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5th CONSOLIDATED MONTHLY EM&A REPORT

March 2017

Client	**:**	Civil Engineering and Development Department, HKSAR
EP No.	**:**	EP-337/2009 – New Distributor Roads Serving the Planned Kai Tak Development Area
Contract No.	**:**	KLN/2016/05 – Independent Environmental Checker for Contract No. KL/2015/02 Kai Tak Development – Stage 5A Infrastructure at Former North Apron Area
Report No.	**:**	0087/16/ED/0379

Prepared by	**:**	Wingo So
Reviewed by	**:**	Calvin Leung
Certified by	**:**	Colin Yung Independent Environmental Checker MateriaLab Consultants Limited

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ii. The EP-337/2009 relevant major construction activities undertaken in the reporting month are summarized as follow:

Contract No. KL/2010/03:
- NA (The works has been completed and no further EM&A submission is required.)

Contract No. KL/2012/02:
- Site Clearance;
- RC works for VT1 at Portion G;
- Drainage works for connection to box culvert (KTOB);
- Hard landscaping works for Portion F1;
- Cross road duct at Choi Hung Road;
- Road and drainage works at Sze Mei Street and Luk Hop Street;
- Condition survey and monitoring survey;
- Earthwork at Portion E3;
- Footpath construction at Sam Chuk Street and Tsat Po Street; and
- ELS works for SW3 at San Po Kong.

Contract No. KL/2012/03:
- Daily Cleaning;
- Finishing works, E&M work in PS2;
- Water test, backfill and sheet-pile removal in Heading 7A
- Segment tunneling, backfill and sheet-pile removed chamber construction in Heading 7B;
- Road widening works (excavation and UU works) at Sung Wong Toi Road;
- Maintenance & Servicing Engineer's Office at Portion 9;
- Install fitting inside chamber in Pit 1 and Pit 5;
- Rising Main installation in Pit 2, Pit 4, Pit6/7 and Pit 9;
- Pipe Jacking from Pit 10 to Pit 9;
- Installation of drainage, UU laying works and Road works at Road D2;
- Finishing works and E&M works at NPS;
- UU works and Road works at Road L19 & Bailey St;
- Refer construction works of NPS in Portion 4 sewerage; and
- Removal of excavated material at Portion 6.

Contract No. KL/2014/01:
- Watermain works;
- Construction of boundary wall at EPD recycling centre;
- Bored piles and Pre-bored socketed H-piles;
- TTA implementation at Shing Fung Road and Wang Chiu Road / Sheung Yee Road;
- Open excavation for box culvert, piles caps and underpass;
- ELS installation for box culvert and underpass; and
- Construction of pile caps, sewer and manholes.

Contract No. KL/2014/03:
- Temporary utility diversion;

- Implementation of Temporary Traffic Arragement (TTA);
- Construction of Tunnel structure;
- Construction of Socket H-piles;
- Construction of drainage works;
- Construction of guide walls and D-walls; and
- Construction of District Cooling System Works.

Contract No. KL/2015/02:

- Bored piling works at abutment A02;
- Carrying out pre-bored works and driving sheet piles at Subway SW6 between Staircases ST2 and ST3;
- Drilling works for standpipe and piezometer;
- Trench excavation for DCS works at Road L7;
- Construction of Box Culvert B3 (Top slab);
- Excavation and Construction Works for Box Culvert B4;
- ELS Works and Excavation Works at Box Culvert B5;
- Excavation Works for Box Culvert B2; and
- ELS Construction for Sewerage Works near SCL Tunnels.

Breaches of the Action and Limit Levels

iii. No Action / Limit Level exceedance was recorded for 24-hr TSP monitoring in the reporting month.

iv. No Action / Limit Level exceedance was recorded for 1-hr TSP monitoring in the reporting month.

v. No Action / Limit Level exceedance was recorded for noise monitoring in the reporting month.

Complaint, Notification of Summons and Successful Prosecution

vi. No notification of summons or prosecution was received and one complaint received for Contract No. KL/2012/02 in this reporting month.

Reporting Changes

vii. There was no reporting change in the reporting month.

Future Key Issues

viii. The potential environmental impacts for the coming month and the control measures are shown in **Table I**:

Table I Summary of Key Issues for the Coming Month and Control Measures

Major Impact Prediction	Control Measures
Contract No. KL/2012/02:	
Air quality impact (dust)	• Frequent watering of haul road and unpaved/exposed areas; • Frequent watering or covering stockpiles with tarpaulin or similar means; and • Watering of any earth moving activities.
Water quality impact (surface run-off)	• Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; • Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; • Provision of perimeter protection such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and • Provision of measures to prevent discharge into the stream.
Noise Impact	• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; • Controlling the number of plants use on site; • Regular maintenance of machines; and • Use of acoustic barriers if necessary.
Contract No. KL/2012/03:	
Air quality impact (dust)	• Frequent watering of haul road and unpaved/exposed areas; • Frequent watering or covering stockpiles with tarpaulin or similar means; and • Watering of any earth moving activities.
Water quality impact (surface run-off)	• Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; • Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; • Provision of site boundary bund such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and • Provision of measures to prevent discharge into the stream.
Noise Impact	• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; • Controlling the number of plants use on site; • Regular maintenance of machines; and • Use of acoustic barriers if necessary.
Contract No. KL/2014/01:	
Air quality impact (dust)	• Frequent watering of haul road and unpaved/exposed areas; • Frequent watering or covering stockpiles with tarpaulin or similar means; and • Watering of any earth moving activities.
Water quality impact (surface run-off)	• Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; • Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge;

Major Impact Prediction	Control Measures
	• Provision of perimeter protection such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and • Provision of measures to prevent discharge into the stream.
Noise Impact	• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; • Controlling the number of plants use on site; • Regular maintenance of machines; and • Use of acoustic barriers if necessary.
Contract No. KL/2014/03:	
Construction dust, construction noise, water quality, waste management and landscape and visual impact.	• Sufficient watering of the works site with the active dust emitting activities; • Limitation of the speed for vehicles on unpaved site roads; • Properly cover or enclosure of the stockpiles and dusty materials; • Good site practices on loading dusty materials; • Providing sufficient vehicles washing facilities at every vehicle exit point; • Good maintenance to the plant and equipment; • Use of quieter plant and Quality Powered Mechanical Equipment (QPME); • Use of acoustic fabric and noise barrier; • Using the approved Non-road Mobile Machineries (NRMMs); • Proper storage and handling of chemical; • Appropriate desilting, oil interceptors or sedimentation devices provided on site for treatment before discharge; • Onsite waste sorting and implementation of trip ticket system; • Training of the site personnel in proper waste management and chemical waste handling procedures; • Proper storage of the construction materials; • Erection of decorative screen hoarding; • Strictly following the Environmental Permits and Licenses; • Provide sufficient mitigation measures as recommended in Approved EIA Reports
Contract No. KL/2015/02:	
Air quality impact (dust)	• Frequent watering of haul road and unpaved/exposed areas; • Frequent watering or covering stockpiles with tarpaulin or similar means; and • Watering of any earth moving activities.
Water quality impact (surface run-off)	• Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; • Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; • Provision of perimeter protection such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and • Provision of measures to prevent discharge into the stream.
Noise Impact	• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; • Controlling the number of plants use on site; • Regular maintenance of machines; and • Use of acoustic barriers if necessary.

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1. INTRODUCTION

1.1 Background

1.1.1 The Kai Tak Development is located in the south-eastern part of Kowloon Peninsula of the HKSAR, comprising the apron and runway areas of the former Kai Tak Airport and existing waterfront areas at To Kwa Wan, Ma Tau Kok, Kowloon Bay, Kwun Tong and Cha Kwo Ling.

1.1.2 A study of environmental impact assessment (EIA) was undertaken to consider the key issues of air quality, noise, water quality, waste, land contamination, cultural heritage and landscape and visual impact, and identify possible mitigation measures associated with the works. EIA Report (Register No. AEIAR-130/2009) was approved by the Environmental Protection Department (EPD) on 4 March 2009.

1.1.3 The EP-337/2009 was issued on 23 April 2009 for the new distributor roads serving the planned Kai Tak Development to the following scale and slope:

a) Road D1 – a dual 2-lane carriageway of approximately 1.3 km long.
b) Road D2 – a dual 3-lane carriageway of approximately 1.1 km long.
c) Road D3 – a dual 2-lane carriageway of approximately 2.3 km long.
d) Road D4 – a dual 2-lane carriageway of approximately 0.9 km long.

1.1.4 The Civil Engineering and Development Department HKSAR has appointed MateriaLab Consultants Limited (MCL) to undertake the role of Independent Environmental Checker (IEC) for the Contract No. KL/2015/02.

1.1.5 This is the 5th Consolidated Monthly EM&A Report which summaries the EM&A works undertaken by respective contract under EP-337/2009 within the period between 1 March and 31 March 2017.

1.2 Summary of relevant Contract Information of Key Personnel

Party	Position	Name	Telephone	Fax
Contract No. KL/2012/02:				
Project Proponent CEDD)	Engineer	Mr. Mike Cho	3579 2450	2369 4980
		Mr. Kelvin Chow	3579 2453	
Engineer's Representative (ARUP)	SRE	Mr. Gary Cheung	2210 6100	2210 6110
	RE	Ms. Edith Fung		
IEC (ANewR)	IEC	Mr. Adi Lee	2618 2836	3007 8648
ET (Cinotech)	ET Leader	Dr. Priscilla Choy	2151 2089	3107 1388
	Project Coordinator and Audit Team Leader	Ms. Ivy Tam	2151 2090	
Main Contractor (Build King)	Project Manager	Mr. Osbert Sit		
	EO	Mr. Edmond Wong	2639 6290	2639 6208
Contract No. KL/2012/03:				
Project Proponent (CEDD)	Senior Engineer	Mr. C. K. Choi	2301 1174	2301 1277
Engineer's Representative (AECOM)	SRE	Mr. John Yam	2798 0771	3013 8864
	RE	Mr. Jacky Pun		
IEC (Arcadis)	IEC	Mr. Wong Fu Nam	2911 2744	2805 5028
ET (Cinotech)	ET Leader	Dr. Priscilla Choy	2151 2089	3107 1388

Party	Position	Name	Telephone	Fax
	Project Coordinator and Audit Team Leader	Ms. Ivy Tam	2151 2090	
Main Contractor (Kwan On)	Site Agent	Mr. Albert Ng	3689 7752	3689 7726
			6146 6761 (Hotline)	
Contract No. KL/2014/01:				
Project Proponent (CEDD)	Senior Engineer	Mr. Ronald Siu	2301 1453	2301 1277
	Engineer	Ms. Vicky Sy	2301 1207	
Engineer's Representative (AECOM)	CRE	Mr. Clive Cheng	3746 1801	2798 0783
IEC (KSMC)	IEC	Dr. C. F. Ng	2618 2166	2120 7752
ET (Cinotech)	ET Leader	Dr. Priscilla Choy	2151 2089	3107 1388
	Audit Team Leader	Ms. Ivy Tam	2151 2090	
Main Contractor (CCJV)	EO	Mr. Dennis Ho	2960 1398	2960 1399
Contract No. KL/2014/03:				
Project Proponent (CEDD)	Co-ordinator	Ms. Amy Chu	3106 3172	2369 4980
Engineer's Representative (HMJV)	CRE	Mr. Chris Wong	3742 3803	3742 3899
IEC (Ramboll Environ)	IEC	Mr. F. C. Tsang	3465 2851	3465 2899
ET (MCL)	ET Leader	Mr. Colin Yung	3565 4114	3565 4160
Main Contractor (CRBC)	Site Agent	Mr. Arnold Chan	9380 4110	2283 1689
	EO	Mr. Andy Choy	6278 2693	
Contract No. KL/2015/02:				
Project Proponent (CEDD)	Senior Engineer	Ms. K. Pong	2301 1466	2369 4980
Engineer's Representative (AECOM)	SRE	Mr. John Yam	2798 0771	2798 0783
IEC (MCL)	IEC	Mr. Colin Yung	3565 4114	2450 8032
ET (Cinotech)	ET Leader	Dr. Priscilla Choy	2151 2089	3107 1388
	Audit Team Leader	Ms. Ivy Tam	2151 2090	
Main Contractor (PWHJV)	Site Agent	Mr. W. M. Wong	6386 3535	2398 8301

1.3 Summary of Construction Programme and Activities

1.3.1 The construction programme of each Contract is summarized in the appendices of the corresponding Monthly EM&A.

1.3.2 The major construction activities undertaken in the reporting month are summarized as follow:

Contract No. KL/2010/03:

- NA (The works has been completed and no further EM&A submission is required.)

Contract No. KL/2012/02:

- Site Clearance;
- RC works for VT1 at Portion G;
- Drainage works for connection to box culvert (KTOB);
- Hard landscaping works for Portion F1;

- Cross road duct at Choi Hung Road;
- Road and drainage works at Sze Mei Street and Luk Hop Street;
- Condition survey and monitoring survey;
- Earthwork at Portion E3;
- Footpath construction at Sam Chuk Street and Tsat Po Street; and
- ELS works for SW3 at San Po Kong.

Contract No. KL/2012/03:

- Daily Cleaning;
- Finishing works, E&M work in PS2;
- Water test, backfill and sheet-pile removal in Heading 7A
- Segment tunneling, backfill and sheet-pile removed chamber construction in Heading 7B;
- Road widening works (excavation and UU works) at Sung Wong Toi Road;
- Maintenance & Servicing Engineer's Office at Portion 9;
- Install fitting inside chamber in Pit 1 and Pit 5;
- Rising Main installation in Pit 2, Pit 4, Pit6/7 and Pit 9;
- Pipe Jacking from Pit 10 to Pit 9;
- Installation of drainage, UU laying works and Road works at Road D2;
- Finishing works and E&M works at NPS;
- UU works and Road works at Road L19 & Bailey St;
- Refer construction works of NPS in Portion 4 sewerage; and
- Removal of excavated material at Portion 6.

Contract No. KL/2014/01:

- Watermain works;
- Construction of boundary wall at EPD recycling centre;
- Bored piles and Pre-bored socketed H-piles;
- TTA implementation at Shing Fung Road and Wang Chiu Road / Sheung Yee Road;
- Open excavation for box culvert, piles caps and underpass;
- ELS installation for box culvert and underpass; and
- Construction of pile caps, sewer and manholes.

Contract No. KL/2014/03:

- Temporary utility diversion;
- Implementation of Temporary Traffic Arragement (TTA);
- Construction of Tunnel structure;
- Construction of Socket H-piles;
- Construction of drainage works;
- Construction of guide walls and D-walls; and
- Construction of District Cooling System Works.

Contract No. KL/2015/02:

- Bored piling works at abutment A02;
- Carrying out pre-bored works and driving sheet piles at Subway SW6 between Staircases ST2 and ST3;
- Drilling works for standpipe and piezometer;
- Trench excavation for DCS works at Road L7;
- Construction of Box Culvert B3 (Top slab);
- Excavation and Construction Works for Box Culvert B4;

- ELS Works and Excavation Works at Box Culvert B5;
- Excavation Works for Box Culvert B2; and
- ELS Construction for Sewerage Works near SCL Tunnels.

1.4 Summary of Inter-relationship with the environmental protection/ mitigation measures with the construction programme

1.4.1 The summary of inter-relationship with environmental protection/mitigation measures are presented as follow:

Major Environmental Impact	Control Measures
Contract No. KL/2012/02:	
Noise, dust impact, water quality and waste generation	• Sufficient watering of the works site with active dust emitting activities; • Properly cover the stockpiles; • On-site waste sorting and implementation of trip ticket system • Appropriate desilting/sedimentation devices provided on site for treatment before discharge; • Use of quiet plant and well-maintained construction plant; • Provide movable noise barrier; • Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall; • Provide sufficient mitigation measures as recommended in Approved EIA Report/Lease requirement.
Contract No. KL/2012/03:	
Dust, Water Quality, Waste Management (Construction of superstructure of Pumping Station PS2 and NPS;	• Sufficient watering of the works site with active dust emitting activities; • Properly cover the stockpiles; • Appropriate desilting/sedimentation devices provided on site for treatment before discharge; • Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall; and • On-site waste sorting and implementation of trip ticket system.
Dust, Noise (Backfilling between sewerage manholes 1K1_1 and FMH10_340 and construction of manhole FMH10_370a at L6;)	• Use of quiet plant and well-maintained construction plant; and • Properly cover the stockpiles;
Noise, Waste Management (Installation of precast unit and construction of in-situ portions of Box Culvert B6; Construction of jacking pits nos. 1 and 2; Installation of gas pipe at pit no. 10; Construction of washout chamber at pit no. 11;)	• Use of quiet plant and well-maintained construction plant; and • Provide hoarding. • Good management and control on construction waste reduction
Noise (Construction of sewerage manhole FMH 10 at Bailey Street; Widening works of Sung Wong Toi Road.)	• Use of quiet plant and well-maintained construction plant; and • Provide hoarding.
Noise, Water Quality	• Use of quiet plant and well-maintained construction plant;

Major Environmental Impact	Control Measures
(Pipe laying from manhole SMH2204 to Box Culvert B6; Laying of rising mains from PS2 to chainage CHA-18; Pipe laying from stormwater manholes SMH1962 to SMH1963 and construction of manholes SMH1953 and SMH1963 at L6; Installation of DCS;)	and • Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall.
Contract No. KL/2014/01:	
Noise, dust impact, water quality and waste generation	• Sufficient watering of the works site with active dust emitting activities; • Properly cover the stockpiles; • On-site waste sorting and implementation of trip ticket system • Appropriate desilting/sedimentation devices provided on site for treatment before discharge; • Use of quiet plant and well-maintained construction plant; • Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall; • Provide mitigation measure to temporary use of chemicals; • Provide sufficient mitigation measures as recommended in Approved EIA Report/Lease requirement.
Contract No. KL/2014/03:	
Air Quality Impact, Construction Noise Impact, Water Quality Impact, Chemical and Waste Management, Landscape and Visual Impact	• Sufficient watering of the works site with the active dust emitting activities; • Limitation of the speed for vehicles on unpaved site roads; • Properly cover or enclosure of the stockpiles and dusty materials; • Good site practices on loading dusty materials; • Providing sufficient vehicles washing facilities at every vehicle exit point; • Good maintenance to the plant and equipment; • Use of quieter plant and Quality Powered Mechanical Equipment (QPME); • Use of acoustic fabric and noise barrier; • Using the approved Non-road Mobile Machineries (NRMMs); • Proper storage and handling of chemical; • Appropriate desilting, oil interceptors or sedimentation devices provided on site for treatment before discharge; • Onsite waste sorting and implementation of trip ticket system; • Training of the site personnel in proper waste management and chemical waste handling procedures; • Proper storage of the construction materials; • Erection of decorative screen hoarding; • Strictly following the Environmental Permits and Licenses; • Provide sufficient mitigation measures as recommended in Approved EIA Reports
Contract No. KL/2015/02:	
Noise, dust impact, water quality and waste generation	• Sufficient watering of the works site with active dust emitting activities; • Properly cover the stockpiles;

Major Environmental Impact	Control Measures
	• On-site waste sorting and implementation of trip ticket system • Appropriate desilting/sedimentation devices provided on site for treatment before discharge; • Use of quiet plant and well-maintained construction plant; • Provide movable noise barrier; • Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall; • Provide sufficient mitigation measures as recommended in Approved EIA Report/Lease requirement.

1.5 Summary Status of Environmental Licences, Notifications and Permits

1.5.1 A summary of the relevant environmental licenses, permits and/or notifications on environmental protection for this EP and relevant Contract are presented in **Table 1.1**.

Table 1.1 Relevant Environmental Licenses, Permits and/or Notifications

Environmental License / Permit / Notification	Reference Number	Valid From	Valid Till
Contract No. KL/2012/02:			
Environmental Permit	EP-337/2009	23/04/2009	N/A
Effluent Discharge License	WT00016873-2013	-	31/08/2018
	WT00016723-2013	-	31/08/2018
Registration of Chemical Waste Producer	5213-286-K3022-04	-	N/A
Construction Noise Permit	GW-RE0646-16	14/09/2016	13/03/2017
	GW-RE1041-16	27/10/2016	23/04/2017
	GW-RE1054-16	28/10/2016	23/04/2017
	GW-RE1197-16	17/12/2016	12/03/2017
	GW-RE0069-17	27/01/2017	31/05/2017
	GW-RE0070-17	09/02/2017	31/05/2017
Contract No. KL/2012/03:			
Environmental Permit	EP-337/2009 EP-344/2009	23/04/2009 23/04/2009	N/A N/A
Effluent Discharge License	WT00020971-2015	22/04/2015	21/04/2020
Registration of Chemical Waste Producer	5213-286-K2958-05	-	N/A
Construction Noise Permit	GW-RE0964-16	30/09/2016	29/03/2017
	GW-RE0149-17	29/03/2017	28/09/2017
Contract No. KL/2014/01:			
Environmental Permit	EP-337/2009 EP-445/2013/A	23/04/2009 13/08/2009	N/A N/A
Effluent Discharge License	WT00023634-2016	-	31/03/2021
Registration of Chemical Waste Producer	5213-247-C4004-01	-	N/A
Construction Noise Permit	GW-RE1092-16	09/11/2016	08/05/2017
	GW-RE1251-16	10/01/2017	08/07/2017
Contract No. KL/2014/03:			
Environmental Permit	EP-337/2009 EP-339/2009/A EP-451/2013	23/04/2009 18/06/2009 19/09/2013	N/A N/A N/A
Notification pursuant to Air Pollution (Construction Dust) Regulation	395601	16/11/2015	N/A
Billing Account for Waste Disposal	A/C No.: 7023814	30/11/2015	N/A
Construction Noise Permit	GW-RE1008-16	19/10/2016	09/04/2017
	PP-RE0032-16	23/11/2016	15/05/2017
Wastewater Discharge License	WT00023125-2015	06/01/2016	31/01/2021
Chemical Waste Producer License	5213-247-C1232-12	23/11/2015	N/A
Contract No. KL/2015/02:			
Environmental Permit	EP-337/2009	23/04/2009	N/A
Billing Account for Waste Disposal	A/C No.: 7026164	20/10/2016	N/A
Construction Noise Permit	GW-RE0033-17	24/01/2017	05/07/2017
	GW-RE1236-16	05/01/2017	29/06/2017
Wastewater Discharge License	WT00027495-2017	NA	31/03/2022
Chemical Waste Producer License	WPN5213-229-P3239-01	24/10/16	N/A

2. ENVIRONMENTAL MONITORING AND AUDIT

2.1 Results and Observations

Air Quality

2.1.1 The schedule of air quality monitoring in reporting month is provided in the appendices of the corresponding Monthly EM&A.

2.1.2 The weather conditions during the monitoring are provided in the appendices of the corresponding Monthly EM&A.

2.1.3 The monitoring data of 24-hr TSP and 1 hour TSP are summarized in **Table 2.1**. Detailed monitoring data are presented in the appendices of the corresponding Monthly EM&A.

Table 2.1 Summary of 24-hr and 1 hour TSP Monitoring Results

Parameter	Monitoring Station	Average ($\mu g/m^3$)	Range ($\mu g/ m^3$)	Action Level ($\mu g/ m^3$)	Limit Level ($\mu g/ m^3$)
Contract No. KL/2012/02:					
1-hr TSP	AM1(B)	111.1	77.0 – 201.2	342	500
	AM2	84.09	42.0 – 185.6	346	
24-hr TSP	AM1(B)	110.2	96.0 – 126.6	159	260
	AM2	67.6	31.0 – 118.2	157	
Contract No. KL/2012/03:					
1-hr TSP	AM2	84.2	42.0 – 185.6	346	500
	AM3(A)	104.5	49.0 – 210.3	351	
	AM4(B)	105.9	55.0 – 188.2	371	
	AM5(A)	80.7	25.0 – 181.9	345	
24-hr TSP	AM2	67.6	31.0 – 118.2	157	260
	AM3(A)	96.0	49.0 – 135.3	167	
	AM4(C)	87.8	38.0 – 133.0	187	
	AM5(A)	51.8	43.2 – 60.3	156	
Contract No. KL/2014/01:					
NA (No air quality monitoring is required for the Project)					
Contract No. KL/2014/03:					
1-hr TSP	KTD1a	No complaint of air quality was received. Therefore, no impact 1-hour TSP monitoring was conducted.			
	KTD2a				
	KER1b				
24-hr TSP	KTD1a	100	75 – 157	177	260
	KTD2a	56	39 – 83	157	
	KER1b	80	55 – 106	172	
Contract No. KL/2015/02:					
1-hr TSP	AM2	84.0	42.0 – 186.0	346	500
24-hr TSP	AM2	67.6	31.0 – 118.2	157	260

2.1.4 No Action / Limit Level exceedance was recorded for 24-hr TSP monitoring in the reporting month.

2.1.5 No Action / Limit Level exceedance was recorded for 1-hr TSP monitoring in the reporting month.

2.1.6 The monitoring data of 24-hr TSP was compared with the EIA predictions are presented in the appendices of the corresponding Monthly EM&A.

2.1.7 The Event and Action Plan for air quality is given in in the appendices of the corresponding Monthly EM&A.

Noise

2.1.8 The schedule of noise monitoring in reporting month is provided in in the appendices of the corresponding Monthly EM&A.

2.1.9 The noise monitoring data are summarized in **Table 2.2**. Detailed monitoring data are presented in the appendices of the corresponding Monthly EM&A.

Table 2.2 Summary of Noise Impact Monitoring Results

Monitoring Stations	Construction Noise Level Leq $_{(30min)}$ dB(A) (Range)	Action Level	Limit Level dB (A)
Contract No. KL/2012/02:		When one documented complaint is received	
M3	67.5 – 78.1#		70*
M4	73.9 – 76.6#		70*
M9	59.3 – 73.0		75
Contract No. KL/2012/03:			
M6(A)	54.8 – 63.2		70*
M7	57.2 – 68.3		70*
M8	60.8 – 65.4		70*
M9	59.3 – 73.0		75
Contract No. KL/2014/01:			
NA (No Construction noise monitoring is required for the Project.)			NA
Contract No. KL/2014/03:			
KTD1a	66 – 71		75
KTD2a	61 – 68		75
KER1a	66 – 70		75
Contract No. KL/2015/02:			
M3	67.5 – 78.1#		70*
M4	73.9 – 76.6#		70*
M5(C)	70.2 – 76.7#		75

(*) Noise Limit Level is 65 dB(A) during school examination periods.
(#) Measured noise level ≤ background / baseline noise level, detailed data refer to the corresponding Monthly EM&A report.

2.1.10 The noise monitoring data was compared with the EIA predictions are presented in the appendices of the corresponding Monthly EM&A.

2.1.11 No Action / Limit Level exceedance was recorded for noise monitoring in the reporting month.

2.1.12 The Event and Action Plan for noise is given in in the appendices of the corresponding Monthly EM&A.

Landscape and Visual

2.1.13 Site audits were carried out on a weekly basis to monitor and audit the landscape and visual mitigation measures within the site boundaries of this Project. Detailed of observations are presented in the appendices of the corresponding Monthly EM&A.

3. SITE INSPECTION

3.1 Site Inspection

3.1.1 Site inspections were carried out weekly to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. The site inspection of each Contract are summarized as follow:

Contract No. KL/2012/02:
Site audits were conducted on 1, 8, 15, 21 and 31 March 2017 in the reporting month.
IEC site inspection was conducted on 21 March 2017.

Contract No. KL/2012/03:
Site audits were conducted on 3, 10, 17, 22 and 31 March 2017 in the reporting month.
IEC site inspection was conducted on 22 March 2017.

Contract No. KL/2014/01:
Site audits were conducted by representatives of the Contractor, Supervising Officer and ET on 1, 8, 15, 22 and 29 March 2017 in the reporting month. IEC joint site inspection was conducted on 22 March 2017.

Contract No. KL/2014/03:
In the reporting month, five site inspections were carried out on 2, 9, 15, 23 and 30 March 2017. Three of them, held on 2, 15 and 30 March 2017 were the joint inspections with the IEC, ER, the Contractor and the ET.

Contract No. KL/2015/02:
Site audits were conducted on 3, 10, 15, 24 and 31 March 2017 in the reporting month. A joint site audit with the representative of IEC, ER, the Contractor and the ET was carried out on 15 March 2017.

3.1.2 Detailed of observation, recommendation of site inspections and summary of the mitigation measures implementation schedule is provided in the appendices of the corresponding Monthly EM&A.

4. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

4.1 Complaints, Notification of Summons and Prosecution

4.1.1 The summary of complaints, notification of summons and prosecution in the reporting month is shown as **Table 4.1**. Detailed records are presented in the appendices of the corresponding Monthly EM&A.

Table 4.1 Summary of Complaints, Notification of Summons and Prosecution

Event	No. of Event This Month	Remark
Contract No. KL/2012/02:		
Complaint received	1	Under investigation
Notifications of any summons & prosecutions received	0	NA
Contract No. KL/2012/03:		
Complaint received	0	NA
Notifications of any summons & prosecutions received	0	NA
Contract No. KL/2014/01:		
Complaint received	0	NA
Notifications of any summons & prosecutions received	0	NA
Contract No. KL/2014/03:		
Complaint received	0	NA
Notifications of any summons & prosecutions received	0	NA
Contract No. KL/2015/02:		
Complaint received	0	NA
Notifications of any summons & prosecutions received	0	NA

5. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

5.1 Implementation Status

5.1.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Reports, the EP and the EM&A Manuals. The implementation status of the mitigation measures during the reporting month are presented in the appendices of the corresponding Monthly EM&A.

5.2 Waste Management

5.2.1 The amount of wastes generated of this Project during the reporting month is shown in the appendices of the corresponding Monthly EM&A.

6. FUTURE KEY ISSUES

6.1 Construction Programme for the Next Two Months

6.1.1 The major site activities undertaken for the coming two months are summarized in follow:

Contract No. KL/2012/02:

- Site Clearance for all possessed portion;
- Condition survey and monitoring survey;
- Road and drainage works at Sze Mei Street;
- Painting and Roadwork at VT1;
- VE panel installation at SW2 and SW3;
- PERE Stage 1 works;
- Earthwork at Portion E3;
- RC for SW2 and SW3;
- Drainage works for connection to box culvert adjacent to KTOB; and
- Road works at King Fuk Street

Contract No. KL/2012/03:

- Daily Cleaning;
- Finishing works, E&M work in PS2;
- Water test, backfill and sheet-pile removal in Heading 7A;
- Segment tunneling, backfill and sheet-pile removed chamber construction in Heading 7B;
- Road widening works (excavation and UU works) at Sung Wong Toi Road;
- Maintenance & Servicing Engineer's Office at Portion 9;
- Install Fitting inside chamber in Pit 1 and Pit 5;
- Rising Main installation in Pit 2, Pit 4, Pit 6/7 and Pit 9;
- Installation of drainage, UU laying works and Road works at Road D2;
- Finishing works and E&M works at NPS;
- UU works and Road works at Road L19 & Bailey St;
- Refer construction works of NPS in portion 4 sewerage; and
- Removal of excavated material in Portion 6

Contract No. KL/2014/01:

- Watermain works;
- Construction of boundary wall at EPD recycling centre;
- Pre-bored socketed H-piles;
- TTA implementation at Shing Fung Road and Wang Chiu Road/ Sheung Yee Road;
- Open excavation for box culvert, pile caps, underpass;
- ELS installation for box culvert, underpass; and
- Construction of pile caps, sewer and manholes.

Contract No. KL/2014/03:

- Temporary utility diversion;
- Implementation of Temporary Traffic Arragement (TTA);
- Construction of Socket H piles;
- Construction of drainage works;
- Pumping test;
- Construction of Tunnel structure;
- Construction of guide walls and D-walls; and
- Construction of District Cooling System Works.

Contract No. KL/2015/02:

- Demolition of part of existing Pier S15;
- Driving sheet piles at Subway SW6 between Staircases ST2 and ST3;
- Construction of temporary slip road and decking for TTA at PERE;
- Hoarding erection along PERE;
- Trench excavation for DCS works at Road D1;
- Installing DCS pipes at Road L7 and test for DCS at Road L7;
- ELS excavation for sewerage at Box 2;
- Installation of sewerage at Box 2;
- ELS excavation for DCS at Road D1;
- Construction of Box Culvert B3;
- Excavation and Construction Works for Box Culvert B4;
- ELS and Excavation Works at Box Culvert B5;
- Construction of Box Culvert B2; and
- Sewerage Works near SCL Tunnels.

6.2 Key Issues for the Coming Month

6.2.1 The potential environmental impacts arising from the above construction activities and the control measures are shown in **Table 6.1**:

Table 6.1 Summary of Key Issues for the Coming Month and Control Measures

Major Impact Prediction	Control Measures
Contract No. KL/2012/02:	
Air quality impact (dust)	• Frequent watering of haul road and unpaved/exposed areas; • Frequent watering or covering stockpiles with tarpaulin or similar means; and • Watering of any earth moving activities.
Water quality impact (surface run-off)	• Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; • Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; • Provision of perimeter protection such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and • Provision of measures to prevent discharge into the stream.
Noise Impact	• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; • Controlling the number of plants use on site; • Regular maintenance of machines; and • Use of acoustic barriers if necessary.
Contract No. KL/2012/03:	
Air quality impact (dust)	• Frequent watering of haul road and unpaved/exposed areas; • Frequent watering or covering stockpiles with tarpaulin or similar means; and • Watering of any earth moving activities.
Water quality impact (surface run-off)	• Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; • Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; • Provision of site boundary bund such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and • Provision of measures to prevent discharge into the stream.
Noise Impact	• Scheduling of noisy construction activities if necessary to avoid persistent

Major Impact Prediction	Control Measures
	noisy operation; • Controlling the number of plants use on site; • Regular maintenance of machines; and • Use of acoustic barriers if necessary.
Contract No. KL/2014/01:	
Air quality impact (dust)	• Frequent watering of haul road and unpaved/exposed areas; • Frequent watering or covering stockpiles with tarpaulin or similar means; and • Watering of any earth moving activities.
Water quality impact (surface run-off)	• Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; • Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; • Provision of perimeter protection such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and • Provision of measures to prevent discharge into the stream.
Noise Impact	• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; • Controlling the number of plants use on site; • Regular maintenance of machines; and • Use of acoustic barriers if necessary.
Contract No. KL/2014/03:	
Construction dust, construction noise, water quality, waste management and landscape and visual impact.	• Sufficient watering of the works site with the active dust emitting activities; • Limitation of the speed for vehicles on unpaved site roads; • Properly cover or enclosure of the stockpiles and dusty materials; • Good site practices on loading dusty materials; • Providing sufficient vehicles washing facilities at every vehicle exit point; • Good maintenance to the plant and equipment; • Use of quieter plant and Quality Powered Mechanical Equipment (QPME); • Use of acoustic fabric and noise barrier; • Using the approved Non-road Mobile Machineries (NRMMs); • Proper storage and handling of chemical; • Appropriate desilting, oil interceptors or sedimentation devices provided on site for treatment before discharge; • Onsite waste sorting and implementation of trip ticket system; • Training of the site personnel in proper waste management and chemical waste handling procedures; • Proper storage of the construction materials; • Erection of decorative screen hoarding; • Strictly following the Environmental Permits and Licenses; • Provide sufficient mitigation measures as recommended in Approved EIA Reports
Contract No. KL/2015/02:	
Air quality impact (dust)	• Frequent watering of haul road and unpaved/exposed areas; • Frequent watering or covering stockpiles with tarpaulin or similar means; and • Watering of any earth moving activities.
Water quality impact (surface run-off)	• Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; • Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; • Provision of perimeter protection such as sealing of hoarding footings to avoid

Major Impact Prediction	Control Measures
	run-off from entering the existing storm water drainage system via public road; and • Provision of measures to prevent discharge into the stream.
Noise Impact	• Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; • Controlling the number of plants use on site; • Regular maintenance of machines; and • Use of acoustic barriers if necessary.

6.3 Monitoring Schedules for the Next Three Months

6.3.1 The tentative schedules for environmental monitoring in the coming three months are provided in in the appendices of the corresponding Monthly EM&A.

7. CONCLUSIONS

7.1.1 No Action / Limit Level exceedance was recorded for 24-hr TSP monitoring in the reporting month.

7.1.2 No Action / Limit Level exceedance was recorded for 1-hr TSP monitoring in the reporting month.

7.1.3 No Action / Limit Level exceedance was recorded for noise monitoring in the reporting month.

7.1.4 No notification of summons or prosecution was received and one complaint received for Contract No. KL/2012/02 in this reporting month.

7.1.5 The potential environmental impacts arising from the coming two months of major construction activities and the control measures are shown in **Table 6.1**

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Appendix A

Monthly EM&A Report
For
Contract No. KL/2012/02
Kai Tak Development - Stage 3A Infrastructure at North Apron Area

Civil Engineering and Development Department

EP-337/2009 – New Distributor Roads Serving the Planned KTD

Contract No. KL/2012/02
Kai Tak Development – Stage 3A Infrastructure at Former North Apron Area

Monthly EM&A Report

March 2017

(version 1.0)

Approved By	(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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ANEWR

Ove Arup & Partners Hong Kong Limited
L5 Festival Walk
80 Tat Chee Avenue
Kowloon Tong
Hong Kong

Your reference:

Our reference: HKCEDD04/50/104316

Date: 1 June 2017

Attention: Mr Gary Cheung / Mr Chris Lee

BY POST

Dear Sirs

Contract No.: KLN/2013/01
Independent Environmental Checker for "Contract No. KL/2012/02
Kai Tak Development – Stage 3A Infrastructure at Former North Apron Area"
Verification of Monthly EM&A Report for March 2017

We refer to emails of 18, 24 and 29 May 2017 and 1 June 2017 attaching a Monthly EM&A Report for March 2017 prepared by the ET.

We have no further comment and hereby verify the Report in accordance with Clause 3.3 of the Environmental Permit no. EP-337/2009.

Please do not hesitate to contact the undersigned or our Mr Adi Lee on 2618 2836 should you have any queries.

Yours faithfully
ANEWR CONSULTING LIMITED

James Choi
Independent Environmental Checker

CPSJ/LYMA/LHHN/csym

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EXECUTIVE SUMMARY

Introduction

1. This is the 42nd Monthly Environmental Monitoring and Audit Report prepared by Cinotech Consultants Ltd. for "Contract No. KL/2012/02 - Kai Tak Development – Stage 3A Infrastructure at Former North Apron Area" (Hereafter referred to as "the Project"). This contract comprises one Schedule 2 designated project (DP), namely the new distributor road D1 serving the planned KTD. The DP is part of the designated project under Environmental Permit (EP) No.: EP-337/2009 ("New distributor roads serving the planned Kai Tak Development") respectively. This report documents the findings of EM&A Works conducted from 1 – 31 March 2017.

2. With reference to the same principle of EIA report of the Project, air quality monitoring stations within 500m and noise monitoring stations within 300m from the boundary of this Project are considered as relevant monitoring locations. In such regard, the relevant air quality and noise monitoring locations are tabulated in Table I (see Figure 2 and 3 for their locations).

Table I – Air Quality and Noise Monitoring Stations for this Project

Locations	Monitoring Stations In accordance with EM&A Manual	Alternative Monitoring Stations
Air Quality Monitoring Stations		
AM1 - Rhythm Garden	No	AM1(B) - Contractor Site Office (KL/2012/02)
AM2 - Lee Kau Yan Memorial School	Yes	N/A
AM6 – Site 1B4 (Planned)	N/A	
Noise Monitoring Stations		
M3 - Cognitio College	Yes	N/A
M4 - Lee Kau Yan Memorial School	Yes	N/A
M9 – Tak Long Estate	Yes	N/A
M10 – Site 1B4 (Planned)	N/A	

3. According to the Environmental Monitoring and Audit Manual (EM&A Manual) of the Kai Tak Development (KTD) Schedule 3 Environmental Impact Assessment (EIA) Report, the impact monitoring at the designated monitoring stations as required in KTD EM&A Manual under the EP, have been conducted in Contract No. KLN/2013/16 and KLN/2016/09 – Environmental Monitoring Works for Kai Tak Development under Schedule 3 of KTD, which is on-going starting from December 2010. The impact monitoring data under Contract No. KLN/2013/16 and KLN/2016/09 will be adopted for the Project. Therefore, this report presents the air quality and noise monitoring works extracted from Contract No. KLN/2013/16 and KLN/2016/09.

4. The major site activities undertaken in the reporting month included:
   - Site Clearance;
   - RC works for VT1 at Portion G;
   - Drainage works for connection to box culvert (KTOB);
   - Hard landscaping works for Portion F1;
   - Cross road duct at Choi Hung Road;
   - Road and drainage works at Sze Mei Street and Luk Hop Street;
   - Condition survey and monitoring survey;
   - Earthwork at Portion E3;
   - Footpath construction at Sam Chuk Street and Tsat Po Street; and
   - ELS works for SW3 at San Po Kong.

Environmental Monitoring Works

5. Environmental monitoring for the Project was performed in accordance with the EM&A Manual and the monitoring results were checked and reviewed. Site Inspections/Audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

6. Summary of the non-compliance in the reporting month for the Project is tabulated in Table II.

Table II Non-compliance Recorded for the Project in the Reporting Month

Parameter	No. of Project-related Exceedance		Action Taken
	Action Level	Limit Level	
1-hr TSP	0	0	N/A
24-hr TSP	0	0	N/A
Noise	0	0	N/A

1-hour & 24-hour TSP Monitoring

7. All 1-hour & 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

8. All construction noise monitoring was conducted as scheduled in the reporting month. One non-project related Limit Level exceedance was recorded.

Environmental Licenses and Permits

9. Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, EP-337/2009 issued on 23 April 2009.

10. Registration of Chemical Waste Producer (License: 5213-286-K3022-04).

11. Water Discharge License (License No.: WT00016873-2013 and WT00016723-2013).

12. Construction Noise Permit (License No.: GW-RE0646-16, GW-RE1041-16, GW-RE1054-16, GW-RE1197-16, GW-RE0069-17 & GW-RE0070-17).

Key Information in the Reporting Month

13. Summary of key information in the reporting month is tabulated in Table III.

Table III Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	1	Dust impact	N/A	Under investigation	---
Reporting Changes	0	---	N/A	N/A	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

Future Key Issues

14. The future key environmental issues in the coming month include:
- Dust generation from stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
- Water spraying for dust generating activity and on haul road;
- Proper storage of construction materials on site;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Accumulation of general and construction waste on site;
- Noise from operation of the equipment, especially for rock-breaking activities, piling works and machinery on-site;
- Wastewater and runoff discharge from site;
- Regular removal of silt, mud and sand along u-channels and sedimentation tanks; and
- Review and implementation of temporary drainage system for the surface runoff.

1. INTRODUCTION

Background

1.1 The Kai Tak Development (KTD) is located in the south-eastern part of Kowloon Peninsula, comprising the apron and runway areas of the former Kai Tak Airport and existing waterfront areas at To Kwa Wan, Ma Tau Kok, Kowloon Bay, Kwun Tong and Cha Kwo Ling. It covers a land area of about 328 hectares. Stage 3A Infrastructure at Former North Apron Area is one of the construction stages of KTD. It contains one Schedule 2 DP including new distributor roads serving the planned KTD. The general layout of the Project is shown in **Figure 1.**

1.2 One Environmental Permit (EP) No. EP-337/2009 was also issued on 23 April 2009 for new distributor roads serving the planned KTD to Civil Engineering and Development Department as the Permit Holder.

1.3 A study of environmental impact assessment (EIA) was undertaken to consider the key issues of air quality, noise, water quality, waste, land contamination, cultural heritage and landscape and visual impact, and identify possible mitigation measures associated with the works. An EIA Report (Register No. AEIAR-130/2009) was approved by the Environmental Protection Department (EPD) on 4 April 2009.

1.4 Cinotech Consultants Limited (Cinotech) was commissioned by Build King Construction Ltd. (the Contractor) to undertake the role of the Environmental Team (ET) for the Contract No. KL/2012/02 – Stage 3A Infrastructure at Former North Apron Area. The construction work under KL/2012/02 comprises the construction of part of the Road D1 under the EP (EP-337/2009).

1.5 Cinotech Consultants Limited was commissioned by Build King Construction Ltd. To undertake the Environmental Monitoring and Audit (EM&A) works for the Project. The construction commencement of this Contract was on 24th October 2013 for Road D1. This is the 42nd Monthly EM&A report summarizing the EM&A works for the Project from 1 – 31 March 2017.

Project Organizations

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

- Project Proponent – Civil Engineering and Development Department (CEDD).
- The Engineer and the Engineer's Representative (ER) – Ove Arup & Partners (ARUP).
- Environmental Team (ET) – Cinotech Consultants Limited (CCL).
- Independent Environmental Checker (IEC) – ANewR Consulting Limited (ANewR).
- Contractor – Build King Construction Ltd. (Build King).

1.7 The key contacts of the Project are shown in **Table 1.1**.

Table 1.1 Key Project Contacts

Party	Role	Contact Person	Position	Phone No.	Fax No.
CEDD	Project Proponent	Mr. Mike Cho / Mr. Kelvin Chow	Engineer	3579 2450 / 3579 2453	2369 4980
ARUP	Engineer's Representative	Mr. Gary Cheung	SRE	2210 6100	2210 6110
		Ms. Edith Fung	RE		
Cinotech	Environmental Team	Dr. Priscilla Choy	Environmental Team Leader	2151 2089	3107 1388
		Ms. Ivy Tam	Project Coordinator and Audit Team Leader	2151 2090	
ANewR	Independent Environmental Checker	Mr. Adi Lee	Independent Environmental Checker	2618 2836	3007 8648
Build King	Contractor	Mr. Osbert Sit	Project Manager		
		Mr. Edmond Wong	Environmental Officer	2639 6290	2639 6208

Construction Activities undertaken during the Reporting Month

1.8 The site activities undertaken in the reporting month included:

- Site Clearance;
- RC works for VT1 at Portion G;
- Drainage works for connection to box culvert (KTOB);
- Hard landscaping works for Portion F1;
- Cross road duct at Choi Hung Road;
- Road and drainage works at Sze Mei Street and Luk Hop Street;
- Condition survey and monitoring survey;
- Earthwork at Portion E3;
- Footpath construction at Sam Chuk Street and Tsat Po Street; and
- ELS works for SW3 at San Po Kong.

1.9 The construction programme showing the inter-relationship with environmental protection/mitigation measures are presented in Table 1.2.

Table 1.2 Construction Programme Showing the Inter-Relationship with Environmental Protection/Mitigation Measures

Construction Works	Major Environmental Impact	Control Measures
As mentioned in Section 1.8	Noise, dust impact, water quality and waste generation	Sufficient watering of the works site with active dust emitting activities; Properly cover the stockpiles; On-site waste sorting and implementation of trip ticket system Appropriate desilting/sedimentation devices provided on site for treatment before discharge; Use of quiet plant and well-maintained construction plant;

		Provide movable noise barrier; Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall; Provide sufficient mitigation measures as recommended in Approved EIA Report/Lease requirement.

Summary of EM&A Requirements

1.10 The EM&A programme requires construction noise monitoring, air quality monitoring, landscape and visual monitoring and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental requirements and mitigation measures, as recommended in the EM&A Manual under the EP.

