period.

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, the construction works undertaken during the construction period, project organization and contact details.

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

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

Section 5: **Summary of EM&A Works** - summarises the EM&A works and results obtained in the construction period.

Section 6: **Environmental Non-conformance** - summarises any monitoring exceedance, environmental complaints and environmental summons within the construction period.

Section 7: **Comments, Conclusions and Recommendations**

2 PROJECT INFORMATION

Background

- 2.1 The Shatin to Central Link – Tai Wai to Hung Hom Section (hereafter referred to as SCL (TAW-HUH)) is an approximately 11 km long extension of the Ma On Shan Line and links up with the West Rail Line at Hung Hom forming a strategic east-west rail corridor. It is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO).
- 2.2 The Environmental Impact Assessment (EIA) Report of the SCL (TAW-HUH) (Register No. AEIAR-167/2012) was approved by the Environmental Protection Department (EPD) under the EIAO on 17 February 2012. An Environmental Permit (EP-438/2012) has been issued on 22 March 2012. The EP has been varied recently and a varied EP (EP-438/2012/K) was issued on 7 October 2016.
- 2.3 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.
- 2.4 The major construction works for Contract 1108A had been commenced on 1 September 2012, and all the construction works had been completed on 29 September 2016. Subsequently, the whole site was vacated and handed back to MTR after completion of all the construction works under Contract 1108A.

General Site Description

- 2.5 The site layout plan for Contract 1108A is shown in **Figure 1**.

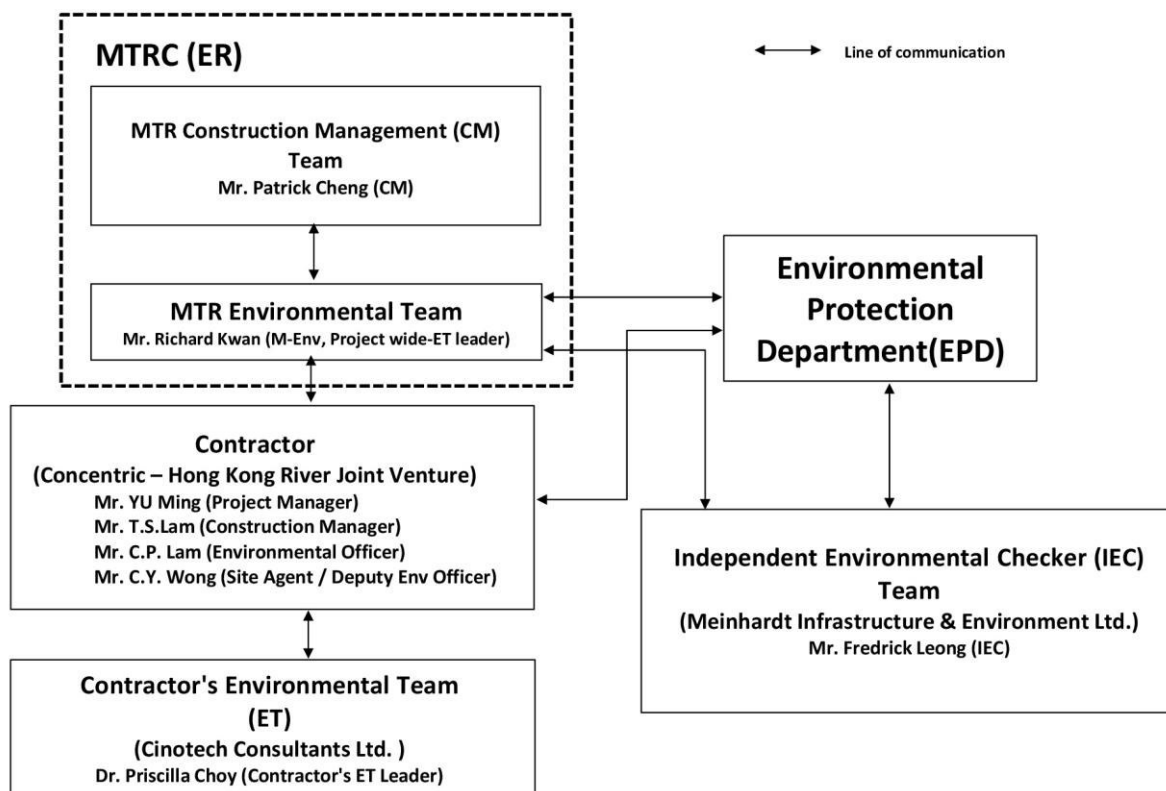
Construction Activities

- 2.6 A summary of the major construction activities undertaken in the construction period is shown as follows.
 - Construction, 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; and
 - Seabed Dredging and disposal of Type 2 & 3 sediments.

Project Organisation

- 2.7 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)

2.8 The project organization chart is shown as follows:



2.9 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 / Deputy Environmental Officer	9199 3188	

Summary of EM&A Requirements

- 2.10 The EM&A programme under Contract 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.
- 2.11 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely marine water quality monitoring as well as audit works for the Project in the construction period.

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 Parameter, 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.

Monitoring Equipment

- 3.14 **Table 3.3** summarizes the equipment used in the impact water quality monitoring program. All the monitoring equipments are complied with the specifications stipulated in the EM&A Manual.

Table 3.3 Water Quality Monitoring Equipment

Equipment	Model and Make
Water Sampler	Kahlsico Water-Bottle Model 135DW 150
Multi-parameter Water Quality System	YSI 6820-C-M / YSI 6920-M
Monitoring Position Equipment	“Magellan” Handheld GPS Model GPS-320
Water Depth Detector	Fishfinder 140

Laboratory Measurement / Analysis

- 3.15 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 are under maintenance, calibration, etc.
- 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 3.4**.

Table 3.4 Laboratory analysis for SS

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

- 3.17 Quality Control Reports as shown the monthly reports are available for the SS analyzed in the HOKLAS-accredited laboratory, WELLAB Ltd.

Action and Limit Levels

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

Event and Action Plan

- 3.19 Should non-compliance of the criteria occur, action in accordance with the Event and Action Plan in **Appendix B** was carried out.

Landscape and Visual

- 3.20 In accordance with the EM&A Manual, the landscape and visual mitigation measures was implemented and a site inspection was conducted once every two weeks throughout the construction period.

Ecology

- 3.21 In accordance with the EM&A Manual, the ecological mitigation measures was implemented and site inspections were conducted throughout the construction period.

Cultural Heritage

- 3.22 In accordance with the location of the Project and EIA Report, there were 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 was, therefore, not required.
- 3.23 A 25m separation distance between the proposed dredging area and the Kowloon Rock as specified in the approved SCL (TAW-HUH) EIA Report were maintained by the Contractor during the dredging period.

4 IMPLEMENTATION STATUS ON ENVIRONMENTAL PROTECTION REQUIREMENTS

4.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the Environmental Permit and the EM&A Manual. The implementation status of the environmental mitigation measures of the construction period is summarized in **Appendix D**. Status of required submissions under the Environmental Permit (EP) of this Project is presented in **Table 4.1**.

Table 4.1 Status of Required Submissions under EP

EP Condition	Submission	Submission Date
Condition 2.1	Employment of Environmental Team	27 th August 2012
Condition 2.2	Employment of Independent Environmental Checker	1 th August 2012
	Replacement of Independent Environmental Checker	29 th May 2013
Condition 2.7	Management Organization of Main Construction Companies	21 th August 2012
Condition 2.8	Construction Programme and EP Submission Schedule	27 th July 2012
Condition 2.12	Sediment Management Plan	6 th July 2012
Condition 3.1	Proposal for termination of EM&A Programme	22 nd September 2016
Condition 3.3	Baseline Monitoring Report	31 st July 2012
Condition 3.4	Monthly EM&A Report (September 2012)	12 th October 2012
	Monthly EM&A Report (October 2012)	14 th November 2012
	Monthly EM&A Report (November 2012)	14 th December 2012
	Monthly EM&A Report (December 2012)	14 th January 2013
	Monthly EM&A Report (January 2013)	14 th February 2013
	Monthly EM&A Report (February 2013)	14 th March 2013
	Monthly EM&A Report (March 2013)	12 th April 2013
	Monthly EM&A Report (April 2013)	14 th May 2013
	Monthly EM&A Report (May 2013)	14 th June 2013
	Monthly EM&A Report (June 2013)	12 th July 2013
	Monthly EM&A Report (July 2013)	15 th August 2013
	Monthly EM&A Report (August 2013)	13 th September 2013
	Monthly EM&A Report (September 2013)	15 th October 2013

Monthly EM&A Report (October 2013)	14 th November 2013
Monthly EM&A Report (November 2013)	13 th December 2013
Monthly EM&A Report (December 2013)	14 th January 2014
Monthly EM&A Report (January 2014)	14 th February 2014
Monthly EM&A Report (February 2014)	14 th March 2014
Monthly EM&A Report (March 2014)	14 th April 2014
Monthly EM&A Report (April 2014)	14 th May 2014
Monthly EM&A Report (May 2014)	13 th June 2014
Monthly EM&A Report (June 2014)	14 th July 2014
Monthly EM&A Report (July 2014)	14 th August 2014
Monthly EM&A Report (August 2014)	12 th September 2014
Monthly EM&A Report (September 2014)	14 th October 2014
Monthly EM&A Report (October 2014)	14 th November 2014
Monthly EM&A Report (November 2014)	12 th December 2014
Monthly EM&A Report (December 2014)	14 th January 2015
Monthly EM&A Report (January 2015)	13 th February 2015
Monthly EM&A Report (February 2015)	13 th March 2015
Monthly EM&A Report (March 2015)	14 th April 2015
Monthly EM&A Report (April 2015)	14 th May 2015
Monthly EM&A Report (May 2015)	11 th June 2015
Monthly EM&A Report (June 2015)	14 th July 2015
Monthly EM&A Report (July 2015)	14 th August 2015
Monthly EM&A Report (August 2015)	14 th September 2015
Monthly EM&A Report (September 2015)	14 th October 2015
Monthly EM&A Report (October 2015)	13 th November 2015
Monthly EM&A Report (November 2015)	14 th December 2015
Monthly EM&A Report (December 2015)	14 th January 2016
Monthly EM&A Report (January 2016)	12 th February 2016
Monthly EM&A Report (February 2016)	14 th March 2016

	Monthly EM&A Report (March 2016)	14 th April 2016
	Monthly EM&A Report (April 2016)	13 th May 2016
	Monthly EM&A Report (May 2016)	14 th June 2016
	Monthly EM&A Report (June 2016)	14 th July 2016
	Monthly EM&A Report (July 2016)	12 th August 2016
	Monthly EM&A Report (August 2016)	14 th September 2016
	Monthly EM&A Report (September 2016)	14 th October 2016

5 SUMMARY OF EM&A WORKS

Water Quality Monitoring

- 5.1 The baseline and impact water quality monitoring periods are summarized in the **Table 5.1** below.

Table 5.1 Baseline and Impact Water Quality Monitoring Periods

Activity	Monitoring Period
Baseline Monitoring ⁽¹⁾	16 June 2012 – 14 July 2012
Impact Monitoring	22 October 2012 – 12 November 2012

Note: (1) Baseline water quality monitoring was conducted by MTR under consultancy agreement no. NEX/2213

- 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**
- 5.3 With reference to section 10.6 of the EM&A Manual, Impact Water Quality Monitoring (WQM) shall be conducted during dredging period. The impact water quality monitoring results together with graphical presentations and statistical analysis of the trends of monitoring parameter over the course of the Project are shown in **Appendix C**.
- 5.4 With reference to the trends of monitoring parameters shown in **Appendix C**, the trends at the impact monitoring station (namely IS-1) are general in line with those at their respective control stations (namely CS-1 & CS-2). Therefore, no adverse environmental impact was brought to the WQM stations by this Project.
- 5.5 No exceedance of the Action and Limit Levels of water quality monitoring was recorded during dredging period.

Waste Management

- 5.6 Waste generated from this Project includes mainly inert construction and demolition (C&D) materials, non-inert C&D materials and dredging materials – Type 2 (Category M) and Type 3 (Category Hf) sediments Non-inert C&D materials are made up of general refuse and recyclable wastes like plastics and paper/cardboard packaging materials. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the construction are summarised in **Table 5.2**. Details of waste management data is presented in **Appendix E**.

Table 5.2 Quantities of Waste Generated from the Project

Whole Construction Period	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
	25,667 m ³	470 m ³	9,484 ^(c) m ³	99 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.

(c) 5179 m³ of Type 2 sediment and 4305 m³ of Type 3 sediment were generated during the dredging period.

Landscape and Visual

- 5.7 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted throughout the construction period. The observations and recommendations made during the audit sessions are summarized in each of the Monthly EM&A Report.

Ecology

- 5.8 Weekly inspection of the implementation of mitigation measures for ecology was conducted throughout the construction period. The observations and recommendations made during the audit sessions are summarized in each of the Monthly EM&A Report.

Site Audit

- 5.9 Site audit was carried out by representatives of the Contractor, Engineer and Contractor's ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The representative of the IEC joined the site inspections once per month.
- 5.10 No non-compliance was recorded during the site inspections throughout the construction period. Observations and recommendations recorded during the site inspections were summarized in each of the Monthly EM&A Reports.
- 5.11 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 D**.
- 5.12 The major findings and the corresponding recommendations given during the site audits are summarized in **Table 5.3**.
- 5.13 As the construction works were completed on 29th September 2016 and the Proposal for Termination of EM&A Programme of the Contract was approved by EPD on 7th October 2016, the EM&A Programme of this Contract was terminated and site audits were not available to conduct starting from 7th October 2016.

Table 5.3 Major Findings and Corresponding Recommendations given During Site Audits

Parameters	Observations	Corresponding Recommendations
Water Quality	Water of wheel washing facility was observed muddy and the volume of water for the wheel washing facility was observed insufficient while the wheel washing.	To regularly remove silt and mud in the wheel washing facilities, and to replace the water in the wheel washing facility by sufficient clear water including car washing bay to ensure the efficiency of facilities.
	Accumulation of sand, mud and sediment in the drainage system was observed.	To check and maintain the drainage system regularly to avoid the accumulation of silt and sediments, especially after rainstorms.
	Muddy surface runoff was observed flowing from the site to the road outside the entrance, the public drainage system and the seawater.	To check and provide proper mitigation measures to control the site muddy surface runoff, and accumulated mud on the ground within the site area should be cleared to prevent the generation of muddy surface off.
	Soil/mud was observed to accumulate on the platform of conveyor belts and near the approach ramp of floating jetty.	To provide adequate measures to avoid any splashing of spoils into the surrounding seawater when handling/unloading the spoil at the discharge points.
	Spoil was observed to fall into the sea during handling/unloading the spoil at the discharge points.	To provide adequate measures to avoid any splashing of spoils into the surrounding seawater when handling/unloading the spoil at the discharge points.
Noise	--	--
Ecology/ Landscape and Visual	--	--
Air Quality	Some openings at the tipping halls of floating jetty and enclosure of conveyor belts were observed.	To repair the openings of tipping halls and enclosure of conveyor belts properly.
	Covering of dusty stockpile was observed not sufficient.	To properly cover and provide watering to the dusty stockpile.
	Dust curtain at tipping halls of floating jetty was damaged.	To repair and maintain the dust curtain properly.
Waste/Chemical Management	General refuse observed accumulated in the site area.	To remove the general refuse properly and regularly
	Chemical containers were observed not provided with secondary confinement.	To provide drip tray to chemical containers accordingly.
	Oil stain observed on the hard paved ground within the site area.	To properly clear the oil stain as “chemical waste” and provide absorptive material on the site in the event of chemical leakage.

Permits/Licenses	Most updated Environmental Permit/Construction Noise Permit for the Project should be displayed conspicuously.	To properly display the most updated Environmental Permit/Construction Noise Permit at the site entrance once the updated version EP/CNP was available.
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6 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

- 6.1 No exceedance of the Action and Limit Levels of impact water quality monitoring was recorded during the dredging period.

Summary of Environmental Non-Compliance

- 6.2 No environmental non-compliance was recorded in the construction period.

Summary of Environmental Complaint

- 6.3 No environmental Project-related complaint was received in the construction period. The Complaint Log is presented in **Appendix F**.

Summary of Environmental Summon and Successful Prosecution

- 6.4 There was no successful environmental prosecution or notification of summons received since the Project commencement.

7 COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

Validity of EIA Predictions

- 7.1 It is predicted in the EIA Report that with the implementation of the recommended mitigation measures, there would be no unacceptable or residual air quality and noise environmental impacts arising from the Project-related construction works.
- 7.2 The impact water quality monitoring data obtained was in-line with the predictions as no Action/Limit Level exceedance was considered caused by the dredging works of the Project. In addition, no major environmental deficiency in terms of ecology and landscape and visual was recorded during the site inspections throughout the construction period.
- 7.3 Throughout the entire construction period, neither project-related environmental complaint, notification of summon nor successful prosecution was received, and no non-conformance of implementation of environmental mitigation measures was identified in weekly site inspections. These demonstrate no adverse environmental impacts arisen from the actual construction activities of the Project which are in-line with the EIA predictions.

Comments on Overall EM&A Programme

- 7.4 The mitigation measures detailed in the Environmental Permit, the Manual and in the EIA report were implemented throughout the whole construction period. With the environmental monitoring and site inspection to directly ensure the timely implementation of mitigation measures during the construction period, the environmental performance of the Project was acceptable. Analysis of all EM&A data collected throughout the construction periods also demonstrated the environmental acceptability of the Project.
- 7.5 The overall performance of the monitoring methodology adopted and environmental management system in this Project was effective.

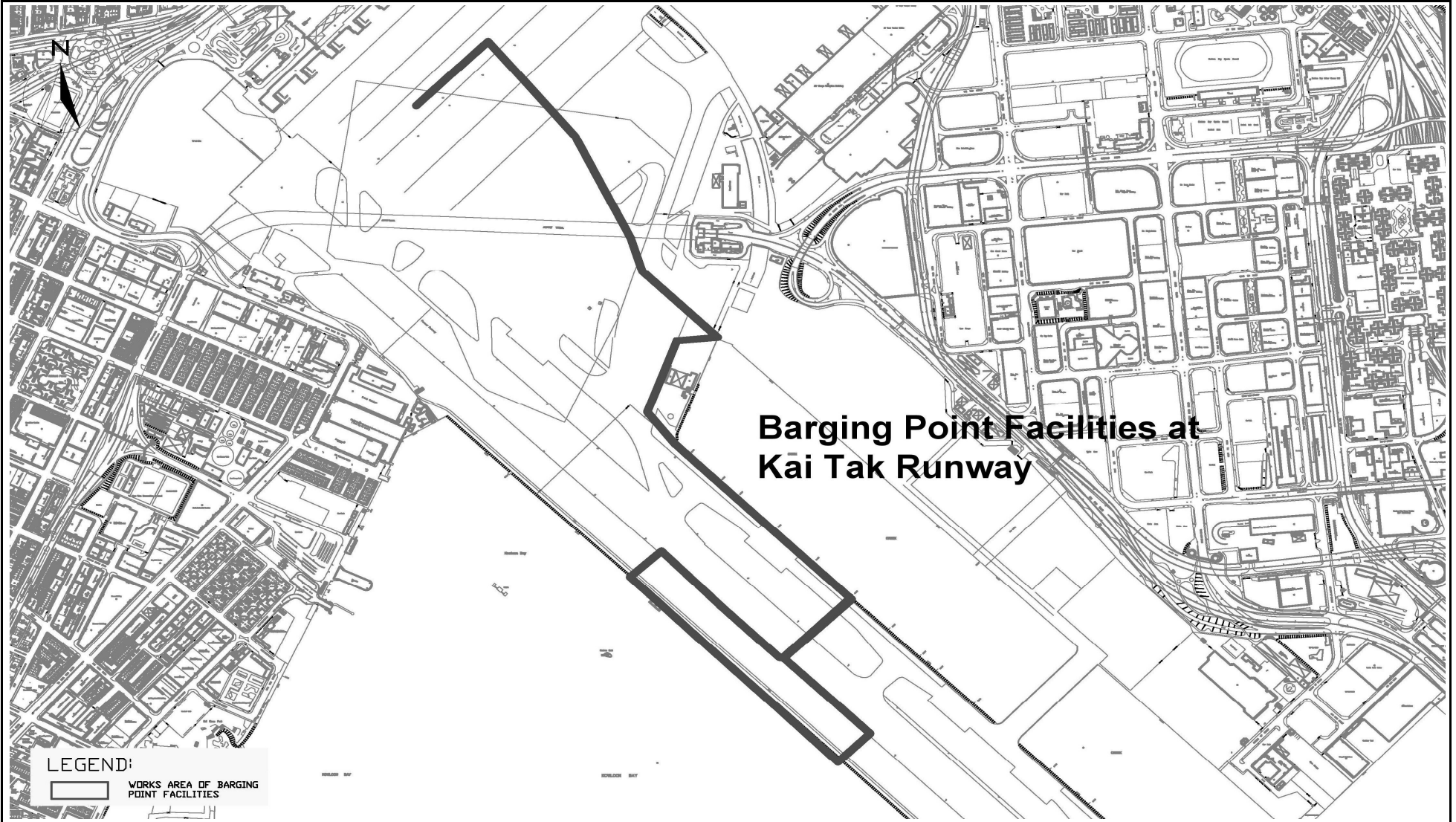
Overall EM&A Data

- 7.6 Baseline and Impact water quality monitoring for dredging works were carried out according to the requirements in the EM&A Manual.
- 7.7 No exceedance of the Action and Limit Levels of impact water quality monitoring was recorded at the designated monitoring stations during the dredging period.