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

1.12 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely air quality and noise levels and audit works for the Project from 1 – 31 March 2017.

2. AIR QUALITY

Monitoring Requirements

2.1 According to EM&A Manual under the EP, 1-hour and 24-hour TSP monitoring were conducted to monitor the air quality for this Project. For regular impact monitoring, a sampling frequency of at least once in every six days at all of the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six days shall be undertaken when the highest dust impact occurs. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

2.2 Three designated monitoring stations were selected for air quality monitoring programme. Impact dust monitoring was conducted at two air quality monitoring stations, AM1(B) - Contractor Site Office (KL/2012/02) AM1(B), AM2 - Lee Kau Yan Memorial School in the reporting month. Table 2.1 describes the air quality monitoring locations, which are also depicted in **Figure 2**.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Stations	Locations	Location of Measurement
AM1(B)	Contractor Site Office (KL/2012/02)	Ground Floor Area
AM2	Lee Kau Yan Memorial School	Rooftop (about 8/F) Area
#AM6	PA 15	Site 1B4 (Planned)

Remarks: # The impact monitoring at these locations will only be carried out until existence of the sensitive receiver at the building.

Monitoring Equipment

2.3 Table 2.2 summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates are attached in **Appendix B**.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	TISCH TE-5025A	2
1-hour TSP Dust Meter	• Laser Dust Monitor – Model LD-3, LD-3B • TSI Model AM510 SidePak Personal Aerosol Monitor	6
HVS Sampler	GMWS 2310 c/w of TSP sampling inlet	8
Wind Anemometer	Davis Weather Monitor II, Model no. 7440	2

Monitoring Parameters, Frequency and Duration

2.4 Table 2.3 summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting month is shown in **Appendix D**.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hr TSP	Three times / 6 days
24-hr TSP	Once / 6 days

Monitoring Methodology and QA/QC Procedure

1-hour TSP Monitoring

(Equipment: Sibata; Model no. LD-3, LD-3B)

Measuring Procedures

2.5 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows:

- Pull up the air sampling inlet cover
- Change the Mode 0 to BG with once
- Push Start/Stop switch once
- Turn the knob to SENSI.ADJ and press it
- Push Start/Stop switch once
- Return the knob to the position MEASURE slowly
- Push the timer set switch to set measuring time
- Remove the cap and make a measurement

Maintenance/Calibration

2.6 The following maintenance/calibration was required for the direct dust meters:

Check the meter at a 3-month interval and calibrate the meter at a 1-year interval throughout all stages of the air quality monitoring.

24-hour TSP Monitoring

Instrumentation

2.7 High volume (HVS) samplers (Model GMWS-2310 Accu-Vol) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in section 2.5 of the updated EM&A Manual.

Operating/Analytical Procedures

2.8 Operating/analytical procedures for the operation of HVS were as follows:

- A horizontal platform was provided with appropriate support 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 sampler was more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

2.9 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

2.10 For TSP sampling, fiberglass filters have a collection efficiency of > 99% for particles of 0.3μm diameter were used.

2.11 The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.12 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.

2.13 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. The applied pressure should be sufficient to avoid air leakage at the edges.

2.14 The shelter lid was closed and secured with the aluminum strip.

2.15 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).

2.16 After sampling, the filter was removed and sent to the HOKLAS laboratory (Wellab Ltd.) for weighing. The elapsed time was also recorded.

2.17 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature 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%.

Maintenance/Calibration

2.18 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.
- High volume samplers were calibrated at bi-monthly intervals using TE-5025A Calibration Kit throughout all stages of the air quality monitoring.

Results and Observations

2.19 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

2.20 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

2.21 The air temperature, precipitation and the relative humidity data was obtained from Hong Kong Observatory where the wind speed and wind direction were recorded by the installed Wind Anemometer set at rooftop (about 8/F) Lee Kau Yan Memorial School. The location is shown in **Figure 4**. This weather information for the reporting month is summarized in **Appendix C.**

2.22 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices E and F** respectively.

2.23 The summary of exceedance record in reporting month is shown in **Appendix H**. No exceedance was recorded for the air quality monitoring.

2.24 According to our field observations, the major dust source identified at the designated air quality monitoring stations are as follows:

Station	Major Dust Source
AM1(B) – Contractor Site Office (KL/2012/02)	Road Traffic Dust Exposed site area and open stockpiles Site vehicle movement
AM2 – Lee Kau Yan Memorial School	Road Traffic Dust Exposed site area and open stockpiles Excavation works Site vehicle movement

2.25 Table 2.4 shows the summary of air quality monitoring results during the reporting month.

Table 2.4 Summary Table of Air Quality Monitoring Results during the reporting month

Parameter	Date	Concentration (µg/m3)	Action Level, µg/m3	Limit Level, µg/m3
AM1(B) – Contractor Site Office (KL/2012/02)				
1-hr TSP	3-Mar-17	201.2	342	500
	3-Mar-17	190.4		
	3-Mar-17	192.8		
	8-Mar-17	105.0		
	8-Mar-17	116.0		
	8-Mar-17	109.0		
	14-Mar-17	102.0		
	14-Mar-17	98.0		
	14-Mar-17	89.0		
	20-Mar-17	79.0		
	20-Mar-17	82.0		
	20-Mar-17	88.0		
	24-Mar-17	77.0		
	24-Mar-17	80.0		
	24-Mar-17	81.0		
	30-Mar-17	105.0		
	30-Mar-17	99.0		
	30-Mar-17	106.0		
24-hr TSP	2-Mar-17	126.6	159	260
	8-Mar-17	103.3		
	14-Mar-17	103.0		
	20-Mar-17	118.0		
	24-Mar-17	114.0		
	30-Mar-17	96.0		
AM2 – Lee Kau Yan Memorial School				
1-hr TSP	3-Mar-17	174.9	346	500
	3-Mar-17	182.6		
	3-Mar-17	185.6		
	8-Mar-17	96.0		
	8-Mar-17	98.0		
	8-Mar-17	95.0		
	14-Mar-17	46.0		
	14-Mar-17	47.0		
	14-Mar-17	42.0		
	20-Mar-17	55.0		
	20-Mar-17	58.0		
	20-Mar-17	64.0		
	24-Mar-17	59.0		
	24-Mar-17	58.0		
	24-Mar-17	59.0		
	30-Mar-17	69.0		
	30-Mar-17	62.0		
	30-Mar-17	65.0		
24-hr TSP	2-Mar-17	118.2	157	260
	8-Mar-17	75.4		
	14-Mar-17	31.0		
	20-Mar-17	55.0		
	24-Mar-17	62.0		
	30-Mar-17	64.0		

3. NOISE

Monitoring Requirements

3.1 According to EM&A Manuals under the EP, construction noise monitoring was conducted to monitor the construction noise arising from the construction activities within KTD. The regular monitoring frequency for each monitoring station shall be on a weekly basis and conduct one set of measurements between 0700 and 1900 hours on normal weekdays. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

3.2 Four designated monitoring stations were selected for noise monitoring programme. Noise monitoring was conducted at three designated monitoring stations (M3, M4, M9). **Figure 3** shows the locations of these stations.

Table 3.1 Noise Monitoring Stations

Monitoring Stations	Locations	Location of Measurement
M3	Cognitio College	Rooftop (about 6/F) Area
M4	Lee Kau Yan Memorial School	Rooftop (about 7/F) Area
M9	Tak Long Estate	Car Park Building (about 2/F)
#M10	Site 1B4 (Planned)	-

Remarks: # The impact monitoring at these locations will only be carried out until existence of the sensitive receiver at the building.

Monitoring Equipment

3.3 **Table 3.2** summarizes the noise monitoring equipment. Copies of calibration certificates are provided in **Appendix B**.

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Qty.
Integrating Sound Level Meter	• SVAN 955 & 957, BSWA 801 • RION NL52	4
Calibrator	• SVAN 30A, B&K4231 • RION NC 73 & 74	4

Monitoring Parameters, Frequency and Duration

3.4 Table 3.3 summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency	Measurement

M3 M4 M9	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A)	0700-1900 hrs on normal weekdays	Once per week	Façade

Monitoring Methodology and QA/QC Procedures

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
- The battery condition was checked to ensure the correct 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
  - time measurement : 30 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused temporarily during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- 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.

Maintenance and Calibration

3.5 The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.

3.6 The sound level meter and calibrator were checked and calibrated at yearly intervals.

3.7 Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Results and Observations

3.8 All construction noise monitoring was conducted as scheduled in the reporting month. One non-project related Limit Level exceedance was recorded.

3.9 The construction noise level at M4 on 15 March 2017 was exceeded the Noise Limit Level. According to the investigation, no construction works was conducted during the measurement period and the exceedance was considered as non-project related as the major noise sources were the traffic noise from Prince Edward Road East.

3.10 The summary of exceedance record in reporting month is shown in **Appendix H**.

3.11 The baseline noise level and the Noise Limit Level at each designated noise monitoring station are presented in **Table 3.4**.

3.12 Noise monitoring results and graphical presentations are shown in **Appendix G**.

3.13 The major noise source identified at the designated noise monitoring stations are as follows:

Monitoring Stations	Locations	Major Noise Source
M3	Cognitio College	Traffic Noise Daily school activities
M4	Lee Kau Yan Memorial School	Traffic Noise Site vehicle movement Excavation works Piling works Daily school activities
M9	Tak Long Estate	Traffic Noise Construction works

Table 3.4 Baseline Noise Level and Noise Limit Level for Monitoring Stations

Station	Baseline Noise Level, dB (A)	Noise Limit Level,dB (A)
M3	76.3/78.6(1) (at 0700 – 1900 hrs on normal weekdays) /	70* (at 0700 – 1900 hrs on normal weekdays)
M4	76.7 (at 0700 – 1900 hrs on normal weekdays)	
M9	59.9 (at 0700 – 1900 hrs on normal weekdays)	75 (at 0700 – 1900 hrs on normal weekdays)

(*) Noise Limit Level is 65 dB(A) during school examination periods.
Note (1): The baseline noise review report submitted under KLN/2013/16 for M3 was approved by EPD on 23rd August 2013. (Baseline Level was found to be 78.6 dB(A)at Rooftop of Cognitio College)

Table 3.5 Summary Table of Noise Monitoring Results during the Reporting Month

Date	Measured Noise Level, Leq(30min) dB (A)	Baseline Level dB (A)	Construction Noise Level (1) : Leq(30min) dB (A)
M3 – Cognitio College			
--	--	Background Noise(2)	--
9-Mar-17	67.5	68.7	67.5 Measured ≦Background
15-Mar-17	70.8	78.6	70.8 Measured ≦Background
21-Mar-17	78.1	78.4	78.1 Measured ≦Background
27-Mar-17	77.4	77.6	77.4 Measured ≦Background
M4 – Lee Kau Yan Memorial School			
9-Mar-17	76.6	76.7	76.6 Measured ≦Baseline
15-Mar-17	79.4		76.1
21-Mar-17	73.9		73.9 Measured ≦Baseline
27-Mar-17	75.7		75.7 Measured ≦Baseline
M9 – Tak Long Estate			
2-Mar-17	73.2	59.9	73.0
8-Mar-17	67.1		66.2
14-Mar-17	64.1		62.0
20-Mar-17	64.0		61.9
30-Mar-17	62.6		59.3

Note (1) The noise level due to the construction work (CNL) was calculated by the following formula:

$$CNL = 10 \log (10^{MNL/10} - 10^{BNL/10})$$

Remarks: MNL = Measured Noise Level, BNL = Baseline Noise Level

(2): The background Noise Level was recorded during the Lunch Hour of Construction Site (i.e. 12:00-13:00) and to be used as the referencing value for compliance checking for Noise Action and Limit Level.

4. COMPARISON OF EM&A RESULTS WITH EIA PREDICTIONS

4.1 The EM&A data was compared with the EIA predictions as summarized in Tables 4.1 to 4.3.

Table 4.1 Comparison of 1-hr TSP data with EIA predictions

Station	Predicted 1-hr TSP conc.		
	Scenario 1 (Mid 2009 to Mid 2013), µg/m3	Scenario 2 (Mid 2013 to Late 2016), µg/m3	Reporting Month (Mar 17), µg/m3
AM1(B) – Contractor Site Office of KL/2012/02	192	298	77.0 – 201.2
AM 2 – Lee Kau Yan Memorial School	290	312	42.0 – 185.6

Table 4.2 Comparison of 24-hr TSP data with EIA predictions

Station	Predicted 24-hr TSP conc.		
	Scenario 1 (Mid 2009 to Mid 2013), µg/m3	Scenario 2 (Mid 2013 to Late 2016), µg/m3	Reporting Month (Mar 17), µg/m3
AM1(B) – Contractor Site Office of KL/2012/02	121	156	96.0 – 126.6
AM2 – Lee Kau Yan Memorial School	145	169	31.0 – 118.2

Table 4.3 Comparison of Noise Monitoring Data with EIA predictions

Stations	Predicted Mitigated Construction Noise Levels during Normal Working Hour ($L_{eq\ (30min)}$ dB(A))	Reporting Month (Mar 17), $L_{eq\ (30min)}$ dB(A)
M3 – Cognitio College	47 – 75	67.5 – 78.1(1)
M4 – Lee Kau Yan Memorial School	47 – 74	73.9 – 76.6(2)(3)
M9 – Tak Long Estate	Not Predicted in EIA Report	59.3 – 73.0

Remark:
(1) Since the background noise level recorded during 12:00 to 13:00 was higher than those recorded during the construction period, the recorded noise levels were considered non-valid exceedance of Noise Limit Level.
(2) Since the baseline noise level was higher than those recorded during the construction period, the recorded noise levels were considered non-valid exceedance of Noise Limit Level.
(3) The exceedance recorded on 15 March 2017 at monitoring station M4 was considered as non-project related exceedance and the details could refer to Section 3.9 of the report

4.2 The 1-hour TSP concentrations in the reporting month were below to the prediction in the approved Environmental Impact Assessment (EIA) Report.

4.3 The 24-hour TSP concentrations in the reporting month were below to the prediction in the approved Environmental Impact Assessment (EIA) Report.

4.4 Mitigated construction noise levels at M9 were not predicted in EIA Report. The noise data

at M3 were not within the range of predicted mitigated construction noise levels in the EIA report, M3 exceeded the prediction of mitigated scenario in EIA report but did not exceed the baseline level.

4.5 The noise data at M4 was slightly higher than those predicted mitigated construction noise level in the EIA report and the discrepancy was considered to be contributed from the major noise sources during the monitoring; i.e. the road traffic noise.

4.6 Noise Limit Level exceedance was recorded at M4 on 15 March 2017. According to the investigation, no construction works was conducted during the measurement period and the exceedance was considered as non-project related as the major noise sources were the traffic noise from Prince Edward Road East.

5. LANDSCAPE AND VISUAL

Monitoring Requirements

5.1 According to EM&A Manual of the Kai Tak Development EIA Study, ET shall monitor and audit the contractor's operation during the construction period on a weekly basis, and to report on the contractor's compliance.

Results and Observations

5.2 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of landscape and visual mitigation measures within the site boundaries of this Project. The summaries of site audits are attached in **Appendix I**.

5.3 No non-compliance of the landscape and visual impact was recorded in the reporting month.

5.4 Should non-compliance of the landscape and visual impact occur, action in accordance with the action plan presented in **Appendix J** shall be performed.

6. ENVIRONMENTAL AUDIT

Site Audits

6.1 Site audits were carried out on a 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 I**.

6.2 Site audits were conducted on 1st, 8th, 15th, 21st and 31st March 2017 in the reporting month. IEC site inspection was conducted on 21st March 2017. No non-compliance was observed during the site audits.

Review of Environmental Monitoring Procedures

6.3 The monitoring works conducted by the monitoring team were inspected regularly. The following observations have been recorded for the monitoring works:

Air Quality Monitoring

- The monitoring team recorded all observations around the monitoring stations within and outside the construction site.
- The monitoring team recorded the temperature and weather conditions on the monitoring days.

Noise Monitoring

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

Status of Environmental Licensing and Permitting

6.4 All permits/licenses obtained for the Project are summarized in Table 6.1.

Table 6.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Details	Status
	From	To		
Environmental Permit (EP)				
EP-337/2009	23/04/09	N/A	Construction of new distributor roads serving the planned Kai Tak development.	Valid
Effluent Discharge License				
WT00016873-2013	-	31/08/18	Wastewater from the construction site including contaminated surface run-off	Valid
WT00016723-2013	-	31/08/18		Valid
Registration of Chemical Waste Producer				
5213-286-K3022-04	-	N/A	Chemical Waste Types: Spent lubricating oil, Soil contaminated with lubricating oil, Spent battery containing heavy metals, Surplus paint, Spend solvent, Spend alkali and acid	Valid
Construction Noise Permit (CNP)				
GW-RE0646-16	14/09/16	13/03/17	Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work other than percussive pilling and performing prescribed construction work.	Valid until 13/03/17
GW-RE1041-16	27/10/16	23/04/17		Valid
GW-RE1054-16	28/10/16	23/04/17		Valid
GW-RE1197-16	17/12/16	12/03/17		Valid until 12/03/17
GW-RE0069-17	27/01/17	31/05/17		Valid
GW-RE0070-17	09/02/17	31/05/17		Valid

Status of Waste Management

6.5 The amount of wastes generated by the major site activities of this Project during the reporting month is shown in **Appendix M**.

6.6 The Contractor is advised to take photo and inspection records to ensure that all dump trucks have the skip fully covered before leaving the site.

Implementation Status of Environmental Mitigation Measures

6.7 During site inspections in the reporting month, no non-conformance was identified. ET weekly site inspections were carried out during the reporting month and the observations and recommendations are summarized in Table 6.2.

Table 6.2 Observations and Recommendations of Site Inspections

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	21 February 2017	Reminder: To remove dusty material from near site boundary at VT1.	Rectification/improvement was observed during the follow-up audit session.
Air Quality	21 February 2017	Reminder: To cover the stockpile of dusty material by impervious sheet after work at VT1.	This item was remarked on 1 March 2017.
	21 February 2017	Reminder: To remove the used cement bags from Portion SW3 to prevent dust emission.	Rectification/improvement was observed during the follow-up audit session.
	21 February 2017	Reminder: To provide valid NRMM label for generator at Portion SW3.	Rectification/improvement was observed during the follow-up audit session.
	1 March 2017	Reminder: Stockpile of dusty materials near Concorde Road, Prince Edward Road East and EMSD should be properly covered after work.	Rectification/improvement was observed during the follow-up audit session.
	15 March 2017	Reminder: Stockpile of dusty material placed at near TI Tower and former KTOB should be properly covered to avoid dust generation.	Rectification/improvement was observed during the follow-up audit session.
	21 March 2017	Observation: Dusty stockpile placed at near CLP substation should be properly covered for dust suppression.	Rectification/improvement was observed during the follow-up audit session.
	21 March 2017	Reminder: Opened cement bags should be properly covered for dust suppression.	Rectification/improvement was observed during the follow-up audit session.
Noise	--	--	--
Waste/ Chemical Management	8 March 2017	Reminder: To contain the oil drum into the drip tray. (SW3).	Rectification/improvement was observed during the follow-up audit session.
	8 March 2017	Reminder: To sort the general refuse and C&D wastes into appropriate waste disposal area.	Rectification/improvement was observed during the follow-up audit session.
	21 March 2017	Reminder: Drip tray should be provided to the chemical containers stored in SW3.	Rectification/improvement was observed during the follow-up audit session.
Landscape and Visual	15 March 2017	Reminder: The fencing of tree protection zone near King Fuk Street should be properly erected.	Rectification/improvement was observed during the follow-up audit session.
	31 March 2017	Observation: The construction material should be placed away from the tree protection zone at SW3.	Follow up action will be reported in the next reporting month.
Permits/ Licenses	--	--	--

Summary of Mitigation Measures Implemented

6.8 The monthly IEC audit was carried out on 21st March 2017, the observations were recorded and they are presented as follows:

Observations:

- Stockpiles were not properly covered with impervious materials at CLP sub-station. The Contractor was recommended to entirely covered the stockpiles by tarpaulins or any other impervious materials.
- Debagged cement bags were not properly covered at CLP sub-station. The Contractor was recommended to mix/debag cement bags at a placed sheltered on top and with 3 sides.
- Drip trays were not provided for the chemical containers. The Contractor was recommended to provide drip trays under the chemical containers.

Follow up of last observation:

- Stockpiles and dusty materials, which was not properly covered during the last inspection, have been covered or back-filled.

6.9 An updated summary of the EMIS is provided in **Appendix K**.

Implementation Status of Event Action Plans

6.10 The Event Action Plans for air quality, noise and landscape and visual are presented in **Appendix J**.

1-hr TSP Monitoring

6.11 No Action/Limit Level exceedance was recorded in the reporting month.

24-hr TSP Monitoring

6.12 No Action/Limit Level exceedance was recorded in the reporting month.

Construction Noise

6.13 One non-project related Limit Level exceedance was recorded in the reporting month.

Landscape and visual

6.14 No non-compliance was recorded in the reporting month.

Summary of Complaint, Warning, Notification of any Summons and Successful Prosecution

6.15 The summaries of environmental complaint, warning, summon and notification of successful prosecution for the Project is presented in **Appendix L**.

7. FUTURE KEY ISSUES

7.1 Major site activities undertaken for the coming two months include:

- Site Clearance for all possessed portion;
- Condition survey and monitoring survey;
- Road and drainage works at Sze Mei Street;
- Painting and Roadwork at VT1;
- VE panel installation at SW2 and SW3;
- PERE Stage 1 works;
- Earthwork at Portion E3;
- RC for SW2 and SW3;
- Drainage works for connection to box culvert adjacent to KTOB; and
- Road works at King Fuk Street

Key Issues for the Coming Month

7.2 Key environmental issues in the coming month include:

- Wastewater and runoff discharge from site;
- Regular removal of silt, mud and sand along u-channels and sedimentation tanks;
- Review and implementation of temporary drainage system for the surface runoff;
- Noise from operation of the equipment, especially for rock-breaking activities, piling works and machinery on-site;
- Dust generation from stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
- Water spraying for dust generating activity and on haul road;
- Proper storage of construction materials on site;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Accumulation of general and construction waste on site.

7.3 The tentative program of major site activities and the impact prediction and control measures for the coming two months, i.e. April 2017 and May 2017 are summarized as follows:

Construction Works	Major Impact Prediction	Control Measures
As mentioned in Section 7.1	Air quality impact (dust)	(a) Frequent watering of haul road and unpaved/exposed areas; (b) Frequent watering or covering stockpiles with tarpaulin or similar means; and (c) Watering of any earth moving activities.
	Water quality impact (surface run-off)	(a) Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; (b) Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; (c) Provision of perimeter protection such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and (d) Provision of measures to prevent discharge into the stream.
	Noise Impact	(a) Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; (b) Controlling the number of plants use on site; (c) Regular maintenance of machines; and (d) Use of acoustic barriers if necessary.

Monitoring Schedule for the Next Month

7.4 The tentative environmental monitoring schedules for the next month are shown in **Appendix D**.

8. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

8.1 Environmental monitoring works were performed in the reporting month and all monitoring results were checked and reviewed.

1-hr TSP Monitoring

8.2 All 1-hr TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hr TSP Monitoring

8.3 All 24-hr TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

8.4 All construction noise monitoring was conducted as scheduled in the reporting month. One non-project related Limit Level exceedance was recorded.

Landscape and visual

8.5 No non-compliance was recorded in the reporting month.

Complaint and Prosecution

8.6 One environmental complaint was received in the reporting month. No environmental prosecution were received in the reporting month.

8.7 No environmental prosecution was received in the reporting month.

Recommendations

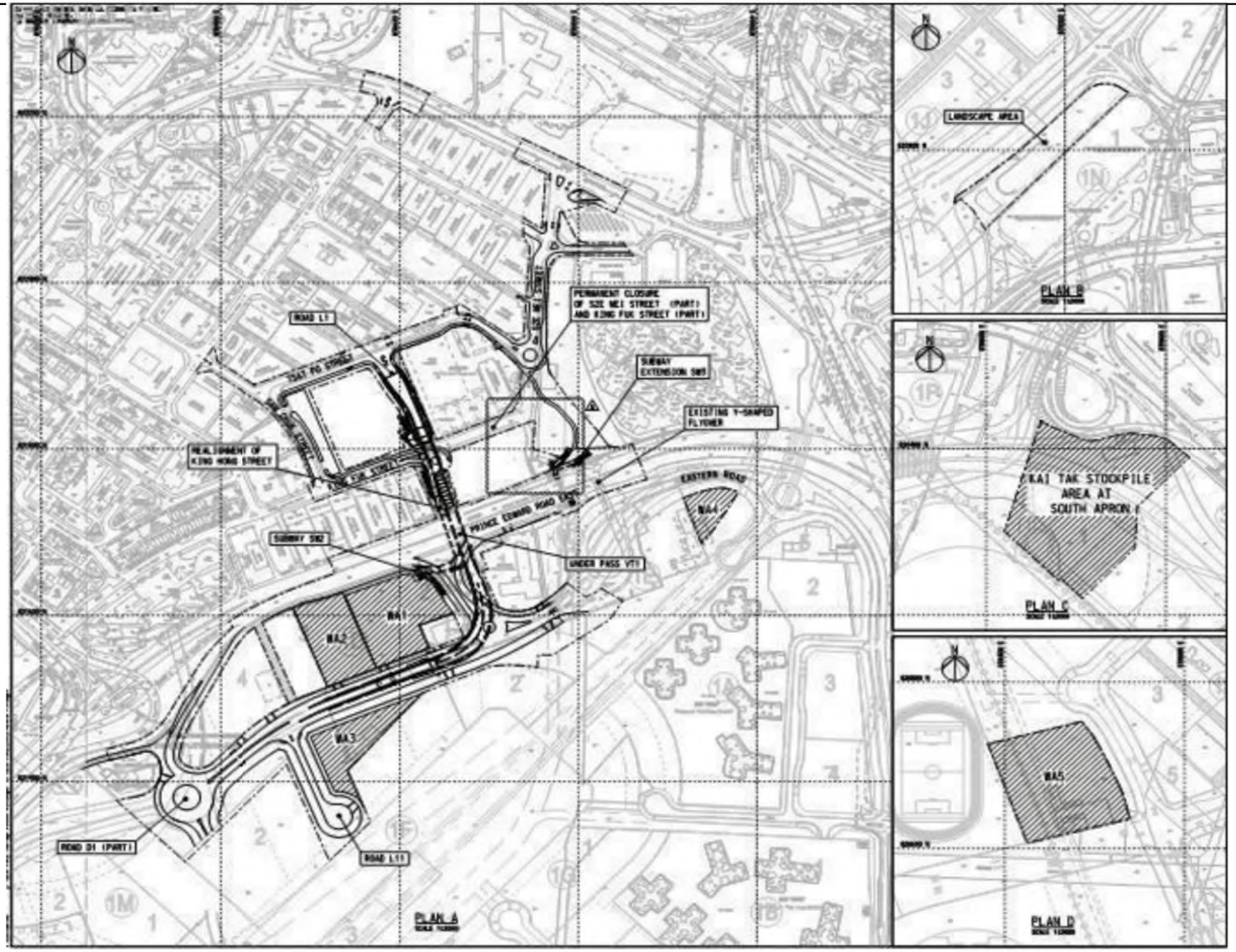
8.8 According to the environmental audit performed in the reporting month, the following recommendations were made:

Air quality
- To properly cover the stockpile stored within the site area to prevent dust generation.

Waste / Chemical Management
- To properly store the chemical containers at appropriate storage area to avoid potential chemical leakage.
- To sort the general refuse and C&D wastes into appropriate waste disposal area.
- To provide drip tray for the chemical containers stored onsite.

Landscape and Visual
- To properly maintain the fencing of tree protection zone and place the construction materials away from the tree protection zone to avoid potential damage to the trees.

FIGURES



Title

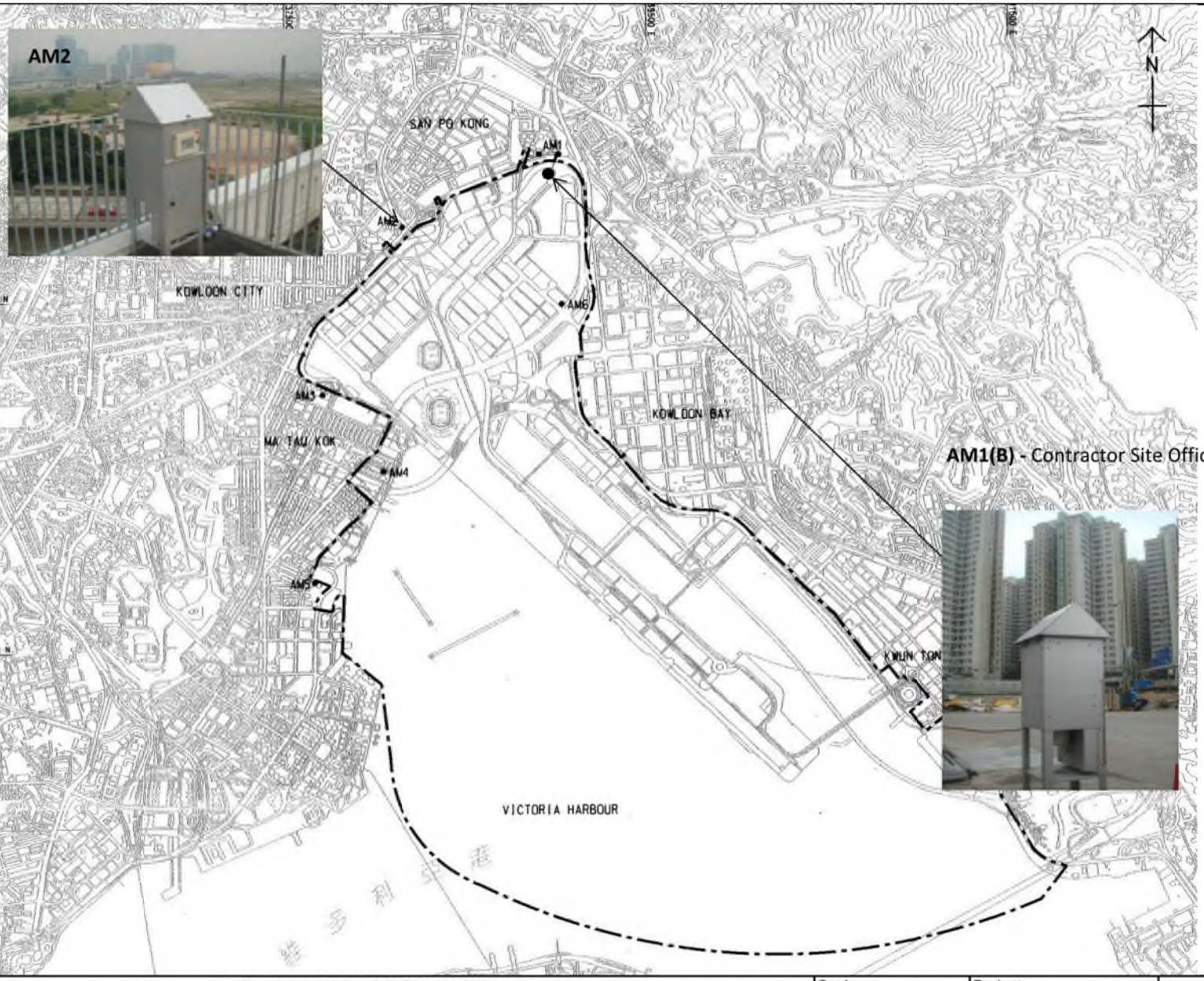
Contract No. KL/2012/02

Kai Tak Development –Stage 3A Infrastructure at Former North Apron Area

Site Layout Plan

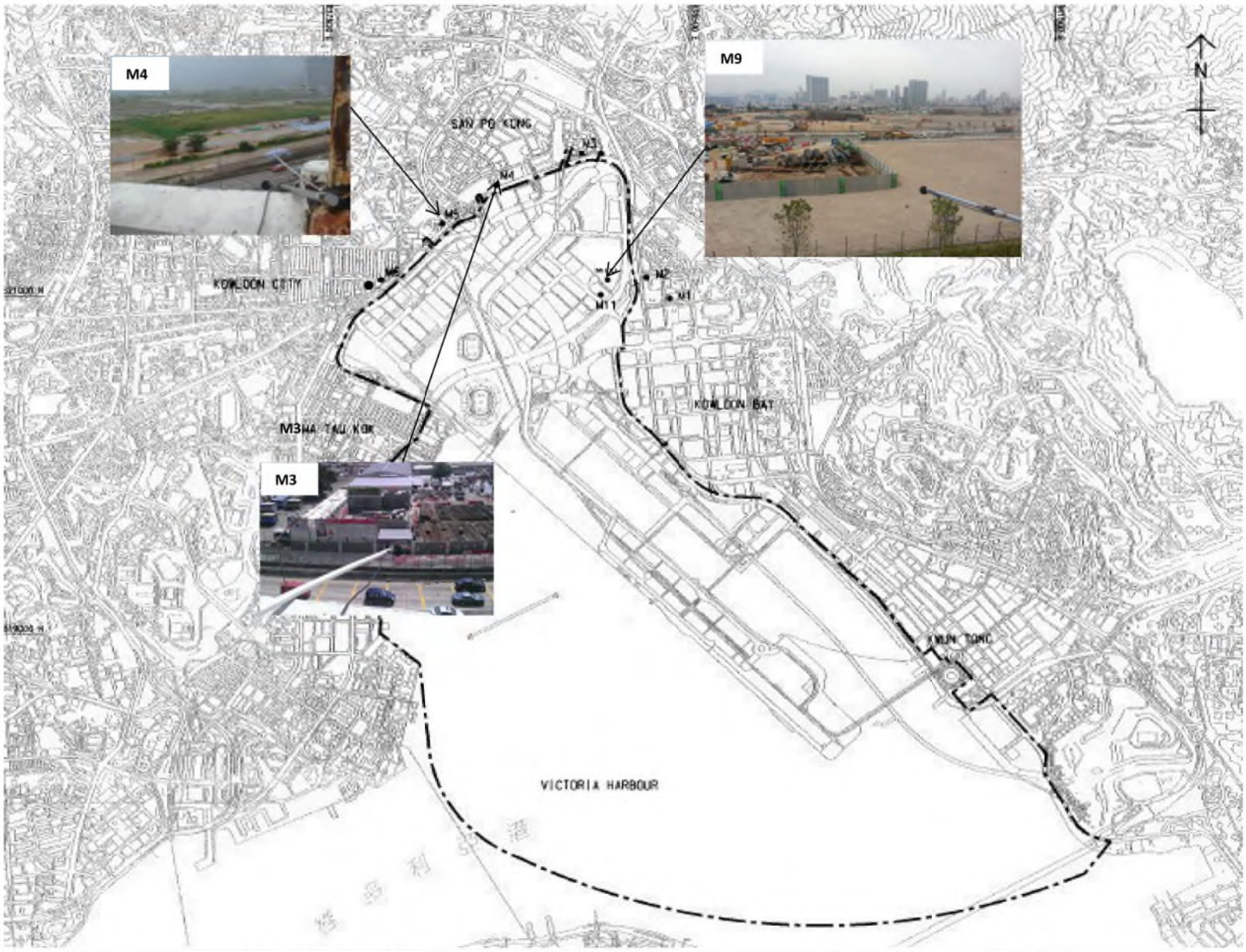
Scale	Project No.
N.T.S	MA13043
Date	Figure
Aug-13	1

CINOTECH

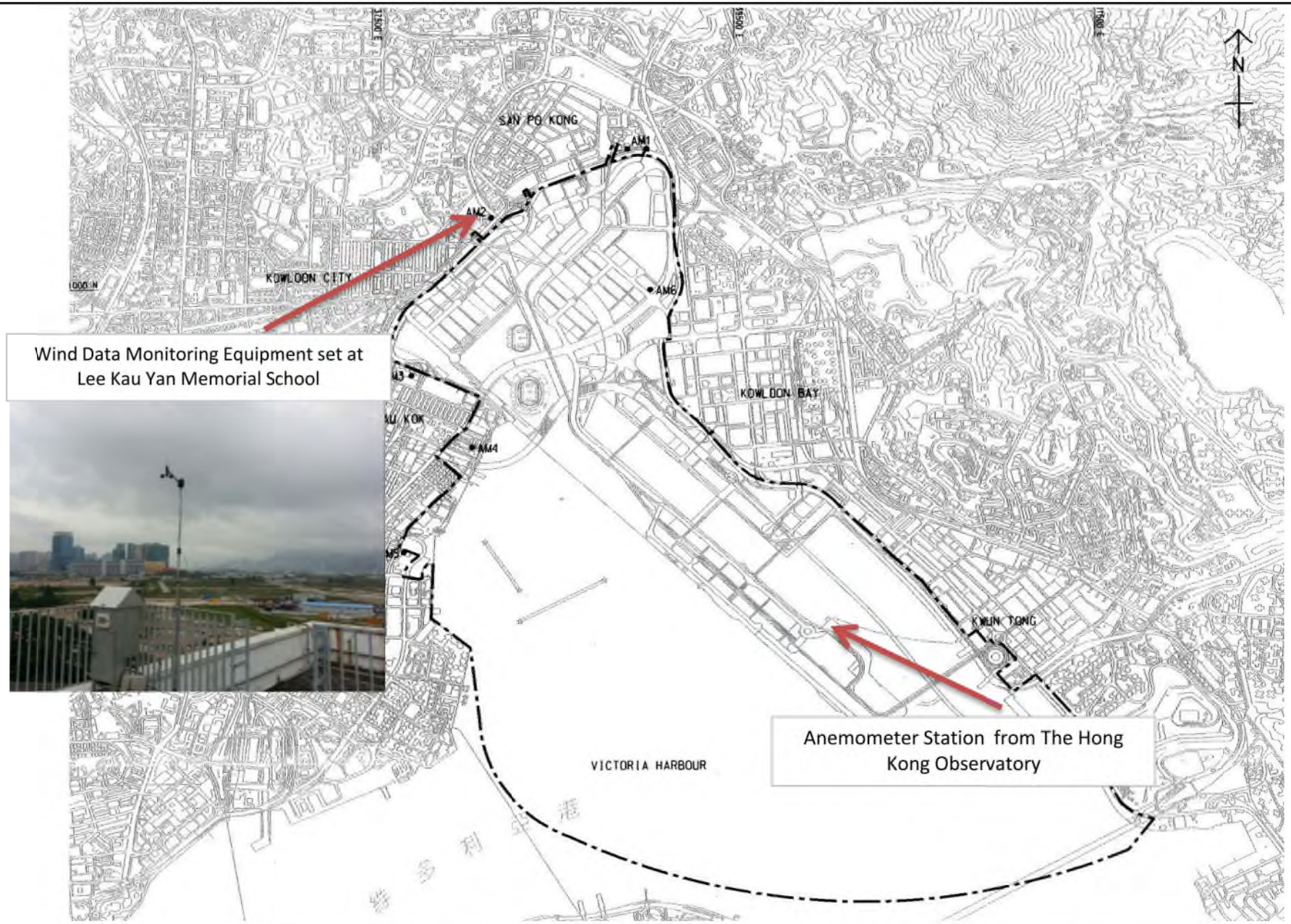


AM1(B) - Contractor Site Office (KL/2012/02)

Title	Contract No. KL/2012/02	Scale N.T.S	Project No. MA13043
	Kai Tak Development –Stage 3A Infrastructure at Former North Apron Area	Date Mar-17	Figure 2
	Air Quality Monitoring Stations under Contract No.: KLN/2013/16 and KLN/2016/09		CINOTECH



Title	Contract No. KL/2012/02	Scale N.T.S	Project No. MA13043
	Kai Tak Development –Stage 3A Infrastructure at Former North Apron Area	Date Mar-17	Figure 3
	Noise Monitoring Stations under Contract No.: KLN/2013/16 and KLN/2016/09		CINOTECH



Title	Contract No. KL/2012/02 Kai Tak Development –Stage 3A Infrastructure at Former North Apron Area Location of Wind Data Monitoring Equipment	Scale: N.T.S Date: Oct-13	Project No.: MA13043 Figure: 4

CINOTECH

APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR QUALITY AND NOISE

Appendix A - Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AM1(B)	342	500
AM2	346	

Table A-2 Action and Limit Levels for 24-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AM1(B)	159	260
AM2	157	

Table A-3 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) 70dB(A)/65dB(A)*

Remarks: 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. *70dB(A) and 65dB(A) for schools during normal teaching periods and school examination periods, respectively.

APPENDIX B
COPIES OF CALIBRATION CERTIFCATES

Appendix B – 1

Monitoring Equipment under Contract No. KLN/2013/16

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA14008/58/0038

Station: AM1(B) - Outside RLJV site office (KL/2008/09) Operator: WK

Date: 20-Jan-17 Next Due Date: 19-Mar-17

Equipment No.: A-01-58 Serial No. 2357

Ambient Condition			
Temperature, Ta (K)	288.7	Pressure, Pa (mmHg)	771.5

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

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.8	3.52	59.66	7.9	2.88
2	9.7	3.19	54.17	6.8	2.67
3	7.6	2.82	48.05	5.1	2.31
4	5.2	2.33	39.89	3.5	1.92
5	3.4	1.89	32.42	2.2	1.52

By Linear Regression of Y on X

Slope , mw = 0.0506 **Intercept, bw =** -0.1108

Correlation coefficient* = 0.9989

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.07**

Remarks:

Conducted by: Kwok Tong Signature: Kwok Date: 20/1/2017

Checked by: LH Signature: Date: 20 January 2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA14008/59/0040

Station: AM2 - Lee Kau Yan Memorial School Operator: WK

Date: 20-Jan-17 Next Due Date: 19-Mar-17

Equipment No.: A-01-59 Serial No. 2354

Ambient Condition			
Temperature, Ta (K)	287.8	Pressure, Pa (mmHg)	770.6

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

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.7	3.50	59.47	7.6	2.82
2	9.8	3.21	54.50	6.5	2.61
3	7.5	2.81	47.78	5.1	2.31
4	5.0	2.29	39.17	3.2	1.83
5	3.4	1.89	32.45	2.3	1.55

By Linear Regression of Y on X

Slope , mw = 0.0480 **Intercept, bw =** -0.0147

Correlation coefficient* = 0.9988

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.01**

Remarks:

Conducted by: wk Tang Signature: Kwai Date: 20/1/2017

Checked by: lw Signature: Date: 20 January 2017

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

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

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

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

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

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

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

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

WELLAB 匯力 Testing & Research

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

TEST REPORT

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

Test Report No.:	C/W/161001
Date of Issue:	2016-10-03
Date Received:	2016-10-01
Date Tested:	2016-10-01
Date Completed:	2016-10-03
Next Due Date:	2017-04-02

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

Certificate of Calibration

Item for calibration:

Description	: Weather Monitor II
Manufacturer	: Davis Instruments
Model No.	: 7440
Serial No.	: MC20813A11

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 56 %

Test Specifications:

1. Performance check of anemometer
2. Performance check of wind direction sensor

Methodology:

In-house method with reference anemometer (RS232 Integral Vane Digital Anemometer)

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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

TEST REPORT

Test Report No.:	C/W/161001
Date of Issue:	2016-10-03
Date Received:	2016-10-01
Date Tested:	2016-10-01
Date Completed:	2016-10-03
Next Due Date:	2017-04-02

Results:

1. Performance check of anemometer

Air Velocity, m/s		Difference D (m/s)
Instrument Reading (V1)	Reference Value (V1)	D = V1 – V2
2.00	2.00	0.00

2. Performance check of wind direction sensor

Wind Direction (°)		Difference D (°)
Instrument Reading (W1)	Reference Value (W2)	D = W1 - W2
0	0	0
45.1	45	0.1
90	90	0
135.1	135	0.1
180	180	0
225.2	225	0.2
270.3	270	0.3
315	315	0
360	360	0

**********END OF REPORT**********

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TEST REPORT

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

Test Report No.:	C/A/170106A
Date of Issue:	2017-01-09
Date Received:	2017-01-06
Date Tested:	2017-01-06
Date Completed:	2017-01-09
Next Due Date:	2017-03-08

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3
Serial No.	: 251634
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 550 CPM
Equipment No.	: A-02-01

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0037

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Testing & Research

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TEST REPORT

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

Test Report No.:	C/A/170106B
Date of Issue:	2017-01-09
Date Received:	2017-01-06
Date Tested:	2017-01-06
Date Completed:	2017-01-09
Next Due Date:	2017-03-08

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 853944
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 685 CPM
Equipment No.	: A-02-04

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0038

****

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

Patrick Tse

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

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

Test Report No.:	C/A/170106
Date of Issue:	2017-01-09
Date Received:	2017-01-06
Date Tested:	2017-01-06
Date Completed:	2017-01-09
Next Due Date:	2017-03-08
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 541146
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 625 CPM
Equipment No.	: A-02-07

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0033

****

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Patrick Tse
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Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/N/161230
Date of Issue:	2017-01-03
Date Received:	2016-12-30
Date Tested:	2016-12-30
Date Completed:	2017-01-03
Next Due Date:	2018-01-02

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

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 14303
Microphone No.	: 35222
Equipment No.	: N-08-05

Test conditions:

Room Temperatre	: 21 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

Remark: 1)This report supersedes the one dated 2012/01/21 with certificate number C/N/120120/1.

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/N/160919
Date of Issue:	2016-09-21
Date Received:	2016-09-19
Date Tested:	2016-09-19
Date Completed:	2016-09-21
Next Due Date:	2017-09-20

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 977
Serial No.	: 45482
Microphone No.	: 63626
Equipment No.	: N-08-14

Test conditions:

Room Temperatre	: 22 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
PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/N/161028/1
Date of Issue:	2016-10-31
Date Received:	2016-10-28
Date Tested:	2016-10-28
Date Completed:	2016-10-31
Next Due Date:	2017-10-30

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

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 10965
Equipment No.	: N-09-02

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 60 %

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

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

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

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

Appendix B – 2

Monitoring Equipment under Contract No. KLN/2016/09

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2752	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.50	1.246	44.0	44.07
2	5.90	1.188	41.0	41.06
3	4.70	1.064	39.0	39.06
4	3.60	0.935	33.0	33.05
5	2.40	0.770	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 33.1537 b= 2.5544 Corr. Coeff= 0.9921

Sampler set point(SSP) 43 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2754	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.40	1.236	40.0	40.06
2	5.50	1.149	38.0	38.06
3	4.60	1.053	36.0	36.05
4	3.30	0.897	30.0	30.05
5	2.20	0.738	26.0	26.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 29.1511 b= 4.4741 Corr. Coeff= 0.9951

Sampler set point(SSP) 40 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2783	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.70	1.264	39.0	39.06
2	5.90	1.188	35.0	35.05
3	4.80	1.075	32.0	32.05
4	3.50	0.923	28.0	28.04
5	2.40	0.770	22.0	22.03

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.4948 b= -2.6780 Corr. Coeff= 0.9945

Sampler set point(SSP) 37 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2765	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.60	1.255	40.0	40.06
2	5.70	1.169	38.0	38.06
3	4.80	1.075	36.0	36.05
4	3.40	0.910	30.0	30.05
5	2.30	0.754	24.0	24.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.2966 b= 0.3031 Corr. Coeff= 0.9936

Sampler set point(SSP) 39 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2766	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	7.50	1.336	48.0	48.07
2	6.40	1.236	44.0	44.07
3	4.40	1.031	39.0	39.06
4	3.30	0.897	32.0	32.05
5	2.00	0.705	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.2524 b= 4.6824 Corr. Coeff= 0.9919

Sampler set point(SSP) 44 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2767	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.60	1.255	42.0	42.06
2	5.50	1.149	41.0	41.06
3	4.80	1.075	37.0	37.06
4	3.40	0.910	33.0	33.05
5	2.20	0.738	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 28.2377 b= 7.3012 Corr. Coeff= 0.9903

Sampler set point(SSP) 41 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

Calibration Certificate for High Volume Sampler (HVS)

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

TISCH Environmental

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - 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}

Calibration Certificate of Dust Meter

CERTIFICATE OF CALIBRATION AND TESTING

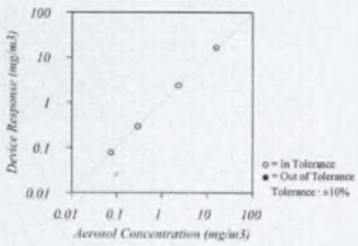
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environmental Conditions		
Temperature	75.16 (24.0)	°F (°C)
Relative Humidity	23.8	%RH
Barometric Pressure	29.36 (994.2)	inHg (hPa)

Model	AM510
Serial Number	11208032

☒ As Left ☐ As Found
☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTI101-02

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17	Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003314	05-19-16	05-19-17	DC Voltage	E003315	05-19-16	05-19-17
Photometer	E003319	07-19-16	01-19-17	Microbalance	M001324	11-02-16	11-02-18
Pressure	E003511	10-11-16	10-11-17	Flowmeter	E002471	04-26-16	04-26-17

Calibrated ☒ Final Function Check November 8, 2016 Date

CERTIFICATE OF CALIBRATION AND TESTING

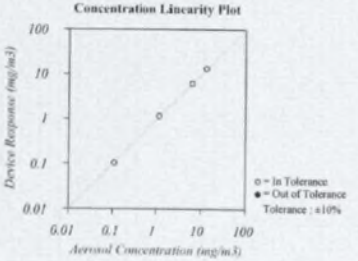
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environmental Conditions		
Temperature	75.7 (24.3)	°F (°C)
Relative Humidity	26	%RH
Barometric Pressure	28.93 (979.7)	inHg (hPa)

Model	AM510
Serial Number	11108001

☒ As Left ☐ As Found
☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



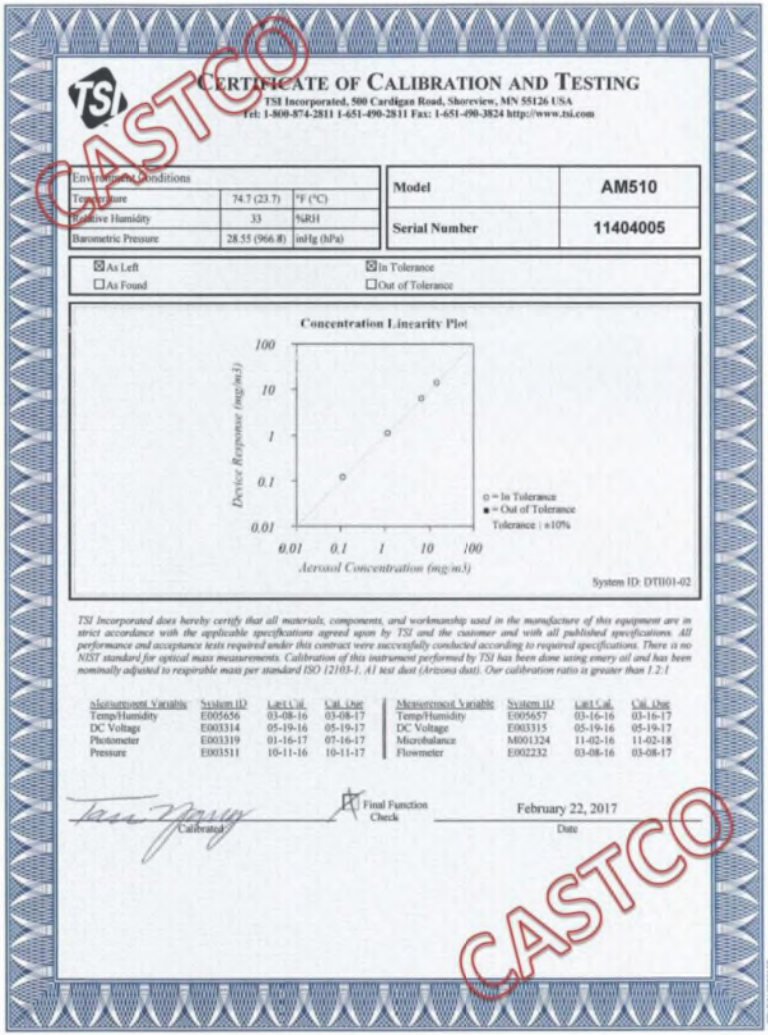
System ID: DTI101-02

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17	Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003314	05-19-16	05-19-17	DC Voltage	E003315	05-19-16	05-19-17
Photometer	E003319	07-19-16	01-19-17	Microbalance	M001324	11-02-16	11-02-18
Pressure	E003511	10-11-16	10-11-17	Flowmeter	E002232	03-08-16	03-08-17

Calibrated ☒ Final Function Check December 20, 2016 Date

Calibration Certificate of Dust Meter



CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environmental Conditions		
Temperature	74.7 (23.7)	°F (°C)
Relative Humidity	33	%RH
Barometric Pressure	28.55 (966.8)	inHg (hPa)

Model	AM510
Serial Number	11404005

☒ As Left ☐ As Found
☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot

System ID: DTI01-02

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17	Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003314	05-19-16	05-19-17	DC Voltage	E003315	05-19-16	05-19-17
Photometer	E003319	01-16-17	07-16-17	Microbalance	M001324	11-02-16	11-02-18
Pressure	E003511	10-11-16	10-11-17	Flowmeter	E002232	03-08-16	03-08-17

Calibrated

Final Function Check

February 22, 2017
Date

TSI P/N 1000187

Certificate of Sound Level Meter

中国赛宝实验室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY
CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L0462

校 准 证 书
CALIBRATION CERTIFICATE

证书编号： 2IB17000013-0001
Certificate No.

委托单位：Client	Castco Testing Centre Limited
委托方地址：Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称：Description	Sound Level Meter
型号规格：Model/Type	NL-52
制造商：Manufacturer	RION
机身号：Serial No.	00921213
管理号：Asset No.	AAST-SLM-04
校准日期：Cal. Date	2017 年 01 月 05 日
建议再校日期：Next Cal. Date	2018 年 01 月 05 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 罗志满　　核验：Inspected by 杨雨振

签发：Approved by 郭木方　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
香港分部地址：香港上水洪桥广场6/F2
客服电话：852-26680871 传真：852-26686197
投诉电话：852-26680936 020-87236789
邮件：cal@ceprei.com.hk
网址：www.ceprei-cal.com

CEPREI Calibration and Testing Center
H.Q. Addr: No.110 Dongguanzhuang Road, Tianhe District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Castco Logistics Plaza, Hung Shui Kiu, New Territories, Hong Kong
Tel: 852-26680871 Fax: 852-26686197
Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

中国赛宝实验室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY
CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L0462

校 准 证 书
CALIBRATION CERTIFICATE

证书编号： 2IB16001326-0003
Certificate No.

委托单位：Client	Castco Testing Centre Limited
仪器名称：Description	SOUND LEVEL METER
型号规格：Model/Type	NL-52
制造商：Manufacturer	RION
机身号：Serial No.	00164461
管理号：Asset No.	AAST-SLM-06
校准日期：Cal. Date	2016 年 09 月 22 日
建议再校日期：Next Cal. Date	2017 年 09 月 22 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 杨雨振　　核验：Inspected by

签发：Approved by 郭木方　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
香港分部地址：香港上水洪桥广场6/F2
客服电话：852-26680871 传真：852-26686197
投诉电话：852-26680936 020-87236789
邮件：cal@ceprei.com.hk
网址：www.ceprei-cal.com

CEPREI Calibration and Testing Center
H.Q. Addr: No.110 Dongguanzhuang Road, Tianhe District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Castco Logistics Plaza, Hung Shui Kiu, New Territories, Hong Kong
Tel: 852-26680871 Fax: 852-26686197
Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

Calibration Certificate of Sound Calibrator

中 国 赛 宝 实 验 室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L0482

校 准 证 书
CALIBRATION CERTIFICATE

证书编号：2HB17000084-0002
Certificate No.

委托单位：Client	Castco Testing Centre Limited
委托方地址：Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称：Description	Sound Level Calibrator
型号规格：Model/Type	NC-73
制造商：Manufacturer	RION
机身号：Serial No.	20652
管理号：Asset No.	AAST-SLC-01
校准日期：Cal. Date	2017 年 01 月 20 日
建议再校日期：Next Cal. Date	2018 年 01 月 20 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by　　核验：Inspected by

签发：Approved by　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
香港分部地址：香港上水到桥广场G/F2
客服电话：852-26680871 传真：852-26686197
投诉电话：852-26680936 020-87236789
邮件：cal@ceprei.com.hk
网址：www.ceprei-cal.com

CEPREI Calibration and Testing Center
H.Q. Addr: No.110 Dongguanzhuang Road, [illegible] District, Guangzhou
CEPREI(H.K.) Addr.: [illegible] Sheung Shui N.T. Hong Kong
Tel: 852-26680871 Fax: 852-2668[illegible]
Complaint phone: 852-[illegible] 87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

Page 1 of 3

中 国 赛 宝 实 验 室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L0482

校 准 证 书
CALIBRATION CERTIFICATE

证书编号：2HB16001157-0001
Certificate No.

委托单位：Client	Castco Testing Centre Limited
委托方地址：Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称：Description	SOUND LEVEL CALIBRATOR
型号规格：Model/Type	NC-74
制造商：Manufacturer	RION
机身号：Serial No.	34546624
管理号：Asset No.	AAST-SLC-03
校准日期：Cal. Date	2016 年 08 月 18 日
建议再校日期：Next Cal. Date	2017 年 08 月 18 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by　　核验：Inspected by

签发：Approved by　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
香港分部地址：香港上水到桥广场G/F2
客服电话：852-26680871 传真：852-26686197
投诉电话：852-26680936 020-87236789
邮件：cal@ceprei.com.hk
网址：www.ceprei-cal.com

CEPREI Calibration and Testing Center
H.Q. Addr: No.110 Dongguanzhuang Road, [illegible] District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Cambridge Plaza [illegible] Shui N.T. Hong Kong
Tel: 852-26680871 Fax: 852-2668[illegible]
Complaint phone: 852-[illegible]36 020-[illegible]
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

Page 1 of 4

Calibration Certificate of Wind Anemometer

广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

校 准 证 书
CALIBRATION CERTIFICATE

证书编号 Certificate No. LC-20172600　　第 1 页 Page　　共 3 页 of

委 托 方 Client：佳力高試驗中心有限公司 CASTCO TESING CENTRE LTD

地 址 Address：香港新界粉嶺安樂村安居街33號 33 On Kui Street On Lok Tsue Fanling, N.T, H.K.

计量器具名称 Measuring instruments：Davis Weather Station

规格型号 Model/Type：Vantage Pro2

制 造 者 Manufacturer：

编 号 Serial No.：A70604D29N/自編號:EN52-01

证书专用章 Issued by (Stamp)

主 管 Approved by：陈金明

审 核 Inspected by：

校 准 Calibrated by：

校准日期 Calibration Date　2017 年 Y 03 月 M 14 日 D　　建议校准周期 The recommended calibration period　一年

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广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

说 明
DIRECTIONS

证书编号 Certificate No.：LC-20172600　　第 2 页 Page　　共 3 页 of

1、本院是政府依法设置的法定计量检定机构，工作职责为承担授权范围内的量值传递工作和向社会开展计量校准技术服务工作。
Guangzhou Institute of Measurement and Testing Technology (GIMTT) is a legal metrological organization set by government, which is responsible for value dissemination within authorization, and to provide metrological and calibration services for social benefit.

2、本院的质量管理体系符合ISO/IEC 17025：2005标准的要求。
The quality system of GIMTT is in accordance with ISO/IEC 17025:2005.

3、本院出具的数据均可溯源到国家计量基准和SI单位标准。
All data issued by GIMTT are traceable to national measurement standards and SI unit standards.

4、本次校准所依据的技术文件是：
Reference documents for the calibration:
JJG 613-1989 《电接风向风速仪》检定规程
V.R. of Verification Regulation of Contact Anemorumbometer

5、本次校准所使用的计量标准是：
Standards of measurement used in the calibration:

设备名称/型号 Equipment/Model	编号 Serial No.	证书号 Certificate No.	技术特征 Technique character
皮托静压管(Pitot Tubes)	0471	NSC201750171/2022-02-16	MPE: ±0.01
补偿式微压计 (Compensated micromanometer)	200509032	LY-201534497/2017-12-19	准确度等级：二等 Grade 2
空盒气压表(Aneroid barometer)	06-0008	LY-201619205/2017-07-01	MPE: ±2.5 hPa
风洞(Wind tunel)	08	LC-20167300/2017-06-28	均匀性≤1%; 稳定性≤0.5%;
数显倾角仪(Digital Inclinometer)	N2955	CJ-20169223/2017-5-25	MPE: ±5'

6、依据JJF 1059.1-2012《测量结果不确定度评定与表示》，本次校准中部分测量结果的不确定度分别是：
The uncertainty of measurement results in accordance with JJF 1059.1-2012:
U=0.20 m/s; k=2

7、本次校准的地点与校准时的环境条件：
Site of the calibration and environmental conditions during the calibration:
地点 Site　科学城实验室　温度 Temperature 19.4℃　相对湿度 RH 53%

Calibration Certificate of Wind Anemometer

GUANGZHOU 广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

校准结果
RESULTS OF CALIBRATION

证书编号 LC-20172600 原始记录号 17205J0338 第 3 页 共 3 页
Certificate No. Page Of

1、外 观：正 常
Appearance: Pass

2、空气密度修正系数(Correction factor of air density)：1.007；
总修正系数(Correction factor of total)：1.013；
大气压力 (Atmospheric pressure)：1018.0 hPa；

3、风速仪示值校准：
Indication calibrated of anemometer:

微压计示值 Indication of micromanometer (mmH_2O)	标准值 Values of standard (m/s)	仪器示值 Indication of anemometer (m/s)	修正值 Values of correction (m/s)
6.10	2.0	1.8	+0.2

4、风向角示值校准：
Indication calibrated of wind direction sensor:

标准值（°） Values of standard	仪器示值（°） Instrument Reading
0.0	0
45.0	45
90.0	90
135.0	135
180.0	180
225.0	225
270.0	270
315.0	315
360.0	360

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注：1、此结果只与受校准的项目有关。
2、未经本院书面批准，不得部分复制此证书。
3、此证书无本院盖章无效。

Note: 1. The results relate only to the items verified.
2. This certificate shall not be reproduced except in full, without the written approval of our institute .
3. This certificate shall not be valid without stamp of our institute .

APPENDIX C
WEATHER INFORMATION

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
1 March 2017	15.9 – 22.9	54 – 82	0
2 March 2017	17.2 – 23.9	25 – 72	0
3 March 2017	15.7 – 20.1	49 – 76	0
4 March 2017	16.8 – 21.8	64 – 79	0
5 March 2017	18.7 – 24.0	79 – 97	0
6 March 2017	17.9 – 23.5	62 – 96	Trace
7 March 2017	17.1 – 20.7	62 – 83	Trace
8 March 2017	15.0 – 17.3	80 – 95	2.8
9 March 2017	16.0 – 19.6	50 – 90	Trace
9 March 2017	16.0 – 19.6	50 – 90	Trace
10 March 2017	16.4 – 19.2	84 – 93	Trace
11 March 2017	16.7 – 18.4	84 – 93	Trace
12 March 2017	17.0 – 19.5	83 – 96	1.0
13 March 2017	19.4 – 24.4	82 – 98	0
14 March 2017	16.8 – 22.0	90 – 97	8.5
15 March 2017	16.2 – 17.9	66 – 91	Trace
16 March 2017	16.8 – 19.0	73 – 83	Trace
17 March 2017	17.0 – 20.4	80 – 91	Trace
18 March 2017	17.4 – 20.1	83 – 95	0.3

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
19 March 2017	18.9 – 20.6	90 – 99	10.7
20 March 2017	18.6 – 27.1	67 – 98	Trace
21 March 2017	19.1 – 27.6	69 – 96	0.6
22 March 2017	17.6 – 19.7	83 – 94	0.9
23 March 2017	19.0 – 24.6	68 – 91	0
24 March 2017	18.9 – 22.4	76 – 91	Trace
25 March 2017	16.5 – 23.4	72 – 93	Trace
26 March 2017	13.8 – 16.9	64 – 93	1.0
27 March 2017	16.3 – 21.5	39 – 71	0
28 March 2017	18.1 – 24.9	61 – 86	0
29 March 2017	20.4 – 23.7	74 – 90	0.3
30 March 2017	21.0 – 23.1	81 – 94	Trace
31 March 2017	15.5 – 23.7	79 – 97	21.9

* The above information was extracted from the daily weather summary by Hong Kong Observatory.

II. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m/s	Direction
1-Mar-2017	0:00	0.9	SSE
1-Mar-2017	1:00	0.9	SE
1-Mar-2017	2:00	0.6	N
1-Mar-2017	3:00	0.8	N
1-Mar-2017	4:00	0.9	N
1-Mar-2017	5:00	0.8	WNW
1-Mar-2017	6:00	0.7	SSW
1-Mar-2017	7:00	0.8	S
1-Mar-2017	8:00	1.1	S
1-Mar-2017	9:00	1.3	SSW
1-Mar-2017	10:00	1.2	SE
1-Mar-2017	11:00	1.3	SE
1-Mar-2017	12:00	1.4	SE
1-Mar-2017	13:00	1.3	NW
1-Mar-2017	14:00	0.9	WSW
1-Mar-2017	15:00	1.1	N
1-Mar-2017	16:00	0.9	WNW
1-Mar-2017	17:00	0.9	S
1-Mar-2017	18:00	0.9	SE
1-Mar-2017	19:00	0.7	SSW
1-Mar-2017	20:00	0.9	SE
1-Mar-2017	21:00	0.9	E
1-Mar-2017	22:00	0.9	WNW
1-Mar-2017	23:00	1.0	WSW
2-Mar-2017	0:00	1.3	SSE
2-Mar-2017	1:00	1.2	SE
2-Mar-2017	2:00	1.2	E
2-Mar-2017	3:00	0.8	NNW
2-Mar-2017	4:00	1	NW
2-Mar-2017	5:00	0.9	NNW
2-Mar-2017	6:00	0.7	NW
2-Mar-2017	7:00	0.6	SSE
2-Mar-2017	8:00	0.7	SW
2-Mar-2017	9:00	0.8	SW
2-Mar-2017	10:00	0.8	SW
2-Mar-2017	11:00	1.1	SSE

II. Mean Wind Speed and Wind Direction

2-Mar-2017	12:00	1.2	WSW
2-Mar-2017	13:00	1.2	ENE
2-Mar-2017	14:00	1.1	E
2-Mar-2017	15:00	1.2	E
2-Mar-2017	16:00	1	ENE
2-Mar-2017	17:00	0.8	NE
2-Mar-2017	18:00	0.8	NNE
2-Mar-2017	19:00	0.9	N
2-Mar-2017	20:00	0.9	N
2-Mar-2017	21:00	0.9	N
2-Mar-2017	22:00	1.1	ENE
2-Mar-2017	23:00	0.9	S
3-Mar-2017	0:00	0.9	SW
3-Mar-2017	1:00	0.9	ENE
3-Mar-2017	2:00	0.7	N
3-Mar-2017	3:00	0.7	NNE
3-Mar-2017	4:00	0.9	NE
3-Mar-2017	5:00	0.7	ENE
3-Mar-2017	6:00	0.6	NNE
3-Mar-2017	7:00	0.6	NNE
3-Mar-2017	8:00	0.8	NE
3-Mar-2017	9:00	1.2	N
3-Mar-2017	10:00	1.1	NE
3-Mar-2017	11:00	1.1	N
3-Mar-2017	12:00	1.1	NE
3-Mar-2017	13:00	1.2	N
3-Mar-2017	14:00	1	N
3-Mar-2017	15:00	1	N
3-Mar-2017	16:00	1.1	W
3-Mar-2017	17:00	1.1	W
3-Mar-2017	18:00	1.1	W
3-Mar-2017	19:00	1.1	SW
3-Mar-2017	20:00	1.1	SW
3-Mar-2017	21:00	1.3	WSW
3-Mar-2017	22:00	1.2	NE
3-Mar-2017	23:00	1.4	NE
4-Mar-2017	0:00	1.1	ENE

II. Mean Wind Speed and Wind Direction

4-Mar-2017	1:00	1.3	NE
4-Mar-2017	2:00	1.3	N
4-Mar-2017	3:00	1.5	NE
4-Mar-2017	4:00	1	NE
4-Mar-2017	5:00	1.2	W
4-Mar-2017	6:00	1.3	N
4-Mar-2017	7:00	1	ENE
4-Mar-2017	8:00	1	ENE
4-Mar-2017	9:00	1.3	ENE
4-Mar-2017	10:00	1.5	ENE
4-Mar-2017	11:00	1.7	SSE
4-Mar-2017	12:00	1.6	NW
4-Mar-2017	13:00	1.9	ENE
4-Mar-2017	14:00	1.9	SW
4-Mar-2017	15:00	1.6	WSW
4-Mar-2017	16:00	1.4	W
4-Mar-2017	17:00	1.3	WSW
4-Mar-2017	18:00	1	WSW
4-Mar-2017	19:00	0.9	WSW
4-Mar-2017	20:00	1.5	WSW
4-Mar-2017	21:00	0.5	WSW
4-Mar-2017	22:00	1.1	S
4-Mar-2017	23:00	1	WNW
5-Mar-2017	0:00	0.9	WNW
5-Mar-2017	1:00	0.9	SSW
5-Mar-2017	2:00	1.2	WSW
5-Mar-2017	3:00	0.6	W
5-Mar-2017	4:00	0.5	W
5-Mar-2017	5:00	0.6	WSW
5-Mar-2017	6:00	0.4	W
5-Mar-2017	7:00	0.5	W
5-Mar-2017	8:00	0.8	W
5-Mar-2017	9:00	1.2	W
5-Mar-2017	10:00	1.3	WSW
5-Mar-2017	11:00	1.3	W
5-Mar-2017	12:00	1.5	SSW
5-Mar-2017	13:00	1.6	SW

II. Mean Wind Speed and Wind Direction

5-Mar-2017	14:00	1.5	SW
5-Mar-2017	15:00	1.3	W
5-Mar-2017	16:00	1.1	WSW
5-Mar-2017	17:00	0.9	SSW
5-Mar-2017	18:00	1.2	WSW
5-Mar-2017	19:00	1.1	WSW
5-Mar-2017	20:00	1.1	WSW
5-Mar-2017	21:00	0.8	SSW
5-Mar-2017	22:00	0.8	SSW
5-Mar-2017	23:00	0.6	S
6-Mar-2017	0:00	2.2	SSW
6-Mar-2017	1:00	2	WSW
6-Mar-2017	2:00	1.8	WSW
6-Mar-2017	3:00	1.5	W
6-Mar-2017	4:00	1.2	W
6-Mar-2017	5:00	1.1	W
6-Mar-2017	6:00	1.1	WSW
6-Mar-2017	7:00	1	WSW
6-Mar-2017	8:00	1	WSW
6-Mar-2017	9:00	1.3	SW
6-Mar-2017	10:00	1.4	WSW
6-Mar-2017	11:00	1.7	SSW
6-Mar-2017	12:00	1.3	W
6-Mar-2017	13:00	1.6	W
6-Mar-2017	14:00	1	WSW
6-Mar-2017	15:00	1	ESE
6-Mar-2017	16:00	1.2	ESE
6-Mar-2017	17:00	1.3	SSW
6-Mar-2017	18:00	1.4	W
6-Mar-2017	19:00	1.1	W
6-Mar-2017	20:00	1.2	W
6-Mar-2017	21:00	0.7	ENE
6-Mar-2017	22:00	0.6	W
6-Mar-2017	23:00	0.9	W
7-Mar-2017	0:00	2	WNW
7-Mar-2017	1:00	1.3	W
7-Mar-2017	2:00	1.4	WNW

II. Mean Wind Speed and Wind Direction

7-Mar-2017	3:00	1.1	W
7-Mar-2017	4:00	1.1	W
7-Mar-2017	5:00	1.3	WSW
7-Mar-2017	6:00	0.9	WSW
7-Mar-2017	7:00	1.2	W
7-Mar-2017	8:00	1.2	WNW
7-Mar-2017	9:00	2.2	W
7-Mar-2017	10:00	2.8	W
7-Mar-2017	11:00	3	W
7-Mar-2017	12:00	3.4	W
7-Mar-2017	13:00	3.6	WSW
7-Mar-2017	14:00	3.6	NNE
7-Mar-2017	15:00	4	S
7-Mar-2017	16:00	3.4	W
7-Mar-2017	17:00	3.2	SSW
7-Mar-2017	18:00	2.1	W
7-Mar-2017	19:00	1.4	WNW
7-Mar-2017	20:00	1.3	W
7-Mar-2017	21:00	2.3	WSW
7-Mar-2017	22:00	2.4	W
7-Mar-2017	23:00	1.6	WSW
8-Mar-2017	0:00	1	SSW
8-Mar-2017	1:00	0.5	SSW
8-Mar-2017	2:00	0.6	WSW
8-Mar-2017	3:00	1	WSW
8-Mar-2017	4:00	0.9	WSW
8-Mar-2017	5:00	0.9	WSW
8-Mar-2017	6:00	0.7	W
8-Mar-2017	7:00	0.8	W
8-Mar-2017	8:00	0.9	W
8-Mar-2017	9:00	1	W
8-Mar-2017	10:00	1.5	W
8-Mar-2017	11:00	1.4	W
8-Mar-2017	12:00	1.5	WSW
8-Mar-2017	13:00	1.5	W
8-Mar-2017	14:00	1.7	SSE
8-Mar-2017	15:00	1.8	SSE

II. Mean Wind Speed and Wind Direction

8-Mar-2017	16:00	1.6	ENE
8-Mar-2017	17:00	1	NE
8-Mar-2017	18:00	0.8	S
8-Mar-2017	19:00	0.6	S
8-Mar-2017	20:00	0.5	WSW
8-Mar-2017	21:00	0.5	WSW
8-Mar-2017	22:00	0.4	SW
8-Mar-2017	23:00	0.5	W

NOTE:

*: Due to mechanical failure of weather station, No wind speed and wind direction data was recorded from 9 March 2017 under KLN/2016/09 in the reporting month.

APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Contract No. KL/2012/02
Kai Tak Development - Stage 3A Infrastructure at Former North Apron Area
Impact Air and Noise Monitoring Schedule for March 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Mar	2-Mar	3-Mar	4-Mar
				Noise M9 24 hr TSP	1 hr TSP X3 AM1(B), AM2	
5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar	11-Mar
			1 hr TSP X3 AM1(B), AM2 24 hr TSP Noise M4, M9	Noise M3		
12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar
		1 hr TSP X3 AM1(B), AM2 24 hr TSP Noise M9	Noise M3, M4			
19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar
	1 hr TSP X3 AM1(B), AM2 24 hr TSP Noise M9	Noise M3, M4			1 hr TSP X3 AM1(B), AM2 24 hr TSP	
26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar	
	Noise M3, M4			1 hr TSP X3 AM1(B), AM2 24 hr TSP Noise M9		

Monitoring which is conducted by ET of schedule 3 of Kai Tak Development under Contract No. KLN/2013/16 is highlighted in black.
Monitoring which is conducted by ET of schedule 3 of Kai Tak Development under Contract No. KLN/2016/09 is highlighted in blue.

Air Quality Monitoring Station

AM1(B) -Boundary of KTD/Outside Contractor's site office of Contract KL/2012/02
AM2 - Lee Kau Yan Memorial School

Noise Monitoring Station

M3 - Cognitio College
M4 - Lee Kau Yan Memorial School
M9 - Tak Long Estate

Contract No. KL/2012/02
Kai Tak Development - Stage 3A Infrastructure at Former North Apron Area
Tentative Impact Air and Noise Monitoring Schedule for April 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Apr
2-Apr	3-Apr	**4-Apr**	5-Apr	6-Apr	7-Apr	8-Apr
			1 hr TSP X3 AM1(B), AM2 24 hr TSP Noise M9	Noise M3, M4		
9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	**14-Apr**	15-Apr
	1 hr TSP X3 AM1(B), AM2 24 hr TSP Noise M9	Noise M3, M4		1 hr TSP X3 AM1(B), AM2 24 hr TSP		
16-Apr	**17-Apr**	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr
		Noise M3, M4	1 hr TSP X3 AM1(B), AM2 24 hr TSP Noise M9			1 hr TSP X3 AM1(B), AM2 24 hr TSP
23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr
	Noise M3, M4			1 hr TSP X3 AM1(B), AM2 24 hr TSP		
30-Apr						

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)
Monitoring which is conducted by ET of schedule 3 of Kai Tak Development under Contract No. KLN/2016/09 is highlighted in blue.

Air Quality Monitoring Station

AM1(B) -Boundary of KTD/Outside Contractor's site office of Contract KL/2012/02
AM2 - Lee Kau Yan Memorial School

Noise Monitoring Station

M3 - Cognitio College
M4 - Lee Kau Yan Memorial School
M9 - Tak Long Estate

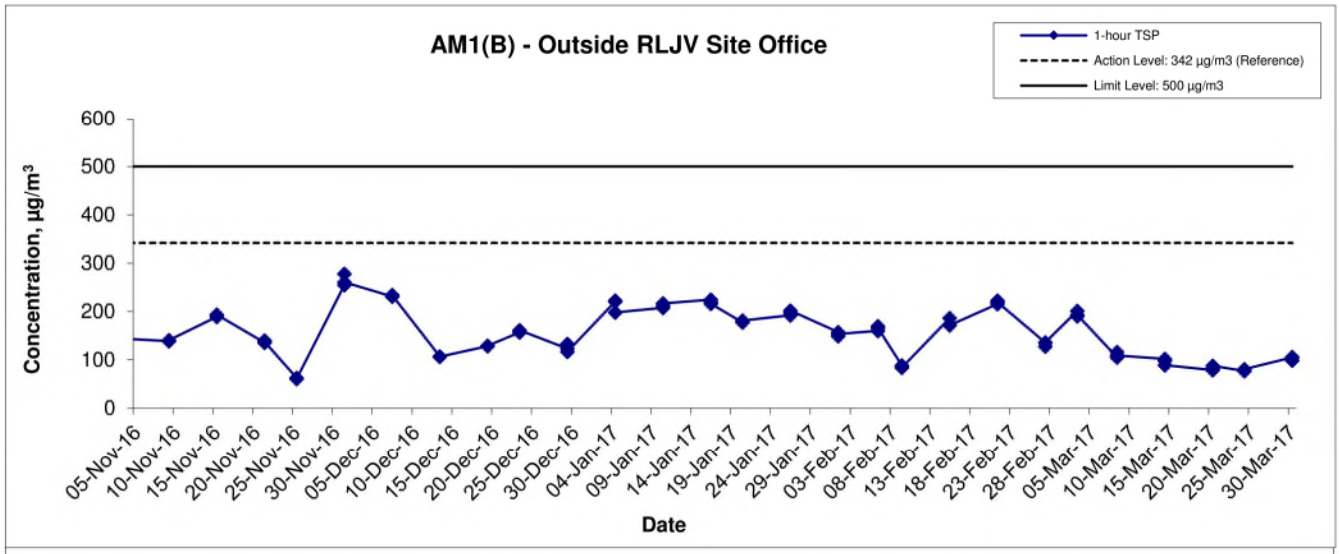
APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

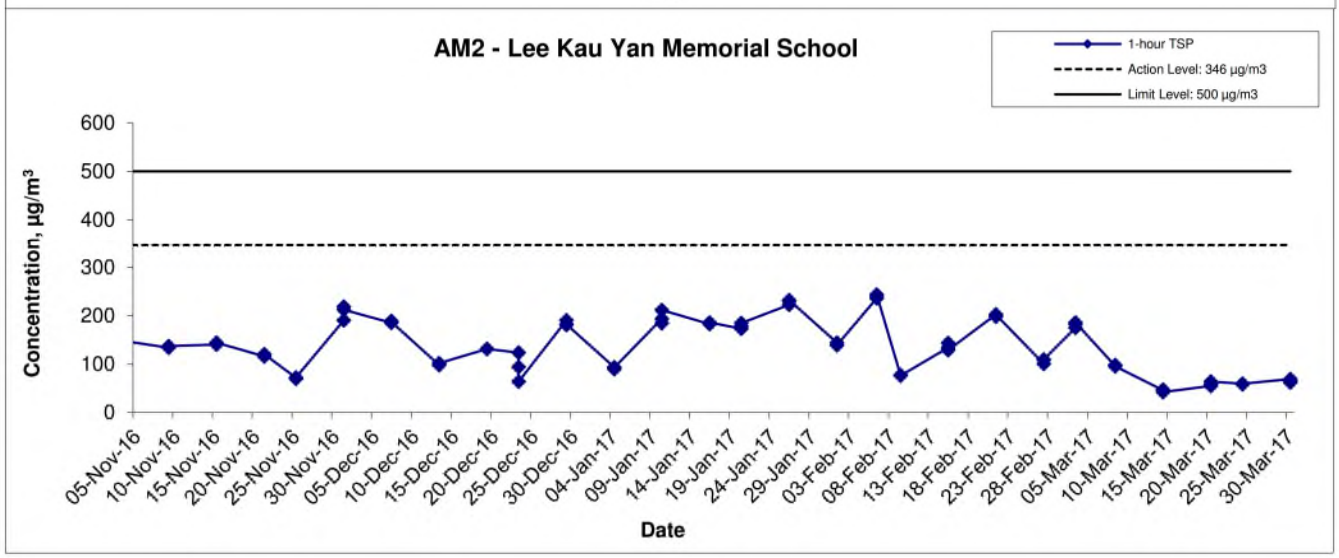
Appendix E - 1-hour TSP Monitoring Results

Location AM1(B) - Outside RLJV Site Office			
Date	Time	Weather	Particulate Concentration (µg/m3)
3-Mar-17	13:00	Sunny	201.2
3-Mar-17	14:00	Sunny	190.4
3-Mar-17	15:00	Sunny	192.8
8-Mar-17	13:00	Cloudy	105.0
8-Mar-17	14:00	Cloudy	116.0
8-Mar-17	15:00	Cloudy	109.0
14-Mar-17	13:00	Cloudy	102.0
14-Mar-17	14:00	Cloudy	98.0
14-Mar-17	15:00	Cloudy	89.0
20-Mar-17	09:00	Cloudy	79.0
20-Mar-17	10:00	Cloudy	82.0
20-Mar-17	11:00	Cloudy	88.0
24-Mar-17	09:00	Sunny	77.0
24-Mar-17	10:00	Sunny	80.0
24-Mar-17	11:00	Sunny	81.0
30-Mar-17	09:00	Cloudy	105.0
30-Mar-17	10:00	Cloudy	99.0
30-Mar-17	11:00	Cloudy	106.0
		Average	111.1
		Maximum	201.2
		Minimum	77.0

Location AM2 - Lee Kau Yan Memorial School			
Date	Time	Weather	Particulate Concentration (µg/m3)
3-Mar-17	09:00	Sunny	174.9
3-Mar-17	10:00	Sunny	182.6
3-Mar-17	11:00	Sunny	185.6
8-Mar-17	13:00	Cloudy	96.0
8-Mar-17	14:00	Cloudy	98.0
8-Mar-17	15:00	Cloudy	95.0
14-Mar-17	09:00	Cloudy	46.0
14-Mar-17	10:00	Cloudy	47.0
14-Mar-17	11:00	Cloudy	42.0
20-Mar-17	13:00	Cloudy	55.0
20-Mar-17	14:00	Cloudy	58.0
20-Mar-17	15:00	Cloudy	64.0
24-Mar-17	13:00	Sunny	59.0
24-Mar-17	14:00	Sunny	58.0
24-Mar-17	15:00	Sunny	59.0
30-Mar-17	13:00	Cloudy	69.0
30-Mar-17	14:00	Cloudy	62.0
30-Mar-17	15:00	Cloudy	65.0
		Average	84.0
		Maximum	185.6
		Minimum	42.0

1-hr TSP Concentration Levels





Title: Contract No. KL/2012/02 Kai Tak Development - Stage 3A Infrastructure at Former North Apron Area Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S Date: Mar 17	Project No.: MA13043 Appendix: E	CINOTECH

APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

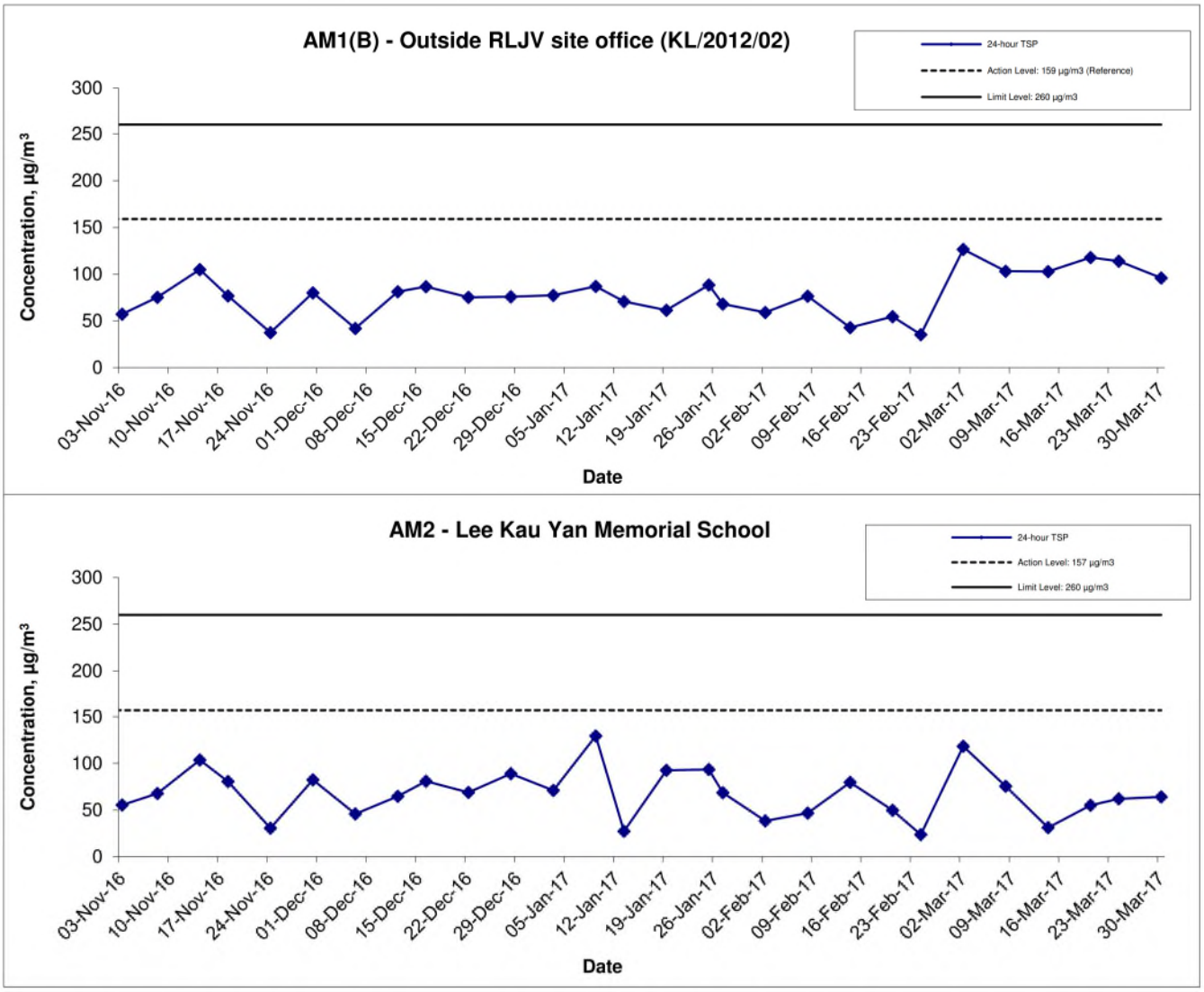
Appendix F - 24-hour TSP Monitoring Results

Location AM1(B) - Outside RLJV site office (KL/2012/02)

Start Date	Weather	Particulate Concentration (µg/m3)
2-Mar-17	Sunny	126.6
8-Mar-17	Cloudy	103.3
14-Mar-17	Cloudy	103.0
20-Mar-17	Cloudy	118.0
24-Mar-17	Sunny	114.0
30-Mar-17	Cloudy	96.0
	Average	110.2
	Maximum	126.6
	Minimum	96.0

Location AM2 - Lee Kau Yan Memorial School		
Start Date	Weather	Particulate Concentration (µg/m3)
2-Mar-17	Sunny	118.2
8-Mar-17	Cloudy	75.4
14-Mar-17	Cloudy	31.0
20-Mar-17	Cloudy	55.0
24-Mar-17	Sunny	62.0
30-Mar-17	Cloudy	64.0
	Average	67.6
	Maximum	118.2
	Minimum	31.0

24-hr TSP Concentration Levels



Title: Contract No. KL/2012/02 Kai Tak Development - Stage 3A Infrastructure at Former North Apron Area Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Mar 17	Project No.: MA13043 Appendix: F	CINOTECH

APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

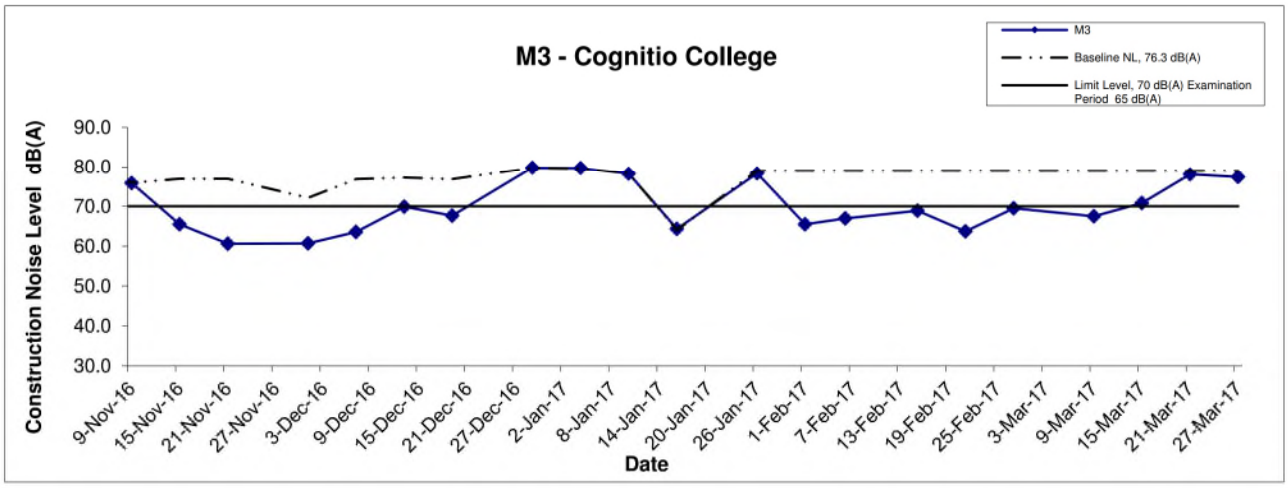
Appendix G - Noise Monitoring Results

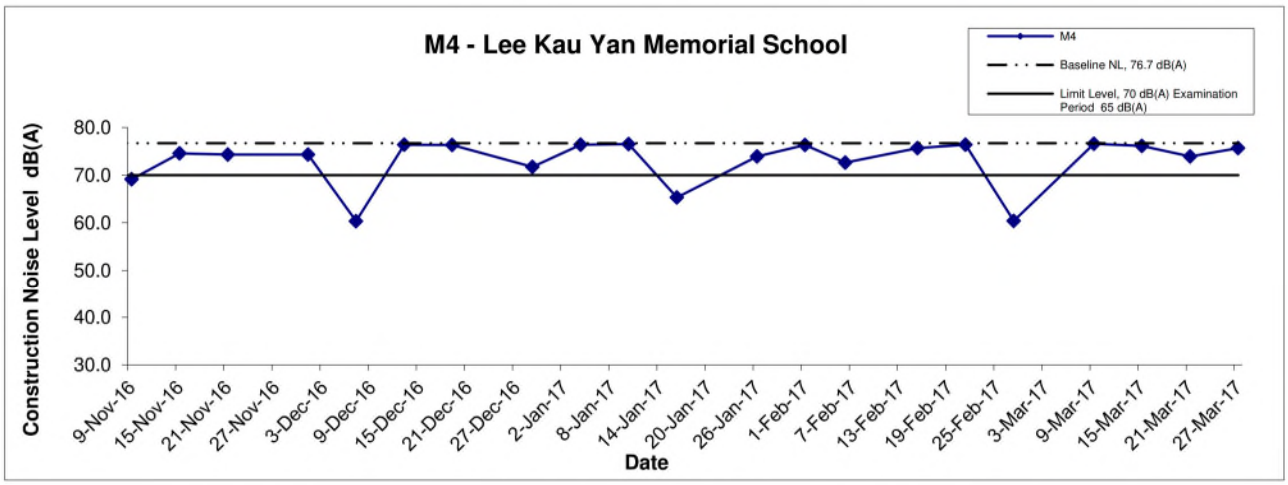
Location M3 - Cognitio College							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Background Noise	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
9-Mar-17	13:30	Cloudy	67.5	68.7	66.2	68.7	67.5 Measured ≦ Background
15-Mar-17	13:45	Cloudy	70.8	71.9	69.2	78.6	70.8 Measured ≦ Background
21-Mar-17	11:30	Sunny	78.1	78.6	77.6	78.4	78.1 Measured ≦ Background
27-Mar-17	11:30	Sunny	77.4	80.7	68.3	77.6	77.4 Measured ≦ Background

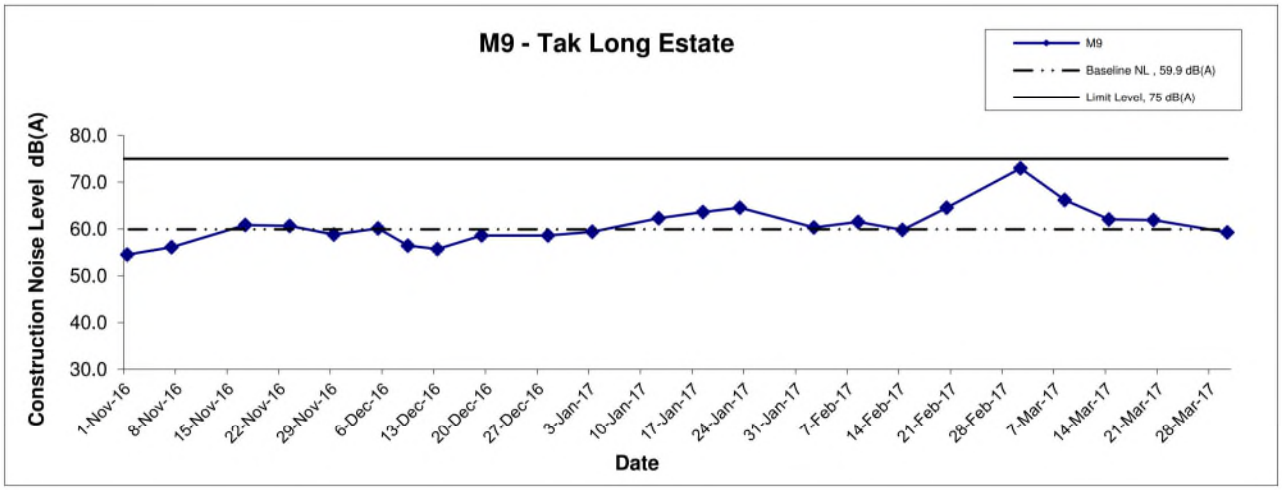
Location M4 - Lee Kau Yan Memorial School							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
9-Mar-17	15:30	Cloudy	76.6	77.7	75.3	76.7	76.6 Measured ≦ Baseline
15-Mar-17	12:30	Cloudy	79.4	81.6	77.4		76.1
21-Mar-17	14:00	Cloudy	73.9	76.2	70.4		73.9 Measured ≦ Baseline
27-Mar-17	13:15	Sunny	75.7	77.0	73.8		75.7 Measured ≦ Baseline

Location M9 - Tak Long Estate							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
2-Mar-17	09:10	Sunny	73.2	75.1	70.4	59.9	73.0
8-Mar-17	11:45	Cloudy	67.1	65.3	59.2		66.2
14-Mar-17	13:30	Cloudy	64.1	66.1	61.6		62.0
20-Mar-17	11:30	Cloudy	64.0	65.4	61.3		61.9
30-Mar-17	10:45	Cloudy	62.6	64.2	60.3		59.3

Noise Levels







Remarks: The construction noise levels in the Tables in Appendix G were adopted for plotting the graphs

Title: Contract No. KL/2012/02 Kai Tak Development - Stage 3A Infrastructure at Former North Apron Area Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S	Project No.: MA13043	CINOTECH
	Date: Mar 17	Appendix: G	

APPENDIX H
SUMMARY OF EXCEEDANCE

Contract No. KL/2012/02
Kai Tak Development –Stage 3A Infrastructure at Former North Apron Area

Appendix H – Summary of Exceedance

Exceedance Report for Contract No. KL/2012/02

(A) Exceedance Report for Air Quality
(NIL in the reporting month)

(B) Exceedance Report for Construction Noise
(One non-project related Limit Level exceedance was rerecord at M4 on 15 March 2017)

Station	Date	Measured Noise Level, Leq(30min) dB (A)	Baseline Level dB (A)	Construction Noise Level: Leq(30min) dB (A)	Limit Level	Level exceeded
M4	15-Mar-17	79.4	76.7	76.1	70.0	Limit Level

According to the information provided by the Contractor, no construction works was conducted during the measurement period (12:30 – 13:00). The exceedance was considered as non-project related as the major noise sources were the traffic noise from Prince Edward Road East.