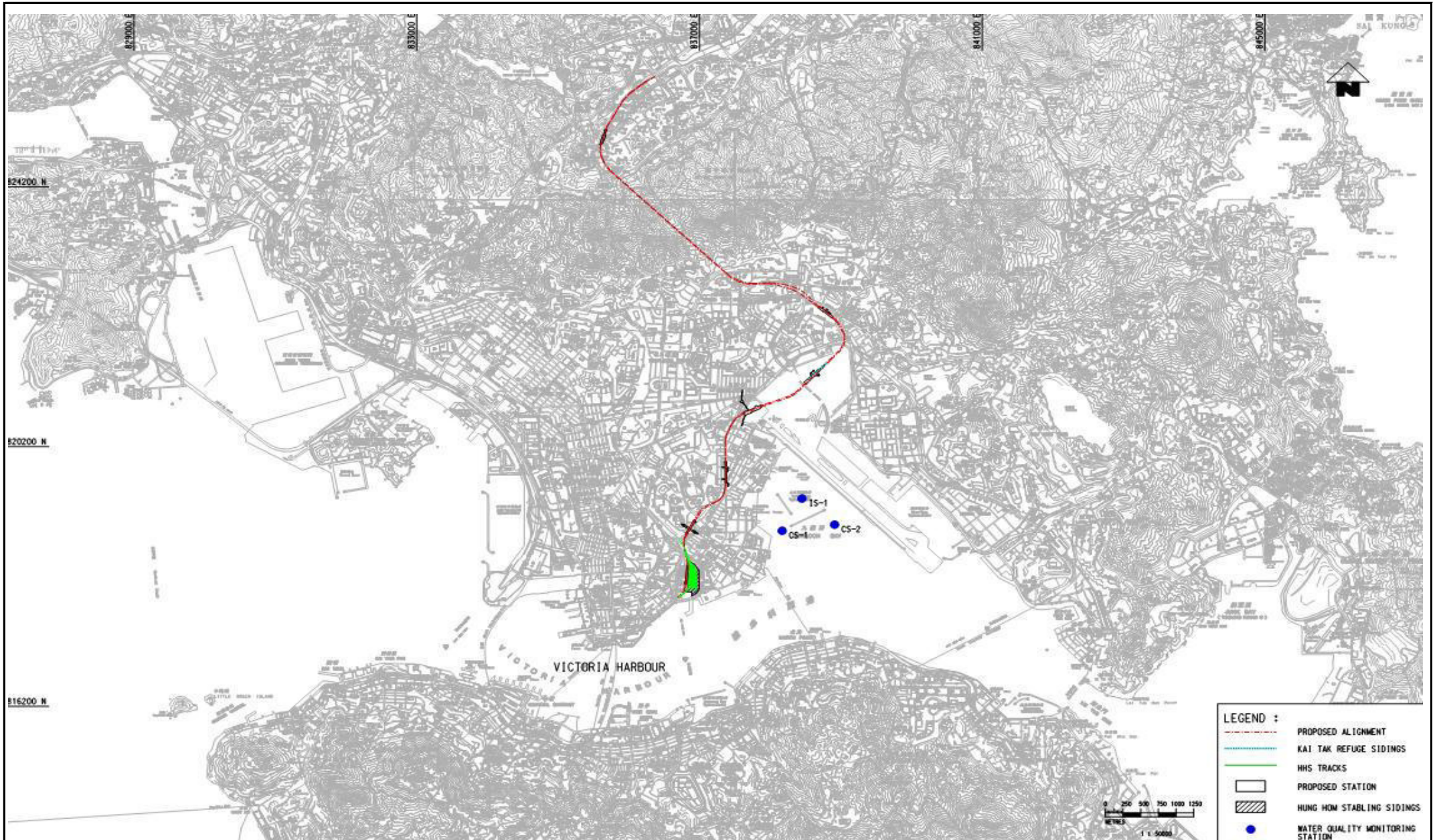
Recommendations and Conclusions

- 7.8 The EM&A programme was found to be effective in monitoring impacts arising from the Project. The findings of the environmental monitoring program suggest that no adverse impacts on sensitive receivers were brought about by the Project. In conclusion the Project was environmentally acceptable.
- 7.9 With the success of the overall EM&A programme, the deterioration of the environment caused by the Project was cost-effectively identified and necessary prompt effective mitigation measures were implemented to avoid any unacceptable impacts.

FIGURES



Title <p style="text-align: center;">SCL Contract 1108A The Shatin to Central Link - Kai Tak Barging Point Facilities Site Layout Plan</p>	Scale	N.T.S	Project No.	CINOTECH
	Date	Apr-14	Figure	



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

Propose

No. MA12028

Figure

2



**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	<u>Surface & Middle:</u> 4.6 (5 percentile of baseline data) <u>Bottom:</u> 3.9 (5 percentile of baseline data)	<u>Surface & Middle:</u> 4 <u>Bottom:</u> 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
EVENT AND ACTION PLANS

Event and Action Plan for Water Quality

Event	ET	IEC	ER	Contractor
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Repeat measurement on next day 	<ol style="list-style-type: none"> 1. Discuss with ET , Contractor and 	<ol style="list-style-type: none"> 1. Discuss with IEC, ET and 	<ol style="list-style-type: none"> 1. Identify source(s) of impact;

Event	ET	IEC	ER	Contractor
<p>exceeded by one sampling day</p>	<p>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;</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>
<p>Limit level being exceeded by more than one consecutive sampling days</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>

Event and Action Plan for Landscape and Visual during Construction Stage

Event	ET	IEC	ER	Contractor
Non-conformity on one occasion	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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:

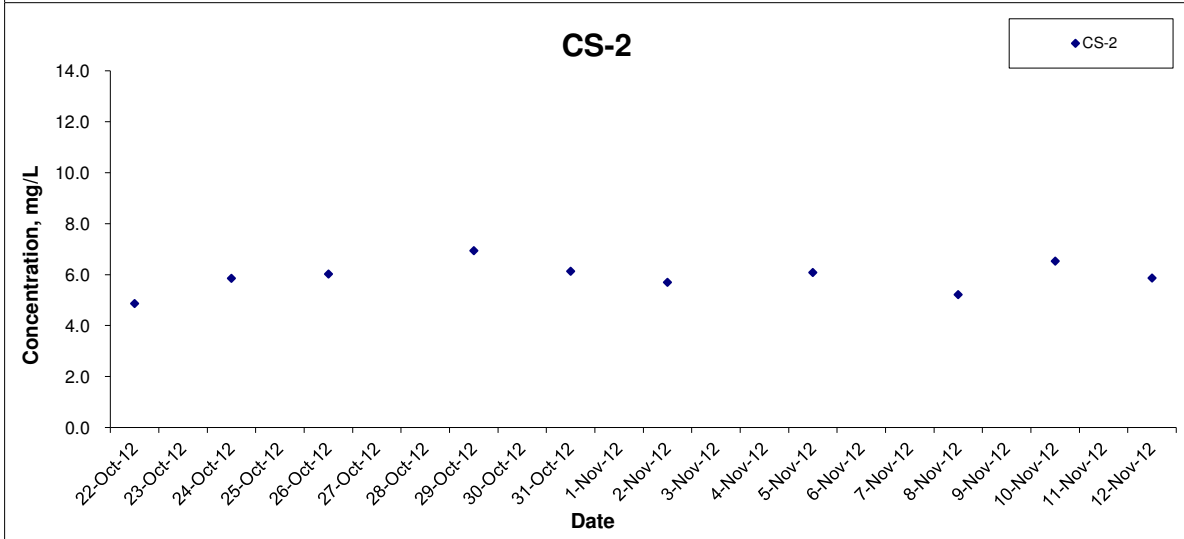
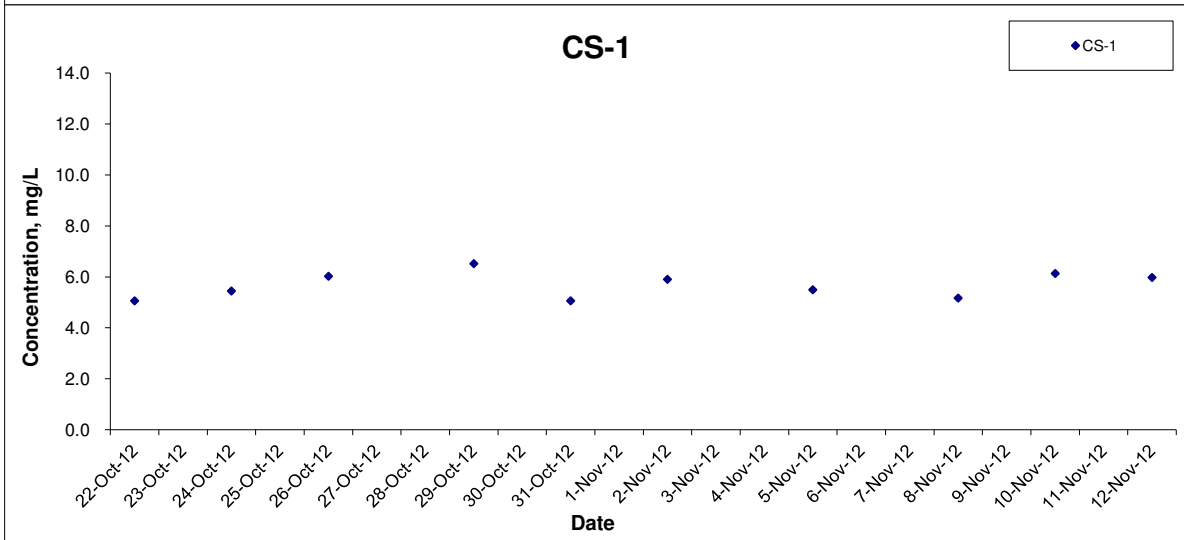
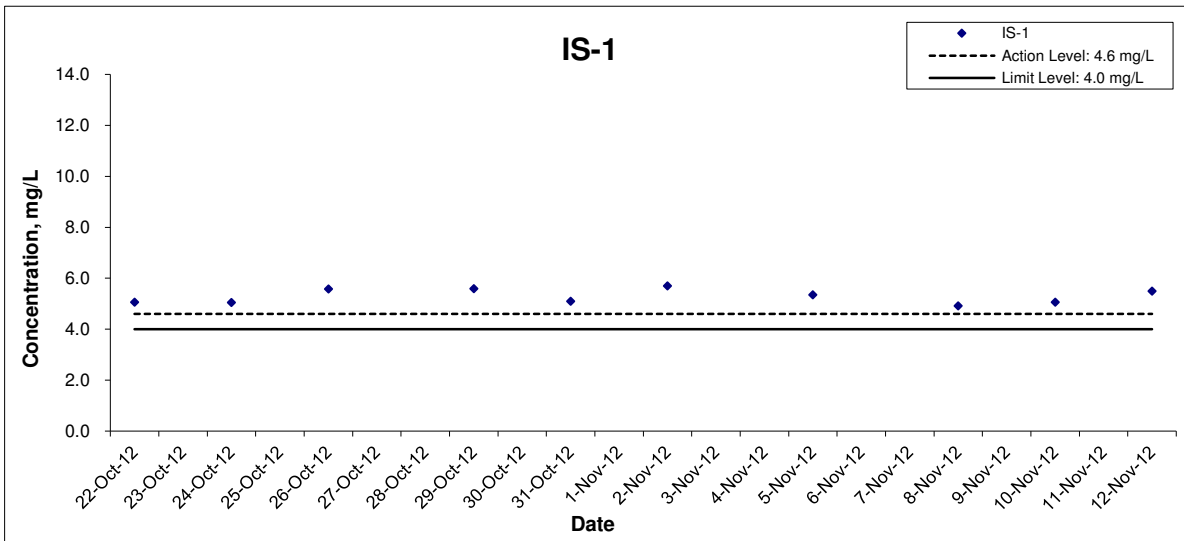
ET – Environmental Team