(C) Exceedance Report for Landscape and Visual
(NIL in the reporting month)

APPENDIX I
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170301
Date	1 March 2017
Time	14:00 – 16:30

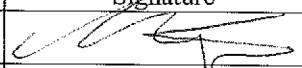
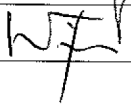
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170301-R01	• Stockpile of dusty materials near Concorde Road, Prince Edward Road East and EMSD should be properly covered after work.	C 7
170301-R02	• To provide valid NRMM label for generator at Portion SW3.	C 19
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170221), follow up action was required for item 170221-R01 which was remarked as 170301-R01.	

	Name	Signature	Date
Recorded by	KC Chung		1 March 2017
Checked by	Dr. Priscilla Choy		1 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170308
Date	8 March 2017
Time	14:00 – 16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
170308-R01	• To contain the oil drum into the drip tray. (SW3).	E 9
170308-R02	• To sort the general refuse and C&D wastes into appropriate waste disposal area.	E 7
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170301), all the environmental deficiency was rectified/ improved by the Contractor.	

	Name	Signature	Date
Recorded by	Benjamin Wong		8 March 2017
Checked by	Dr. Priscilla Choy		8 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170315
Date	15 March 2017
Time	14:00 – 16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170315-R01	• Stockpile of dusty material placed at near TI Tower and former KTOB should be properly covered to avoid dust generation.	C 7
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
170315-R02	• The fencing of tree protection zone near King Fuk Street should be properly erected.	F 1
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170308), all the environmental deficiency was rectified/ improved by the Contractor.	

	Name	Signature	Date
Recorded by	KC Chung		15 March 2017
Checked by	Dr. Priscilla Choy		15 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170321
Date	21 March 2017
Time	14:30 – 16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170321-O01	• Dusty stockpile placed at near CLP substation should be properly covered for dust suppression.	C 7
170321-R02	• Opened cement bags should be properly covered for dust suppression.	C 7
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
170321-R03	• The fencing of tree protection zone near King Fuk Street should be properly erected.	F 1
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170315), all the environmental deficiency was rectified/ improved by the Contractor.	

	Name	Signature	Date
Recorded by	KC Chung		21 March 2017
Checked by	Dr. Priscilla Choy		21 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170331
Date	31 March 2017
Time	10:30 – 11:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
170331-O01	• The construction material should be placed away from the tree protection zone at SW3.	F 1
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 17031), all the environmental deficiencies were rectified/ improved by the Contractor.	

	Name	Signature	Date
Recorded by	KC Chung	Chung	31 March 2017
Checked by	Dr. Priscilla Choy		31 March 2017

APPENDIX J
EVENT ACTION PLANS

Appendix J - Event Action Plans

Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ction Level being xceeded by ne sampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contactor, IEC and ER; 3. Repeat measurement to confirm finding.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
ction Level being xceeded by wo or more onsecutive ampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contractor, IEC and ER; 3. Increase monitoring frequency to daily; 4. Discuss with IEC and Contractor on remedial actions required; 5. Assess the effectiveness of Contractor's remedial actions; 6. If exceedance continues, arrange meeting with IEC and ER; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise implementation of remedial measures; 5. Conduct meeting with ET and IEC if exceedance continues.	1. Discuss with ET and IEC on prope remedial actions; 2. Submit proposals for remedial actions to ER and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
imit Level being xceeded by ne sampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contractor, IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Assess effectiveness of Contractor's remedial actions and keep	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures;	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be	1. Take immediate action to avoid further exceedance; 2. Discuss with ET and IEC on prope remedial actions; 3. Submit proposals for remedial actions to ER and IEC within three

Appendix J - Event Action Plans

	EPD, IEC and ER informed of the results.	4. Advise the ER on the effectiveness of the proposed remedial measures.	implemented; 4. Supervise implementation of remedial measures; 5. Conduct meeting with ET and IEC if exceedance continues.	working days of notification; 4. Implement the agreed proposals.
imit Level being xceeded by wo or more onsecutive ampling	1. Notify IEC, ER, Contractor and EPD; 2. Repeat measurement to confirm findings; 3. Carry out analysis of Contractor's working procedures to identify source and investigate the causes of exceedance; 4. Increase monitoring frequency to daily; 5. Arrange meeting with IEC, ER and Contractor to discuss the remedial actions to be taken; 6. Assess effectiveness of Contractor's remedial actions and keep EPD, IEC and ER informed of the results; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Discuss with ET, ER and IEC on proper remedial actions; 3. Submit proposals for remedial actions to IEC within three working days of notification; 4. Implement the agreed proposals; 5. Submit further remedial actions if problem still not under control; 6. Stop the relevant portion of works as instructed by the ER until the exceedance is abated.

Appendix J - Event Action Plans

Event/Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ction Level eing xceeded	1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals. (The above actions should be taken within 2 working days after the exceedance is identified)
imit Level eing xceeded	1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance;	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals;

	5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. (The above actions should be taken within 2 working days after the exceedance is identified)	(The above actions should be taken within 2 working days after the exceedance is identified)	measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified)	4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified)

Appendix J - Event Action Plans

Event/Action Plan for Landscape and Visual

EVENT ACTION LEVEL	ACTION			
	ET	IEC	ER	CONTRACTOR
Design Check	1. Check final design conforms to the requirements of EP and prepare report.	1. Check report. 2. Recommend remedial design if necessary	1. Undertake remedial design if necessary	
Non-conformity on one occasion	1. Identify Source 2. Inform IEC and ER 3. Discuss remedial actions with IEC, ER and Contractor 4. Monitor remedial actions until rectification has been completed	1. Check report 2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures. 5. Check implementation of remedial measures.	1. Notify Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source Inform IEC and	1. Check monitoring report	1. Notify Contractor 2. Ensure remedial measures are properly	1. Amend working methods 2. Rectify damage and

	ER 2. Increase monitoring frequency 3. Discuss remedial actions with IEC, ER and Contractor 4. Monitor remedial actions until rectification has been completed 5. If non-conformity stops, cease additional monitoring	2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures.	implemented	undertake any necessary replacement

APPENDIX K
ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

Appendix K – Summary of Implementation Schedule of Mitigation Measures for Construction Phase

EIA Ref.	Recommended Mitigation Measures	Implementation Status
Construction Air Quality		
S6.5	8 times daily watering of the work site with active dust emitting activities.	^
S6.8	Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. The following mitigation measures, good site practices and a comprehensive dust monitoring and audit programme are recommended to minimize cumulative dust impacts.	
	• Stockpiling site(s) should be lined with impermeable sheeting and bunded. Stockpiles should be fully covered by impermeable sheeting to reduce dust emission.	*
	• Misting for the dusty material should be carried out before being loaded into the vehicle. Any vehicle with an open load carrying area should have properly fitted side and tail boards.	^
	• Material having the potential to create dust should not be loaded from a level higher than the side and tail boards and should be dampened and covered by a clean tarpaulin.	^
	• The tarpaulin should be properly secured and should extent at least 300 mm over the edges of the sides and tailboards. The material should also be dampened if necessary before transportation.	^
	• The vehicles should be restricted to maximum speed of 10 km per hour and confined haulage and delivery vehicle to designated roadways insider the site. Onsite unpaved roads should be compacted and kept free of lose materials.	^
	• Vehicle washing facilities should be provided at every vehicle exit point.	^
	• The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.	^
	• Every main haul road should be scaled with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet.	^
	• Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the three sides.	^
	• Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.	^

S6.8	• DWFI compound for JVBC: A DWFI compound is proposed at the downstream of JVC to contain pollution in drainage systems entering the KTAC and KTTS by interception facilities until the ultimate removal of the pollution sources. Tidal barriers and desiliting facilities will form part of the compounds to prevent any accumulation of sediment within the downstream section of JVBC and hence fully mitigate the potential odour emissions from the headspace of JVBC near the existing discharge locations. The odour generating operations within the proposed desilting compound will be fully enclosed and the odorous air will be collected and treated by high efficiency deodorizers before discharge to the atmosphere.	N/A
	• Desilting compound for KTN: Two desilting compounds are proposed for KTN (at Site 1D6 and Site 1P1) to contain pollution in drainage systems entering the KTAC and KTTS by interception facilities until the ultimate removal of the pollution sources. Tidal barriers and desiliting facilities will form part of the compounds to prevent any accumulation of sediment within the downstream section of KTN and hence fully mitigate the potential odour emissions from the headspace of KTN near the existing discharge locations. The odour generating operations within the proposed desilting compound will be fully enclosed and the odorous air will be collected and treated by high efficiency deodorizers before discharge to the atmosphere.	N/A
	• Decking or reconstruction of KTN within apron area: It is proposed to deck the KTN or reconstruct the KTN within the former Apron area into Kai Tak River from the south of Road D1 to the north of Road D2 along the existing alignment of KTN. The Kai Tak River will compose of a number of channels flowing with nonodorous fresh water and THEES effluent. The channel flowing with THEES effluent will be designed with the width of water surface of not more than 16m.	N/A
	• Localised maintenance dredging: Localised maintenance dredging should be conducted to provide water depth of not less than 3.5m over the whole of KTAC and KTTS. With reference to the water depth data recorded during the odour survey, only some of the areas in the northern part of KTAC (i.e. to the north of taxiway bridge) including the area near the northern edge of KTAC, the area near western bank of KTAC, and the area near the JVC discharge have water depths shallower than 3.5m. The area involved would be about 40% of the northern KTAC and the dredging depth required would be from about 2.7m to less than 1m. The maintenance dredging to be carried out prior to the occupation of any new development in the immediate vicinity of KTAC to avoid potential localized odour	N/A

	impacts at the future ASRs during the maintenance dredging operation. • Improvement of water circulation in KTAC and KTTS: 600m gap opening at the northern part of the former Kai Tak runway, the water circulation in KTAC and KTTS would be substantially improved. Together with the improvement in water circulation, the DO level in KTAC and KTTS would also be increased. • In-situ sediment treatment by bioremediation: Bioremediation would be applied to the entire KTAC and KTTS.	N/A N/A
Construction Noise		
S7.8	Use of quiet PME, movable barriers barrier for Asphalt Paver, Breaker, Excavator and Hand-held breaker and full enclosure for Air Compressor, Bar Bender, Concrete Pump, Generator and Water Pump.	^
S7.9	Good Site Practice: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program. • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program. • Mobile plant, if any, should be sited as far away from NSRs as possible. • Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. • Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	 ^ ^ ^ ^ ^ ^
S7.9	Scheduling of Construction Works during School Examination Period	^
S7.8	(i) Provision of low noise surfacing in a section of Road L2; and (ii) Provision of structural fins	N/A N/A
S7.8	(i) Avoid the sensitive façade of class room facing Road L2 and L4; and (ii) Provision of low noise surfacing in a section of Road L2 & L4	N/A N/A

Appendix K – Summary of Implementation Schedule of Mitigation Measures for Construction Phase

S7.8	(i) Provision of low noise surfacing in a section of Road L4 before occupation of Site 1I1; and (ii) Setback of building about 5m from site boundary.	N/A N/A
S7.8	Setback of building about 35m to the northwest direction at 1L3 and 5m at Site 1L2.	N/A
S7.8	(i) avoid any sensitive façades with openable window facing the existing Kowloon City Road network; and Avoid the sensitive façade of class room facing Road L2 and L4; and (ii) for the sensitive facades facing the To Kwa Wan direction, either setback the facades by about 5m to the northeast direction or do not provide the facades with openable window.	N/A N/A
S7.8	(i) avoid any sensitive facades with openable window facing the existing To Kwa Wan Road or (ii) provision of 17.5m high noise tolerant building fronting To Kwa Wan Road and restrict the height of the residential block(s) located at less than 55m away from To Kwa Wan Road to no more than 25m above ground	N/A N/A
S7.8	(i) avoid any sensitive facades with openable window facing the slip road connecting Prince Edward Road East and San Po Kong or other alternative mitigation measures and at-source mitigation measures for the surrounding new local roads to minimise the potential traffic noise impacts from the slip road	^
S7.8	All the ventilation fans installed in the below will be provided with silencers or acoustics treatment. (i) SPS (ii) ESS (iii) Tunnel Ventilation Shaft (iv) EFTS depot	 N/A N/A N/A N/A
S7.8	Installation of retractable roof or other equivalent measures	N/A
Construction Water Quality		
S8.8	The following mitigation measures are proposed to be incorporated in the design of the SPS at KTD, including: • Dual power supply or emergency generator should be provided at all the SPSs to secure electrical power supply; • Standby pumps should be provided at all SPSs to ensure smooth operation of the SPS during maintenance of the duty pumps; • An alarm should be installed to signal emergency high water level in the wet well at all SPSs; and	 N/A N/A N/A

	• For all unmanned SPSs, a remote monitor system connecting SPSs with the control station through telemetry system should be provided so that swift actions could be taken in case of malfunction of unmanned facilities	N/A
S8.8	**Construction Phase** Marine-based Construction *Capital and Maintenance Dredging for Cruise Terminal* Mitigation measures for construction of the proposed cruise terminal should follow those recommended in the approved EIA for CT Dredging.	N/A
S8.8	*Fireboat Berth, Runway Opening and Road T2* Silt curtains should be deployed around the close grab dredger to minimize release of sediment and other contaminants for any dredging and filling activities in open water.	N/A
S8.8	Dredging at and near the seawall area for construction of the public landing steps cum fireboat berth should be carried out at a maximum production rate of 1,000m^3 per day using one grab dredger.	N/A
S8.8	The proposed construction method for runway opening should adopt an approach where the existing seawall at the runway will not be removed until completion of all excavation and dredging works for demolition of the runway. Thus, excavation of bulk fill and majority of the dredging works will be carried out behind the existing seawall, and the sediment plume can be effectively contained within the works area. As there is likely some accumulation of sediments alongside the runway, there will be a need to dredge the existing seabed after completion of all the demolition works. Dredging alongside the 600m opening should be carried out at a maximum production rate of 2,000m^3 per day using one grab dredger.	N/A
8.8	Dredging for Road T2 should be conducted at a maximum rate of 8,000m^3 per day (using four grab dredgers) whereas the sand filling should be conducted at a maximum rate of 2,000m3 per day (using two grab dredgers).	N/A
8.8	Silt screens shall be applied to seawater intakes at WSD seawater intake.	N/A

Appendix K – Summary of Implementation Schedule of Mitigation Measures for Construction Phase

S8.8	Land-based Construction *Construction Runoff* Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: • use of sediment traps • adequate maintenance of drainage systems to prevent flooding and overflow	^ ^
S8.8	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	^
S8.8	Construction site should be provided with adequately designed perimeter channel and pre-treatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles 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.	^
S8.8	Sediment tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m^3 capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	^
S8.8	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50 m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	^
S8.8	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.	^
S8.8	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, 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.	
S8.8	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	N/A(1)
S8.8	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 located wheel washing bay should be provided at every site exit, and 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.	^
S8.8	*Drainage* It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There should be no direct discharge of effluent from the site into the sea	^
S8.8	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	^
S8.8	All fuel tanks and storage areas should be provided with locks and be located 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 the coastal waters of the Victoria Harbour WCZ.	^
S8.8	*Sewage Effluent* Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets should be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor should also be responsible for waste disposal and maintenance practices.	^

S8.8	*Stormwater Discharges* Minimum distances of 100 m should be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes	^
S8.8	*Debris and Litter* In order to maintain water quality in acceptable conditions with regard to aesthetic quality, contractors should be required, under conditions of contract, to ensure that site management is optimised and that disposal of any solid materials, litter or wastes to marine waters does not occur	^
S8.8	*Construction Works at or in Close Proximity of Storm Culvert or Seafront* The proposed works should preferably be carried out within the dry season where the flow in the drainage channel /storm culvert/ nullah is low.	^
S8.8	The use of less or smaller construction plants may be specified to reduce the disturbance to the bottom sediment at the drainage channel /storm culvert / nullah.	^
S8.8	Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works	^
S8.8	Stockpiling of construction materials and dusty materials should be covered and located away from any water courses.	^
S8.8	Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers.	^
S8.8	Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable.	^
S8.8	Mitigation measures to control site runoff from entering the nearby water environment should be implemented to minimize water quality impacts. Surface channels should be provided along the edge of the waterfront within the work sites to intercept the runoff.	^
S8.8	Construction effluent, site run-off and sewage should be properly collected and/or treated.	^
S8.8	Any works site inside the storm water courses should be temporarily isolated, such as by placing of sandbags or silt curtains with lead	N/A

	edge at bottom and properly supported props to prevent adverse impact on the storm water quality.	
S8.8	Silt curtain may be installed around the construction activities at the seafront to minimize the potential impacts due to accidental spillage of construction materials.	N/A
S8.8	Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert/drainage channel/sea.	N/A
S8.8	Supervisory staff should be assigned to station on site to closely supervise and monitor the works	^
S8.8	Marine water quality monitoring and audit programme shall be implemented for the proposed sediment treatment operation.	N/A
Construction Waste Management		
S9.5	Good Site Practices It is not anticipated that adverse waste management related impacts would arise, provided that good site practices are adhered to. Recommendations for good site practices during the dredging activities include: • Nomination of an approved person, such as a site manager, be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site. • Training of site personnel in proper waste management and chemical waste handling procedures. • Provision of sufficient waste disposal points and regular collection for disposal. • Appropriate measure to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. • A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).	^ ^ ^ ^ ^
S9.5	Waste Reduction Measures Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of the remaining structures to recover recyclable portions such as metals • 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 • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force	^ ^ ^

	• Any unused chemicals or those with remaining functional capacity should be recycled	^
	• Proper storage and site practices to minimise the potential for damage or contamination of construction materials	^
S9.5	Dredged Marine Sediment The basic requirements and procedures for dredged mud disposal are specified under the ETWB TCW No. 34/2002. The management of the dredging, use and disposal of marine mud is monitored by the MFC, while the licensing of marine dumping is required under the Dumping at Sea Ordinance and is the responsibility of the Director of Environmental Protection (DEP)	N/A
S9.5	The dredged marine sediments would be loaded onto barges and transported to the designated disposal sites allocated by the MFC depending on their level of contamination. Sediment classified as Category L would be suitable for Type 1 - Open Sea Disposal. Contaminated sediment would require either Type 1 – Open Sea Disposal (Dedicated Sites), Type 2 - Confined Marine Disposal, or Type 3 – Special Treatment / Disposal and must be dredged and transported with great care in accordance with ETWB TCW No. 34/2002. Subject to the final allocation of the disposal sites by MFC, the dredged contaminated sediment must be effectively isolated from the environment and disposed properly at the designated disposal site	N/A
S9.5	It will be the responsibility of the contractor to satisfy the appropriate authorities that the contamination levels of the marine sediment to be dredged have been analysed and recorded. According to the ETWB TCW No. 34/2002, this will involve the submission of a formal Sediment Quality Report to the DEP, prior to the dredging contract being tendered. The contractor for the dredging works should apply for allocation of marine disposal sites and all necessary permits from relevant authorities for the disposal of dredged sediment. During transportation and disposal of the dredged marine sediments requiring Type 1, Type 2, or Type 3 disposal, the following measures should be taken to minimise potential impacts on water quality:	
	• Bottom opening of barges should be fitted with tight fitting seals to prevent leakage of material. Excess material should be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved	N/A
	• Monitoring of the barge loading should be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels should be equipped with automatic selfmonitoring devices as required under the Dumping at Sea Ordinance and as specified by the DEP	N/A
	• Barges or hopper barges should not be filled to a level that would cause the overflow of materials or sediment laden water during loading or transportation	N/A

Appendix K – Summary of Implementation Schedule of Mitigation Measures for Construction Phase

S9.5	Construction and Demolition Material Mitigation measures and good site practices should be incorporated into contract document to control potential environmental impact from handling and transportation of C&D material. The mitigation measures include: • Where it is unavoidable to have transient stockpiles of C&D material within the Project work site pending collection for disposal, the transient stockpiles should be located away from waterfront or storm drains as far as possible • Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric • Skip hoist for material transport should be totally enclosed by impervious sheeting • Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site • The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores • The load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle • All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet • The height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading When delivering inert C&D material to public fill reception facilities, the material should consist entirely of inert construction waste and of size less than 250mm or other sizes as agreed with the Secretary of the Public Fill Committee. In order to monitor the disposal of the surplus C&D material at the designed public fill reception facility and to control fly tipping, a trip-ticket system as stipulated in the ETWB TCW No. 31/2004 "Trip Ticket System for Disposal of Construction and Demolition Materials" should be included as one of the contractual requirements and implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. An Independent Environmental Checker should be responsible for auditing the results of the system.	^ ^ ^ ^ ^ ^ ^ ^ ^

Appendix K – Summary of Implementation Schedule of Mitigation Measures for Construction Phase

S9.5	Chemical Waste After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Spent chemicals should be collected by a licensed collector for disposal at the CWTF or other licensed facility, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*		*
S9.5	General Refuse General refuse should be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Effective collection and storage methods (including enclosed and covered area) of site wastes would be required to prevent waste materials from being blown around by wind, wastewater discharge by flushing or leaching into the marine environment, or creating odour nuisance or pest and vermin problem		*
Construction Landscape and Visual			
S13.9	CM1	All existing trees should be carefully protected during construction.	*
	CM2	Trees unavoidably affected by the works should be transplanted where practical. Detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBC 2/2004 and 3/2006. Final locations of transplanted trees should be agreed prior to commencement of the work.	^
	CM3	Control of night-time lighting.	N/A(1)
	CM4	Erection of decorative screen hoarding.	^

Remarks:

^	Compliance of mitigation measure
*	Recommendation was made during site audit but improved/rectified by the Contractor
•	Non-compliance but rectified by the Contractor
X	Non-compliance of mitigation measure
N/A	Not Applicable at this stage
N/A(1)	Not observed

APPENDIX L
SUMMARIES OF ENVIRONMENTAL COMPLAINT, WARNING, SUMMON AND NOTIFICATION OF SUCCESSFUL PROSECUTION

Contract No. KL/2012/02

Kai Tak Development –Stage 3A Infrastructure at Former North Apron Area

Appendix L – Summary of environmental complaint, warning, summon and notification of successful prosecution

Reporting Month: March 2017

Contract No. KL/2012/02

Log Ref.	Location	Received Date	Details of Complaint/warning/summon and prosecution	Investigation/Mitigation Action	Status
17-05215	Concorde Road	9 March 2017	Complainant complained that the vehicle leaving the construction area beside Concorde Road without washing and the dusty road affecting the driving activity on Concorde Road.	The Contractor had ensured vehicles and plants were wheel washed to be cleaned of mud and debris before leaving the construction site area besides Concorde Road to minimize the dust impart arise from the vehicles leaving the construction site. Regular spraying was also provided to the Concorde Road to reduce the dust impact arise from the construction site to the vicinity of this Project. The Contractor has also taken follow-up actions to minimize dust impact to Concorde Road arise from this Project including: ● Proper clear up the accumulated dust at the Concorde Road such as sweeping the accumulated dust along the Concorde Road; ● Providing regular water spraying to the Concorde Road and haul road; and ● Ensure the vehicles and plants were wheel washed before leaving the site to avoid the formation of dusty trail on the Concorde Road.	Keep in view

Remarks: No warning/summon and prosecution were received in the reporting period.

APPENDIX M
SUMMARY OF WASTE GENERATION AND DISPOSAL RECORDS

Name of Department : Civil Engineering and Development Department / Kowloon Development Office **Contract No. :** KL/2012/02

MONTHLY SUMMARY WASTE FLOW TABLE FOR 2017 (YEAR)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Borken Concrete (4)	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Import Fill	Metals	Paper / Cardboard Packaging	Plastics (3)	Chemical Waste	Other, 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	3.72310	0	0	0.15500	3.40455	0	0	0	0	0	0.16355
FEB	5.14235	0	0	0	4.92240	0	0	0	0	0	0.21995
MAR	17.63202	0	0	0.00000	17.21112	0	0	0	0	0	0.42090
APR											
MAY											
JUNE											
SUB-TOTAL	26.49746	0	0	0.15500	25.53806	0	0	0	0	0	0.80440
JULY											
AUG											
SEPT											
OCT											
NOV											
DEC											
TOTAL	26.49746	0	0	0.15500	25.53806	0	0	0	0	0	0.80440

Forecast of Total Quantities of C&D materials to be Generated from the Contracts *										
Total Quantity	Borken Concrete (4)	Reused in the Contract	Reused in other	Disposal as Public Fill	Import Fill	Metals	Paper / Cardboard	Plastics (3)	Chemical Waste	Other, e.g. general
[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]
27.972	26.472	0	0	0	0	0	0.9	0	1.8	1.5

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.

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Appendix B

Monthly EM&A Report
For
Contract No. KL/2012/03
Kai Tak Development - Stage 4 Infrastructure at North Apron Area

Civil Engineering and Development Department

EP-344/2009 – New Sewage Pumping Stations Serving KTD
EP-337/2009 – New Distributor Roads Serving the Planned KTD

Contract No. KL/2012/03
Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area

Monthly EM&A Report

March 2017

(Version 1.0)

Approved By	(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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By Email

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For the attention of: Dr. Priscilla Choy

Subject: Contract No. KL/2012/03 Kai Tak Development – Stage 4 Infrastructure at Former North Apron Area
Verification for Monthly EM&A Report (March 2017)
(Draft_Mrpt1703_v1.0_revised_v3)

Our ref: EB001399-320/THW17-33004
Your ref:
Date: 17 May 2017

Dear Dr. Choy,

We have no further comments on the revised report received via e-mail dated 16 May 2017 and hereby verify the report.

Should you have any queries, please feel free to contact the undersigned on 2911 2744.

Yours faithfully,
For and on behalf of
Arcadis Design & Engineering Limited

F N Wong
Independent Environmental Checker

cc. Mr. John Yam (AECOM) (By-email)

FN/my

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EXECUTIVE SUMMARY

Introduction

1. This is the 39^{9h} Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Ltd. for "Contract No. KL/2012/03 - Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area" (Hereafter referred to as "the Project"). This contract comprises the construction of Schedule 2 Designated Projects (DP) Road D2 & Sewage Pumping Station PS2 and PS NPS which forms a part of the works under two Environmental Permits (EP), EP-337/2009 and EP-344/2009. The title of the designated projects under Environmental Permit No.: EP-344/2009 is "New sewage pumping stations serving Kai Tak Development" and under Environmental Permit No.: EP-337/2009 is "New distributor roads serving the planned Kai Tak Development". This report documents the findings of EM&A Works conducted from 1 to 31 March 2017.

2. The major site activities undertaken in the reporting month included:
   - Daily Cleaning;
   - Finishing works, E&M work in PS2;
   - Water test, backfill and sheet-pile removal in Heading 7A, DCS pipe installation;
   - Segment tunneling, backfill and sheet-pile removed chamber construction in Heading 7B;
   - Road widening works (excavation and UU works) at Sung Wong Toi Road;
   - Maintenance & Servicing Engineer's Office at Portion 9;
   - Install fitting inside chamber in Pit 1 and Pit 5;
   - Rising Main installation in Pit 2, Pit 4, Pit6/7 and Pit 9;
   - Pipe Jacking from Pit 10 to Pit 9;
   - Installation of drainage, UU laying works and Road works at Road D2;
   - Finishing works and E&M works at NPS;
   - UU works and Road works at Road L19 & Bailey St;
   - Refer construction works of NPS in Portion 4 sewerage; and
   - Removal of excavated material at Portion 6.

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed in accordance with the EM&A Manual and the monitoring results were checked and reviewed. Site Inspections/Audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

4. Summary of the breaches of action and limit levels in the reporting month for the Project is tabulated in **Table I**.

Table I Breaches of Action and Limit Levels for the Project in the Reporting Month

Parameter	No. of Project-related Exceedance		Action Taken
	Action Level	Limit Level	
1-hr TSP	0	0	N/A
24-hr TSP	0	0	N/A
Noise	0	0	N/A

1-hour & 24-hour TSP Monitoring

5. 1-hour TSP monitoring at AM4(A) – EMSD Workshop was cancelled due to unsuccessful accessibility to the facility. 1-hr TSP monitoring was conducted at AM4(B) – Ma Tau Kok Road (next to EMSD workshop) temporarily.

6. All other 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

7. 24-hour TSP monitoring at AM4(A) – EMSD Workshop was cancelled due to unsuccessful accessibility to the facility. The alternative monitoring location was located at AM4(C) – New Pumping Station under Contract No. KL/2012/03.

8. 24-hour TSP monitoring at AM5(A) – Po Leung Kuk Ngan Po Ling College was cancelled starting from 9 Mar 2017 due to no permission was granted from the premise. No 24-hour TSP monitoring was conducted at alternative location in the reporting month.

9. All other 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

10. All construction noise monitoring was conducted as scheduled in the reporting month. No Action and Limit Level exceedance was recorded.

Environmental Licenses and Permits

11. Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, Environmental Permits No. EP-344/2009 and EP-337/2009 were issued on 23 April 2009.

12. Registration of Chemical Waste Producer (Waste Producer Number: 5213-286-K2958-05).

13. Water Discharge License (WT00020971-2015).

14. Construction Noise Permit (GW-RE0964-16 & GW-RE0149-17).

Key Information in the Reporting Month

15. Summary of complaint received, reporting changes and notifications of any summons and successful prosecutions in the reporting month is tabulated in **Table II**.

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Reporting Changes	0	---	N/A	N/A	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

Future Key Issues

16. The future key environmental issues in the coming month include:
- Dust generation from stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
- Water spraying for dust generating activity and on haul road;
- Proper storage of construction materials on site;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Accumulation of general and construction waste on site;
- Noise from operation of the equipment, especially for rock-breaking activities, piling works and machinery on-site; and
- Review and implementation of temporary drainage system for the surface runoff.

1. INTRODUCTION

Background

1.1 The Kai Tak Development (KTD) is located in the south-eastern part of Kowloon Peninsula, comprising the apron and runway areas of the former Kai Tak Airport and existing waterfront areas at To Kwa Wan, Ma Tau Kok, Kowloon Bay, Kwun Tong and Cha Kwo Ling. It covers a land area of about 328 hectares. Stage 4 Infrastructure at Former North Apron Area is one of the construction stages of KTD. Schedule 2 DPs in this Project include new distributor roads serving the planned KTD and new sewage pumping stations serving the planned KTD. The general layout of the Project is shown in **Figure 1.**

1.2 Two Environmental Permits (EPs) No. EP-344/2009 and EP-337/2009 were also issued to the Permit Holder Civil Engineering and Development Department on 23 April 2009 for new sewage pumping stations serving the planned KTD and new distributor roads serving the planned KTD respectively.

1.3 A study of environmental impact assessment (EIA) was undertaken to identify the key issues of air quality, noise, water quality, waste, land contamination, cultural heritage and landscape and visual impact, and recommend possible mitigation measures associated with the works. The EIA Report (Register No. AEIAR-130/2009) was approved by the Environmental Protection Department (EPD) on 4 April 2009.

1.4 Cinotech Consultants Limited (Cinotech) is commissioned by Kwan On Construction Co., Ltd. (the Contractor) to undertake the role of the Environmental Team (ET) for the Contract No. KL/2012/03 - Stage 4 Infrastructure at Former North Apron Area. The construction work under KL/2012/03 comprises the construction of Road D2 & Sewage Pumping Station PS2 and PS NPS which forms a part of the works under two EPs (EP-337/2009 and EP-344/2009).

1.5 The construction commencement of this Contract was on 1st December 2013 for Road D2, Sewage Pumping Station PS2 and PS NPS. This is the 40th Monthly EM&A report summarizing the EM&A works for the Project from 1 to 31 March 2017.

Project Organizations

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

- Project Proponent – Civil Engineering and Development Department (CEDD).
- The Engineer and the Engineer's Representative (ER) – AECOM.
- Environmental Team (ET) – Cinotech Consultants Limited (CCL).
- Independent Environmental Checker (IEC) – Arcadis Design & Engineering Limited. (Arcadis).
- Contractor –Kwan On Construction Co., Ltd. (Kwan On).

1.7 The key contacts of the Project are shown in **Table 1.1** and **Figure 5**.

Table 1.1 Key Project Contacts

Party	Role	Contact Person	Position	Phone No.	Fax No.
CEDD	Project Proponent	Mr. C. K. Choi	Senior Engineer	2301 1174	2301 1277
AECOM	Engineer's Representative	Mr. John Yam	SRE	2798 0771	3013 8864
		Mr. Jacky Pun	RE		
Cinotech	Environmental Team	Dr. Priscilla Choy	Environmental Team Leader	2151 2089	3107 1388
		Ms. Ivy Tam	Project Coordinator and Audit Team Leader	2151 2090	
Arcadis	Independent Environmental Checker	Mr. Wong Fu Nam	Independent Environmental Checker	2911 2744	2805 5028
Kwan On	Contractor	Mr. Albert Ng	Site Agent	3689 7752	3689 7726
				6146 6761 (Hotline telephone number)	

Construction Activities undertaken during the Reporting Month

1.8 The site activities undertaken in the reporting month included:

- Daily Cleaning;
- Finishing works, E&M work in PS2;
- Water test, backfill and sheet-pile removal in Heading 7A, DCS pipe installation;
- Segment tunneling, backfill and sheet-pile removed chamber construction in Heading 7B;
- Road widening works (excavation and UU works) at Sung Wong Toi Road;
- Maintenance & Servicing Engineer's Office at Portion 9;
- Install fitting inside chamber in Pit 1 and Pit 5;
- Rising Main installation in Pit 2, Pit 4, Pit6/7 and Pit 9;
- Pipe Jacking from Pit 10 to Pit 9;
- Installation of drainage, UU laying works and Road works at Road D2;
- Finishing works and E&M works at NPS;
- UU works and Road works at Road L19 & Bailey St;
- Refer construction works of NPS in Portion 4 sewerage; and
- Removal of excavated material at Portion 6.

1.9 The construction programme showing the inter-relationship with environmental protection/mitigation measures is presented in **Table 1.2**.

Table 1.2 Construction Programme Showing the Inter-Relationship with Environmental Protection/Mitigation Measures

Construction Works	Generated Major Environmental Impact	Control Measures
Construction of superstructure of Pumping Station PS2 and NPS;	Dust, Water Quality, Waste Management	• Sufficient watering of the works site with active dust emitting activities; • Properly cover the stockpiles; • Appropriate desilting/sedimentation devices provided on site for treatment before discharge; • Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall; and • On-site waste sorting and implementation of trip ticket system.
Backfilling between sewerage manholes 1K1_1 and FMH10_340 and construction of manhole FMH10_370a at L6;	Dust, Noise	• Use of quiet plant and well-maintained construction plant; and • Properly cover the stockpiles;
Installation of precast unit and construction of in-situ portions of Box Culvert B6; Construction of jacking pits nos. 1 and 2; Installation of gas pipe at pit no. 10; Construction of washout chamber at pit no. 11;	Noise, Waste Management	• Use of quiet plant and well-maintained construction plant; and • Provide hoarding. • Good management and control on construction waste reduction
Construction of sewerage manhole FMH 10 at Bailey Street; Widening works of Sung Wong Toi Road.	Noise	• Use of quiet plant and well-maintained construction plant; and • Provide hoarding.
Pipe laying from manhole SMH2204 to Box Culvert B6; Laying of rising mains from PS2 to chainage CHA-18; Pipe laying from stormwater manholes SMH1962 to SMH1963 and construction of manholes SMH1953 and SMH1963 at L6; Installation of DCS;	Noise, Water Quality	• Use of quiet plant and well-maintained construction plant; and • Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall.

Summary of EM&A Requirements

1.10 The EM&A programme requires construction noise monitoring, air quality monitoring, landscape and visual monitoring and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental requirements and mitigation measures, as recommended in the EM&A Manual under the EP.

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

1.12 This report presents the implementation of the EM&A programme for the Project from 1 to 31 March 2017.

1.13 Air quality monitoring stations within 500m and noise monitoring stations within 300m from the boundary of this Project are considered as relevant monitoring locations. In such regard, the relevant air quality and noise monitoring locations are tabulated in **Table 1.3** (see **Figure 2 and 3** for their locations).

Table 1.3 Air Quality and Noise Monitoring Stations for this Project

Locations	Monitoring Stations In accordance with EM&A Manual	Alternative Monitoring Stations
Air Quality Monitoring Stations		
AM2 - Lee Kau Yan Memorial School	Yes	N/A
AM3 – Sky Tower	No	AM3(A) – Holy Trinity Bradbury Centre
AM4 – Grand Waterfront	No	AM4(A) – EMSD Workshop*
AM5 – CCC Kei To Secondary School	No	AM5(A) – Po Leung Kuk Ngan Po Ling College
AM6 – Site 1B4 (Planned)	N/A	
Noise Monitoring Stations		
M6 – Holy Carpenter Primary School	No	M6(A) – Oblate Primary School
M7 – CCC Kei To Secondary School	Yes	N/A
M8 – Po Leung Kuk Ngan Po Ling College	Yes	N/A
M9 – Tak Long Estate	Yes	N/A
M10 – Site 1B4 (Planned)	N/A	

Remarks:
- "Yes" - Monitoring station is the same as that stated in EM&A Manual
- No - Monitoring station is not the same as that stated in EM&A Manual. Request for carrying monitoring works at the monitoring stations stated in EM&A Manual was rejected by owner of premise. Alternative monitoring stations were proposed by the ET of Schedule 3 EIA and approved by the EPD.
- N/A - No alternative monitoring station is required.
- *AM4(A) – EMSD Workshop was cancelled due to unsuccessful accessibility of the facility. 1-hr TSP monitoring was conducted at AM4(B) – Ma Tau Kok Road (next to EMSD workshop) temporarily and 24-hr TSP monitoring was conducted at AM4(C) – New Pumping Station under Contract No. KL/2012/03.

1.14 According to the Environmental Monitoring and Audit Manual (EM&A Manual) of the Kai Tak Development (KTD) Schedule 3 Environmental Impact Assessment (EIA) Report, the impact monitoring at the designated monitoring stations as required in KTD EM&A Manual under the EP, has been conducted in Environmental Monitoring Works for Kai Tak Development under Schedule 3 of KTD, which is on-going starting from December 2010. The impact monitoring data under Schedule 3 of KTD will be adopted for the Project. Therefore, this report presents the air quality and noise monitoring works extracted from Schedule 3 of KTD.

1.15 Contract no. KLN/2013/16 under Schedule 3 of KTD was superseded by KLN/2016/09 in early March 2017. The impact environmental monitoring schedule is shown in **Appendix D**.

Status of Compliance with Environmental Permits Conditions

1.16 The status of required submission related to this Project under the Environmental Permits No. EP-337/2009 and EP-344/2009 is summarized in the **Table 1.4** and **Table 1.5** respectively:

Table 1.4 Summary Table for Required Submission under EP No. EP-337/2009

EP Conditions	Submission	Submission Date	Remark
1.11	Notification of Commencement Date of Construction of Project	31 October 2013	For Road D2
2.3	Management Organization of Main Construction Companies	31 October 2013	For Contract No. KL/2012/03
2.4	Design Drawing(s) of the Project	28 October 2013	For Road D2
2.11	Landscape Mitigation Plan(s) for distributors road(s)	7 January 2014	For Road D2
2.12	As-built drawing(s) for the distributor road(s)	To be submitted at least one week before the commencement of operation of distributor road(s)	
3.2	Baseline Monitoring Report	26 November 2010 (Part I) 24 December 2010 (Part II)	/
3.3	Four hard copies and one electronic copy of the Monthly EM&A Report No. 39 (February 2017)	14 March 2017	Monthly EM&A Report for Contract No. KL/2012/03

Table 1.5 Summary Table for Required Submission under EP No. EP-344/2009

EP Conditions	Submission	Submission Date	Remark
1.11	Notification of Commencement Date of Construction of Project	31 October 2013	For Pumping Station PS2 and PS NPS
2.3	Management Organization of Main Construction Companies	31 October 2013	For Contract No. KL/2012/03
2.4	Design Drawing(s) of the Project	28 October 2013	For Pumping Station PS2 and PS NPS
2.11	Landscape Mitigation Plan(s) for sewage pumping station(s)	7 January 2014	For Pumping Station PS2 and PS NPS
2.12	As-built drawing(s) for the sewage pumping station (s)	To be submitted at least one week before the commencement of operation of distributor road(s)	
3.2	Baseline Monitoring Report	26 November 2010 (Part I) 24 December 2010 (Part II)	/
3.3	Four hard copies and one electronic copy of the Monthly EM&A Report No.389 (February 2017)	14 March 2017	Monthly EM&A Report for Contract No. KL/2012/03

2. AIR QUALITY

Monitoring Requirements

2.1 According to EM&A Manual under the EPs, 1-hour and 24-hour Total Suspended Particulates (TSP) monitoring were conducted to monitor the air quality for this Project. For regular impact monitoring, a sampling frequency of at least once in every six days at all of the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six days shall be undertaken when the highest dust impact occurs. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

2.2 Five designated monitoring stations were selected for air quality monitoring programme. Impact dust monitoring was conducted at four of the air quality monitoring stations (AM2, AM3(A), AM4(A) and AM5(A)). **Table 2.1** describes the air quality monitoring locations, which are also depicted in **Figure 2**.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Stations	Locations	Location of Measurement
AM2	Lee Kau Yan Memorial School	Rooftop (about 8/F) Area
AM3(A)	Holy Trinity Bradbury Centre	Rooftop (about 8/F) Area
AM4(A)*	EMSD Workshops	Rooftop (about 6/F) Area
AM4(B)	Ma Tau Kok Road (next to EMSD workshop)	N/A
AM5(A)	Po Leung Kuk Ngan Po Ling College	Rooftop (about 10/F) Area
#AM6	PA 15	Site 1B4 (Planned)

Remarks: # The impact monitoring at these locations will only be carried out until the sensitive receivers at the building are resided.
*Air Quality Monitoring at AM4(A) was cancelled due to unsuccessful accessibility of the facility. 1-hr TSP monitoring was conducted at AM4(B) temporarily and 24-hr TSP monitoring was conducted at AM4(C) – New Pumping Station under Contract No. KL/2012/03.

Monitoring Equipment

2.3 **Table 2.2** summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates and laboratory accreditation are attached in **Appendix B**.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	TE-5025A	1

1-hour TSP Dust Meter	Laser Dust Monitor – Model LD-3, LD-3B/ Met One Instruments – AEROCET-531	4
HVS Sampler	GMWS 2310 c/w of TSP sampling inlet TE-2025A	9
Wind Anemometer	Davis Weather Monitor II, Model no. 7440 Vantage Pro2	2

Monitoring Parameters, Frequency and Duration

2.4 Table 2.3 summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting month is shown in **Appendix D**.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hr TSP	At least three times every 6 days
24-hr TSP	At least once every 6 days

Monitoring Methodology and Quality Assurance and Quality Control (QA/QC) Procedure

1-hour TSP Monitoring

Measuring Procedures

2.5 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows:

- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Set POWER to "ON" and make sure that the battery level was not flash or in low level.
- Allow the instrument to stand for about 3 minutes and then the cap of the air sampling inlet has been released.
- Push the knob at MEASURE position.
- Set time/mode setting to [BG] by pushing the time setting switch. Then, start the background measurement by pushing the start/stop switch once. It will take 6 sec. to complete the background measurement.
- Push the time setting switch to change the time setting display to [MANUAL] at the bottom left of the liquid crystal display. Finally, push the start/stop switch to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, count value and site condition were recorded during the monitoring period.