IEC – Independent Environmental Checker

ER – Engineer/Engineer’s Representative

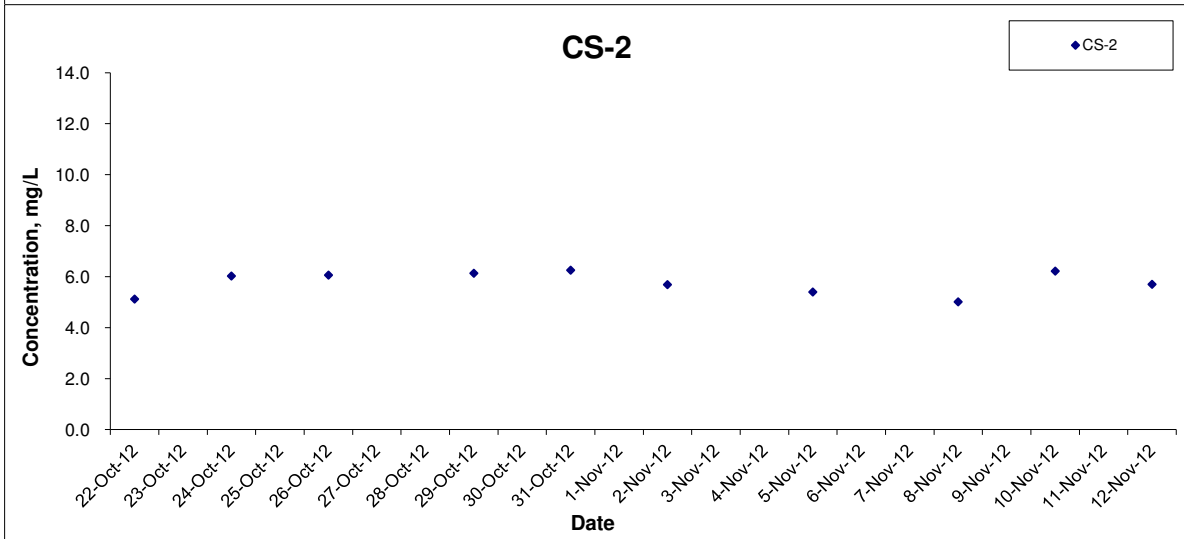
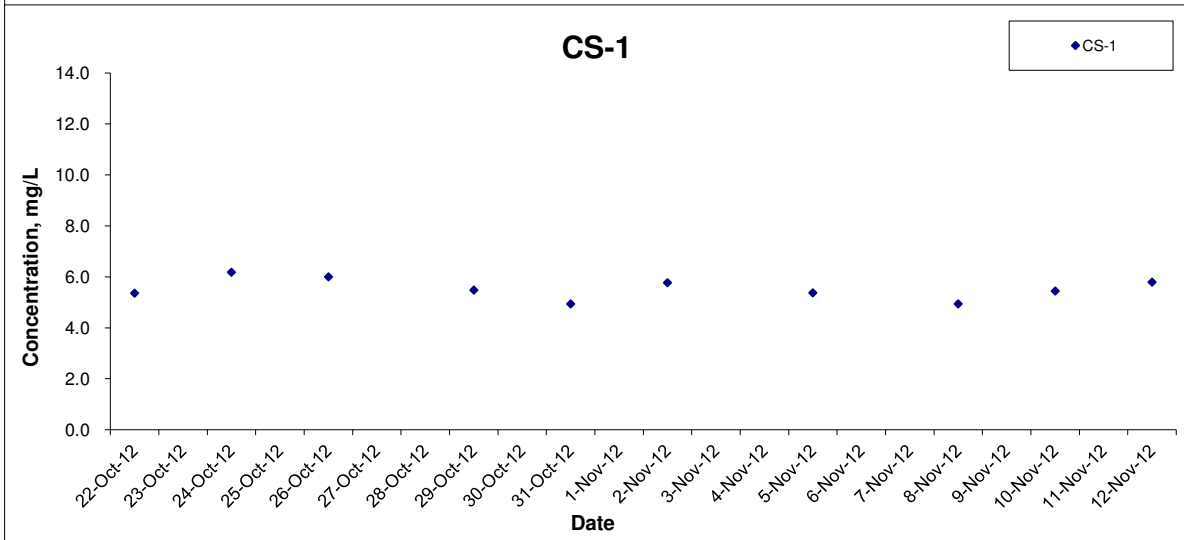
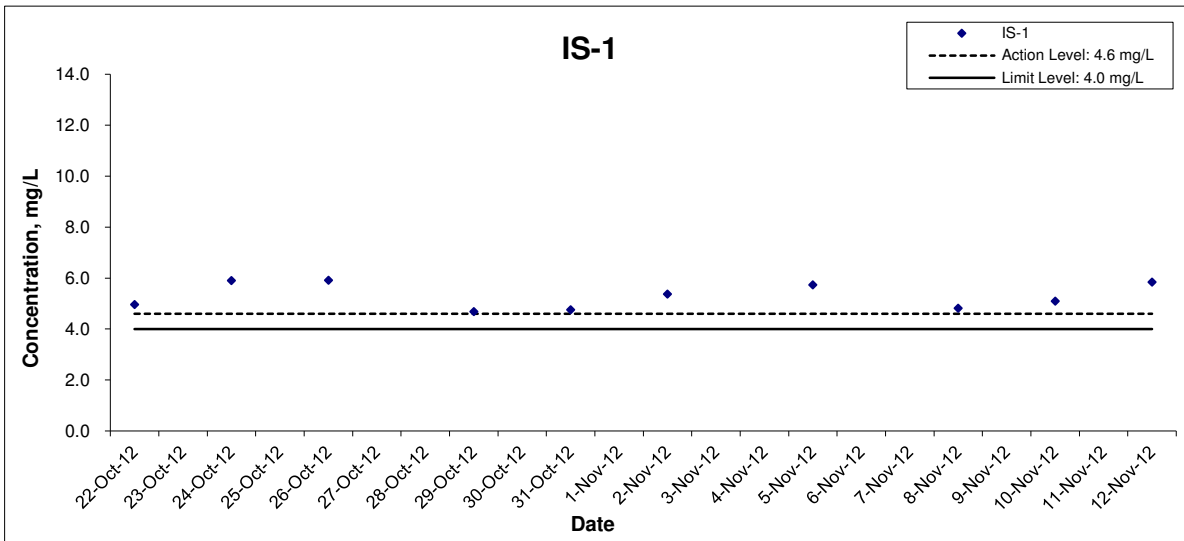
**APPENDIX C
WATER QUALITY MONITORING RESULTS
AND GRAPHICAL PRESENTATIONS**

Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



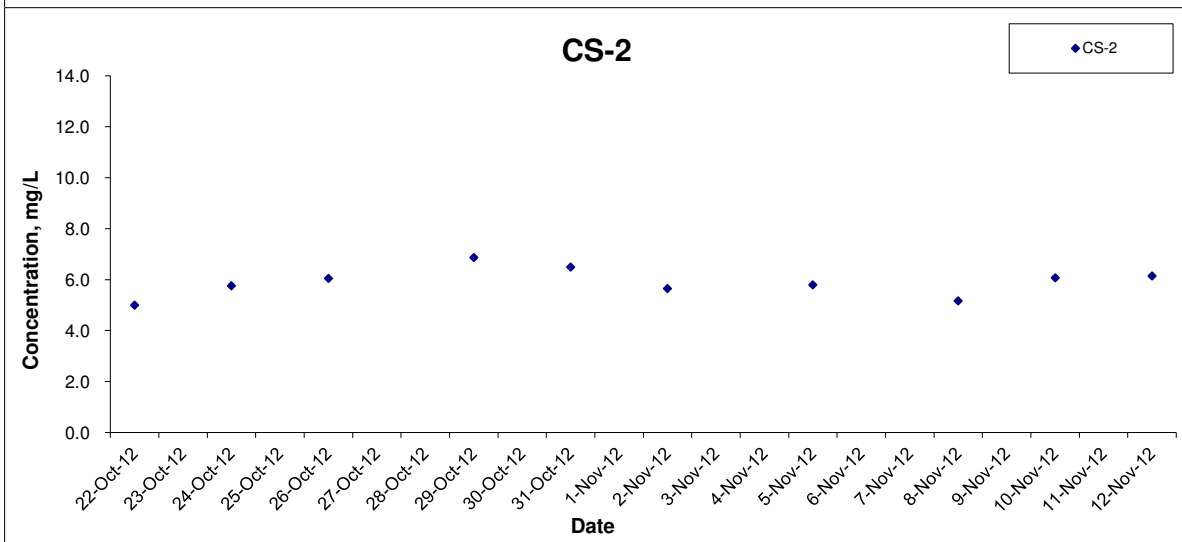
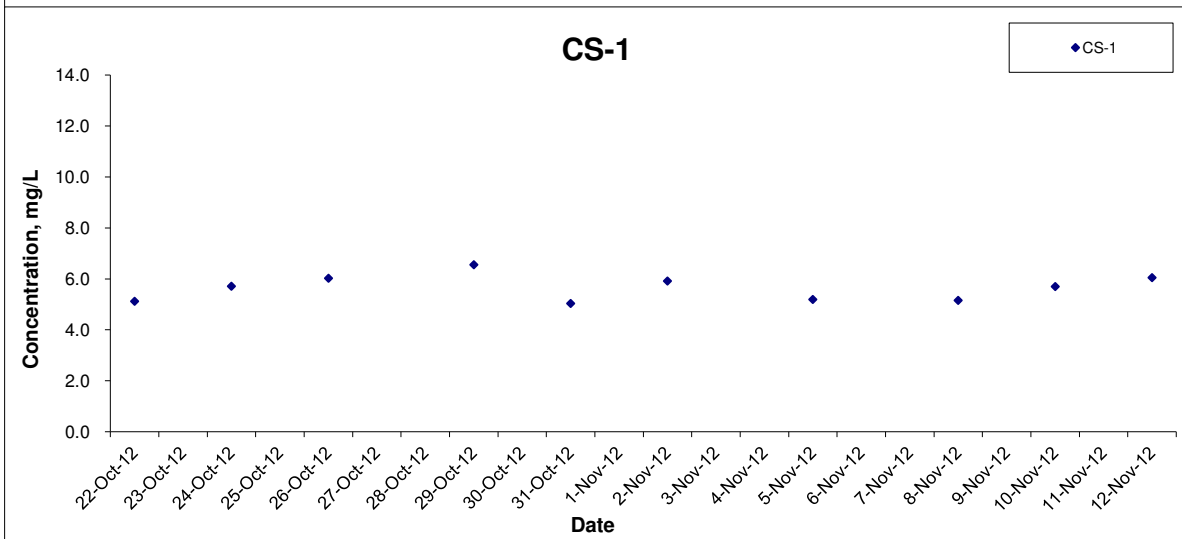
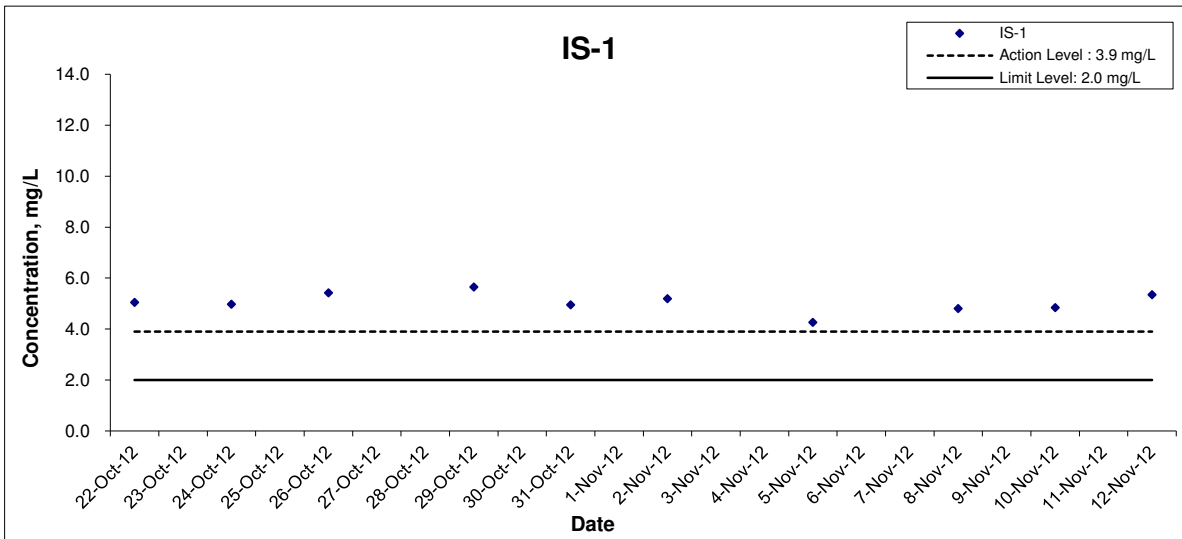
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	Date Oct to Nov 12	Appendix C	

Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



Title Shatin to Central Link – Contract 1108A Kai Tak Barging Point Facilities Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12028	
	Date Oct to Nov 12	Appendix C	

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



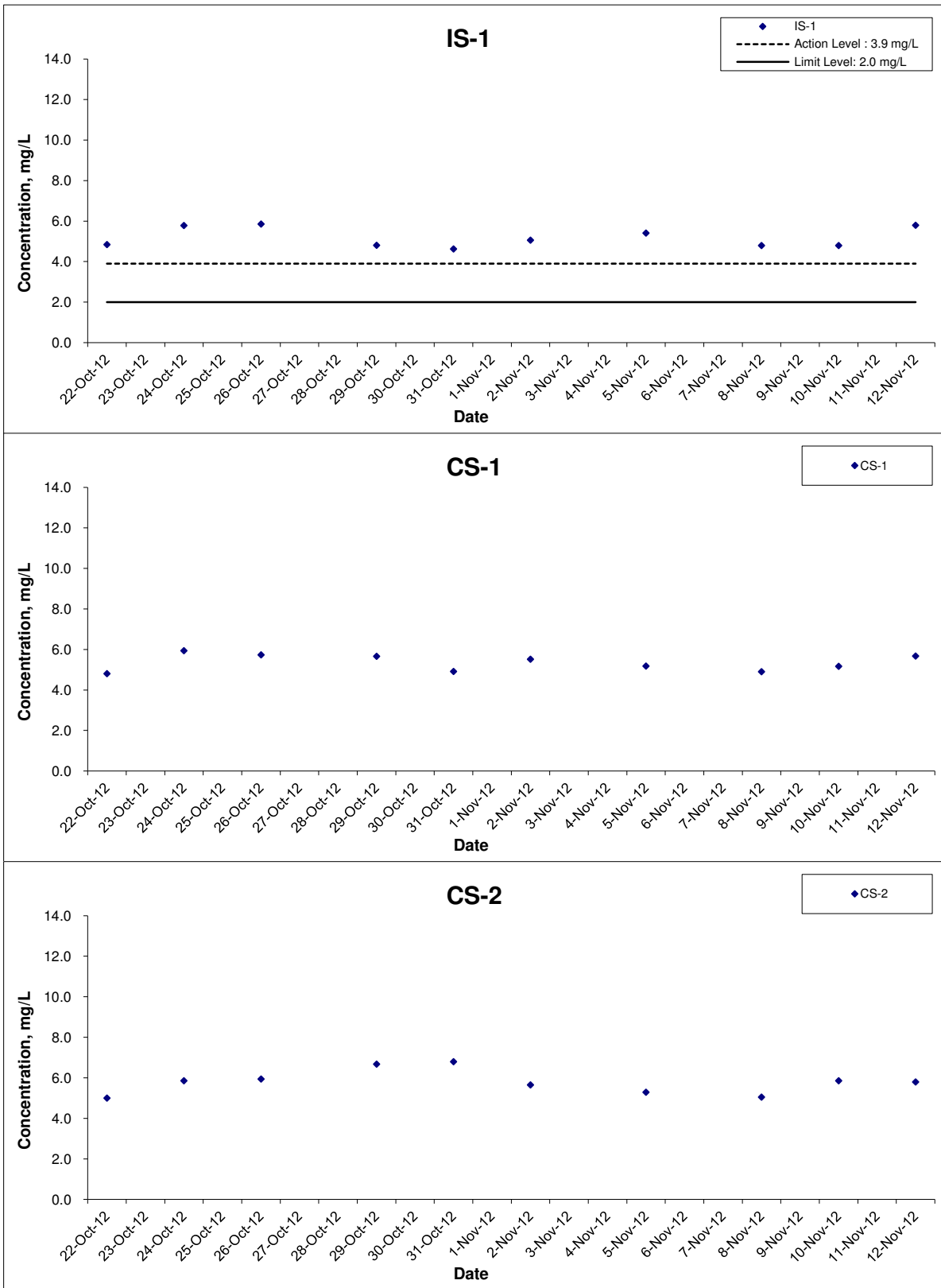
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 Contract 1108A Kai Tak Barging Point Facilities
 Graphical Presentation of Water Quality Monitoring
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 Date
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Project
 No. MA12028
 Appendix
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