Maintenance/Calibration

2.6 The following maintenance/calibration was required for the direct dust meters:

- Check and calibrate the meter by High-Volume Sampler (HVS) to check the validity and accuracy of the results measured by direct reading method at 2-month intervals throughout

all stages of the air quality monitoring.

24-hour TSP Monitoring

Instrumentation

2.7 High volume samplers (HVS) (Model GMWS-2310 Accu-Vol) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in section 2.5 of the updated EM&A Manual.

Operating/Analytical Procedures

2.8 Operating/analytical procedures for the operation of HVS were as follows:

- A horizontal platform was provided with appropriate support 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 sampler was more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

2.9 Prior to the commencement of the 24-hour TSP sampling, the flow rate of the high volume sampler was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

2.10 For 24-hour TSP sampling, fiberglass filters having a collection efficiency of $\geq$ 99% for particles of 0.3μm (DOP) diameter were used.

2.11 The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.12 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.

2.13 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. The applied pressure should be sufficient to avoid air leakage at the edges.

2.14 The shelter lid was closed and secured with the aluminum strip.

2.15 The timer was then programmed so that the TSP will be sampled for 24 hours. 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).

2.16 After completion of sampling, the filter was removed and sent to Wellab Ltd., which is accredited under HOKLAS for laboratory analysis. The elapsed time was also recorded.

2.17 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning temperature 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%.

Maintenance/Calibration

2.18 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.
- High volume samplers were calibrated at bi-monthly intervals using G25A Calibration Kit throughout all stages of the air quality monitoring.
- Orifice Transfer Standards were calibrated at yearly intervals throughout all stages of the air quality monitoring.

Results, Observations and Action/Limit Level Exceedance

2.19 1-hour TSP monitoring at AM4(A) – EMSD Workshop was cancelled due to unsuccessful accessibility to the facility. 1-hr TSP monitoring was conducted at AM4(B) – Ma Tau Kok Road (next to EMSD workshop) temporarily.

2.20 All other 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

2.21 24-hour TSP monitoring at AM4(A) – EMSD Workshop was cancelled due to unsuccessful accessibility to the facility. 24-hr TSP monitoring was conducted at alternative location at New Pumping Station under Contract No. KL/2012/03.

2.22 24-hour TSP monitoring at AM5(A) – Po Leung Kuk Ngan Po Ling College was cancelled starting from 9 Mar 2017 due to no permission was granted from the premise. No 24-hour TSP monitoring was conducted at alternative location in the reporting month.

2.23 All other 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

2.24 The air temperature, precipitation and the relative humidity data were obtained from Hong Kong Observatory where the wind speed and wind direction were recorded by the installed

Wind Anemometer set at rooftop (about 8/F) Lee Kau Yan Memorial School. The location is shown in **Figure 4**. This weather information for the reporting month is summarized in **Appendix C.**

2.25 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices E and F** respectively.

2.26 The summary of exceedance record in the reporting month is shown in **Appendix H**. No exceedance in Action/Limit Levels of 1-hour and 24-hour TSP was recorded for the air quality monitoring.

2.27 According to our field observations, the major dust source identified at the designated air quality monitoring stations is as follows:

Table 2.4 Major dust source identified at the designated air quality monitoring stations

Station	Major Dust Source
AM2 – Lee Kau Yan Memorial School	Road Traffic Dust Exposed site area and open stockpiles Site vehicle movement
AM3(A) – Holy Trinity Bradbury Centre	Road Traffic Dust Exposed site area Excavation works Site vehicle movement
AM4(A) – EMSD Workshops	Site vehicle movement
AM4(B) – Ma Tau Kok Road (next to EMSD workshop) temporarily	Site vehicle movement
AM4(C) – New Pumping Station under Contract No. KL/2012/03	Site vehicle movement
AM5(A) – Po Leung Kuk Ngan Po Ling College	Road Traffic Dust Excavation works at the site (Contract No.: 1/WSD/14(K)) facing Po Leung Kuk Ngan Po Ling College

3. NOISE

Monitoring Requirements

3.1 According to EM&A Manuals under the EP, construction noise monitoring was conducted to monitor the construction noise arising from the construction activities within KTD. The regular monitoring frequency for each monitoring station shall be on a weekly basis to conduct one set of measurements between 0700 and 1900 hours on normal weekdays. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

3.2 Five designated monitoring stations were selected for noise monitoring programme. Noise monitoring was conducted at four designated monitoring stations (M6, M7, M8 and M9). **Figure 3** shows the locations of these stations.

3.3 Construction noise monitoring at Station M6 – Holy Carpenter Primary School was rejected by the premise owner on 6th October 2014. The monitoring station has been relocated at a proposed alternative noise monitoring station M6(A) – Oblate Primary School since 10th October 2014 to carry out the monitoring works.

Table 3.1 Noise Monitoring Stations

Monitoring Stations	Locations	Location of Measurement
*M6(A)	Oblate Primary School	Rooftop (about 7/F) Area
M7	CCC Kei To Secondary School	Rooftop (about 8/F) Area
M8	Po Leung Kuk Ngan Po Ling College	Staircase Area (about 9/F)
M9	Tak Long Estate	Car Park Building (about 2/F)
#M10	Site 1B4 (Planned)	-

Remarks:
* Alternative noise monitoring station for M6 – Holy Carpenter Primary School from 10th October 2014 onwards
\# The impact monitoring at these locations will only be carried out until existence of the sensitive receiver at the building.

Monitoring Equipment

3.4 **Table 3.2** summarizes the noise monitoring equipment. Copies of calibration certificates are provided in **Appendix B**.

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Qty.
Integrating Sound Level Meter	SVAN 955, 957	5
	AM510	
Calibrator	SVAN 30A	6
	NL52, NC73, NC74	4

Monitoring Parameters, Frequency and Duration

3.5 Table 3.3 summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency	Type of Measurement
M7 M8 M9	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A)	0700-1900 hrs on normal weekdays	Once per week	Façade (*)
M6(A)	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A)	0700-1900 hrs on normal weekdays	Once per week	Free Field (*)

(*) Refer to bullet point 1 and 2 in the following section.

Monitoring Methodology and QA/QC Procedures

- The Sound Level Meter was set on a tripod at a point 1m from the exterior of the sensitive receivers building façade and be at a position 1.2m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels was adjusted with a correction of +3 dB(A).
- The battery condition was checked to ensure the correct 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
  - time measurement : 30 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused temporarily during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- 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.

Maintenance and Calibration

3.6 The microphone head of the sound level meter and calibrator was cleaned with a soft cloth at quarterly intervals.

3.7 The sound level meter and calibrator were checked and calibrated at yearly intervals.

3.8 Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Results, Observations and Action/Limit Level Exceedance

3.9 All construction noise monitoring was conducted as scheduled in the reporting month. No Action and Limit Level exceedance was recorded.

3.10 The baseline noise level and the Noise Limit Level at each designated noise monitoring station are presented in **Table 3.4**.

3.11 Noise monitoring results and graphical presentations are shown in **Appendix G**.

3.12 The major noise source identified at the designated noise monitoring stations is as follows:

Table 3.4 Major noise source identified at the designated noise monitoring stations

Monitoring Stations	Locations	Major Noise Source
M6(A)	Oblate Primary School	Road and marine traffic Noise
M7	CCC Kei To Secondary School	Road and marine traffic Noise
M8	Po Leung Kuk Ngan Po Ling College	Excavation works at the site (Contract No.: 1/WSD/14(K)) facing Po Leung Kuk Ngan Po Ling College
M9	Tak Long Estate	Road paving and asphalt paving works

Table 3.5 Baseline noise level and noise limit level for monitoring stations

Monitoring Stations	Baseline Noise Level, dB (A)	Noise Limit Level, dB (A)
M6(A)	63.9 (at 0700 – 1900 hrs on normal weekdays)	70* (at 0700 – 1900 hrs on normal weekdays)
M7	68.7 (at 0700 – 1900 hrs on normal weekdays)	
M8	61.9 (at 0700 – 1900 hrs on normal weekdays)	
M9	59.0 (at 0700 – 1900 hrs on normal weekdays)	75 (at 0700 – 1900 hrs on normal weekdays)

(*) Noise Limit Level is 65 dB(A) during school examination periods.

4. COMPARISON OF EM&A RESULTS WITH EIA PREDICTIONS

4.1 According to Section 16.1.6 (vi) of the EM&A Manual, the EM&A data were compared with the EIA predictions as summarized in **Table 4.1** to **4.3** below.

Table 4.1 Comparison of 1-hr TSP data with EIA predictions

Station	Predicted 1-hr TSP conc.			
	Scenario1 (Mid 2009 to Mid 2013), µg/m3	Scenario2 (Mid 2013 to Late 2016), µg/m3	Reporting Month (March 2017), µg/m3	
			Average	Range
AM2 – Lee Kau Yan Memorial School	290	312	84	42-186
AM3(A) - Holy Trinity Bradbury Centre (Alternative station for Sky Tower)	217	247	105	49-210
AM4(B) – Ma Tau Kok Road (next to EMSD workshops) Temporary	246	258	106	55-188
AM5(A) – Po Leung Kuk Ngan Po Ling College (Alternative station for CCC Kei To Secondary School)	159	221	81	25-182

Table 4.2 Comparison of 24-hr TSP data with EIA predictions

Station	Predicted 24-hr TSP conc.			
	Scenario1 (Mid 2009 to Mid 2013), µg/m3	Scenario2 (Mid 2013 to Late 2016), µg/m3	Reporting Month (March 2017), µg/m3	
			Average	Range
AM2 – Lee Kau Yan Memorial School	145	169	68	31-118
AM3(A) - Holy Trinity Bradbury Centre (Alternative station for Sky Tower)	106	138	96	49-135
AM5(A) – Po Leung Kuk Ngan Po Ling College (Alternative station for CCC Kei To Secondary School)	103	128	52	43-60

Table 4.3 Comparison of Noise Monitoring Data with EIA predictions

Stations	Predicted Mitigated Construction Noise Levels during Normal Working Hour ($L_{eq\ (30min)}$ dB(A))	Reporting Month (March 2017), $L_{eq\ (30min)}$ dB(A)
M6(A) - Oblate Primary School ^	N/A	54.8 – 63.2
M7 - CCC Kei To Secondary School	45 – 68	57.2 – 68.3
M8 - Po Leung Kuk Ngan Po Ling College	44 – 70	60.8 – 65.4
M9 – Tak Long Estate	Not predicted in EIA Report	59.3 – 73.0

(^) Alternative noise monitoring station for M6 – Holy Carpenter Primary School from 10th October 2014 onwards.

4.2 The averages of 1-hour TSP concentrations in all stations in the reporting month were below the prediction in the approved Environmental Impact Assessment (EIA) Report.

4.3 The averages of 24-hour TSP concentrations in all stations in the reporting month were below the prediction in the approved Environmental Impact Assessment (EIA) Report.

5. LANDSCAPE AND VISUAL

Monitoring Requirements

5.1 According to EM&A Manual of the Kai Tak Development EIA Study, ET shall monitor and audit the contractor's activities during the construction period on a weekly basis, and to report on the contractor's performance.

Results and Observations

5.2 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of landscape and visual mitigation measures within the site boundaries of this Project. The summaries of site audits are attached in **Appendix I**.

5.3 No non-compliance of the landscape and visual impact was recorded in the reporting month.

5.4 In accordance with the Action Plan presented in **Appendix J**, no corrective actions were required in the reporting month.

6. ENVIRONMENTAL AUDIT

Site Audits

6.1 Site audits were carried out on a 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 I**.

6.2 Site audits were conducted on 3rd, 10th, 17th, 22nd and 31st March 2017 in the reporting month. IEC site inspection was conducted on 22nd March 2017. No non-compliance was observed during the site audits.

Status of Environmental Licensing and Permitting

6.3 All permits/licenses obtained for the Project are summarized in Table 6.1.

Table 6.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Details	Status
	From	To		
Environmental Permit (EP)				
EP-337/2009	23/04/09	N/A	Construction of new distributor roads serving the planned Kai Tak development.	Valid
EP-344/2009	23/04/09	N/A	Construction of a new sewage pumping station serving the planned Kai Tak development with installed capacity of more than 2,000 m^3 per day and a boundary of which is less than 150m from an existing or planned residential area or educational institution.	Valid
Effluent Discharge License				
WT00020971-2015	22/04/15	21/04/20	Discharge Licence for the discharge of wastewater from the construction site including contaminated surface run-off to the communal storm water drain	Valid
Registration of Chemical Waste Producer				
5213-286-K2958-05	--	--	Registration of chemical waste producer for chemical waste produced during construction of Stage 4 at former North Apron Area Infrastructure.	Valid
Construction Noise Permit				
GW-RE0964-16	30/09/16	29/03/17	Location: Heading 7A & 7B	Expired
GW-RE0149-17	29/03/17	28/09/17	Location: Heading 7A & 7B	Valid

Status of Waste Management

6.4 The amount of wastes generated by the major site activities of this Project during the reporting month is shown in **Appendix M**.

6.5 In respect of the dump truck cover, the Contractor is advised to take record photos and inspection to ensure that the skips of all dump trucks have been fully covered before leaving the site.

Implementation Status of Environmental Mitigation Measures

6.6 During site inspections in the reporting month, no non-conformance was identified. ET weekly site inspections were carried out during the reporting month and the observations and recommendations are summarized in Table 6.2.

Table 6.2 Observations and Recommendations of Site Inspections for EP-337/2009

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	3 March 2017	Observation: Muddy sewage should be treated before discharge at Pit 2.	Sewage treatment facility was provided. Discharge was cleaned.
Air Quality	10 March 2017	Reminder: Stockpile of dusty material should be properly covered. (near PS2)	Item was remarked as 170317-R01.
	17 March 2017	Reminder: Stockpile of dusty material should be properly covered. (near PS2)	Stockpile of dusty material was covered.
Noise	--	--	--
Waste/Chemical Management	10 March 2017	Reminder: Oil stain should be properly cleared as chemical waste.	Oil stain was cleared.
	17 March 2017	Reminder: General refuse should be disposed of regularly. (near Contractor's office)	General refuse was removed.
	22 March 2017	Reminder: Oil stain should be cleared.	Oil stain was cleared.
	31 March 2017	Reminder: Construction waste should be removed regularly. (next to PS2)	Construction waste was removed.
Landscape and Visual	--	--	--
Permits /Licences	--	--	--

Table 6.3 Observations and Recommendations of Site Inspections for EP-344/2009

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	31 March 2017	Observation: Muddy sewage should be treated before discharge and sedimentation tank should be well-maintained. (NPS)	Sewage was observed clean.
Air Quality	--	--	--
Noise	--	--	--
Waste/Chemical Management	--	--	--
Landscape and Visual	--	--	--
Permits /Licences	--	--	--

Summary of Mitigation Measures Implemented

6.7 The monthly IEC audit was carried out on 22nd March 2017, the observations were recorded and they are presented as follows:

Follow up of last monthly audit:

- Generator without drip tray was removed from the site. Case closed.

Observation(s) in the reporting month:

- No adverse environmental impacts or deficiencies of the environmental mitigation measures were observed. No corrective actions are therefore required.

6.8 An updated summary of the EMIS is provided in **Appendix K**.

Implementation Status of Event Action Plans

6.9 The Event Action Plans for air quality, noise and landscape and visual are presented in **Appendix J**.

1-hr TSP Monitoring

6.10 No Action/Limit Level exceedance was recorded in the reporting month.

24-hr TSP Monitoring

6.11 No Action/Limit Level exceedance was recorded in the reporting month.

Construction Noise

6.12 No Action/Limit Level exceedance was recorded in the reporting month.

Landscape and visual

6.13 No non-compliance was recorded in the reporting month.

Summary of Complaint, Warning, Notification of any Summons and Successful Prosecution

6.14 No environmental complaints and environmental prosecution were received in the reporting month. The summaries of environmental complaint, warning, summon and notification of successful prosecution for the Project are presented in **Appendix L**.

7. FUTURE KEY ISSUES

7.1 Major site activities undertaken for the coming two months include:

- Daily Cleaning;
- Finishing works, E&M work in PS2;
- Water test, backfill and sheet-pile removal in Heading 7A, DVS pipe installation;
- Segment tunneling, backfill and sheet-pile removed chamber construction in Heading 7B;
- Road widening works (excavation and UU works) at Sung Wong Toi Road;
- Maintenance & Servicing Engineer's Office at Portion 9;
- Install Fitting inside chamber in Pit 1 and Pit 5;
- Rising Main installation in Pit 2, Pit 4, Pit 6/7, Pit 9 and Pit 10;
- Installation of drainage, UU laying works and Road works at Road D2;
- Finishing works and E&M works at NPS;
- UU works and Road works at Road L19 & Bailey St;
- Refer construction works of NPS in portion 4 sewerage; and
- Removal of excavated material in Portion 6

7.2 The tentative construction program for the Project is provided in **Appendix N.**

Key Issues for the Coming Month

7.3 Key environmental issues in the coming month include:

- Dust generation from stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
- Water spraying for dust generating activity and on haul road;
- Proper storage of construction materials on site;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Accumulation of general and construction waste on site;
- Noise from operation of the equipment, especially for rock-breaking activities, piling works and machinery on-site; and
- Review and implementation of temporary drainage system for the surface runoff.

7.4 The tentative program of major site activities and the impact prediction and environmental mitigation measures for the coming two months, i.e. April and May 2017 are summarized as follows:

Table 7.1 Summary of the tentative program of major site activities, the impact prediction and control measures for April and May 2017

Construction Works	Major Impact Prediction	Control Measures
As mentioned in Section 7.1	Air quality impact (dust)	a) Frequent watering of haul road and unpaved/exposed areas; b) Frequent watering or covering stockpiles with tarpaulin or similar means; and c) Watering of any earth moving activities.
	Water quality impact (surface run-off)	d) Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; e) Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; f) Provision of site boundary bund such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and g) Provision of measures to prevent discharge into the stream.
	Noise Impact	h) Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; i) Controlling the number of plants use on site; j) Regular maintenance of machines; and k) Use of acoustic barriers if necessary.

Monitoring Schedule for the Next Month

7.5 The tentative environmental monitoring schedules for the next month are shown in **Appendix D**.

8. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

8.1 Environmental monitoring works required under the EM&A Manual were performed in the reporting month and all monitoring results were checked and reviewed.

1-hr TSP Monitoring

8.2 1-hour TSP monitoring at AM4(A) – EMSD Workshop was cancelled due to unsuccessful accessibility to the facility. 1-hr TSP monitoring was conducted at AM4(B) – Ma Tau Kok Road (next to EMSD workshop) temporarily.

8.3 All other 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. 1-hour TSP concentrations in all stations in the reporting month were below the prediction in the approved Environmental Impact Assessment (EIA) Report.

24-hr TSP Monitoring

8.4 24-hour TSP monitoring at AM4(A) – EMSD Workshop was cancelled due to unsuccessful accessibility to the facility. 24-hr TSP monitoring were alternatively carried out at AM4(C) – New Pumping Station under Contract No. KL/2012/03.

8.5 24-hour TSP monitoring at AM5(A) – Po Leung Kuk Ngan Po Ling College was cancelled starting from 9 Mar 2017 due to no permission was granted from the premise. No 24-hour TSP monitoring was conducted at alternative location in the reporting month.

8.6 All other 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. 24-hour TSP concentrations in all stations in the reporting month were below the prediction in the approved Environmental Impact Assessment (EIA) Report.

Construction Noise Monitoring

8.7 All construction noise monitoring was conducted as scheduled in the reporting month. No Action and Limit Level exceedance was recorded. The construction noise levels in all stations in the reporting month were within the range of predicted mitigated construction noise levels in the approved Environmental Impact Assessment (EIA) report.

Complaints, Notification of any Summons and Prosecution Received

8.8 No environmental complaints and environmental prosecution were received in the reporting month. The summaries of environmental complaint, warning, summon and notification of successful prosecution for the Project are presented in **Appendix L**.

Recommendations

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

Air Quality Impact

- To implement dust suppression measures on all haul roads, stockpiles, dry surfaces and excavation works.
- To mitigate the dust generation by adequate water spraying in dry days.

Noise Impact

- To inspect the noise sources inside the site.
- To disperse the locations of noisy equipments and position the equipments as far away as possible from sensitive receivers.
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location.

Water Impact

- To prevent any surface runoff discharge into any stream course.
- To review and implement temporary drainage system.
- To identify any wastewater discharges from site.
- To ensure properly maintenance for de-silting facilities.
- To clear the silt and sediment in the sedimentation tanks.
- To review the capacity of de-silting facilities for discharge.
- To divert all the water generated from construction site to de-silting facilities with enough handling capacity before discharge.

Waste/Chemical Management

- To check for any accumulation of waste materials or rubbish on site.
- To ensure the performance of sorting of C&D materials at source (during generation);
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the site.
- To provide proper storage area or drip trays for oil containers/ equipment on site.
- To avoid improper handling or storage of oil drum on site.

Landscape and Visual

- To protect the existing trees to be retained.
- To transplant the trees unavoidably affected by the works.
- To control of night-time lighting.
- To provide decorative screen hoarding.
- To complete landscape works at site area as early as possible.

Effectiveness of Environmental Management

8.10 The above recommendations and the recommended mitigation measures in the EM&A Manual were carried out by the Contractor during construction. No non-compliance was recorded during the environmental site inspections as shown in **Appendix I**.

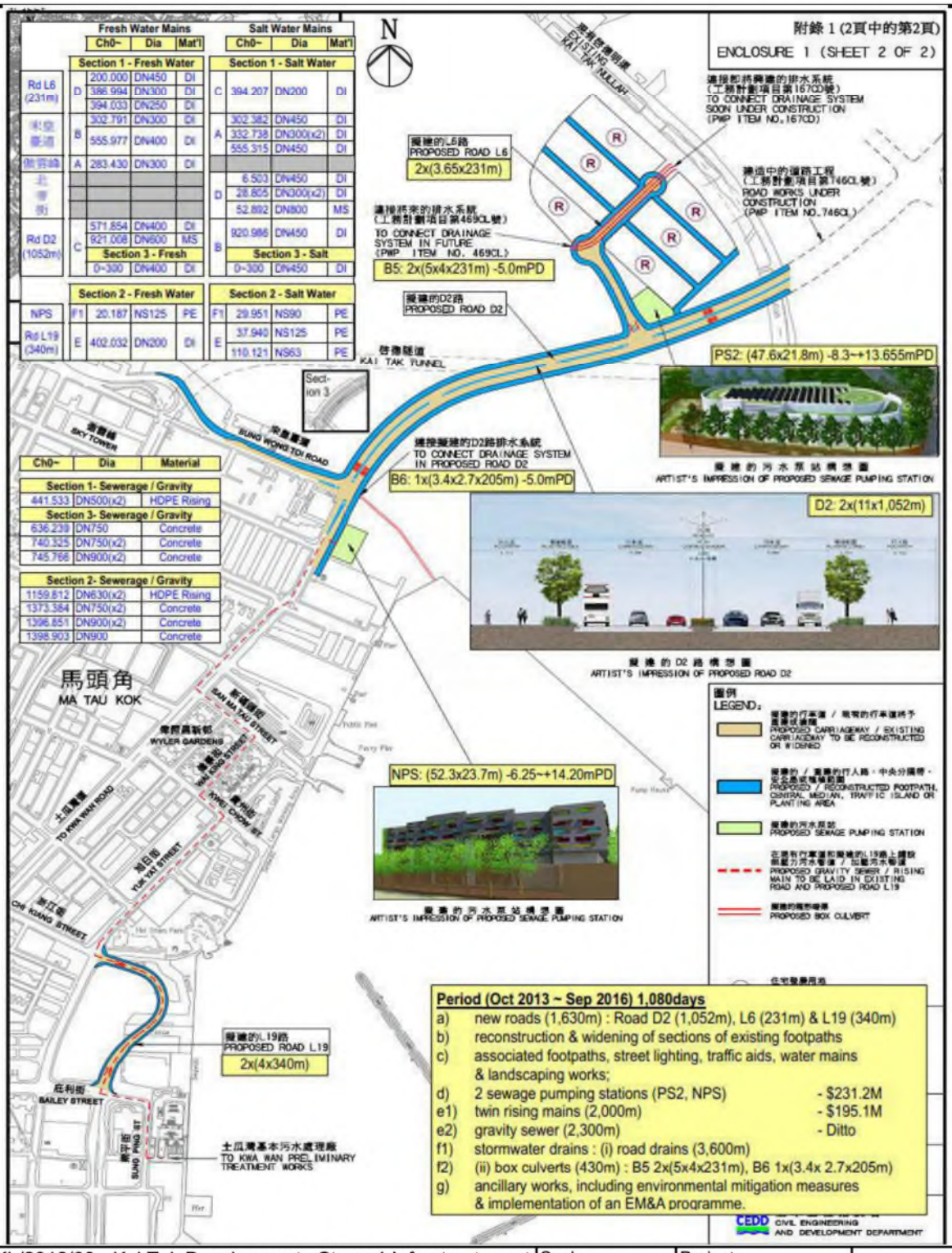
8.11 The effectiveness of environmental management is satisfactory as the above recommendations are met. Some of the examples of mitigation measures for the following recommendations are given in **Table 8.1** below.

- Surface runoff discharge into any stream course is prevented;
- Provision of sedimentation facilities after identification of wastewater discharges from site;
- Discharge or accidental spillage of chemical waste or oil directly from the site is avoided;
- Improper handling or storage of oil drum on site is avoided;
- The existing trees to be retained are protected; and
- Night-time lighting is controlled.

Table 8.1 Examples of Mitigation Measures for Environmental Recommendations

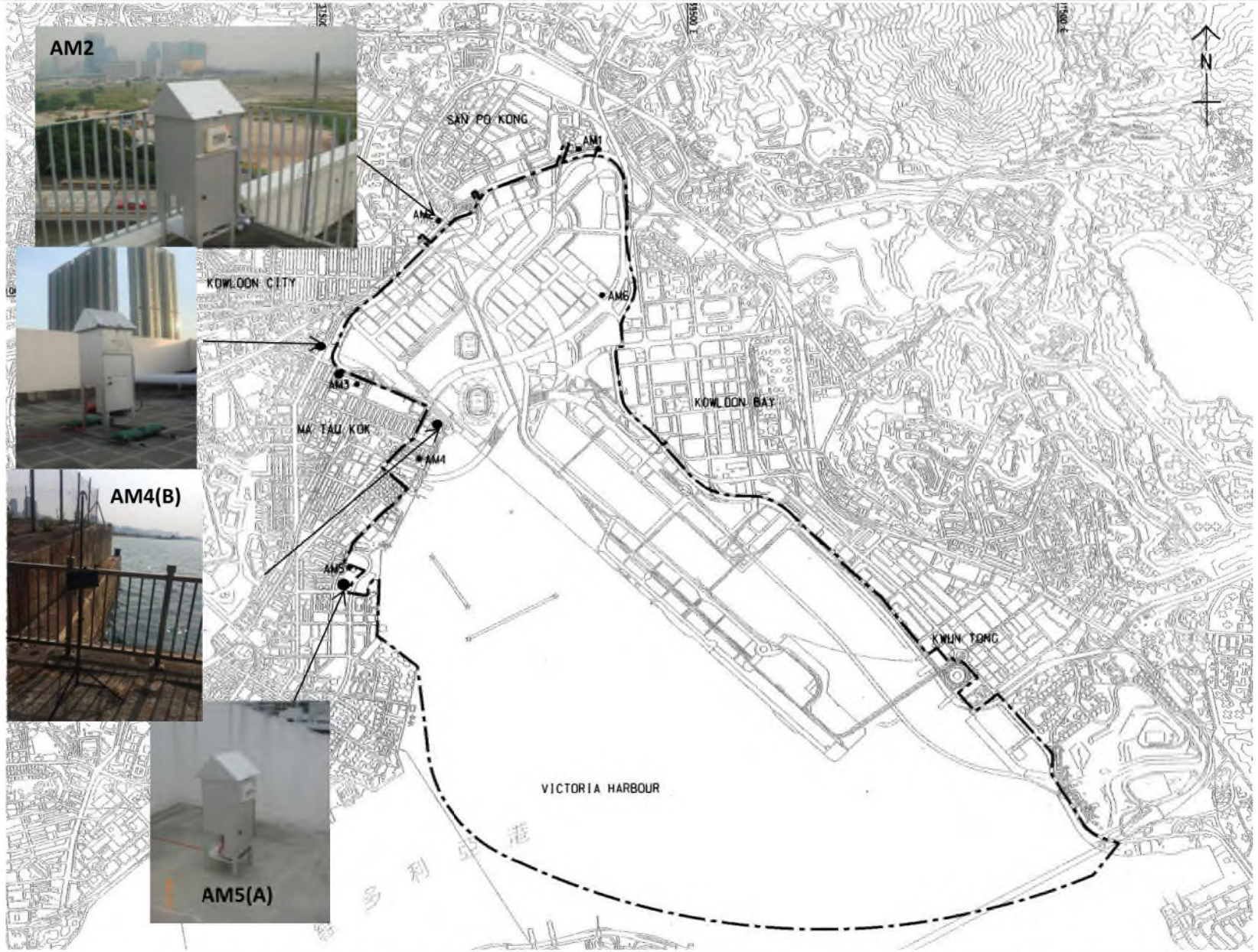
	
To prevent any surface runoff discharge into any stream course.	Follow-up measure(s) after identification of wastewater discharges from site.
	
To avoid any discharge or accidental spillage of chemical waste or oil directly from the site	To avoid improper handling or storage of oil drum on site
	
To protect the existing trees to be retained	To control of night-time lighting

FIGURES



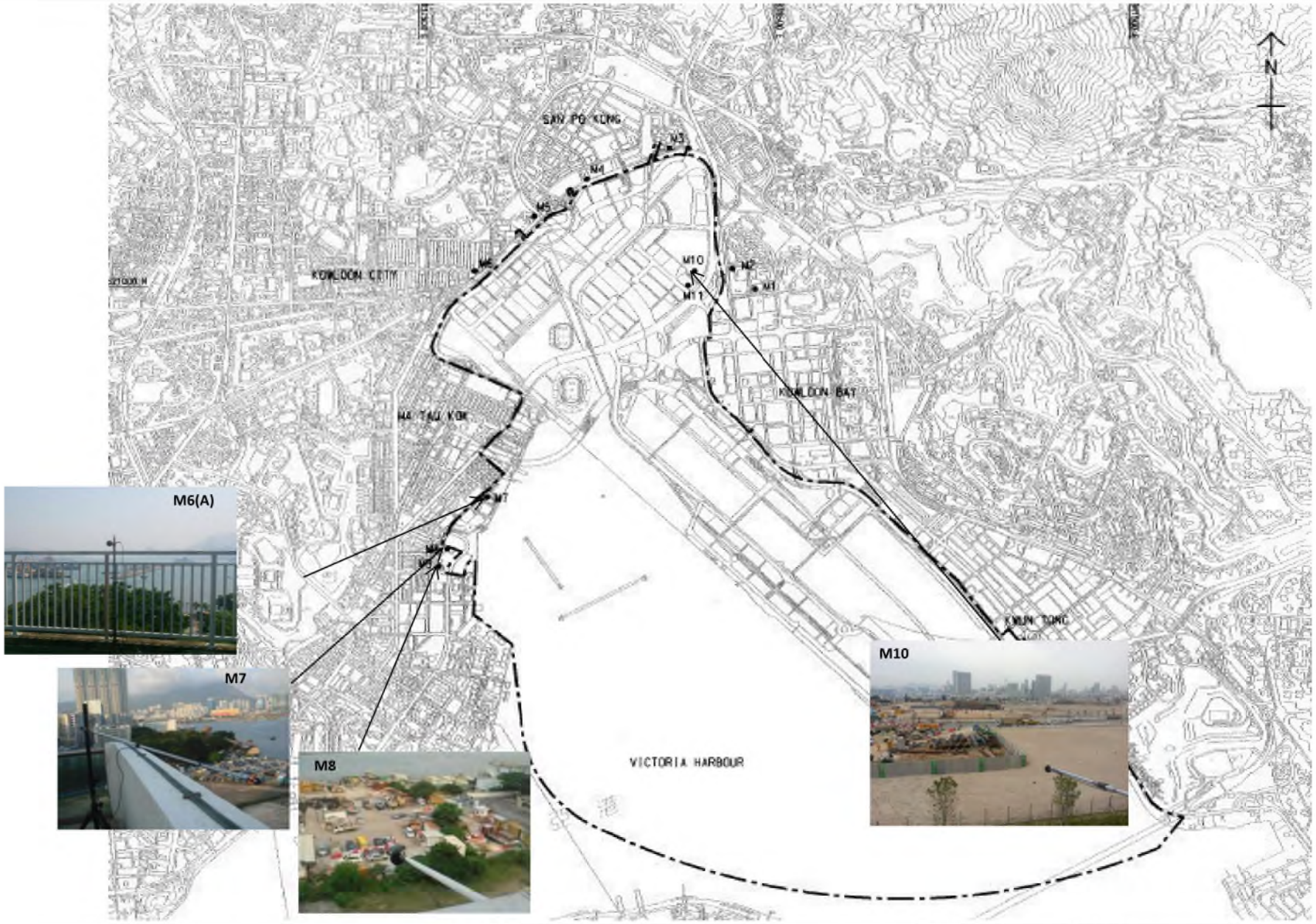
Title	KL/2012/03 - Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area	Scale N.T.S	Project No. MA13056
	Site Layout Plan	Date Sep-13	Figure 1

CINOTECH



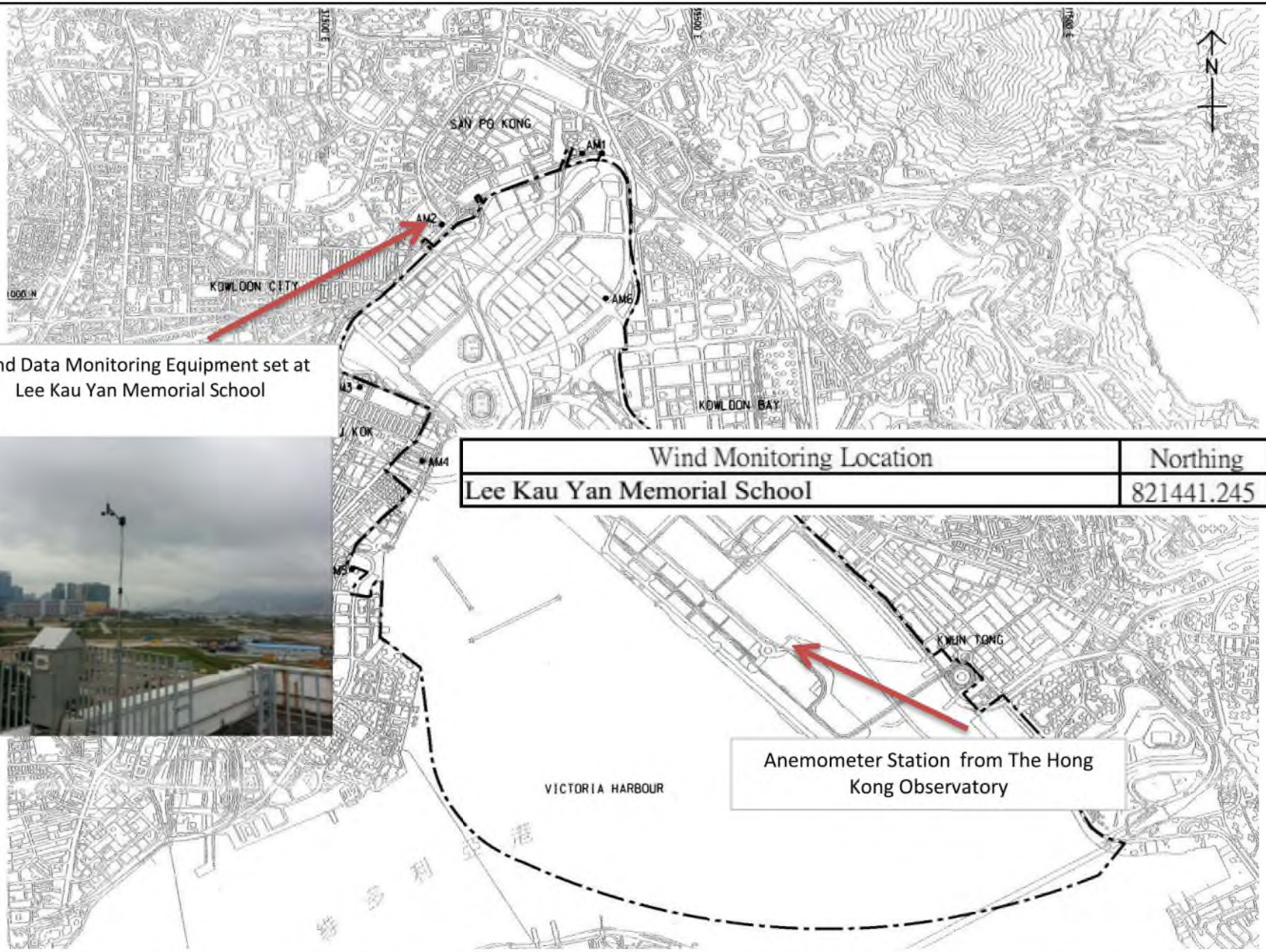
Title	Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Air Quality Monitoring Stations under this Project	Scale: N.T.S Date: Mar-17	Project No.: MA13056 Figure: 2

CINOTECH



Title	Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Noise Monitoring Stations under this Project	Scale: N.T.S Date: Dec-16	Project No.: MA13056 Figure: 3

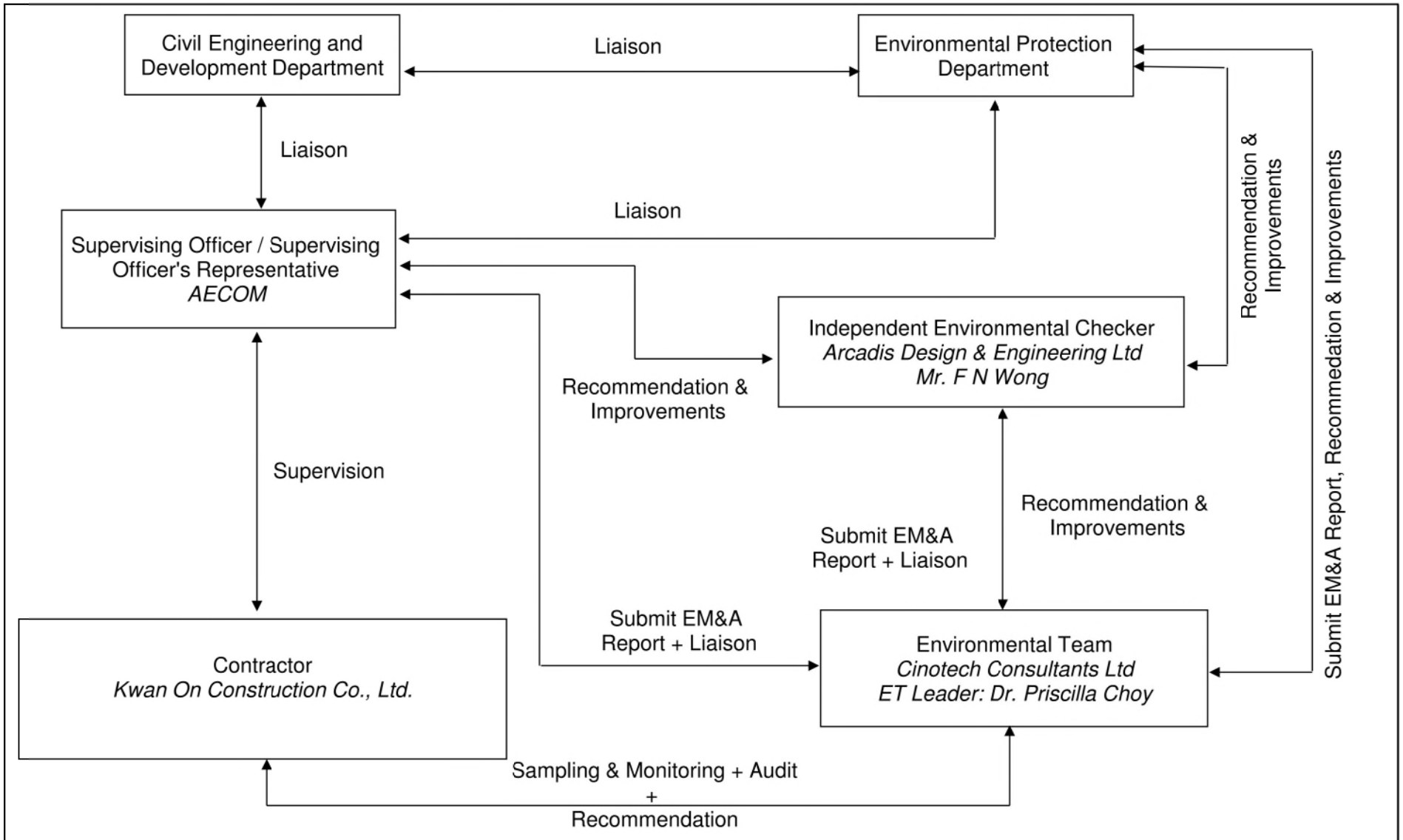
CINOTECH



Wind Monitoring Location	Northing	Easting
Lee Kau Yan Memorial School	821441.245	838153.917

Title	Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Location of Wind Data Monitoring Equipment	Scale: N.T.S Date: Dec-13	Project No.: MA13056 Figure: 4

CINOTECH



Title	Scale	Project
Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Management Structure	N.T.S	No. MA13056
	Date: Dec-16	Figure: 5

CINOTECH

APPENDIX A
ACTION AND LIMIT LEVELS

Appendix A - Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AM2	346	500
AM3(A)	351	
AM4(A)	371	
AM5(A)	345	

Table A-2 Action and Limit Levels for 24-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AM2	157	260
AM3(A)	167	
AM4(A)	187	
AM5(A)	156	

Table A-3 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) 70dB(A)/65dB(A)*

Remarks: 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. *70dB(A) and 65dB(A) for schools during normal teaching periods and school examination periods, respectively.

APPENDIX B
COPIES OF CALIBRATION CERTIFCATES

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA14008/59/0040

Station: AM2 - Lee Kau Yan Memorial School Operator: WK

Date: 20-Jan-17 Next Due Date: 19-Mar-17

Equipment No.: A-01-59 Serial No. 2354

Ambient Condition			
Temperature, Ta (K)	287.8	Pressure, Pa (mmHg)	770.6

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

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.7	3.50	59.47	7.6	2.82
2	9.8	3.21	54.50	6.5	2.61
3	7.5	2.81	47.78	5.1	2.31
4	5.0	2.29	39.17	3.2	1.83
5	3.4	1.89	32.45	2.3	1.55

By Linear Regression of Y on X

Slope , mw = 0.0480 **Intercept, bw =** -0.0147

Correlation coefficient* = 0.9988

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.01**

Remarks:

Conducted by: wk Tang Signature: Kwai Date: 20/1/2017

Checked by: lw Signature: Date: 20 January 2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA14008/49/0038

Station: AM3(A) - Holy Trinity Bradbury Centre Operator: WK

Date: 20-Jan-17 Next Due Date: 19-Mar-17

Equipment No.: A-01-49 Serial No. 1793

Ambient Condition			
Temperature, Ta (K)	288.4	Pressure, Pa (mmHg)	771.5

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

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.8	3.52	59.69	7.8	2.86
2	9.7	3.19	54.20	6.5	2.61
3	7.5	2.80	47.76	5.1	2.31
4	5.1	2.31	39.53	3.4	1.89
5	3.4	1.89	32.43	2.1	1.48

By Linear Regression of Y on X

Slope , mw = 0.0504 **Intercept, bw =** -0.1216

Correlation coefficient* = 0.9989

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

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

Remarks:

Conducted by: Wk. Tang Signature: Kwai Date: 20/1/2017

Checked by: Lhr Signature: Date: 20 January 2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA14008/60/0040

Station: AM5(A) - Po Leung Kuk Ngan Po Ling College Operator: WK

Date: 20-Jan-17 Next Due Date: 19-Mar-17

Equipment No.: A-01-60 Serial No. 2358

Ambient Condition			
Temperature, Ta (K)	289.5	Pressure, Pa (mmHg)	770.6

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

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.3	3.43	58.29	7.9	2.87
2	9.7	3.18	54.07	6.8	2.66
3	7.6	2.82	47.96	5.3	2.35
4	5.2	2.33	39.81	3.3	1.86
5	3.4	1.88	32.36	2.3	1.55

By Linear Regression of Y on X

Slope , mw = 0.0523 **Intercept, bw =** -0.1710

Correlation coefficient* = 0.9983

*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 Date: 20/1/2017

Checked by: [illegible] Signature: [illegible] Date: 20 January 2017

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

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

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

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

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

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

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

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

WELLAB 匯力 Testing & Research

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

TEST REPORT

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

Test Report No.:	C/W/161001
Date of Issue:	2016-10-03
Date Received:	2016-10-01
Date Tested:	2016-10-01
Date Completed:	2016-10-03
Next Due Date:	2017-04-02

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

Certificate of Calibration

Item for calibration:

Description	: Weather Monitor II
Manufacturer	: Davis Instruments
Model No.	: 7440
Serial No.	: MC20813A11

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 56 %

Test Specifications:

1. Performance check of anemometer
2. Performance check of wind direction sensor

Methodology:

In-house method with reference anemometer (RS232 Integral Vane Digital Anemometer)

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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

TEST REPORT

Test Report No.:	C/W/161001
Date of Issue:	2016-10-03
Date Received:	2016-10-01
Date Tested:	2016-10-01
Date Completed:	2016-10-03
Next Due Date:	2017-04-02

Results:

1. Performance check of anemometer

Air Velocity, m/s		Difference D (m/s)
Instrument Reading (V1)	Reference Value (V1)	D = V1 – V2
2.00	2.00	0.00

2. Performance check of wind direction sensor

Wind Direction (°)		Difference D (°)
Instrument Reading (W1)	Reference Value (W2)	D = W1 - W2
0	0	0
45.1	45	0.1
90	90	0
135.1	135	0.1
180	180	0
225.2	225	0.2
270.3	270	0.3
315	315	0
360	360	0

**********END OF REPORT**********

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18 On Lai Street, Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	C/A/170106A
Date of Issue:	2017-01-09
Date Received:	2017-01-06
Date Tested:	2017-01-06
Date Completed:	2017-01-09
Next Due Date:	2017-03-08

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3
Serial No.	: 251634
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 550 CPM
Equipment No.	: A-02-01

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0037

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力
Testing & Research

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
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18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/A/170106B
Date of Issue:	2017-01-09
Date Received:	2017-01-06
Date Tested:	2017-01-06
Date Completed:	2017-01-09
Next Due Date:	2017-03-08

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 853944
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 685 CPM
Equipment No.	: A-02-04

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0038

****

PREPARED AND CHECKED BY:

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

Patrick Tse

PATRICK TSE
Laboratory Manager

WELLAB 匯力
Testing & Research

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

TEST REPORT

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

Test Report No.:	C/A/170106
Date of Issue:	2017-01-09
Date Received:	2017-01-06
Date Tested:	2017-01-06
Date Completed:	2017-01-09
Next Due Date:	2017-03-08

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 541146
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 625 CPM
Equipment No.	: A-02-07

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0033

****

PREPARED AND CHECKED BY:
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Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/161230D
Date of Issue:	2017-01-03
Date Received:	2016-12-30
Date Tested:	2016-12-30
Date Completed:	2017-01-03
Next Due Date:	2017-03-02

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-531
Serial No.	: N6734
Flow rate	:0.1 cfm
Zero Count Test	:0 mg (The result of the 2-minute sample)
Equipment No.	: A-02-13

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 66 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.183

****

PREPARED AND CHECKED BY:

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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Rms 816, 1516 & 1701, Technology Park,
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Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	C/N/161230
Date of Issue:	2017-01-03
Date Received:	2016-12-30
Date Tested:	2016-12-30
Date Completed:	2017-01-03
Next Due Date:	2018-01-02

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

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 14303
Microphone No.	: 35222
Equipment No.	: N-08-05

Test conditions:

Room Temperatre	: 21 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

Remark: 1)This report supersedes the one dated 2012/01/21 with certificate number C/N/120120/1.