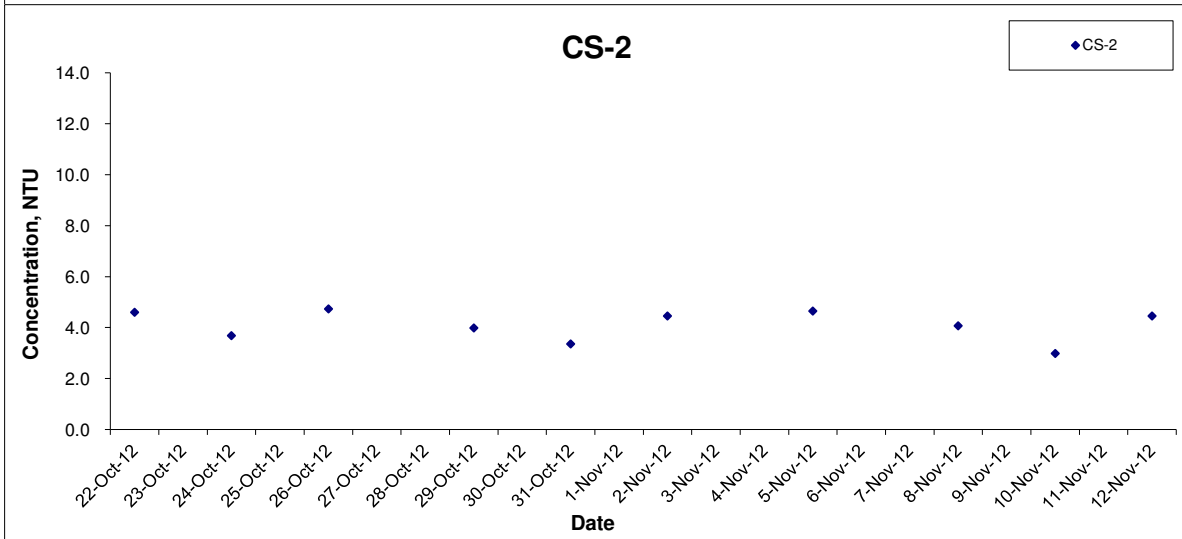
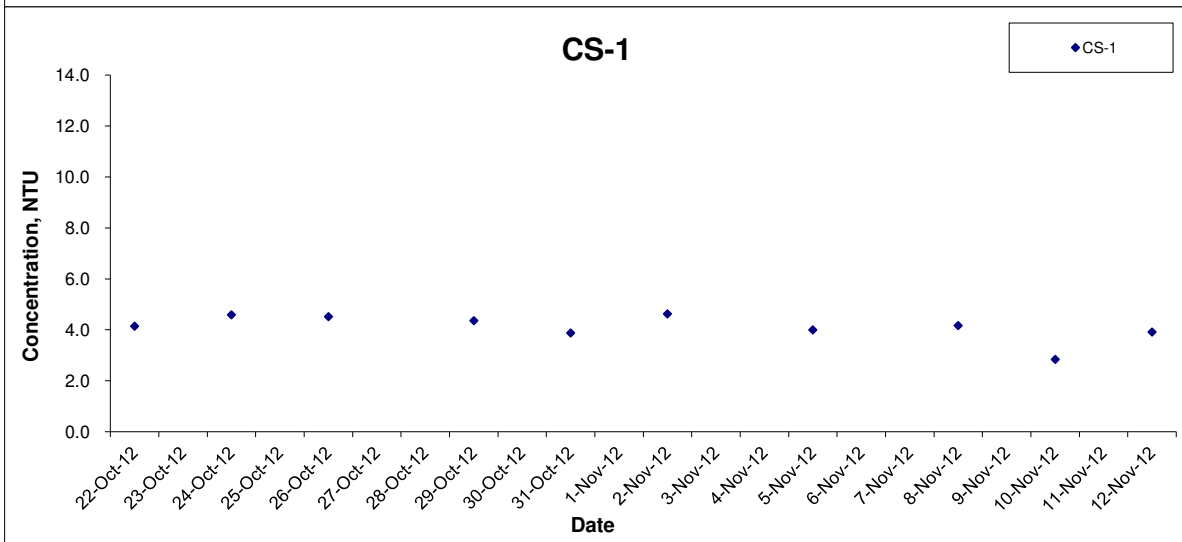
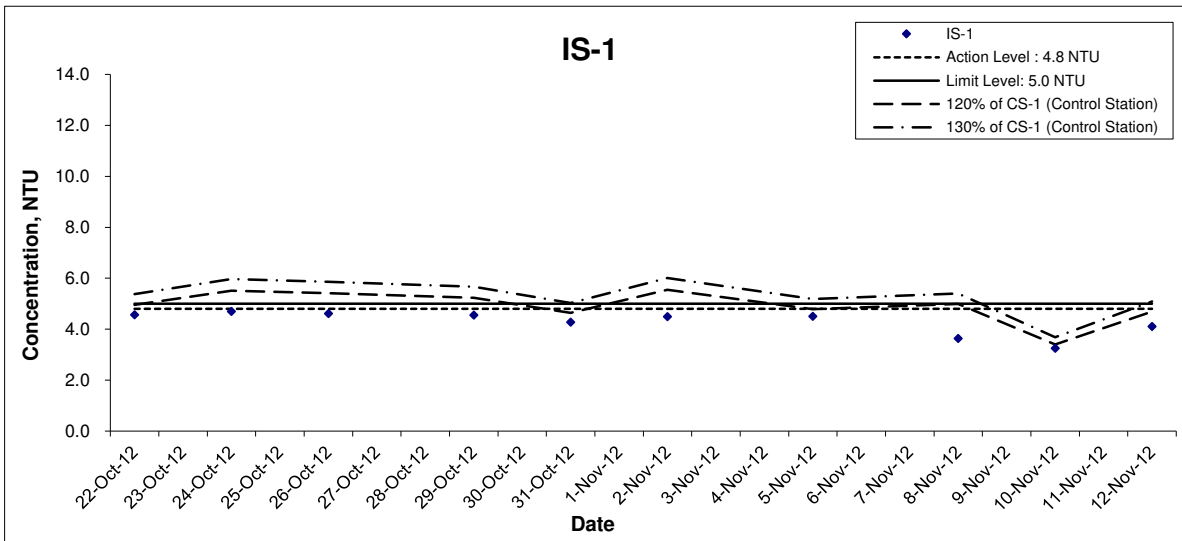
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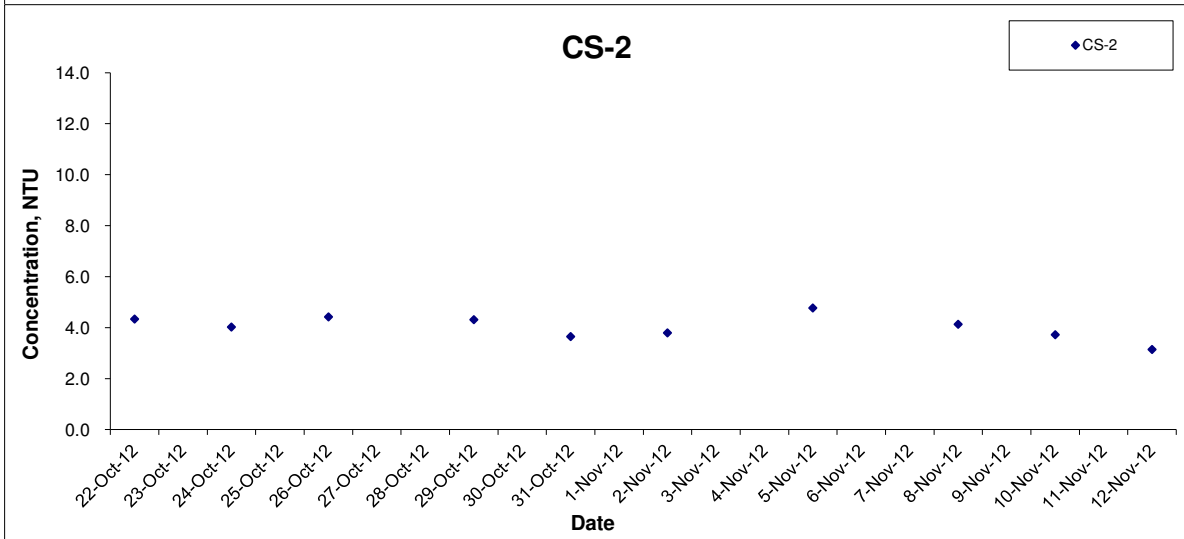
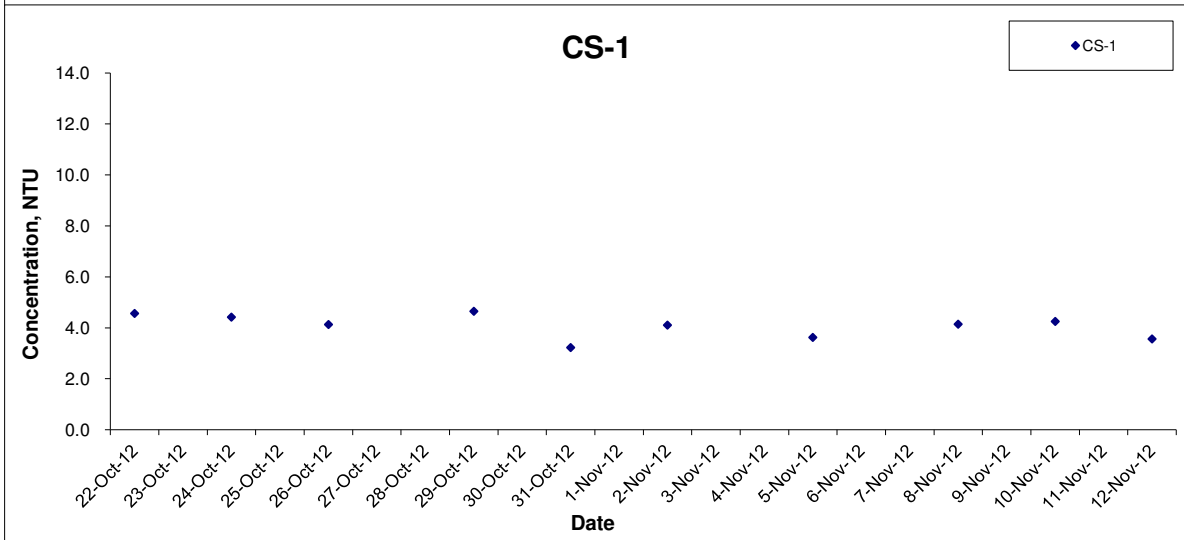
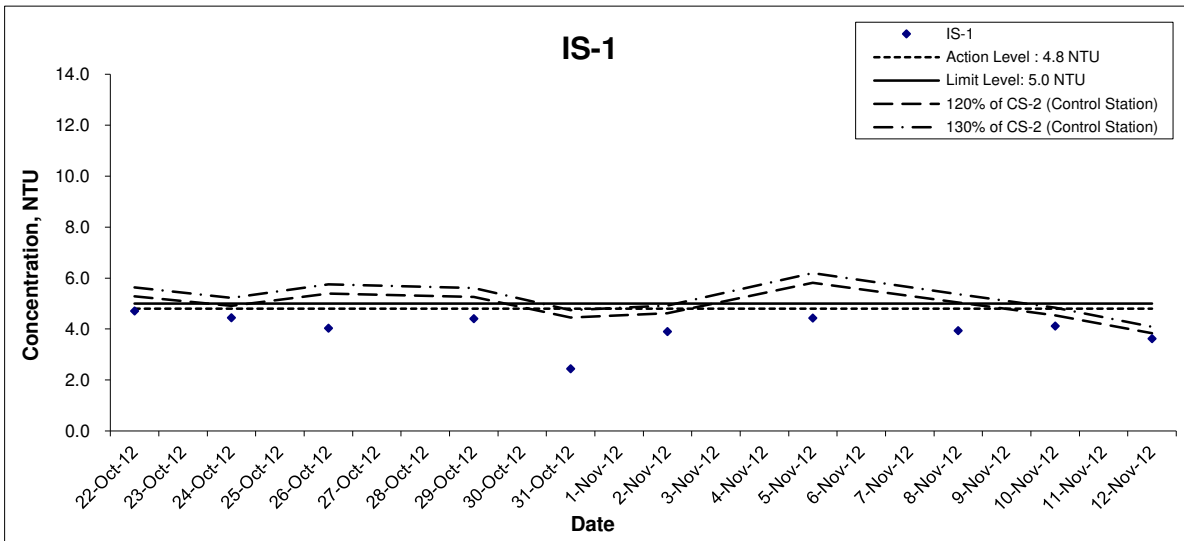