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力
Testing & Research

WELLAB LIMITED
Rms 1516, 1701 & 1716, Technology Park,
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Tel: 2898 7388 Fax: 2898 7076
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TEST REPORT

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

Test Report No.:	C/N/160919
Date of Issue:	2016-09-21
Date Received:	2016-09-19
Date Tested:	2016-09-19
Date Completed:	2016-09-21
Next Due Date:	2017-09-20

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 977
Serial No.	: 45482
Microphone No.	: 63626
Equipment No.	: N-08-14

Test conditions:

Room Temperatre	: 22 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

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TEST REPORT

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

Test Report No.:	C/N/161028/1
Date of Issue:	2016-10-31
Date Received:	2016-10-28
Date Tested:	2016-10-28
Date Completed:	2016-10-31
Next Due Date:	2017-10-30

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

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 10965
Equipment No.	: N-09-02

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 60 %

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

WELLAB 匯力
Testing & Research

WELLAB LIMITED
Rms 1516, 1701 & 1716, Technology Park,
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TEST REPORT

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

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

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

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2752	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.50	1.246	44.0	44.07
2	5.90	1.188	41.0	41.06
3	4.70	1.064	39.0	39.06
4	3.60	0.935	33.0	33.05
5	2.40	0.770	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 33.1537 b= 2.5544 Corr. Coeff= 0.9921

Sampler set point(SSP) 43 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew. Date: 13-Mar-17

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2754	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.40	1.236	40.0	40.06
2	5.50	1.149	38.0	38.06
3	4.60	1.053	36.0	36.05
4	3.30	0.897	30.0	30.05
5	2.20	0.738	26.0	26.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 29.1511 b= 4.4741 Corr. Coeff= 0.9951

Sampler set point(SSP) 40 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew. Date: 13-Mar-17

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2783	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.70	1.264	39.0	39.06
2	5.90	1.188	35.0	35.05
3	4.80	1.075	32.0	32.05
4	3.50	0.923	28.0	28.04
5	2.40	0.770	22.0	22.03

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.4948 b= -2.6780 Corr. Coeff= 0.9945

Sampler set point(SSP) 37 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2765	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.60	1.255	40.0	40.06
2	5.70	1.169	38.0	38.06
3	4.80	1.075	36.0	36.05
4	3.40	0.910	30.0	30.05
5	2.30	0.754	24.0	24.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.2966 b= 0.3031 Corr. Coeff= 0.9936

Sampler set point(SSP) 39 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2766	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	7.50	1.336	48.0	48.07
2	6.40	1.236	44.0	44.07
3	4.40	1.031	39.0	39.06
4	3.30	0.897	32.0	32.05
5	2.00	0.705	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.2524 b= 4.6824 Corr. Coeff= 0.9919

Sampler set point(SSP) 44 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2767	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.60	1.255	42.0	42.06
2	5.50	1.149	41.0	41.06
3	4.80	1.075	37.0	37.06
4	3.40	0.910	33.0	33.05
5	2.20	0.738	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 28.2377 b= 7.3012 Corr. Coeff= 0.9903

Sampler set point(SSP) 41 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

Calibration Certificate for High Volume Sampler (HVS)

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		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}

Calibration Certificate of Dust Meter

CERTIFICATE OF CALIBRATION AND TESTING

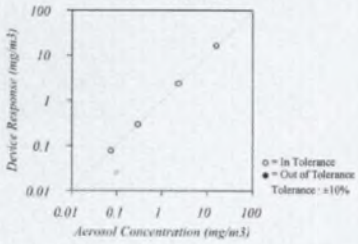
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environmental Conditions		
Temperature	75.16 (24.0)	°F (°C)
Relative Humidity	23.8	%RH
Barometric Pressure	29.36 (994.2)	inHg (hPa)

Model	AM510
Serial Number	11208032

☒ As Left ☐ As Found
☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTI101-02

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17	Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003314	05-19-16	05-19-17	DC Voltage	E003315	05-19-16	05-19-17
Photometer	E003319	07-19-16	01-19-17	Microbalance	M001324	11-02-16	11-02-18
Pressure	E003511	10-11-16	10-11-17	Flowmeter	E002471	04-26-16	04-26-17

Calibrated — ☒ Final Function Check — November 8, 2016 Date

CASTCO

CERTIFICATE OF CALIBRATION AND TESTING

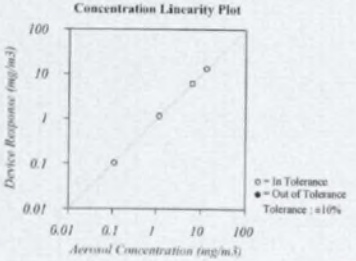
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environmental Conditions		
Temperature	75.7 (24.3)	°F (°C)
Relative Humidity	26	%RH
Barometric Pressure	28.93 (979.7)	inHg (hPa)

Model	AM510
Serial Number	11108001

☒ As Left ☐ As Found
☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTI101-02

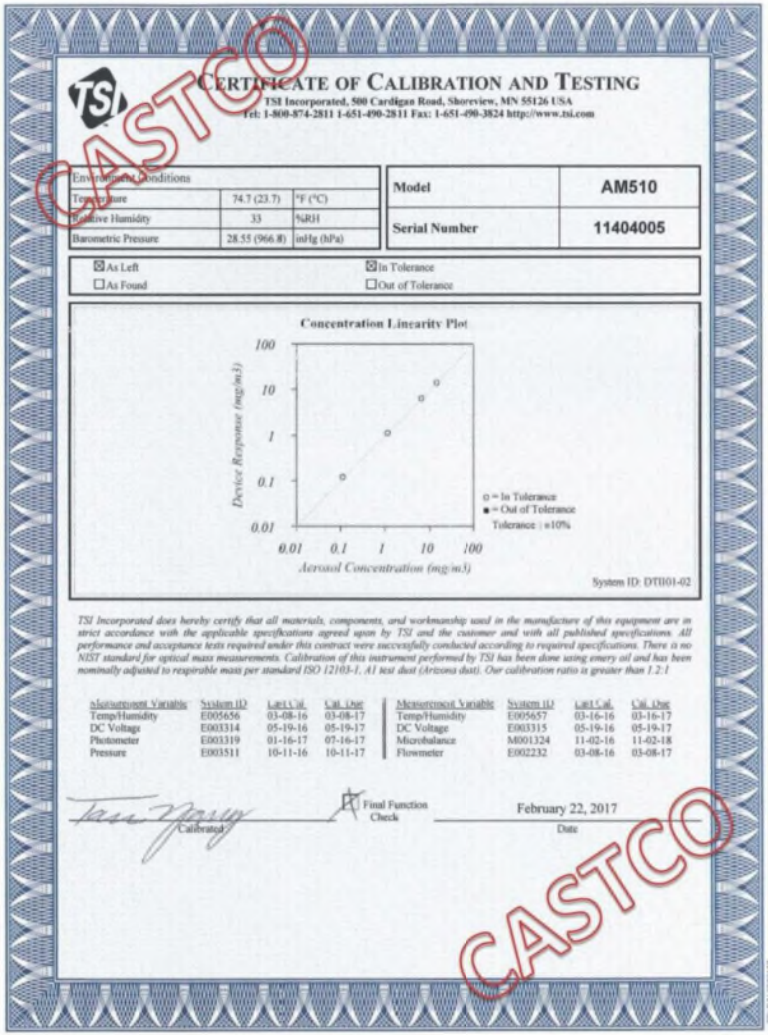
TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17	Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003314	05-19-16	05-19-17	DC Voltage	E003315	05-19-16	05-19-17
Photometer	E003319	07-19-16	01-19-17	Microbalance	M001324	11-02-16	11-02-18
Pressure	E003511	10-11-16	10-11-17	Flowmeter	E002232	03-08-16	03-08-17

Calibrated — ☒ Final Function Check — December 20, 2016 Date

CASTCO

Calibration Certificate of Dust Meter



CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environmental Conditions		
Temperature	74.7 (23.7)	°F (°C)
Relative Humidity	33	%RH
Barometric Pressure	28.55 (966.8)	inHg (hPa)

Model	**AM510**
Serial Number	**11404005**

☒ As Left ☐ As Found
☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot

System ID: DTI01-02

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17	Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003314	05-19-16	05-19-17	DC Voltage	E003315	05-19-16	05-19-17
Photometer	E003319	01-16-17	07-16-17	Microbalance	M001324	11-02-16	11-02-18
Pressure	E003511	10-11-16	10-11-17	Flowmeter	E002232	03-08-16	03-08-17

Calibrated

Final Function Check

February 22, 2017
Date

TSI P/N 1000187

Certificate of Sound Level Meter

中国赛宝实验室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY
CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L0462

校 准 证 书
CALIBRATION CERTIFICATE

证书编号： 2IB17000013-0001
Certificate No.

委托单位：Client	Castco Testing Centre Limited
委托方地址：Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称：Description	Sound Level Meter
型号规格：Model/Type	NL-52
制造商：Manufacturer	RION
机身号：Serial No.	00921213
管理号：Asset No.	AAST-SLM-04
校准日期：Cal. Date	2017 年 01 月 05 日
建议再校日期：Next Cal. Date	2018 年 01 月 05 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 罗志满　　核验：Inspected by 杨雨振

签发：Approved by 郭木方　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
香港分部地址：香港上水洪桥广场6/F2
客服电话：852-26680871 传真：852-26686197
投诉电话：852-26680936 020-87236789
邮件：cal@ceprei.com.hk
网址：www.ceprei-cal.com

CEPREI Calibration and Testing Center
H.Q. Addr: No.110 Dongguan Zhuang Road, Tianhe District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Castco Logistics Plaza shung Shui N.T. Hong Kong
Tel: 852-26680871 Fax: 852-26686197
Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

中国赛宝实验室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY
CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L0462

校 准 证 书
CALIBRATION CERTIFICATE

证书编号： 2IB16001326-0003
Certificate No.

委托单位：Client	Castco Testing Centre Limited
仪器名称：Description	SOUND LEVEL METER
型号规格：Model/Type	NL-52
制造商：Manufacturer	RION
机身号：Serial No.	00164461
管理号：Asset No.	AAST-SLM-06
校准日期：Cal. Date	2016 年 09 月 22 日
建议再校日期：Next Cal. Date	2017 年 09 月 22 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 杨雨振　　核验：Inspected by

签发：Approved by 郭木方　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
香港分部地址：香港上水洪桥广场6/F2
客服电话：852-26680871 传真：852-26686197
投诉电话：852-26680936 020-87236789
邮件：cal@ceprei.com.hk
网址：www.ceprei-cal.com

CEPREI Calibration and Testing Center
H.Q. Addr: No.110 Dongguan Zhuang Road, Tianhe District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Castco Logistics Plaza shung Shui N.T. Hong Kong
Tel: 852-26680871 Fax: 852-26686197
Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

Calibration Certificate of Sound Calibrator

中国赛宝实验室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

CNAS CALIBRATION CNAS L0462

校准证书
CALIBRATION CERTIFICATE

证书编号：2HB17000084-0002
Certificate No.

委托单位： Client	Castco Testing Centre Limited
委托方地址： Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称： Description	Sound Level Calibrator
型号规格： Model/Type	NC-73
制造商： Manufacturer	RION
机身号： Serial No.	20652
管理号： Asset No.	AAST-SLC-01
校准日期： Cal. Date	2017 年 01 月 20 日
建议再校日期： Next Cal. Date	2018 年 01 月 20 日
结论： Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 罗志满　　核验：Inspected by 杨西梅

签发：Approved by　　印章：Stamp

CASTCO

CEPREI Calibration and Testing Center
Tel: 852-26680871
Website: www.ceprei-cal.com

Page 1 of 3

中国赛宝实验室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

CNAS CALIBRATION CNAS L0462

校准证书
CALIBRATION CERTIFICATE

证书编号：2HB16001157-0001
Certificate No.

委托单位： Client	Castco Testing Centre Limited
委托方地址： Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称： Description	SOUND LEVEL CALIBRATOR
型号规格： Model/Type	NC-74
制造商： Manufacturer	RION
机身号： Serial No.	34546624
管理号： Asset No.	AAST-SLC-03
校准日期： Cal. Date	2016 年 08 月 18 日
建议再校日期： Next Cal. Date	2017 年 08 月 18 日
结论： Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 罗志满　　核验：Inspected by 杨西梅

签发：Approved by　　印章：Stamp

CASTCO

CEPREI Calibration and Testing Center
Tel: 852-26680871
Website: www.ceprei-cal.com

Page 1 of 4

Calibration Certificate of Wind Anemometer

广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

校准证书
CALIBRATION CERTIFICATE

证书编号 Certificate No. LC-20172600　　第 1 页 Page　　共 3 页 of

委托方 Client：佳力高試驗中心有限公司 CASTCO TESING CENTRE LTD

地址 Address：香港新界粉嶺安樂村安居街33號 33 On Kui Street On Lok Tsue Fanling, N.T, H.K.

计量器具名称 Measuring instruments：Davis Weather Station

规格型号 Model/Type：Vantage Pro2

制造者 Manufacturer：

编号 Serial No.：A70604D29N/自編號:EN52-01

证书专用章 Issued by (Stamp)

主管 Approved by：陈金叫

审核 Inspected by：

校准 Calibrated by：

校准日期 Calibration Date　2017 年 Y 03 月 M 14 日 D　　建议校准周期 The recommended calibration period　一年

本院地址：广州市广仁路11号　邮政编码：510030　电话：020-83362165　传真：020-83369351
广州市科学城尖塔山路19号　邮政编码：510663　电话：020-32086301　传真：020-32086300
开发区中心电话：020-82223272　白云区中心电话：020-36200320　南沙中心电话：020-34970774
单位网址：www.gzjljc.net　业务邮箱：ywuban@gzjls.net　微信号：GZJLJC

广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

说　明
DIRECTIONS

证书编号：LC-20172600 Certificate No.　　第 2 页 Page　　共 3 页 of

1、本院是政府依法设置的法定计量检定机构，工作职责为承担授权范围内的量值传递工作和向社会开展计量校准技术服务工作。
Guangzhou Institute of Measurement and Testing Technology (GIMTT) is a legal metrological organization set by government, which is responsible for value dissemination within authorization, and to provide metrological and calibration services for social benefit.

2、本院的质量管理体系符合ISO/IEC 17025：2005标准的要求。
The quality system of GIMTT is in accordance with ISO/IEC 17025:2005.

3、本院出具的数据均可溯源到国家计量基准和SI单位标准。
All data issued by GIMTT are traceable to national measurement standards and SI unit standards.

4、本次校准所依据的技术文件是：
Reference documents for the calibration:
JJG 613-1989 《电接风向风速仪》检定规程
V.R. of Verification Regulation of Contact Anemorumbometer

5、本次校准所使用的计量标准是：
Standards of measurement used in the calibration:

设备名称/型号 Equipment/Model	编号 Serial No.	证书号 Certificate No.	技术特征 Technique character
皮托静压管(Pitot Tubes)	0471	NSC201750171/2022-02-16	MPE: ±0.01
补偿式微压计 (Compensated micromanometer)	200509032	LY-201534497/2017-12-19	准确度等级：二等 Grade 2
空盒气压表(Aneroid barometer)	06-0008	LY-201619205/2017-07-01	MPE: ±2.5 hPa
风洞(Wind tunel)	08	LC-20167300/2017-06-28	均匀性≤1%; 稳定性≤0.5%;
数显倾角仪(Digital Inclinometer)	N2955	CJ-20169223/2017-5-25	MPE: ±5'

6、依据JJF 1059.1-2012《测量结果不确定度评定与表示》，本次校准中部分测量结果的不确定度分别是：
The uncertainty of measurement results in accordance with JJF 1059.1-2012:
U=0.20 m/s; k=2

7、本次校准的地点与校准时的环境条件：
Site of the calibration and environmental conditions during the calibration:
地点 Site　科学城实验室　温度 Temperature　19.4℃　相对湿度 RH　53%

Calibration Certificate of Wind Anemometer

广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

校准结果
RESULTS OF CALIBRATION

证书编号 LC-20172600 原始记录号 17205J0338 第 3 页 共 3 页
Certificate No. Page Of

1、外 观：正 常
Appearance: Pass

2、空气密度修正系数(Correction factor of air density)：1.007；
总修正系数(Correction factor of total)：1.013；
大气压力 (Atmospheric pressure)：1018.0 hPa；

3、风速仪示值校准：
Indication calibrated of anemometer:

微压计示值 Indication of micromanometer (mmH_2O)	标准值 Values of standard (m/s)	仪器示值 Indication of anemometer (m/s)	修正值 Values of correction (m/s)
6.10	2.0	1.8	+0.2

4、风向角示值校准：
Indication calibrated of wind direction sensor:

标准值（°） Values of standard	仪器示值（°） Instrument Reading
0.0	0
45.0	45
90.0	90
135.0	135
180.0	180
225.0	225
270.0	270
315.0	315
360.0	360

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注：1、此结果只与受校准的项目有关。
2、未经本院书面批准，不得部分复制此证书。
3、此证书无本院盖章无效。

Note: 1. The results relate only to the items verified.
2. This certificate shall not be reproduced except in full, without the written approval of our institute .
3. This certificate shall not be valid without stamp of our institute .

APPENDIX C
WEATHER INFORMATION

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
1 March 2017	15.9 – 22.9	54 – 82	0
2 March 2017	17.2 – 23.9	25 – 72	0
3 March 2017	15.7 – 20.1	49 – 76	0
4 March 2017	16.8 – 21.8	64 – 79	0
5 March 2017	18.7 – 24.0	79 – 97	0
6 March 2017	17.9 – 23.5	62 – 96	Trace
7 March 2017	17.1 – 20.7	62 – 83	Trace
8 March 2017	15.0 – 17.3	80 – 95	2.8

* The above information was extracted from the daily weather summary by Hong Kong Observatory.

II. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m/s	Direction
1-Mar-2017	0:00	0.9	SSE
1-Mar-2017	1:00	0.9	SE
1-Mar-2017	2:00	0.6	N
1-Mar-2017	3:00	0.8	N
1-Mar-2017	4:00	0.9	N
1-Mar-2017	5:00	0.8	WNW
1-Mar-2017	6:00	0.7	SSW
1-Mar-2017	7:00	0.8	S
1-Mar-2017	8:00	1.1	S
1-Mar-2017	9:00	1.3	SSW
1-Mar-2017	10:00	1.2	SE
1-Mar-2017	11:00	1.3	SE
1-Mar-2017	12:00	1.4	SE
1-Mar-2017	13:00	1.3	NW
1-Mar-2017	14:00	0.9	WSW
1-Mar-2017	15:00	1.1	N
1-Mar-2017	16:00	0.9	WNW
1-Mar-2017	17:00	0.9	S
1-Mar-2017	18:00	0.9	SE
1-Mar-2017	19:00	0.7	SSW
1-Mar-2017	20:00	0.9	SE
1-Mar-2017	21:00	0.9	E
1-Mar-2017	22:00	0.9	WNW
1-Mar-2017	23:00	1.0	WSW
2-Mar-2017	0:00	1.3	SSE
2-Mar-2017	1:00	1.2	SE
2-Mar-2017	2:00	1.2	E
2-Mar-2017	3:00	0.8	NNW
2-Mar-2017	4:00	1	NW
2-Mar-2017	5:00	0.9	NNW
2-Mar-2017	6:00	0.7	NW
2-Mar-2017	7:00	0.6	SSE
2-Mar-2017	8:00	0.7	SW
2-Mar-2017	9:00	0.8	SW
2-Mar-2017	10:00	0.8	SW
2-Mar-2017	11:00	1.1	SSE

II. Mean Wind Speed and Wind Direction

2-Mar-2017	12:00	1.2	WSW
2-Mar-2017	13:00	1.2	ENE
2-Mar-2017	14:00	1.1	E
2-Mar-2017	15:00	1.2	E
2-Mar-2017	16:00	1	ENE
2-Mar-2017	17:00	0.8	NE
2-Mar-2017	18:00	0.8	NNE
2-Mar-2017	19:00	0.9	N
2-Mar-2017	20:00	0.9	N
2-Mar-2017	21:00	0.9	N
2-Mar-2017	22:00	1.1	ENE
2-Mar-2017	23:00	0.9	S
3-Mar-2017	0:00	0.9	SW
3-Mar-2017	1:00	0.9	ENE
3-Mar-2017	2:00	0.7	N
3-Mar-2017	3:00	0.7	NNE
3-Mar-2017	4:00	0.9	NE
3-Mar-2017	5:00	0.7	ENE
3-Mar-2017	6:00	0.6	NNE
3-Mar-2017	7:00	0.6	NNE
3-Mar-2017	8:00	0.8	NE
3-Mar-2017	9:00	1.2	N
3-Mar-2017	10:00	1.1	NE
3-Mar-2017	11:00	1.1	N
3-Mar-2017	12:00	1.1	NE
3-Mar-2017	13:00	1.2	N
3-Mar-2017	14:00	1	N
3-Mar-2017	15:00	1	N
3-Mar-2017	16:00	1.1	W
3-Mar-2017	17:00	1.1	W
3-Mar-2017	18:00	1.1	W
3-Mar-2017	19:00	1.1	SW
3-Mar-2017	20:00	1.1	SW
3-Mar-2017	21:00	1.3	WSW
3-Mar-2017	22:00	1.2	NE
3-Mar-2017	23:00	1.4	NE
4-Mar-2017	0:00	1.1	ENE

II. Mean Wind Speed and Wind Direction

4-Mar-2017	1:00	1.3	NE
4-Mar-2017	2:00	1.3	N
4-Mar-2017	3:00	1.5	NE
4-Mar-2017	4:00	1	NE
4-Mar-2017	5:00	1.2	W
4-Mar-2017	6:00	1.3	N
4-Mar-2017	7:00	1	ENE
4-Mar-2017	8:00	1	ENE
4-Mar-2017	9:00	1.3	ENE
4-Mar-2017	10:00	1.5	ENE
4-Mar-2017	11:00	1.7	SSE
4-Mar-2017	12:00	1.6	NW
4-Mar-2017	13:00	1.9	ENE
4-Mar-2017	14:00	1.9	SW
4-Mar-2017	15:00	1.6	WSW
4-Mar-2017	16:00	1.4	W
4-Mar-2017	17:00	1.3	WSW
4-Mar-2017	18:00	1	WSW
4-Mar-2017	19:00	0.9	WSW
4-Mar-2017	20:00	1.5	WSW
4-Mar-2017	21:00	0.5	WSW
4-Mar-2017	22:00	1.1	S
4-Mar-2017	23:00	1	WNW
5-Mar-2017	0:00	0.9	WNW
5-Mar-2017	1:00	0.9	SSW
5-Mar-2017	2:00	1.2	WSW
5-Mar-2017	3:00	0.6	W
5-Mar-2017	4:00	0.5	W
5-Mar-2017	5:00	0.6	WSW
5-Mar-2017	6:00	0.4	W
5-Mar-2017	7:00	0.5	W
5-Mar-2017	8:00	0.8	W
5-Mar-2017	9:00	1.2	W
5-Mar-2017	10:00	1.3	WSW
5-Mar-2017	11:00	1.3	W
5-Mar-2017	12:00	1.5	SSW
5-Mar-2017	13:00	1.6	SW

II. Mean Wind Speed and Wind Direction

5-Mar-2017	14:00	1.5	SW
5-Mar-2017	15:00	1.3	W
5-Mar-2017	16:00	1.1	WSW
5-Mar-2017	17:00	0.9	SSW
5-Mar-2017	18:00	1.2	WSW
5-Mar-2017	19:00	1.1	WSW
5-Mar-2017	20:00	1.1	WSW
5-Mar-2017	21:00	0.8	SSW
5-Mar-2017	22:00	0.8	SSW
5-Mar-2017	23:00	0.6	S
6-Mar-2017	0:00	2.2	SSW
6-Mar-2017	1:00	2	WSW
6-Mar-2017	2:00	1.8	WSW
6-Mar-2017	3:00	1.5	W
6-Mar-2017	4:00	1.2	W
6-Mar-2017	5:00	1.1	W
6-Mar-2017	6:00	1.1	WSW
6-Mar-2017	7:00	1	WSW
6-Mar-2017	8:00	1	WSW
6-Mar-2017	9:00	1.3	SW
6-Mar-2017	10:00	1.4	WSW
6-Mar-2017	11:00	1.7	SSW
6-Mar-2017	12:00	1.3	W
6-Mar-2017	13:00	1.6	W
6-Mar-2017	14:00	1	WSW
6-Mar-2017	15:00	1	ESE
6-Mar-2017	16:00	1.2	ESE
6-Mar-2017	17:00	1.3	SSW
6-Mar-2017	18:00	1.4	W
6-Mar-2017	19:00	1.1	W
6-Mar-2017	20:00	1.2	W
6-Mar-2017	21:00	0.7	ENE
6-Mar-2017	22:00	0.6	W
6-Mar-2017	23:00	0.9	W
7-Mar-2017	0:00	2	WNW
7-Mar-2017	1:00	1.3	W
7-Mar-2017	2:00	1.4	WNW

II. Mean Wind Speed and Wind Direction

7-Mar-2017	3:00	1.1	W
7-Mar-2017	4:00	1.1	W
7-Mar-2017	5:00	1.3	WSW
7-Mar-2017	6:00	0.9	WSW
7-Mar-2017	7:00	1.2	W
7-Mar-2017	8:00	1.2	WNW
7-Mar-2017	9:00	2.2	W
7-Mar-2017	10:00	2.8	W
7-Mar-2017	11:00	3	W
7-Mar-2017	12:00	3.4	W
7-Mar-2017	13:00	3.6	WSW
7-Mar-2017	14:00	3.6	NNE
7-Mar-2017	15:00	4	S
7-Mar-2017	16:00	3.4	W
7-Mar-2017	17:00	3.2	SSW
7-Mar-2017	18:00	2.1	W
7-Mar-2017	19:00	1.4	WNW
7-Mar-2017	20:00	1.3	W
7-Mar-2017	21:00	2.3	WSW
7-Mar-2017	22:00	2.4	W
7-Mar-2017	23:00	1.6	WSW
8-Mar-2017	0:00	1	SSW
8-Mar-2017	1:00	0.5	SSW
8-Mar-2017	2:00	0.6	WSW
8-Mar-2017	3:00	1	WSW
8-Mar-2017	4:00	0.9	WSW
8-Mar-2017	5:00	0.9	WSW
8-Mar-2017	6:00	0.7	W
8-Mar-2017	7:00	0.8	W
8-Mar-2017	8:00	0.9	W
8-Mar-2017	9:00	1	W
8-Mar-2017	10:00	1.5	W
8-Mar-2017	11:00	1.4	W
8-Mar-2017	12:00	1.5	WSW
8-Mar-2017	13:00	1.5	W
8-Mar-2017	14:00	1.7	SSE
8-Mar-2017	15:00	1.8	SSE

II. Mean Wind Speed and Wind Direction

8-Mar-2017	16:00	1.6	ENE
8-Mar-2017	17:00	1	NE
8-Mar-2017	18:00	0.8	S
8-Mar-2017	19:00	0.6	S
8-Mar-2017	20:00	0.5	WSW
8-Mar-2017	21:00	0.5	WSW
8-Mar-2017	22:00	0.4	SW
8-Mar-2017	23:00	0.5	W

Weather Conditions during the Monitoring Period

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
01/03/2017	18.8	67	-
02/03/2017	19.4	45	-
03/03/2017	17.4	67	-
04/03/2017	18.7	73	-
05/03/2017	20.7	83	-
06/03/2017	20.3	80	Trace
07/03/2017	18	75	Trace
08/03/2017	16.3	86	2.8
09/03/2017	17	74	Trace
10/03/2017	17.8	90	Trace
11/03/2017	17.5	88	Trace
12/03/2017	18.4	90	1
13/03/2017	21.7	92	-
14/03/2017	19.1	94	8.5
15/03/2017	16.8	75	Trace
16/03/2017	17.8	78	Trace
17/03/2017	18.1	86	Trace
18/03/2017	18.9	90	0.3
19/03/2017	19.8	94	10.7
20/03/2017	21.9	86	Trace
21/03/2017	22.9	85	0.6
22/03/2017	18.8	88	0.9
23/03/2017	21.2	84	-
24/03/2017	20.8	83	Trace
25/03/2017	20.2	84	Trace
26/03/2017	15.8	76	1
27/03/2017	18.9	55	-
28/03/2017	20.6	70	-
29/03/2017	21.7	84	0.3
30/03/2017	21.9	89	Trace
31/03/2017	20.1	92	21.9

Remark: The above information was extracted from the daily weather summary by Hong Kong Observatory.

II. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed (m/s)	Wind Direction

Remark: Due to mechanical failure of weather station, NO wind speed and wind direction was recorded in the reporting month.

APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Contract No. KL/2012/03
Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area
Tentative Impact Air and Noise Monitoring Schedule for March 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Mar	2-Mar	3-Mar	4-Mar
				Noise (M9) 24 hr TSP	1 hr TSP X3 AM1(B), AM2, AM3(A), AM4(B) & AM5(A) Noise (M6(A) and M7)	
5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar	11-Mar
			1 hr TSP X3 AM2, AM3(A), AM4(B) Noise M9 24 hr TSP	1 hr TSP X3 AM5(A) Noise (M8)	Noise (M6(A) and M7)	
12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar
		1 hr TSP X3 AM2, AM3(A), AM4(B) Noise M9 24 hr TSP	1 hr TSP X3 AM5(A) Noise (M6(A), M7, M8)			
19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar
	1 hr TSP X3 AM2, AM3(A), AM4(B) Noise M9 24 hr TSP	1 hr TSP X3 AM5(A) Noise (M6(A), M7, M8)			1 hr TSP X3 AM2, AM3(A), AM4(B) 24 hr TSP	
26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar	
	1 hr TSP X3 AM5(A) Noise (M6(A), M7, M8)			1 hr TSP X3 AM2, AM3(A), AM4(B) Noise M9 24 hr TSP		

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)
Monitoring which is conducted by ET of schedule 3 of Kai Tak Development under Contract No. KLN/2016/09 is highlighted in blue.

Air Quality Monitoring Station

AM1(B) -Boundary of KTD/Outside Contractor's site office of Contract KL/2012/02
AM2 - Lee Kau Yan Memorial School
AM3(A) - Holy Trinity Bradbury Centre
AM4(B) - Ma Tau Kok Road (next to EMSD workshops) (Temporary)
AM4(C) - New Pumping Station
AM5(A) - Po Leung Kuk Ngan Po Ling College

Noise Monitoring Station

M6(A) - Oblate Primary School
M7 - CCC Kei To Secondary School
M8 - Po Leung Kuk Ngan Po Ling College
M9 - Tak Long Estate

Contract No. KL/2012/03

Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area

Tentative Impact Air and Noise Monitoring Schedule for April 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Apr
2-Apr	3-Apr	**4-Apr**	5-Apr	6-Apr	7-Apr	8-Apr
			1 hr TSP X3 AM2, AM3(A), AM4(C) Noise M9 24 hr TSP	1 hr TSP X3 AM5(A) Noise (M6(A), M7, M8)	24hr TSP	
9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	**14-Apr**	15-Apr
	1 hr TSP X3 AM2, AM3(A), AM4(C) Noise M9 24 hr TSP	Noise (M6(A))	1 hr TSP X3 AM5(B) Noise (M7, M8)	1 hr TSP X3 AM2, AM3(A), AM4(C), AM5(B) 24 hr TSP		
16-Apr	**17-Apr**	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr
		1 hr TSP X3 AM5(B) Noise (M6(A), M7, M8)	1 hr TSP X3 AM2, AM3(A), AM4(C), AM5(B) Noise M9 24 hr TSP			1 hr TSP X3 AM2, AM3(A), AM4(C) 24 hr TSP
23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr
	1 hr TSP X3 AM5(B) Noise (M6(A), M7, M8)			1 hr TSP X3 AM2, AM3(A), AM4(C) 24 hr TSP	1 hr TSP X3 AM5(B)	
30-Apr						

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)
Monitoring which is conducted by ET of schedule 3 of Kai Tak Development under Contract No. KLN/2016/09 is highlighted in blue.

Air Quality Monitoring Station

AM1(B) -Boundary of KTD/Outside Contractor's site office of Contract KL/2012/02
AM2 - Lee Kau Yan Memorial School
AM3(A) - Holy Trinity Bradbury Centre
AM4(C) - New Pumping Station
AM5(A) - Po Leung Kuk Ngan Po Ling College
AM5(B) - CCC Kei To Secondary School

Noise Monitoring Station

M6(A) - Oblate Primary School
M7 - CCC Kei To Secondary School
M8 - Po Leung Kuk Ngan Po Ling College
M9 - Tak Long Estate

APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix E - 1-hour TSP Monitoring Results

Location AM2 - Lee Kau Yan Memorial School			
Date	Time	Weather	Particulate Concentration (µg/m3)
3-Mar-17	9:00	Sunny	174.9
3-Mar-17	10:00	Sunny	182.6
3-Mar-17	11:00	Sunny	185.6
8-Mar-17	13:00	Cloudy	96.0
8-Mar-17	14:00	Cloudy	98.0
8-Mar-17	15:00	Cloudy	95.0
14-Mar-17	9:00	Cloudy	46.0
14-Mar-17	10:00	Cloudy	47.0
14-Mar-17	11:00	Cloudy	42.0
20-Mar-17	13:00	Cloudy	55.0
20-Mar-17	14:00	Cloudy	58.0
20-Mar-17	15:00	Cloudy	64.0
24-Mar-17	13:00	Sunny	59.0
24-Mar-17	14:00	Sunny	58.0
24-Mar-17	15:00	Sunny	59.0
30-Mar-17	13:00	Cloudy	69.0
30-Mar-17	14:00	Cloudy	62.0
30-Mar-17	15:00	Cloudy	65.0
		Average	84.2
		Maximum	185.6
		Minimum	42.0

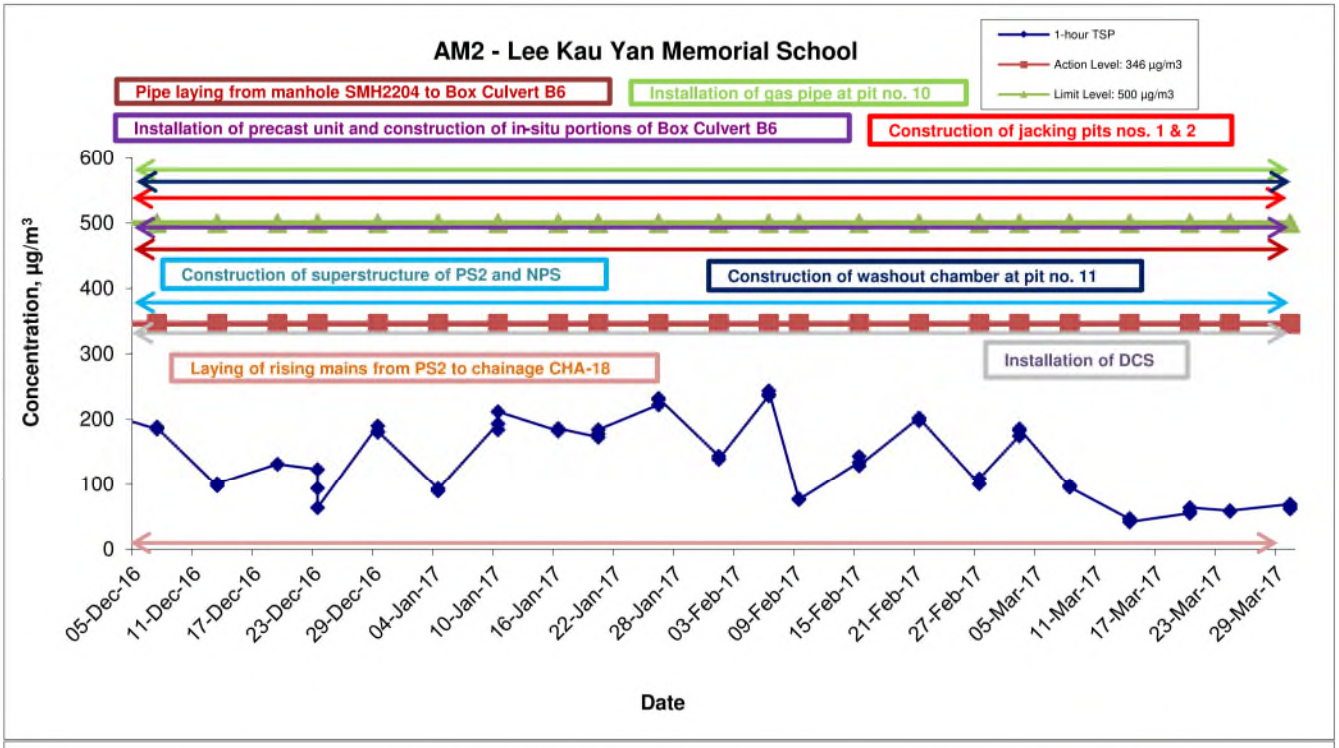
Location AM3(A) - Holy Trinity Bradbury Centre			
Date	Time	Weather	Particulate Concentration (µg/m3)
3-Mar-17	9:00	Sunny	197.9
3-Mar-17	10:00	Sunny	210.3
3-Mar-17	11:00	Sunny	193.0
8-Mar-17	13:00	Cloudy	93.0
8-Mar-17	14:00	Cloudy	96.0
8-Mar-17	15:00	Cloudy	82.0
14-Mar-17	9:00	Cloudy	55.0
14-Mar-17	10:00	Cloudy	56.0
14-Mar-17	11:00	Cloudy	49.0
20-Mar-17	9:00	Cloudy	80.0
20-Mar-17	10:00	Cloudy	81.0
20-Mar-17	11:00	Cloudy	83.0
24-Mar-17	9:00	Sunny	109.0
24-Mar-17	10:00	Sunny	112.0
24-Mar-17	11:00	Sunny	105.0
30-Mar-17	9:00	Cloudy	95.0
30-Mar-17	10:00	Cloudy	91.0
30-Mar-17	11:00	Cloudy	93.0
		Average	104.5
		Maximum	210.3
		Minimum	49.0

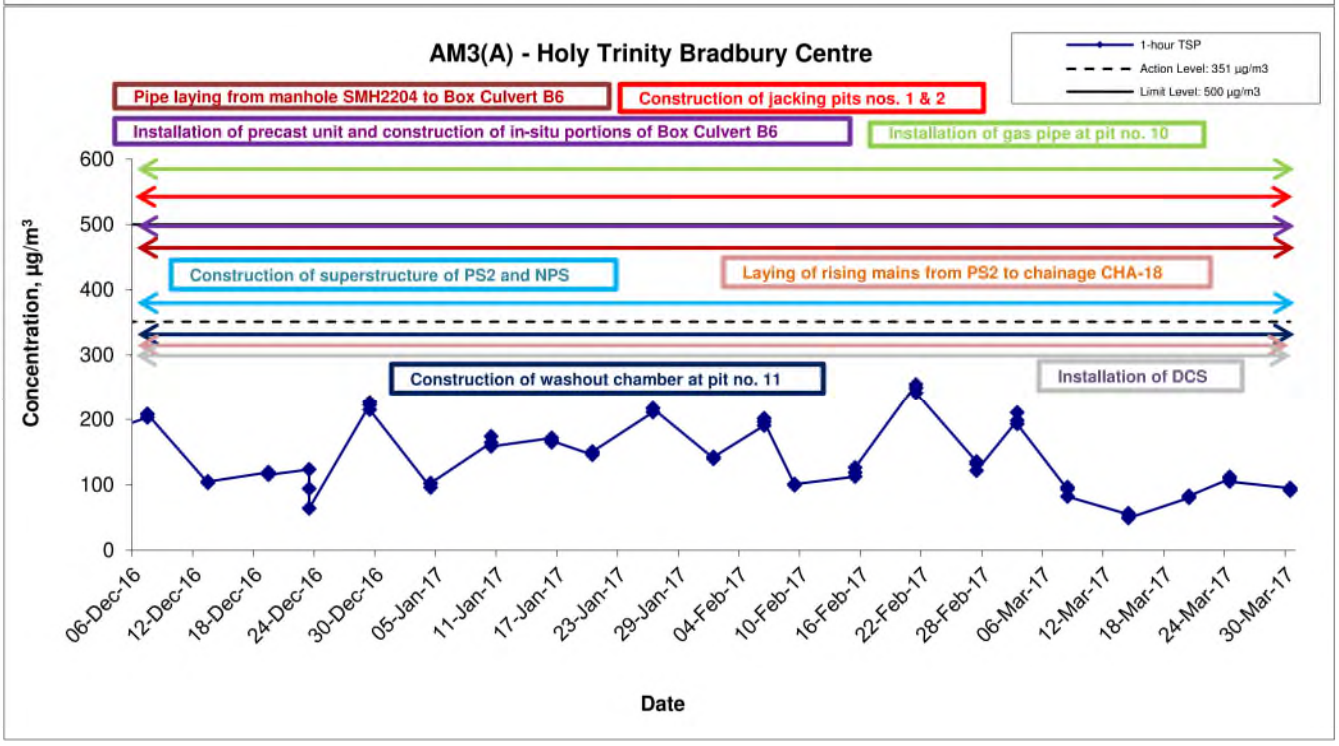
Appendix E - 1-hour TSP Monitoring Results

Location AM4(B) - Ma Tau Kok Road (next to EMSD workshops) (Temporary)			
Date	Time	Weather	Particulate Concentration (µg/m3)
3-Mar-17	13:00	Sunny	186.0
3-Mar-17	14:00	Sunny	188.2
3-Mar-17	15:00	Sunny	181.6
8-Mar-17	9:00	Cloudy	111
8-Mar-17	10:00	Cloudy	106
8-Mar-17	11:00	Cloudy	105
14-Mar-17	13:00	Cloudy	59
14-Mar-17	14:00	Cloudy	55
14-Mar-17	15:00	Cloudy	56
20-Mar-17	13:00	Cloudy	91
20-Mar-17	14:00	Cloudy	86
20-Mar-17	15:00	Cloudy	87
24-Mar-17	13:00	Sunny	121
24-Mar-17	14:00	Sunny	107
24-Mar-17	15:00	Sunny	107
30-Mar-17	13:00	Cloudy	95
30-Mar-17	14:00	Cloudy	84
30-Mar-17	15:00	Cloudy	81
		Average	105.9
		Maximum	188.2
		Minimum	55.0

Location AM5(A) - Po Leung Kuk Ngan Po Ling College			
Date	Time	Weather	Particulate Concentration (µg/m3)
3-Mar-17	8:45	Sunny	181.9
3-Mar-17	9:45	Sunny	180.6
3-Mar-17	10:45	Sunny	171.2
9-Mar-17	9:00	Cloudy	64
9-Mar-17	10:00	Cloudy	58
9-Mar-17	11:00	Cloudy	59
15-Mar-17	13:00	Cloudy	79
15-Mar-17	14:00	Cloudy	86
15-Mar-17	15:00	Cloudy	78
21-Mar-17	10:00	Cloudy	76
21-Mar-17	11:00	Cloudy	50
21-Mar-17	12:00	Cloudy	47
27-Mar-17	9:00	Sunny	25
27-Mar-17	10:00	Sunny	27
27-Mar-17	11:00	Sunny	28
		Average	80.7
		Maximum	181.9
		Minimum	25.0

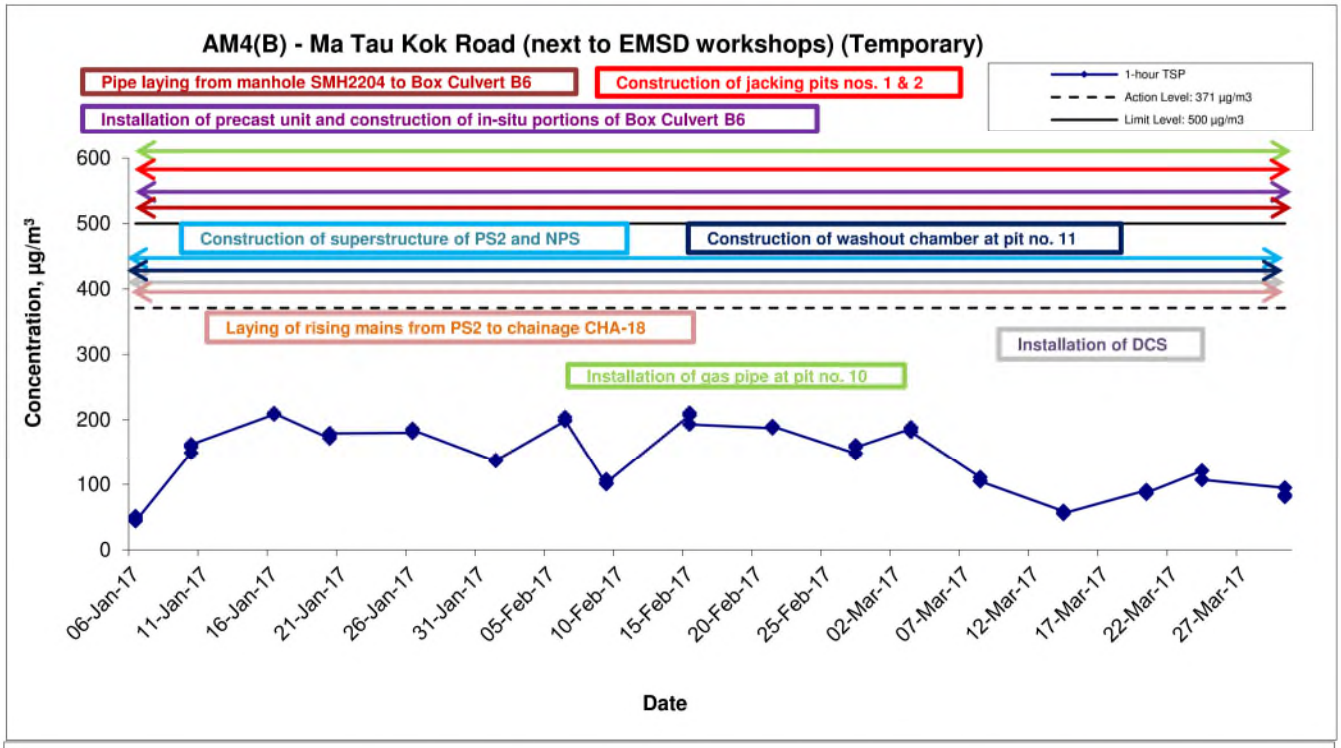
1-hr TSP Concentration Levels

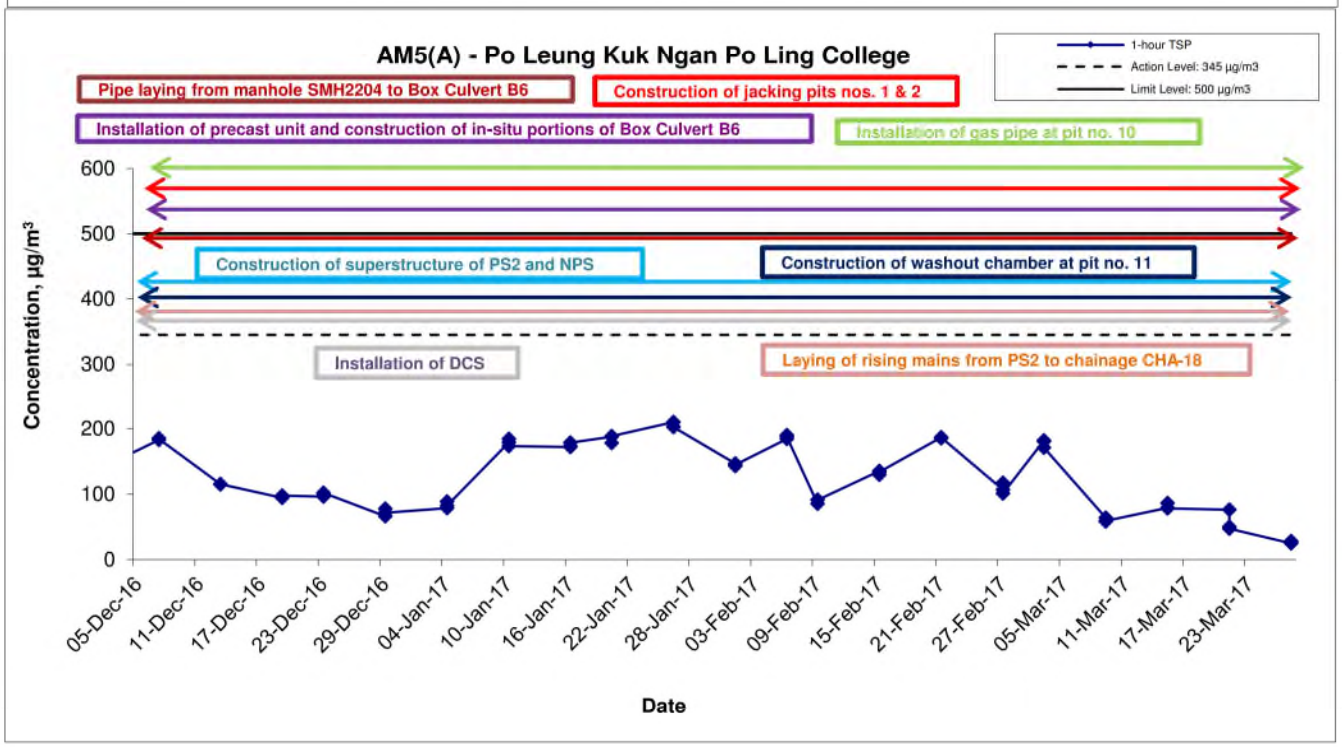




Title: Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S Date: Mar 17	Project No.: MA13056 Appendix: E	CINOTECH

1-hr TSP Concentration Levels





Title	Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area	Scale N.T.S	Project No. MA13056	CINOTECH
	Graphical Presentation of 1-hour TSP Monitoring Results	Date Mar 17	Appendix E	

APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix F - 24-hour TSP Monitoring Results

Location AM2 - Lee Kau Yan Memorial School

Start Date	Weather Condition	Conc. ($\mu g/m^3$)
2-Mar-17	Sunny	118.2
8-Mar-17	Cloudy	75.4
14-Mar-17	Cloudy	31
20-Mar-17	Cloudy	55
24-Mar-17	Sunny	62
28-Mar-17	Cloudy	64
	Min	31.0
	Max	118.2
	Average	67.6

Location AM3(A) - Holy Trinity Bradbury Centre

Start Date	Weather Condition	Conc. ($\mu g/m^3$)
2-Mar-17	Sunny	135.3
8-Mar-17	Cloudy	81.6
14-Mar-17	Cloudy	49
20-Mar-17	Cloudy	86
24-Mar-17	Sunny	125
30-Mar-17	Cloudy	99
	Min	49.0
	Max	135.3
	Average	96.0

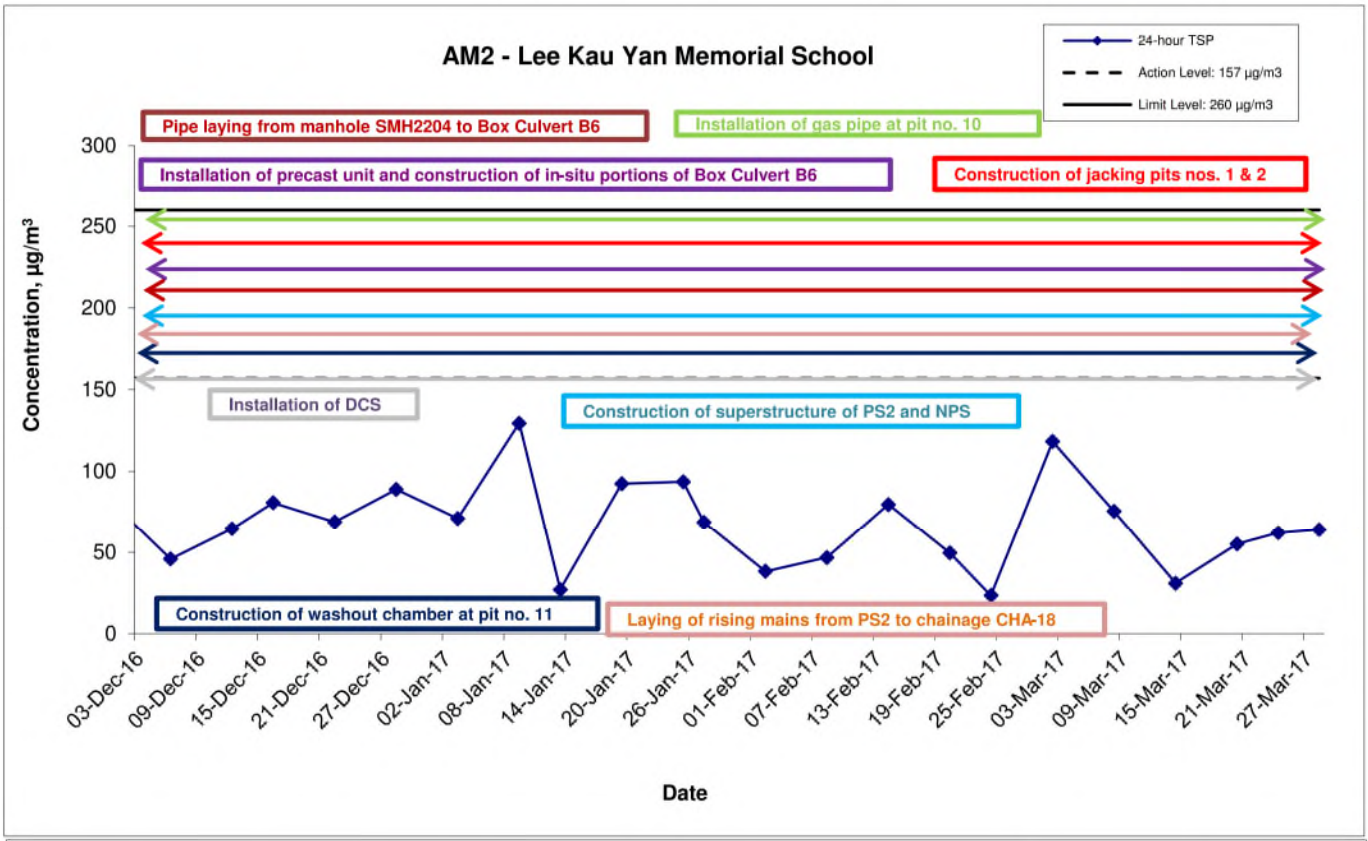
Location AM4(C) - New Pumping Station

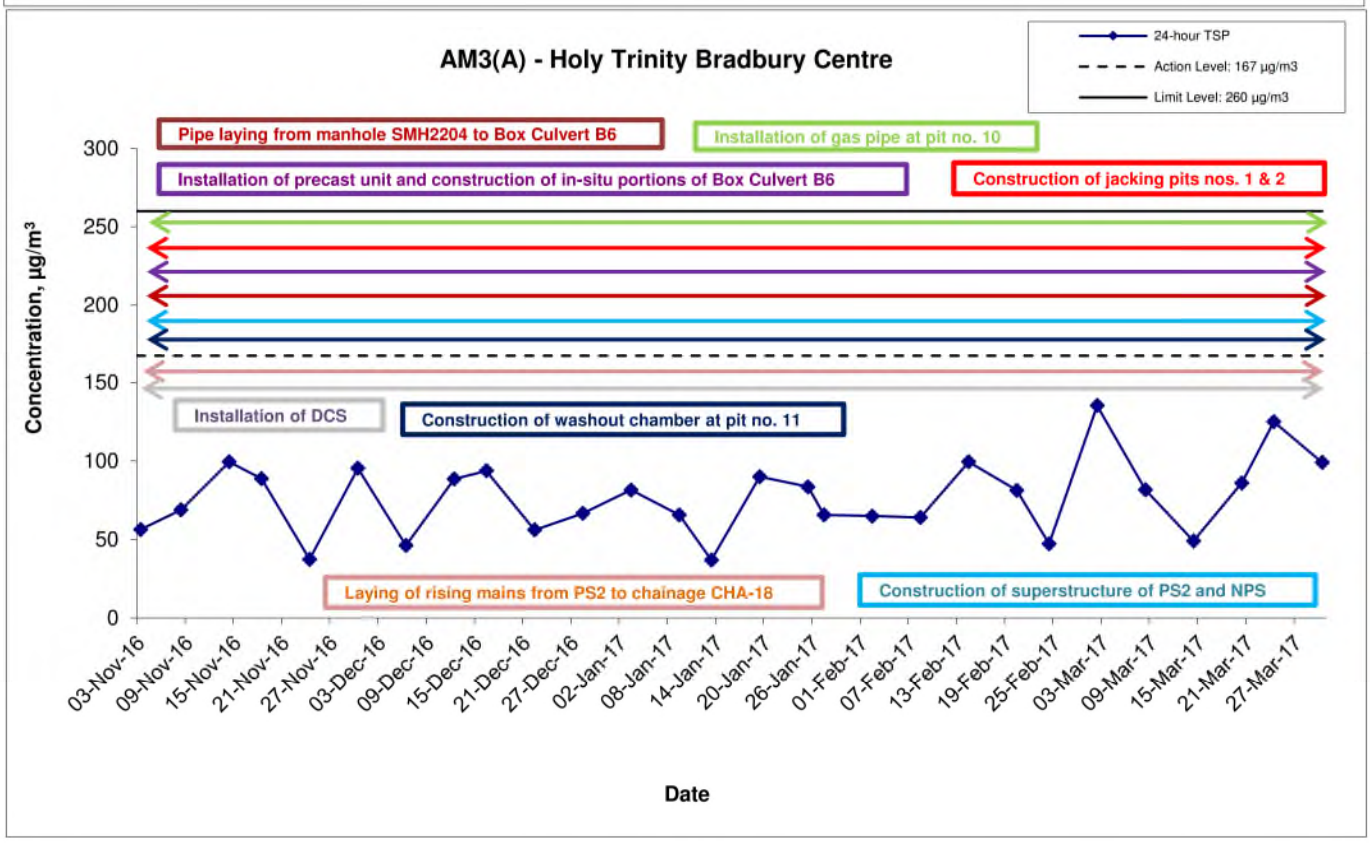
Start Date	Weather Condition	Total vol. (m^3)
14-Mar-17	Cloudy	38
20-Mar-17	Cloudy	95
24-Mar-17	Sunny	133
30-Mar-17	Cloudy	85
	Min	38.0
	Max	133.0
	Average	87.8

Location AM5(A) - Po Leung Kuk Ngan Po Ling College

Start Date	Weather Condition	Conc. ($\mu g/m^3$)
2-Mar-17	Sunny	60.3
8-Mar-17	Cloudy	43.2
	Min	43.2
	Max	60.3
	Average	51.8

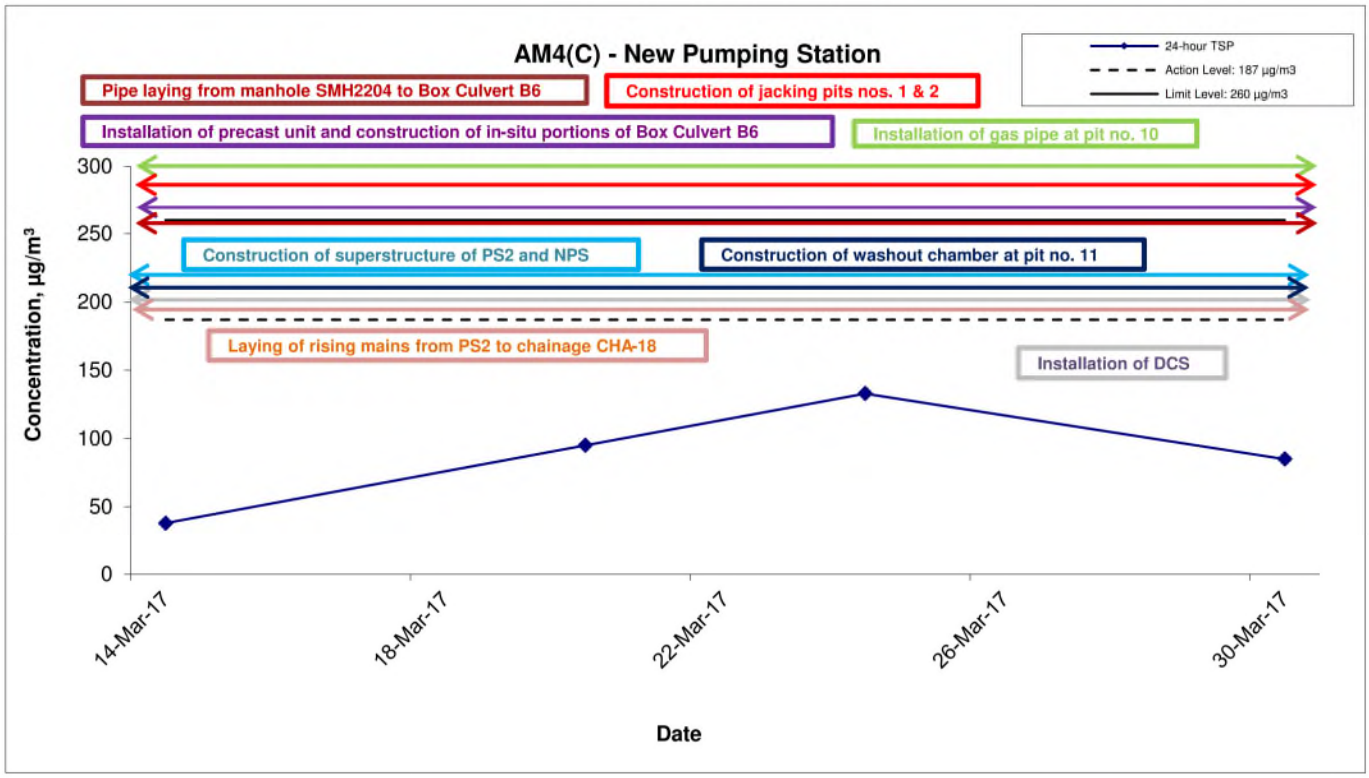
24-hr TSP Concentration Levels

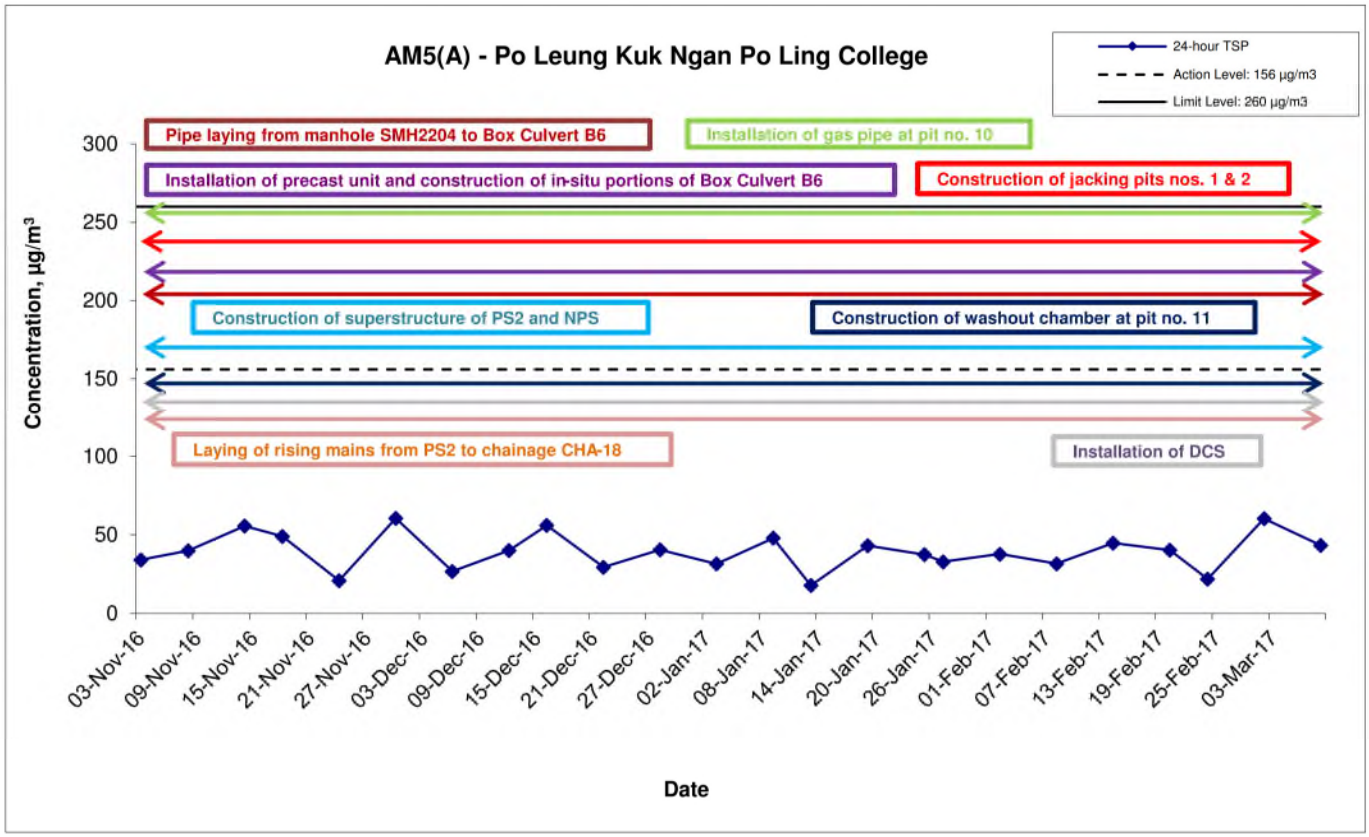




Title: Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Mar 17	Project No.: MA13056 Appendix: F	CINOTECH

24-hr TSP Concentration Levels





Title: Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Mar 17	Project No.: MA13056 Appendix: F	CINOTECH

APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix G - Noise Monitoring Results

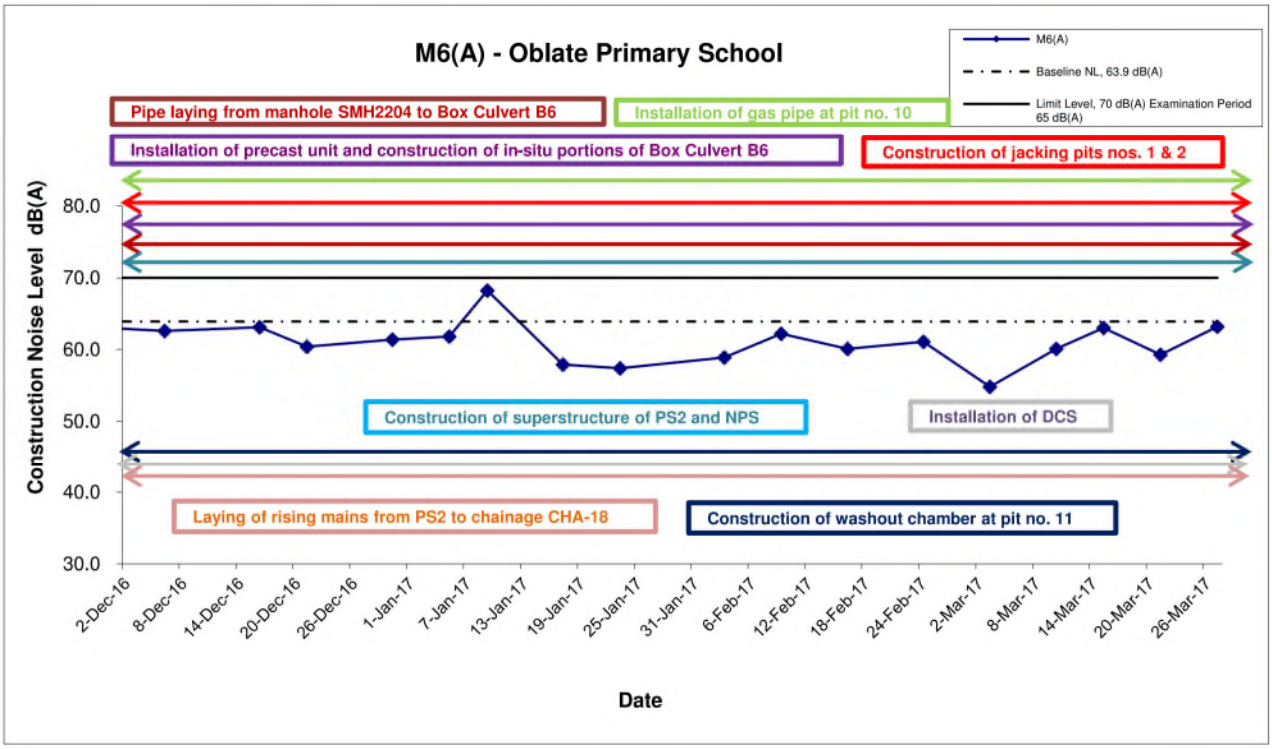
Location M6(A) - Oblate Primary School							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
3-Mar-17	14:30	Sunny	64.4	69.5	60.1	63.9	54.8
10-Mar-17	14:00	Cloudy	60.1	68.2	56.3		60.1
15-Mar-17	11:30	Cloudy	66.5	70.8	57.9		63.0
21-Mar-17	15:05	Cloudy	59.3	60.2	56.1		59.3
27-Mar-17	14:00	Sunny	63.2	65.3	59.7		63.2

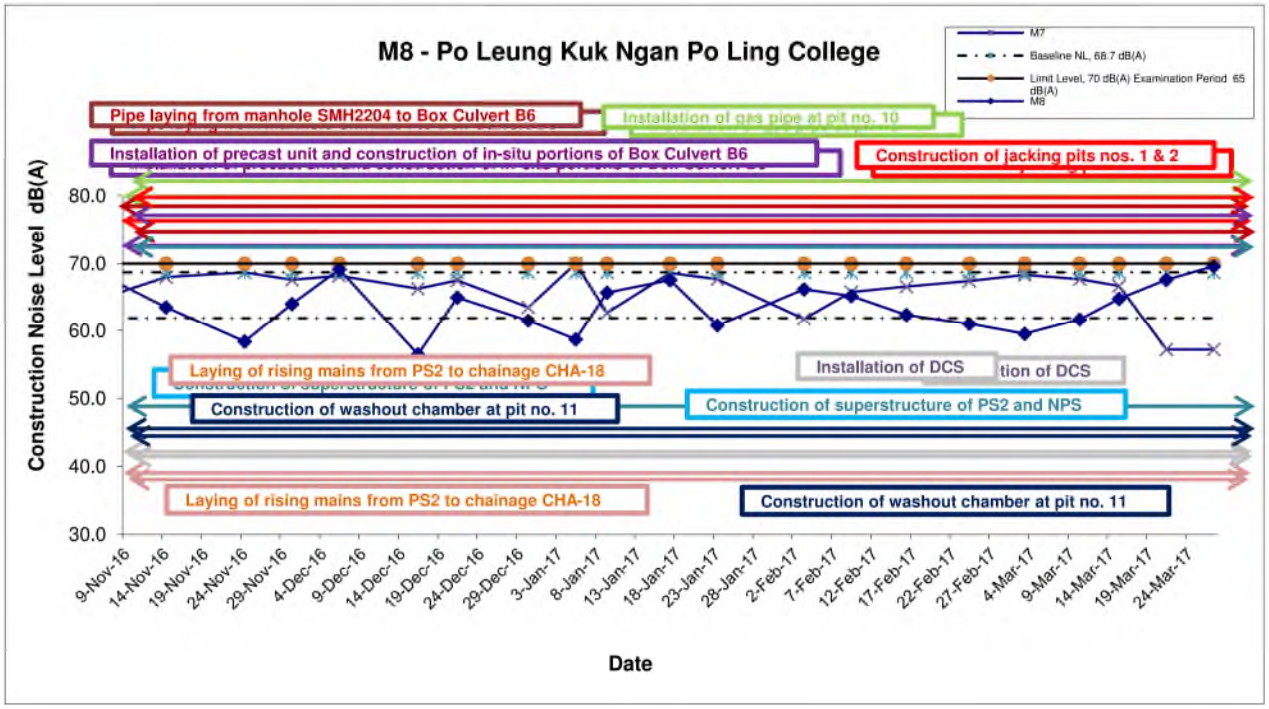
Location M7 - CCC Kei To Secondary School							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
3-Mar-17	13:30	Sunny	68.3	69.9	66.1	68.7	68.3 Measured ≦ Baseline
10-Mar-17	13:10	Cloudy	67.7	70.1	62.8		67.7 Measured ≦ Baseline
15-Mar-17	10:40	Cloudy	66.7	70.0	61.8		66.7 Measured ≦ Baseline
21-Mar-17	14:10	Cloudy	69.0	72.2	61.4		57.2
27-Mar-17	13:15	Sunny	69.0	71.1	65.9		57.2

Location M8 - Po Leung Kuk Ngan Po Ling College							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
9-Mar-17	10:45	Cloudy	67.0	68.6	61.5	61.9	65.4
15-Mar-17	10:00	Cloudy	64.8	67.7	61.5		61.7
21-Mar-17	10:40	Cloudy	64.4	66.0	61.7		60.8
27-Mar-17	15:45	Sunny	66.7	68.8	62.5		65.0

Location M9 - Tak Long Estate							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
2-Mar-17	9:10	Sunny	73.2	75.1	70.4	59.9	73.0
8-Mar-17	11:45	Cloudy	67.1	65.3	59.2		66.2
14-Mar-17	13:30	Cloudy	64.1	66.1	61.6		62.0
20-Mar-17	11:30	Cloudy	64.0	65.4	61.3		61.9
30-Mar-17	10:45	Cloudy	62.6	64.2	60.3		59.3

Noise Levels

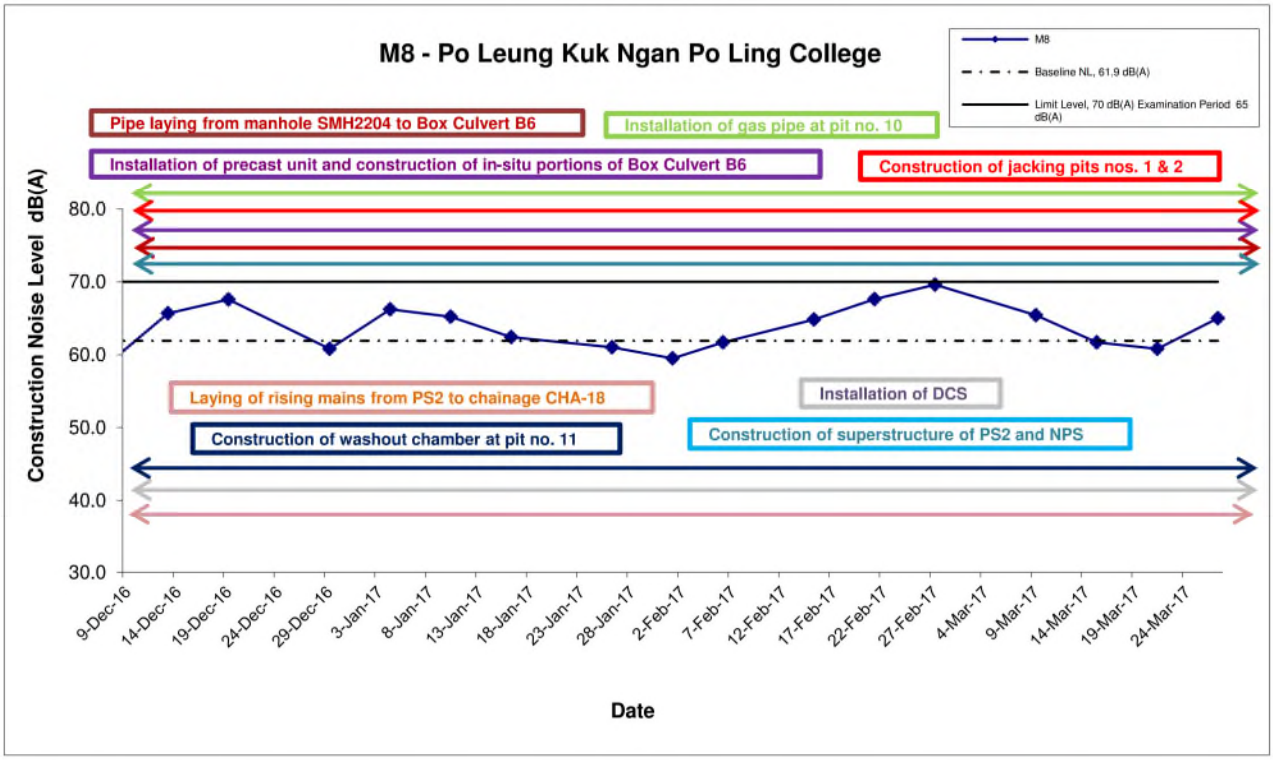


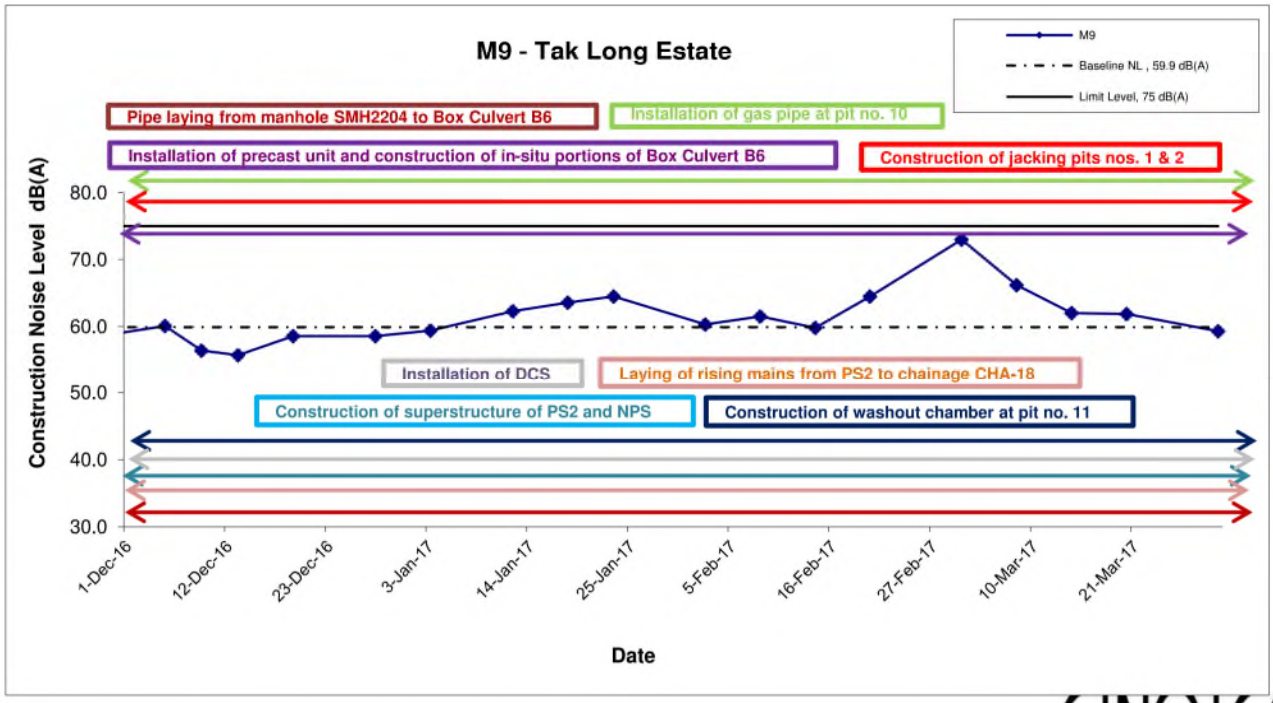


Remarks: The construction noise levels in the Tables in Appendix G were adopted for plotting the graphs

Title: Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S	Project No.: MA13056	CINOTECH
	Date: Mar 17	Appendix: G	

Noise Levels





CINOTECH

Remarks: The construction noise levels in the Tables in Appendix G were adopted for plotting the graphs

Title: Contract No. KL/2012/03 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S	Project No.: MA13056	
	Date: Mar 17	Appendix: G	

APPENDIX H
SUMMARY OF EXCEEDANCE

Contract No. KL/2012/03
Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area

Appendix H – Summary of Exceedance

Exceedance Report for Contract No. KL/2012/03

(A) Exceedance Report for Air Quality
(NIL in the reporting month)

(B) Exceedance Report for Construction Noise
(NIL in the reporting month)

(C) Exceedance Report for Landscape and Visual
(NIL in the reporting month)

APPENDIX I
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170303
Date	3 March 2017
Time	10:00-12:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
170303-O01	• Muddy sewage should be treated before discharge at Pit 2.	B 3i
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170222), all environmental deficiencies were improved/rectified during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		3 March 2017
Checked by	Dr. Priscilla Choy		3 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170310
Date	10 March 2017
Time	10:00-12:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170310-R01	• Stockpile of dusty material should be properly covered. (near PS2)	C 7
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
170310-R02	• Oil stain should be properly cleared as chemical waste. (near PS2)	E 8
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170303), all environmental deficiencies were improved/rectified during the site inspection.	

	Name	Signature	Date
Recorded by	KC Chung	Chung	10 March 2017
Checked by	Dr. Priscilla Choy		10 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170317
Date	17 March 2017
Time	10:00-12:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170317-R01	• Stockpile of dusty material should be properly covered. (near PS2)	C 7
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
170317-R02	• General refuse should be disposed of regularly. (near Contractor's office)	E 1iii
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170310), item 170310-R01 was remarked as 170317-R01.	

	Name	Signature	Date
Recorded by	Carrie Leung		17 March 2017
Checked by	Dr. Priscilla Choy		17 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170322
Date	22 March 2017
Time	14:00-17:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
170322-R01	• Oil stain should be cleared.	E 8
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170317), all environmental deficiencies were improved/rectified during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		22 March 2017
Checked by	Dr. Priscilla Choy		22 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170303
Date	3 March 2017
Time	10:00-12:00

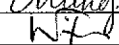
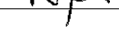
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170222), no major environmental deficiencies were observed during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		3 March 2017
Checked by	Dr. Priscilla Choy		3 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170310
Date	10 March 2017
Time	10:00-12:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170303), no major environmental deficiencies were observed during the site inspection.	

	Name	Signature	Date
Recorded by	KC Chung		10 March 2017
Checked by	Dr. Priscilla Choy		10 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170317
Date	17 March 2017
Time	10:00-12:00

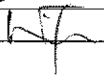
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170310), no major environmental deficiencies were observed during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		17 March 2017
Checked by	Dr. Priscilla Choy		17 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170322
Date	22 March 2017
Time	14:00-17:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170317), no major environmental deficiencies were observed during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		22 March 2017
Checked by	Dr. Priscilla Choy		22 March 2017

APPENDIX J
EVENT ACTION PLANS

Appendix J - Event Action Plans

Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ction Level being xceeded by ne sampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contactor, IEC and ER; 3. Repeat measurement to confirm finding.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
ction Level being xceeded by wo or more onsecutive ampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contractor, IEC and ER; 3. Increase monitoring frequency to daily; 4. Discuss with IEC and Contractor on remedial actions required; 5. Assess the effectiveness of Contractor's remedial actions; 6. If exceedance continues, arrange meeting with IEC and ER; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise implementation of remedial measures; 5. Conduct meeting with ET and IEC if exceedance continues.	1. Discuss with ET and IEC on prope remedial actions; 2. Submit proposals for remedial actions to ER and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
imit Level being xceeded by ne sampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contractor, IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Assess effectiveness of Contractor's remedial actions and keep	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures;	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be	1. Take immediate action to avoid further exceedance; 2. Discuss with ET and IEC on prope remedial actions; 3. Submit proposals for remedial actions to ER and IEC within three

Appendix J - Event Action Plans

	EPD, IEC and ER informed of the results.	4. Advise the ER on the effectiveness of the proposed remedial measures.	implemented; 4. Supervise implementation of remedial measures; 5. Conduct meeting with ET and IEC if exceedance continues.	working days of notification; 4. Implement the agreed proposals.
imit Level being xceeded by wo or more onsecutive ampling	1. Notify IEC, ER, Contractor and EPD; 2. Repeat measurement to confirm findings; 3. Carry out analysis of Contractor's working procedures to identify source and investigate the causes of exceedance; 4. Increase monitoring frequency to daily; 5. Arrange meeting with IEC, ER and Contractor to discuss the remedial actions to be taken; 6. Assess effectiveness of Contractor's remedial actions and keep EPD, IEC and ER informed of the results; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Discuss with ET, ER and IEC on proper remedial actions; 3. Submit proposals for remedial actions to IEC within three working days of notification; 4. Implement the agreed proposals; 5. Submit further remedial actions if problem still not under control; 6. Stop the relevant portion of works as instructed by the ER until the exceedance is abated.

Appendix J - Event Action Plans

Event/Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ction Level eing xceeded	1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals. (The above actions should be taken within 2 working days after the exceedance is identified)
imit Level eing xceeded	1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance;	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals;

	5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. (The above actions should be taken within 2 working days after the exceedance is identified)	(The above actions should be taken within 2 working days after the exceedance is identified)	measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified)	4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified)

Appendix J - Event Action Plans

Event/Action Plan for Landscape and Visual

EVENT ACTION LEVEL	ACTION			
	ET	IEC	ER	CONTRACTOR
Design Check	1. Check final design conforms to the requirements of EP and prepare report.	1. Check report. 2. Recommend remedial design if necessary	1. Undertake remedial design if necessary	
Non-conformity on one occasion	1. Identify Source 2. Inform IEC and ER 3. Discuss remedial actions with IEC, ER and Contractor 4. Monitor remedial actions until rectification has been completed	1. Check report 2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures. 5. Check implementation of remedial measures.	1. Notify Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source Inform IEC and	1. Check monitoring report	1. Notify Contractor 2. Ensure remedial measures are properly	1. Amend working methods 2. Rectify damage and

	ER 2. Increase monitoring frequency 3. Discuss remedial actions with IEC, ER and Contractor 4. Monitor remedial actions until rectification has been completed 5. If non-conformity stops, cease additional monitoring	2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures.	implemented	undertake any necessary replacement

APPENDIX K
ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

Appendix K - Summary of Implementation Schedule of Mitigation Measures for Construction Phase

Types of Impacts	Mitigation Measures	Status
Construction Dust	8 times daily watering of the work site with active dust emitting activities.	^
	Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. The following mitigation measures, good site practices and a comprehensive dust monitoring and audit programme are recommended to minimize cumulative dust impacts.	
	• Stockpiling site(s) should be lined with impermeable sheeting and bunded. Stockpiles should be fully covered by impermeable sheeting to reduce dust emission.	^
	• Misting for the dusty material should be carried out before being loaded into the vehicle.	^
	• Any vehicle with an open load carrying area should have properly fitted side and tail boards.	^
	• Material having the potential to create dust should not be loaded from a level higher than the side and tail boards and should be dampened and covered by a clean tarpaulin.	^
	• The tarpaulin should be properly secured and should extent at least 300 mm over the edges of the sides and tailboards. The material should also be dampened if necessary before transportation.	^
	• The vehicles should be restricted to maximum speed of 10 km per hour and confined haulage and delivery vehicle to designated roadways insider the site. On-site unpaved roads should be compacted and kept free of lose materials.	^
	• Vehicle washing facilities should be provided at every vehicle exit point.	*
	• The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.	^
	• Every main haul road should be scaled with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet.	^
	• Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the three sides.	^
	• Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.	^

Construction Noise	Use of quiet PME, movable barriers barrier for Asphalt Paver, Breaker, Excavator and Hand-held breaker and full enclosure for Air Compressor, Bar Bender, Concrete Pump, Generator and Water Pump	^
	Good Site Practice: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.	^
	• Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program.	N/A(1)
	• Mobile plant, if any, should be sited as far away from NSRs as possible.	^
	• Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum.	^
	• Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.	^
	• Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	^
	Scheduling of Construction Works during School Examination Period	^
	(i) Provision of low noise surfacing in a section of Road L2; and	N/A
	(ii) Provision of structural fins	N/A
	(i) Avoid the sensitive façade of class room facing Road L2 and L4; and	N/A
	(ii) Provision of low noise surfacing in a section of Road L2 & L4	N/A
	(i) Provision of low noise surfacing in a section of Road L4 before occupation of Site 1I1; and	N/A
	(ii) Setback of building about 5m from site boundary.	N/A
	Setback of building about 35m to the northwest direction at 1L3 and 5m at Site 1L2.	N/A
	(i) avoid any sensitive façades with openable window facing the existing Kowloon City Road network; and	N/A
	(ii) for the sensitive facades facing the To Kwa Wan direction, either setback the facades by about 5m to the northeast direction or do not provide the facades with openable window.	N/A

	(i) avoid any sensitive facades with openable window facing the existing To Kwa Wan Road or (ii) provision of 17.5m high noise tolerant building fronting To Kwa Wan Road and restrict the height of the residential block(s) located at less than 55m away from To Kwa Wan Road to no more than 25m above ground. (i) avoid any sensitive facades with openable window facing the slip road connecting Prince Edward Road East and San Po Kong or other alternative mitigation measures and at-source mitigation measures for the surrounding new local roads to minimise the potential traffic noise impacts from the slip road	N/A N/A N/A
	All the ventilation fans installed in the below will be provided with silencers or acoustics treatment. (i) SPS (ii) ESS (iii) Tunnel Ventilation Shaft (iv) EFTS depot Installation of retractable roof or other equivalent measures	N/A N/A N/A N/A N/A
Construction Water Quality	The following mitigation measures are proposed to be incorporated in the design of the SPS at KTD, including: • Dual power supply or emergency generator should be provided at all the SPSs to secure electrical power supply; • Standby pumps should be provided at all SPSs to ensure smooth operation of the SPS during maintenance of the duty pumps; • An alarm should be installed to signal emergency high water level in the wet well at all SPSs; and • For all unmanned SPSs, a remote monitor system connecting SPSs with the control station through telemetry system should be provided so that swift actions could be taken in case of malfunction of unmanned facilities. <u>Land-based Construction</u> *Construction Runoff* Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: • use of sediment traps • adequate maintenance of drainage systems to prevent flooding and overflow	N/A N/A N/A N/A ^ ^ ^

	Construction site should be provided with adequately designed perimeter channel and pre-treatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles 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.	^
	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	^
	Sediment tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m^3 capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	^
	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50 m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	^
	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.	^
	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, 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.	^
	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	^

	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 located wheel washing bay should be provided at every site exit, and 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.	*
	Drainage	
	It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There should be no direct discharge of effluent from the site into the sea.	^
	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	^
	All fuel tanks and storage areas should be provided with locks and be located 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 the coastal waters of the Victoria Harbour WCZ.	^
	Sewage Effluent	
	Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets should be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor should also be responsible for waste disposal and maintenance practices.	^
	Stormwater Discharges	
	Minimum distances of 100 m should be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes	N/A

	Debris and Litter In order to maintain water quality in acceptable conditions with regard to aesthetic quality, contractors should be required, under conditions of contract, to ensure that site management is optimised and that disposal of any solid materials, litter or wastes to marine waters does not occur	^
	Construction Works at or in Close Proximity of Storm Culvert or Seafront The proposed works should preferably be carried out within the dry season where the flow in the drainage channel /storm culvert/ nullah is low.	^
	The use of less or smaller construction plants may be specified to reduce the disturbance to the bottom sediment at the drainage channel /storm culvert / nullah.	^
	Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works.	^
	Stockpiling of construction materials and dusty materials should be covered and located away from any water courses.	^
	Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers.	^
	Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable.	^
	Mitigation measures to control site runoff from entering the nearby water environment should be implemented to minimize water quality impacts. Surface channels should be provided along the edge of the waterfront within the work sites to intercept the runoff.	^
	Construction effluent, site run-off and sewage should be properly collected and/or treated.	^
	Any works site inside the storm water courses should be temporarily isolated, such as by placing of sandbags or silt curtains with lead edge at bottom and properly supported props to prevent adverse impact on the storm water quality.	^
	Silt curtain may be installed around the construction activities at the seafront to minimize the potential impacts due to accidental spillage of construction materials.	^
	Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert/drainage channel/sea.	^

	Supervisory staff should be assigned to station on site to closely supervise and monitor the works	^
	Marine water quality monitoring and audit programme shall be implemented for the proposed sediment treatment operation.	^
	Good Site Practices It is not anticipated that adverse waste management related impacts would arise, provided that good site practices are adhered to. Recommendations for good site practices during construction activities include:	
	• Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site	^
	• Training of site personnel in proper waste management and chemical waste handling procedures	^
	• Provision of sufficient waste disposal points and regular collection for disposal	^
	• Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers	^
	• A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites)	^
	Waste Reduction Measures Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:	
	• Sort C&D waste from demolition of the remaining structures to recover recyclable portions such as metals	^
	• 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	^
	• Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force	^
	• Any unused chemicals or those with remaining functional capacity should be recycled	^
	• Proper storage and site practices to minimise the potential for damage or contamination of construction materials	^

	Construction and Demolition Material Mitigation measures and good site practices should be incorporated into contract document to control potential environmental impact from handling and transportation of C&D material. The mitigation measures include: • Where it is unavoidable to have transient stockpiles of C&D material within the Project work site pending collection for disposal, the transient stockpiles should be located away from waterfront or storm drains as far as possible • Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric • Skip hoist for material transport should be totally enclosed by impervious sheeting • Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site • The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores • The load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle • All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet • The height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading When delivering inert C&D material to public fill reception facilities, the material should consist entirely of inert construction waste and of size less than 250mm or other sizes as agreed with the Secretary of the Public Fill Committee. In order to monitor the disposal of the surplus C&D material at the designed public fill reception facility and to control fly tipping, a trip-ticket system as stipulated in the ETWB TCW No. 31/2004 "Trip Ticket System for Disposal of Construction and Demolition Materials" should be included as one of the contractual requirements and implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. An Independent Environmental Checker should be responsible for auditing the results of the system. Chemical Waste After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Spent chemicals should be collected by a licensed collector for disposal at the CWTF or other licensed facility, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*	^ ^ ^ ^ ^ ^ ^ ^ ^

	General Refuse General refuse should be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Effective collection and storage methods (including enclosed and covered area) of site wastes would be required to prevent waste materials from being blown around by wind, wastewater discharge by flushing or leaching into the marine environment, or creating odour nuisance or pest and vermin problem	^
Landscape and Visual	CM1 All existing trees should be carefully protected during construction. CM2 Trees unavoidably affected by the works should be transplanted where practical. Detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBC 2/2004 and 3/2006. Final locations of transplanted trees should be agreed prior to commencement of the work. CM3 Control of night-time lighting. CM4 Erection of decorative screen hoarding.	^ N/A ^ ^

Remarks:	^ Compliance of mitigation measure;
	X Non-compliance of mitigation measure;
	N/A Not Applicable at this stage; N/A(1) Not observed;
	• Non-compliance but rectified by the contractor;
	* Recommendation was made during site audit but improved/rectified by the contractor.