Turbidity (Depth-averaged) at Mid-Ebb Tide



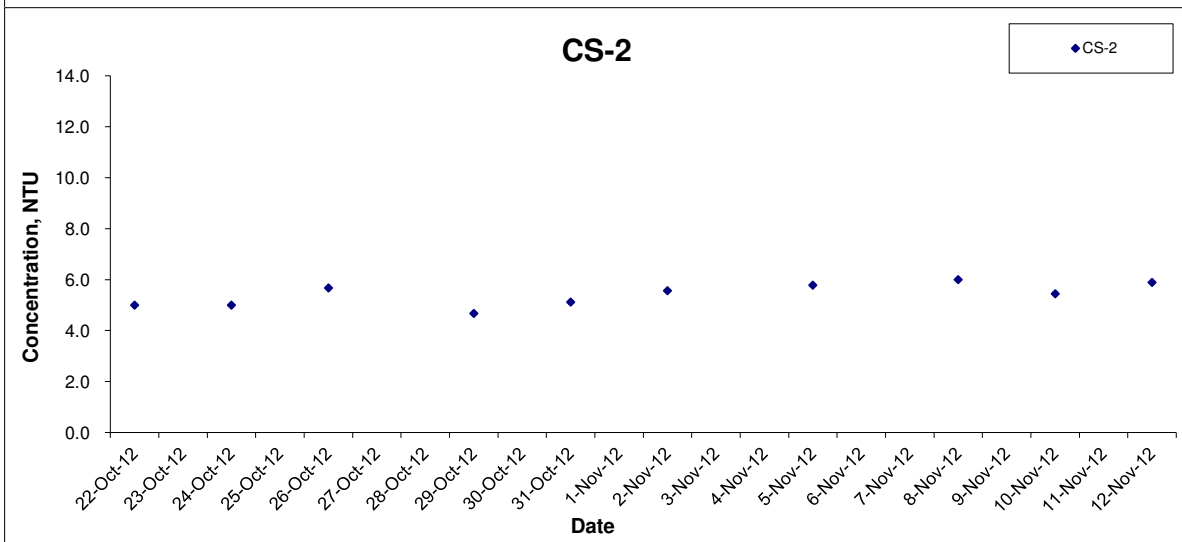
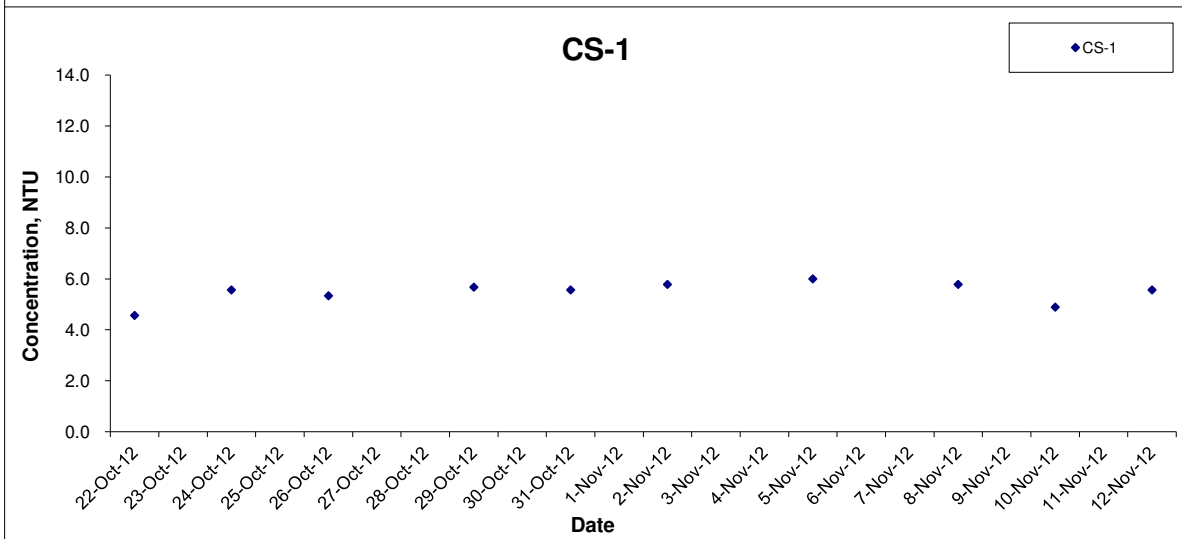
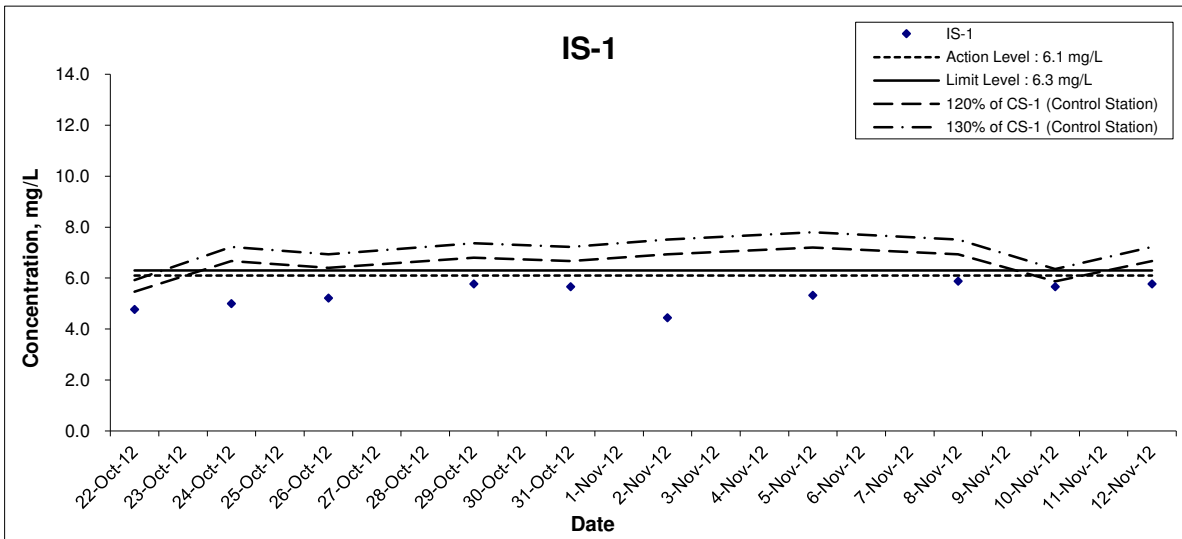
Title Shatin to Central Link – Contract 1108A Kai Tak Barging Point Facilities Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12028	
	Date Oct to Nov 12	Appendix C	

Turbidity (Depth-averaged) at Mid-Flood Tide



Title Shatin to Central Link – Contract 1108A Kai Tak Barging Point Facilities Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA12028	
	Date Oct to Nov 12	Appendix C	

Suspended Solids (Depth-averaged) at Mid-Ebb Tide



Title

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

Graphical Presentation of Water Quality Monitoring
Results

Scale

N.T.S

Date

Oct to Nov 12

Project No.

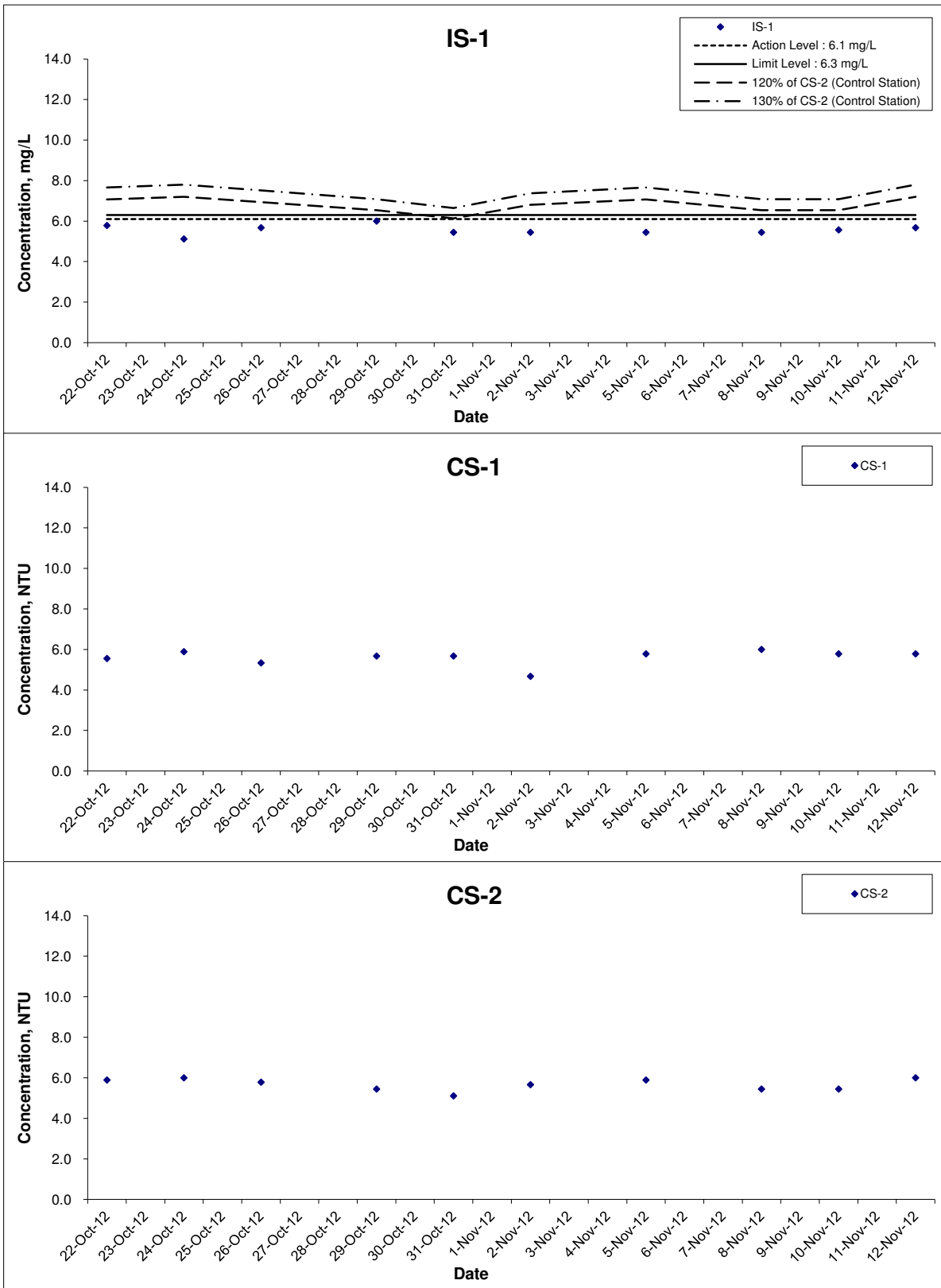
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Appendix

C



Suspended Solids (Depth-averaged) at Mid-Flood Tide



Title

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

Graphical Presentation of Water Quality Monitoring
Results

Scale

N.T.S

Date

Oct to Nov 12

Project No.

MA12028

Appendix

C



**APPENDIX D
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	<p><u>Tree felling and vegetation removal</u></p> <p>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.</p>	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	<p><u>Good Site Practices</u></p> <p>Impact to any habitats or local fauna should be avoided by implementing good site practices, including the containment of silt runoff within the site boundary, the containment of contaminated soils for removal from the site, appropriate storage of chemicals and chemical waste away from sites of ecological value and the provision of sanitary facilities for on-site workers. Adoption of such measures should permit waste to be suitably contained within the site for subsequent removal and appropriate disposal.</p> <p>The following good site practices should also be implemented:</p> <ul style="list-style-type: none"> 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
		<ul style="list-style-type: none"> 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. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S5.7	E6	<p><u>Sediment Removal</u></p> <ul style="list-style-type: none"> Use closed grab in dredging works. Install silt curtain during the dredging. 	<ul style="list-style-type: none"> Reduce indirect impacts of suspended solids on sessile benthic and intertidal fauna Minimize marine water quality impacts 	Contractor	Dredging Area	During Dredging	•TM-Water	<p>^</p> <p>^</p>
Landscape & Visual (Construction Phase)								
S6.9.3	LV1	<p>The following good site practices and measures for minimisation and avoidance of potential impacts are recommended:</p> <p><u>Re-use of Existing Soil</u></p> <ul style="list-style-type: none"> 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
		<p>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.</p> <p><u>No-intrusion Zone</u></p> <ul style="list-style-type: none"> 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. <p><u>Protection of Retained Trees</u></p> <ul style="list-style-type: none"> 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. 						<p>^</p> <p>^</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<ul style="list-style-type: none"> 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	<p><u>Decorative Hoarding</u></p> <ul style="list-style-type: none"> 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. <p><u>Management of facilities on work sites</u></p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> EIAO – TM ETWB TCW 2/2004 ETWB TCW 3/2006 	<p>^</p> <p>N/A⁽¹⁾</p>
Air Quality (Construction Phase)								
/	A1	<p><u>Emission from Vehicles and Plants</u></p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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
		<ul style="list-style-type: none"> • 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 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;</p> <ul style="list-style-type: none"> • 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. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	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	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:</p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Air Pollution Control (Construction Dust) Regulation 	<p>^</p> <p>*</p> <p>^</p> <p>^</p>
S7.6.5	D5	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> • 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	^ ^ ^ ^ ^
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	<p>In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following:</p> <p><u>Construction Runoff and Site Drainage</u></p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Water Pollution Control Ordinance ProPECC PN1/94 TM-EIAO TM-Water 	<p>^</p> <p>^</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>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.</p> <ul style="list-style-type: none"> • 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 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

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		<p>weather and the reduction of surface sheet flows.</p> <ul style="list-style-type: none"> • 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 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 						<p style="text-align: center;">*</p> <p style="text-align: center;">^</p> <p style="text-align: center;">N/A⁽¹⁾</p> <p style="text-align: center;">*</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>system and storm runoff being directed into foul sewers</p> <ul style="list-style-type: none"> • 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 						<p style="text-align: center;">^</p> <p style="text-align: center;">*</p> <p style="text-align: center;">^</p>

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		<p>should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain.</p> <ul style="list-style-type: none"> • 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. 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>
S10.7.1	W3	<p><u>Sewage Effluent</u></p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Water Pollution Control Ordinance • TM-water 	^

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		<p>plant shall meet the requirements as stated in TM-Water and should be discharged into the foul sewers</p> <ul style="list-style-type: none"> 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⁾

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S10.7.1	W5	<p><u>Dredging Works</u></p> <p>The following good practice shall apply for the dredging works:</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Water Pollution Control Ordinance • TM-EIAO 	<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S10.7.1	W6	<p><u>Operation of Barging Facilities</u></p> <p>The following good practice shall apply for the barging facilities operations:</p> <ul style="list-style-type: none"> • 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 	To minimize water quality impact from operation of barging facility	Contractor	All barging facilities	Construction stage	<ul style="list-style-type: none"> • Water Pollution Control Ordinance • TM-EIA 	<p>^</p> <p>^</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>overflow of materials or polluted water during loading or transportation;</p> <ul style="list-style-type: none"> 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. 						<p>^</p> <p>*</p> <p>*</p>
S10.7.1	W7	<p>In order to prevent accidental spillage of chemicals, the following is recommended:</p> <ul style="list-style-type: none"> All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains. The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings. Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical 	To minimize water quality impact from accidental spillage	Contractor	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> Water Pollution Control Ordinance ProPECC PN1/94 TM-EIAO TM-Water 	<p>*</p> <p>^</p> <p>^</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	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) (General) Regulation.						
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	<ul style="list-style-type: none"> • Water Pollution Control Ordinance • TM-water • EIA-TM 	^
Waste Management (Construction Waste)								
S11.4.1.1	WM1	<u>On-site sorting of C&D material</u> <ul style="list-style-type: none"> • 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 	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> • 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
		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	<p><u>Construction and Demolition Material</u></p> <ul style="list-style-type: none"> 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 	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Land (Miscellaneous Provisions) Ordinance Waste Disposal Ordinance ETWB TCW No. 19/2005 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>and to minimize their generation during the course of construction.</p> <ul style="list-style-type: none"> 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	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> 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 	<p>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</p>	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> 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
		segregation and storage.						
S11.5.1	WM4	<u>General Refuse</u> <ul style="list-style-type: none"> 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> <ul style="list-style-type: none"> All construction plant and equipment shall be designed and 	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
		<p>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;</p> <ul style="list-style-type: none"> • 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 						<p>N/A⁽¹⁾</p> <p>N/A⁽¹⁾</p> <p>N/A⁽¹⁾</p> <p>N/A⁽¹⁾</p> <p>N/A⁽¹⁾</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		<p>licence.</p> <ul style="list-style-type: none"> • All bottom dumping vessels (Hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material; • The material shall be placed into the disposal pit by bottom dumping; • Contaminated marine mud shall be transported by spit barge of not less than 750m³ 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 						<p>N/A⁽¹⁾</p> <p>N/A⁽¹⁾</p> <p>N/A⁽¹⁾</p> <p>N/A⁽¹⁾</p> <p>N/A⁽¹⁾</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		at the disposal site, thereby fulfilling the requirements for fully confined mud disposal.						
S11.5.1	WM7	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> 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 	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All Construction Sites	Construction Stage	<ul style="list-style-type: none"> Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste 	<p>*</p> <p>*</p> <p>^</p>

**APPENDIX E
WASTE GENERATION IN THE
CONSTRUCTION PERIOD**

Concentric – Hong Kong River Joint Venture

MTR SCL Contract 1108A Kai Tak Barging Point Facilities

Monthly Summary Waste Flow Table for 2013 (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	0.005	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.005
Feb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
Mar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Apr	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
June	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
Sub-total	0.005	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.020
July	0.010	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.010	0.005
Aug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
Sept	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Oct	0.055	0.000	0.000	0.000	0.055	0.000	0.000	0.000	0.000	0.000	0.005
Nov	0.120	0.000	0.000	0.000	0.120	0.000	0.000	0.000	0.000	0.000	0.010
Dec	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
G.Total	0.190	0.000	0.000	0.000	0.190	0.000	0.000	0.000	0.000	0.010	0.065

Concentric – Hong Kong River Joint Venture

MTR SCL Contract 1108A Kai Tak Barging Point Facilities

Monthly Summary Waste Flow Table for 2016 (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	0.005
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	0.010
April	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
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	0.005
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025
July	7.160	0.000	0.000	7.160	0.000	0.000	0.000	0.000	0.000	0.000	0.085
August	17.952	0.000	0.000	17.952	0.000	0.000	0.000	0.000	0.000	0.089	0.055
September	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
October	-	-	-	-	-	-	-	-	-	-	-
November	-	-	-	-	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-	-	-	-	-
G.Total	25.122	0.000	0.000	25.122	0.000	0.000	0.000	0.000	0.000	0.089	0.180

**APPENDIX F
COMPLAINT LOG**

Appendix F - 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.	<p>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).</p> <p>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</p>	Closed

						<p>there are no Noise Sensitive Receivers (NSRs) located within 300m from the barge point.</p> <p>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.</p>	
7	Barging Point / Dust and Disposal of Construction Waste	15-07297	-- / --	2 April 2015	<p>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.</p>	<p>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.</p> <p>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</p>	Closed

						<p>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.</p> <p>The environmental conditions of the site and effectiveness of the implementation of mitigation measures will be continuously reviewed and monitored by the Resident Staff and the Environmental Team.</p>	
8	Barging Point / Dust emission	15-10412	-- / --	4 May 2015	<p>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.</p>	<p>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</p>	Closed

						<p>the barging point.</p> <p>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.</p>	
9	-- / Air Quality Impact	16-08335 (Follow up)	-- / --	28 June 2016	<p>The complainant complained that storage and transport the construction materials caused air pollution and water spraying is not enough.</p>	<p>It was observed that the Contractor has implemented appropriate dust mitigation measures to reduce air pollution generated from the work site. The Contractor also took additional mitigation measures after the complaint was received to further reduce the dust generated from the work site.</p> <p>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.</p>	Closed