APPENDIX L
SUMMARIES OF ENVIRONMENTAL COMPLAINT, WARNING, SUMMON AND NOTIFICATION OF SUCCESSFUL PROSECUTION

Contract No. KL/2012/03

Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area

Appendix L – Summary of environmental complaint, warning, summon and notification of successful prosecution

Reporting Month: March 2017

Warnings / Summons and Successful Prosecutions received in the reporting month

Log Ref.	Received Date	Details of Warning / Summons and Successful Prosecutions	Investigation/Mitigation Action	Status
N/A	N/A	N/A	N/A	N/A

Remarks: No warning/summon and prosecution were received in the reporting period.

Complaint Log

EPD Complaint Ref No.	Date of Complaint	Complaint Details	Investigation / Mitigation Action	Status
15-14258	10/6/2015	Complainant said dust emission from the construction work affecting him/her. The stockpiles was not covered properly such that dust emission was observed. Some muddy water was found in To Kwa Wan Typhoon Shelter.	Complaint cases referred to the Contractor. Investigation conducted by the Contract ET. The investigation results showed that no major construction activities were conducted at the time of complaint on the day - 10th June 2015. Since no marine works or land-based construction activities near the To Kwa Wan Typhoon Shelter were conducted, muddy effluent discharged to the To Kwa Wan Typhoon Shelter is not anticipated. The regular impact air monitoring results in the first three weeks of June 2015 were in full compliance with the Action and Limit levels. No major environmental deficiencies were observed related to the air quality and water quality, and the deficiencies as mentioned in the complaint were not recorded during the site inspections.	Closed

APPENDIX M
GENERATED WASTE QUANTITY

APPENDIX IV

Monthly Summary Waste Flow Table

(PS Clause 1.86)

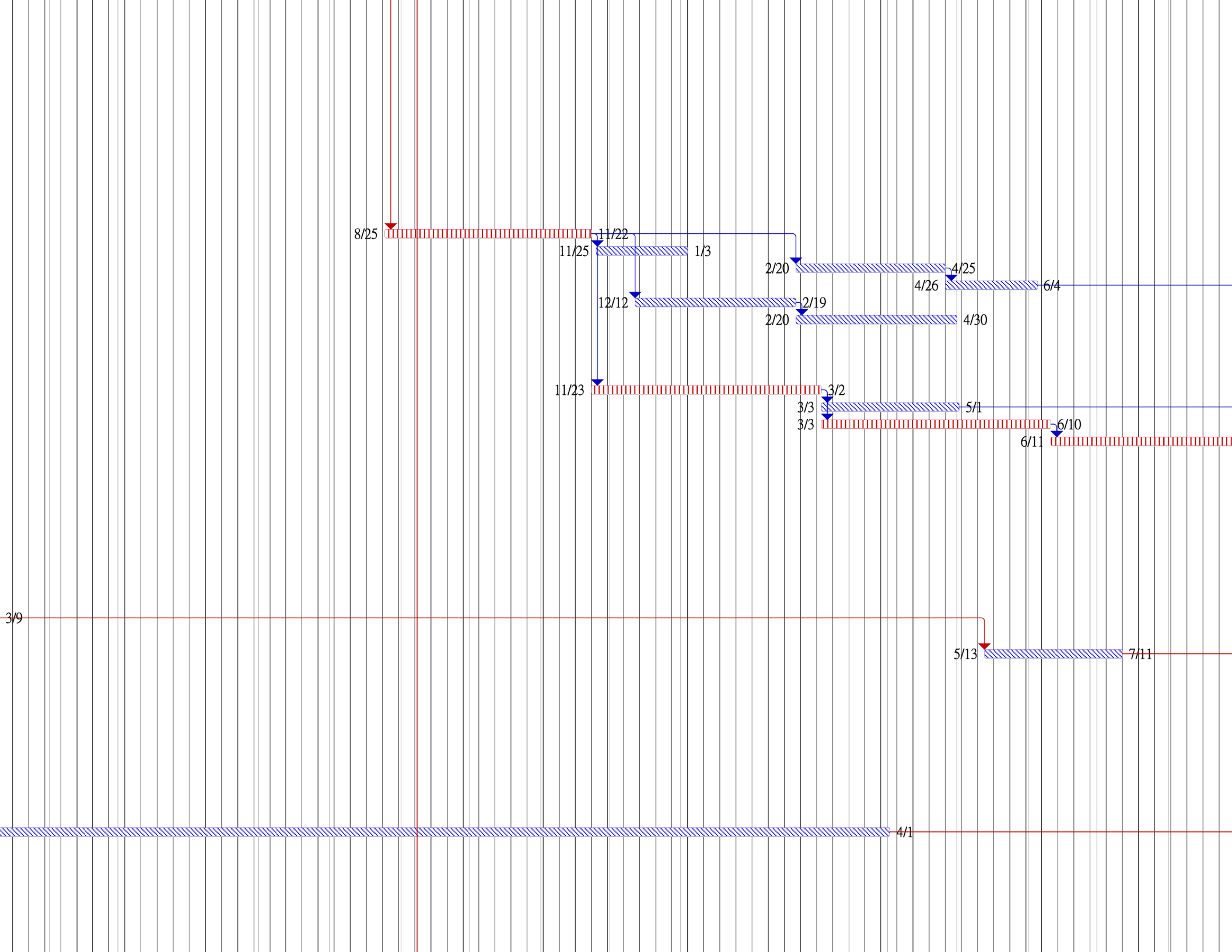
Name of Department: CEDD

Contract No. : KL/2012/03

Monthly Summary Waste Flow Table for March 2017 (year) (in tons)

Month	Total Disposal Loads	Total Quantity Generated	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Wastes Generated Monthly				
			Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
	(No.s)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)	(in tons)
2013 (Oct - Dec) Sub-Total	108	463.69	0	0	0	0	0	0	0	0	0	463.69
2014 (Jan – Dec) Sub-Total	24	16925.7	0	0	16798.93	83.66	1804.27	0	0	0	0	43.11
2015 (Jan – Dec) Sub-Total	284	81859.97	0	0	38291.91	43457.21	19920	0	0	0	0	310.26
2015 (Jan – Dec) Sub-Total	3369	50762.64	0	0	0	49894.67	4020	0	0	0	0	867.95
Jan-17	23	107.63	0	0	0	58.53	0	0	0	0	0	39.1
Feb-17	1227	18948.76	0	0	0	18898.13	0	0	0	0	0	50.63
Mar-17	307	4426.51	0	0	0	4379.15	0	0	0	0	0	157.74
Apr-17												
May-17												
Jun-17												
Jul-17												
Aug-17												
Sep-17												
Oct-17												
Nov-17												
Dec-17												
Total	5342	173494.9	0	0	55090.84	116771.35	25744.27	0	0	0	0	1932.48

APPENDIX N
CONSTRUCTION PROGRAMME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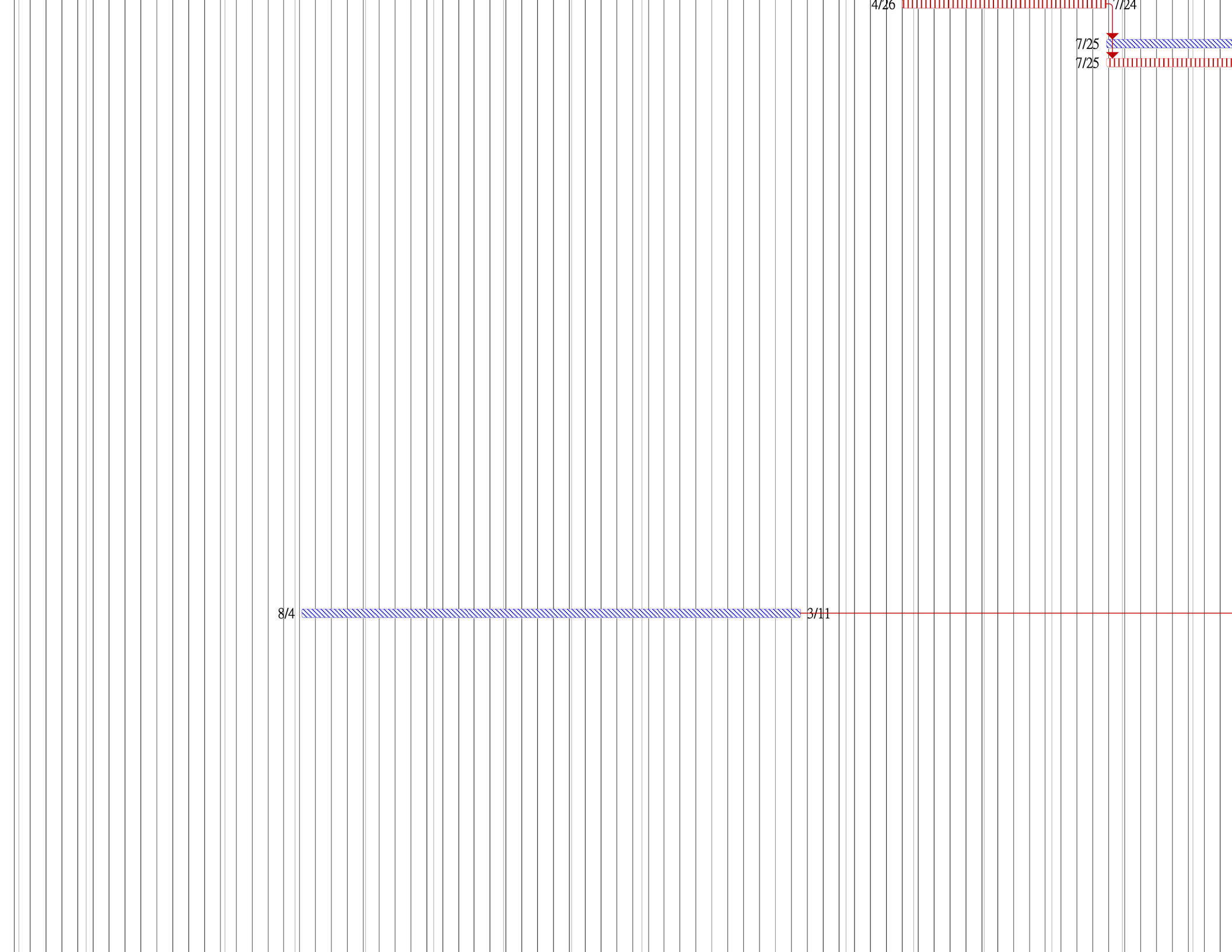
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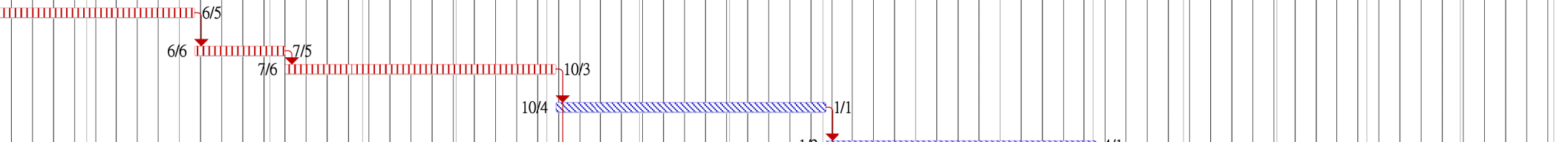
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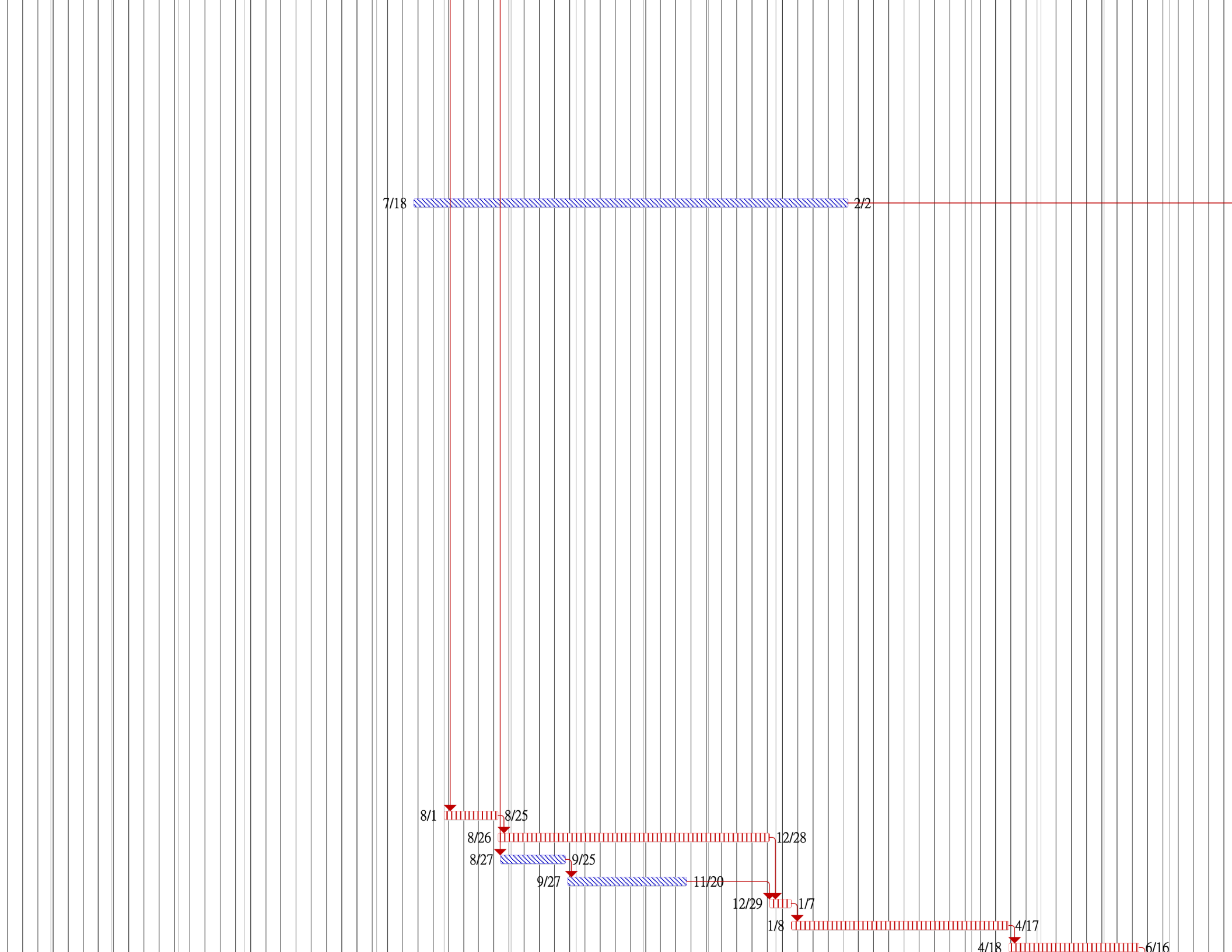
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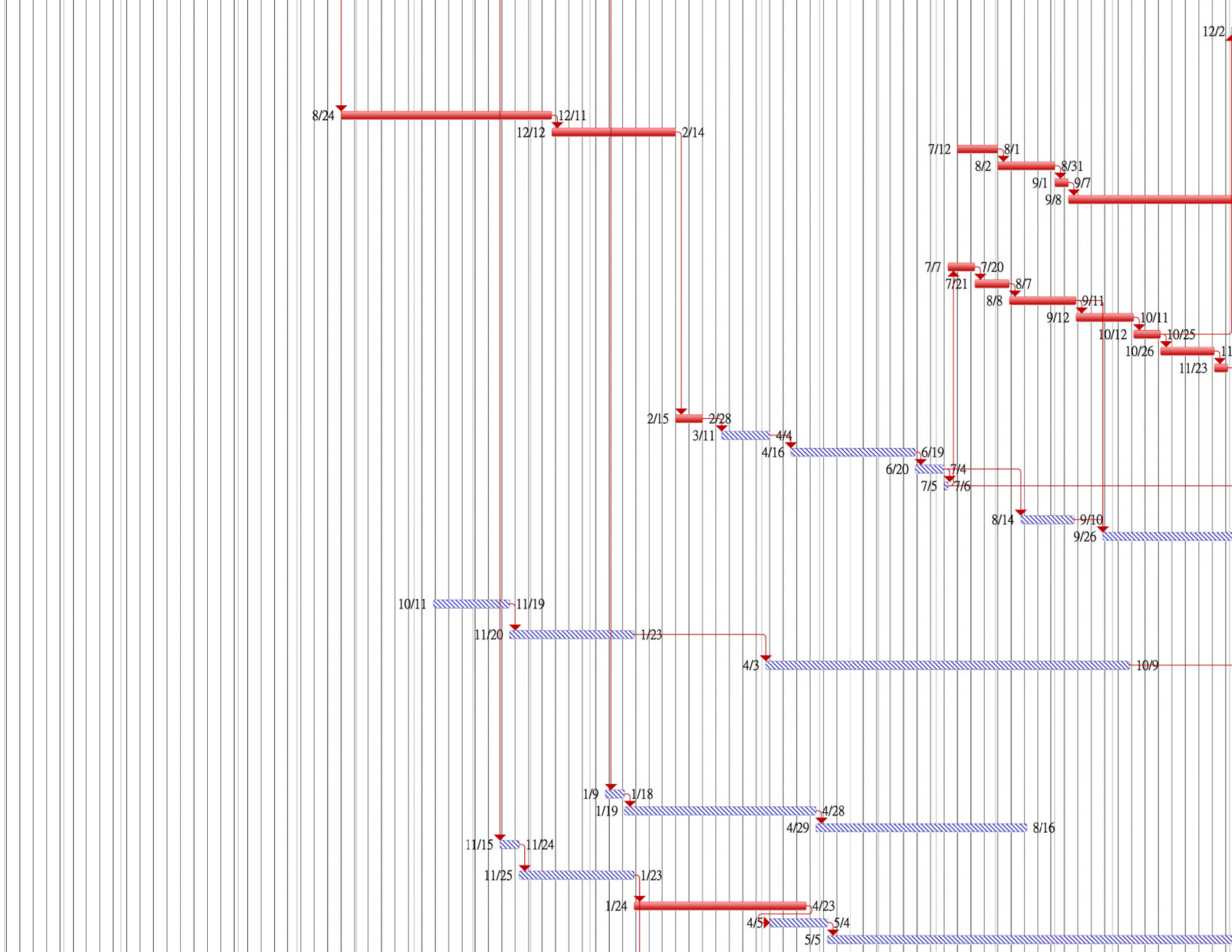
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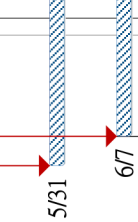
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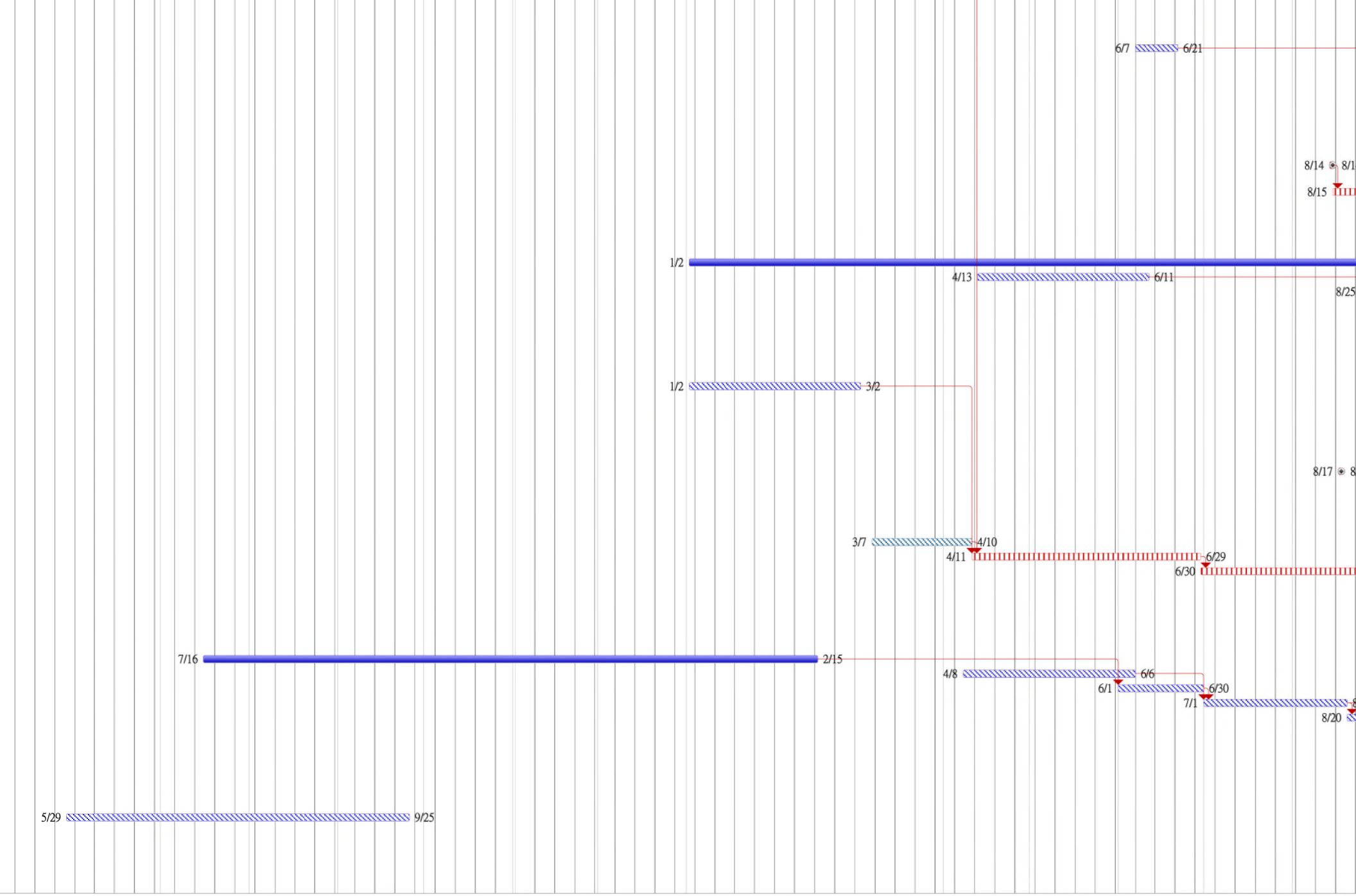
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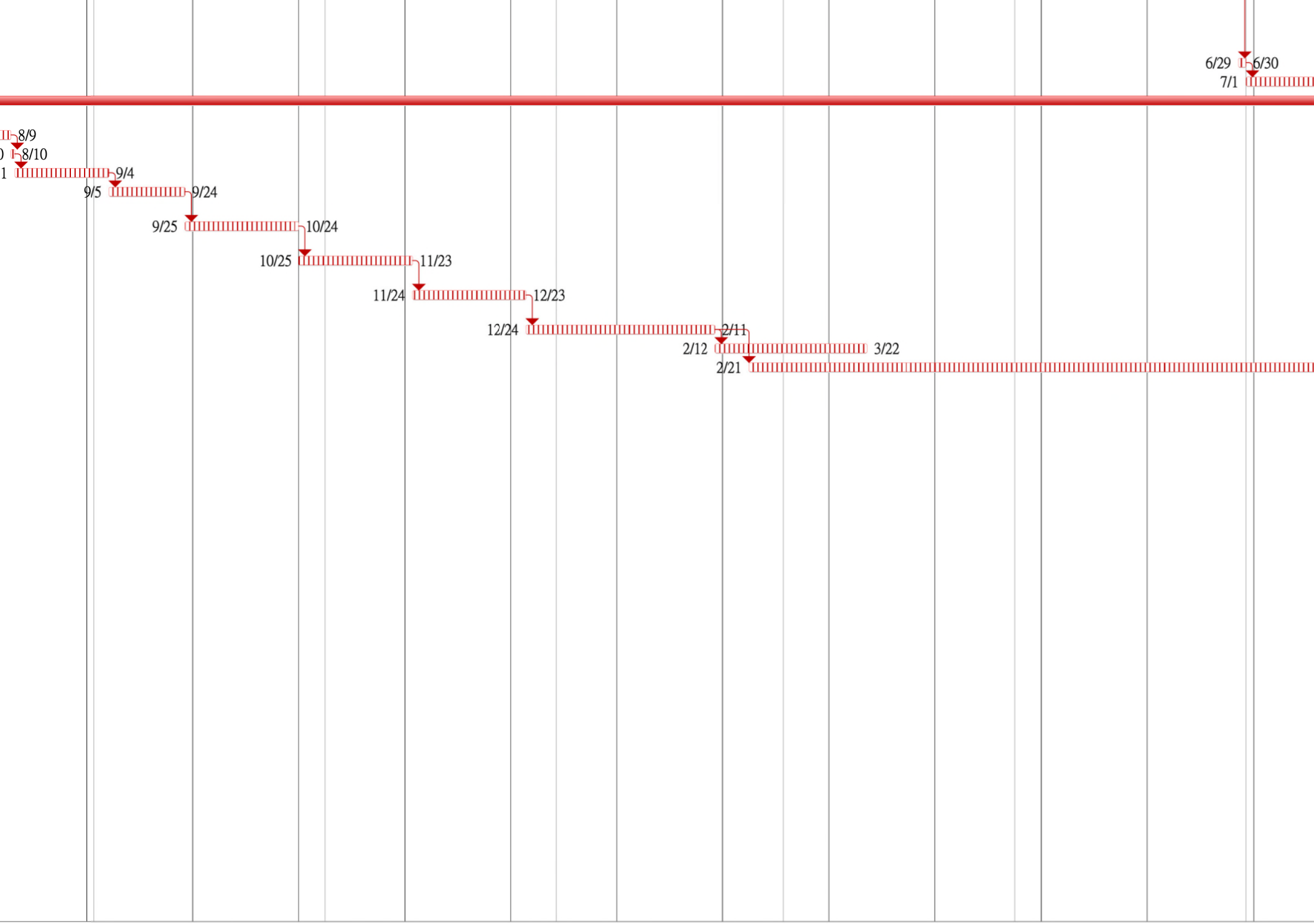
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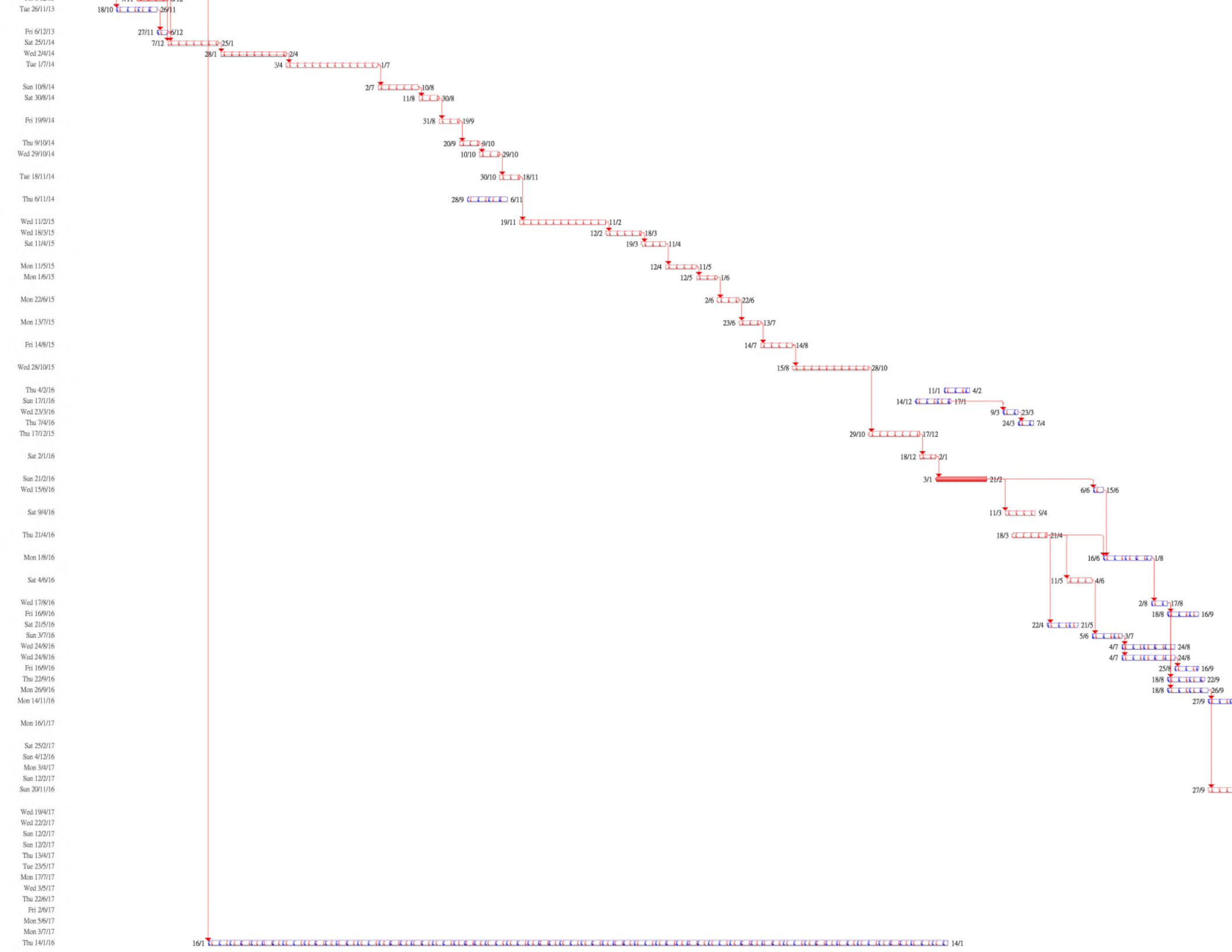
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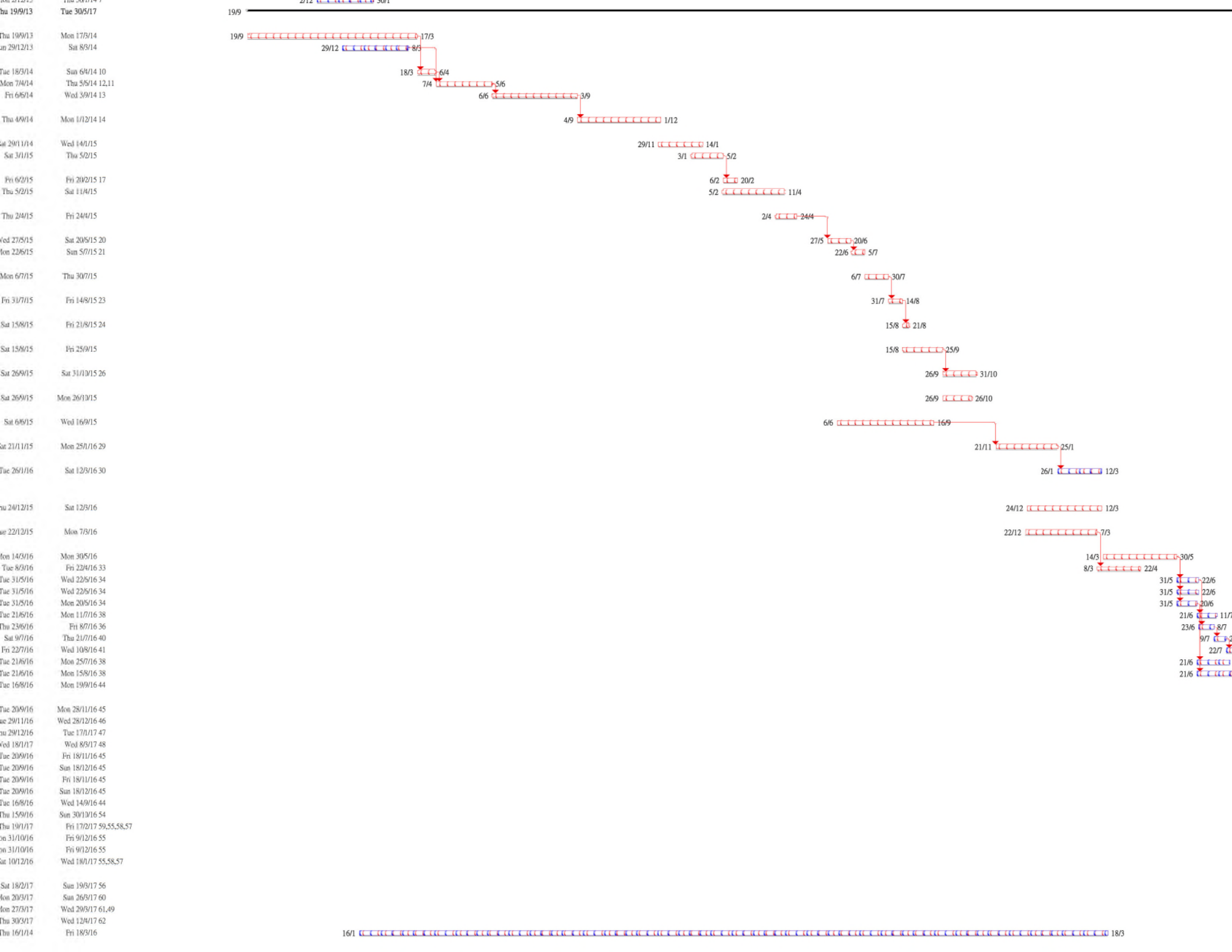
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Appendix C

Monthly EM&A Report
For
Contract No. KL/2014/01
Kai Tak Development - Stage 2 Infrastructure works for Developments at Southern Part of the Former Runway

Civil Engineering and Development Department

EP-337/2009 & EP-445/2013/A

Contract No. KL/2014/01

Kai Tak Development –
Stage 2 Infrastructure works for Developments at Southern Part of the Former Runway

Monthly EM&A Report
March 2017

(Version 1.0)

Approved By	(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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嘉誠管理顧問有限公司
Ka Shing management consultant Limited

Our ref: 6-4-2017

6 th April 2017

By email: clive.cheng@aecom-ktd.com and By post

Supervising Officer Representative
Aecom Asia Co Ltd.
8/F Grand Central Plaza Tower 2
138 Shatin Rural Committee Road
Sha Tin, N.T. Hong Kong
(Attn: Mr. Cheng Chi Hung)

Dear Mr. Cheng,

Re: Contract No. KL/2014/01 (Environmental Permit Nos. EP-337/2009 and EP-445/2013/A)
Kai Tak Development –Stage 2 Infrastructure Works for Developments at Southern Part of the Former Runway
Monthly EM&A report for March 2017

Reference is made to the Environmental Team's submission of the draft Monthly EM&A Report (version 1.0) for March 2017 provided to Independent Environmental Checker (IEC) via email dated on 3 rd April 2017 for review and comment.

Please be informed that IEC has no adverse comment on the captioned submission. IEC writes to verify the captioned submission in accordance with Specific Condition 2.2 of the Environmental Permit No. 337/2009 and 445/2013/A.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

Yours faithfully,
For and on behalf of
Ka Shing Management Consultant Limited

Dr. C.F. Ng
Independent Environmental Checker

c.c.	CEDD	Mr. Ronald Siu	(By email: ronaldsiu@cedd.gov.hk)
	AECOM	Mr. Anthony Lok	(By email: anthony.lok@aecom-ktd.com)
	CEC-CCC	Mr. Andrew Wong	(By email: andrew-wong@continental-engineering.com)
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EXECUTIVE SUMMARY

Introduction

1. This is the 12th Monthly Environmental Monitoring and Audit Report prepared by Cinotech Consultants Ltd. for "Contract No. KL/2014/01 - Kai Tak Development – Stage 2 Infrastructure Works for Developments at the Southern Part of the Former Runway" (Hereafter referred to as "the Project"). This contract work comprises two Schedule 2 designated projects (DP), namely the new distributor road D4(part) and roads D3A & D4A serving the planned KTD. The DPs are part of the designated projects under Environmental Permits (EP) No.: EP-337/2009 ("New distributor roads serving the planned Kai Tak Development") and EP-445/2013/A ("Kai Tak Development – Roads D3A & D4A") respectively. This report documents the findings of EM&A Works conducted from 1 – 31 March 2017.

2. With reference to the same principle of EIA report of the Project, no air quality monitoring station within 500m and noise monitoring station within 300m from the boundary of this Project are considered as relevant monitoring locations. In such regard, no relevant air quality and noise monitoring location are required for monitoring under the Project. The monitoring works for recommended monitoring stations in EM&A Manual of the DPs are conducted by Kai Tak Development (KTD) Schedule 3 Project.

3. The major site activities undertaken in the reporting month included:
   - Watermain works;
   - Construction of boundary wall at EPD recycling centre;
   - Bored piles and Pre-bored socketed H-piles;
   - TTA implementation at Shing Fung Road and Wang Chiu Road / Sheung Yee Road;
   - Open excavation for box culvert, piles caps and underpass;
   - ELS installation for box culvert and underpass; and
   - Construction of pile caps, sewer and manholes.

Environmental Monitoring Works

4. Environmental monitoring for the Project was performed in accordance with the EM&A Manual and the monitoring results were checked and reviewed. Site Inspections/Audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

5. Summary of the non-compliance in the reporting month for the Project is tabulated in Table I.

Table I Non-compliance Recorded for the Project in the Reporting Month

Parameter	No. of Project-related Exceedance		Action Taken
	Action Level	Limit Level	
Noise	0	0	N/A

Environmental Monitoring for Air Quality and Construction Noise

6. No monitoring for air quality and construction noise is required. No Action/Limit Level exceedance was recorded.

Environmental Licenses and Permits

7. Licenses/Permits granted to the Project include the Environmental Permits (EP) for the Project, EP-337/2009 issued on 23 April 2009 and EP-445/2013 issued on 3 May 2013 (Amended Environmental Permit (No.: EP-445/2013/A) issued on 13 August 2014).

8. Billing Account for Disposal of Construction Waste (A/C No. 7024073)

9. Registration of Chemical Waste Producer (License: 5213-247-C4004-01).

10. Water Discharge License (License: WT00023634-2016).

11. Construction Noise Permit (Permit: GW-RE1092-16 and GW-RE 1251-16)

Key Information in the Reporting Month

12. Summary of key information in the reporting month is tabulated in Table II.

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Reporting Changes	0	---	N/A	N/A	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

Future Key Issues

13. The future key environmental issues in the coming month include:
- Dust generation from stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
- Water spraying for dust generating activity and on haul road;
- Proper storage of construction materials on site;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Accumulation of general and construction waste on site;
- Noise from operation of the equipment, especially for excavation activities and machinery on-site;
- Wastewater and runoff discharge from site;
- Regular removal of silt, mud and sand along u-channels and sedimentation tanks; and
- Review and implementation of temporary drainage system for the surface runoff.

1. INTRODUCTION

Background

1.1 The Kai Tak Development (KTD) is located in the south-eastern part of Kowloon Peninsula, comprising the apron and runway areas of the former Kai Tak Airport and existing waterfront areas at To Kwa Wan, Ma Tau Kok, Kowloon Bay, Kwun Tong and Cha Kwo Ling. It covers a land area of about 328 hectares. Stage 2 Infrastructure Works for Developments for Southern Part of the Former Runway is one of the construction stages of KTD. It contains two Schedule 2 DPs including new distributor roads serving the planned KTD and KTD Roads D3A & D4A. The general layout of the Project is shown in **Figure 1.**

1.2 One Environmental Permits (EP) No.: EP-337/2009 was issued on 23 April 2009 for new distributor roads serving the planned KTD and one Environmental Permit No.: EP-445/2013 was issued on 3 May 2013 for Kai Tak Development Roads D3A & D4A to Civil Engineering and Development Department (CEDD) as the Permit Holder. Pursuant to Section 13 of the EIAO, the Director of Environmental Protection amended the Environmental Permit No.: EP-445/2013 based on the Application No. VEP-449/2014 and the Environmental Permit (No.: EP-445/2013/A) was issued on 13 August 2014.

1.3 A study of environmental impact assessment (EIA) was undertaken to consider the key issues of air quality, noise, water quality, waste, land contamination, cultural heritage and landscape and visual impact, and identify possible mitigation measures associated with the works. EIA Reports (Register No. AEIAR-130/2009 and AEIAR-170/2013) were approved by the Environmental Protection Department (EPD) on 4 March 2009 and 3 May 2013 respectively.

1.4 Cinotech Consultants Limited (Cinotech) was commissioned by Civil Engineering and Development Department (CEDD) to undertake the role of the Environmental Team (ET) for the Contract No. KL/2014/01 – Stage 2 Infrastructure Works for Developments at the Southern Part of the Former Runway. The construction work under KL/2014/01 comprises the construction of part of the Road D4 under the EP (EP-337/2009) and the construction of Roads D3A & D4A under the EP (EP-445/2013/A).

1.5 Cinotech Consultants Limited was commissioned by Civil Engineering and Development Department (CEDD) to undertake the Environmental Monitoring and Audit (EM&A) works for the Project. The construction commencement of this Contract is on 13 April 2016. This is the 12th Monthly EM&A report summarizing the EM&A works for the Project from 1 – 31 March 2017.

1.6 All project information since the commencement of work under EPs including Monthly EM&A Reports is made available to the public via internet access at the website: http://www.kl201401.com/

Project Organizations

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

- Project Proponent – Civil Engineering and Development Department (CEDD).
- The Supervising Officer and the Supervising Officer's Representative (SO) – AECOM Asia Co. Ltd. (AECOM).
- Environmental Team (ET) – Cinotech Consultants Limited (CCL).
- Independent Environmental Checker (IEC) – Ka Shing Management Consultant Ltd. (KSMC).
- Contractor – Continental Engineering Corp. and Chit Cheung Construction Co. Ltd. Joint Venture (CCJV).

1.8 The key contacts of the Project are shown in **Table 1.1**.

Table 1.1 Key Project Contacts

Party	Role	Contact Person	Position	Phone No.	Fax No.
CEDD	Project Proponent	Mr. Ronald Siu	Senior Engineer	2301 1453	2301 1277
		Ms. Vicky Sy	Engineer	2301 1207	
AECOM	Supervising Officer	Mr. Clive Cheng	CRE	3746 1801	2798 0783
Cinotech	Environmental Team	Dr. Priscilla Choy	Environmental Team Leader	2151 2089	3107 1388
		Ms. Ivy Tam	Audit Team Leader	2151 2090	
KSMC	Independent Environmental Checker	Dr. C. F. Ng	IEC	2618 2166	2120 7752
CCJV	Contractor	Mr. Dennis Ho	Environmental Officer	2960 1398	2960 1399

Construction Activities undertaken during the Reporting Month

1.9 The site activities undertaken in the reporting month included:

- Watermain works;
- Construction of boundary wall at EPD recycling centre;
- Bored piles and Pre-bored socketed H-piles;
- TTA implementation at Shing Fung Road and Wang Chiu Road / Sheung Yee Road;
- Open excavation for box culvert, piles caps and underpass;
- ELS installation for box culvert and underpass; and
- Construction of pile caps, sewer and manholes.

1.10 The construction programme showing the inter-relationship with environmental protection/mitigation measures are presented in Table 1.2.

Table 1.2 Construction Programme Showing the Inter-Relationship with Environmental Protection/Mitigation Measures

Construction Works	Major Environmental Impact	Control Measures
As mentioned in Section 1.8	Noise, dust impact, water quality and waste generation	Sufficient watering of the works site with active dust emitting activities; Properly cover the stockpiles; On-site waste sorting and implementation of trip ticket system Appropriate desilting/sedimentation devices provided on site for treatment before discharge; Use of quiet plant and well-maintained construction plant; Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall; Provide mitigation measure to temporary use of chemicals; Provide sufficient mitigation measures as recommended in Approved EIA Report/Lease requirement.

Summary of EM&A Requirements

1.11 The EM&A programme requires construction noise monitoring, air quality monitoring, landscape and visual monitoring and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental requirements and mitigation measures, as recommended in the EM&A Manual under the EP.

1.12 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 5 of this report.

2. AIR QUALITY

Monitoring Requirements

2.1 With reference to the same principle of EIA report of the Project, no air quality monitoring station within 500m from the boundary of this Project are considered as relevant monitoring locations. No air quality monitoring is required for the Project.

Observations

2.2 No monitoring for air quality is required for the Project.

2.3 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of air quality mitigation measures within the site boundaries of this Project. The summaries of site audits are attached in **Appendix C.**

3. NOISE

Monitoring Requirements

3.1 With reference to the same principle of EIA report of the Project, no construction noise monitoring station within 300m from the boundary of this Project are considered as relevant monitoring locations. No Construction noise monitoring is required for the Project. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Observations

3.2 No monitoring for air quality is required for the Project. No Action/Limit Level exceedance was recorded. The summary of exceedance record in reporting month is shown in **Appendix B**.

3.3 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of construction noise mitigation measures within the site boundaries of this Project. The summaries of site audits are attached in **Appendix C**.

4. LANDSCAPE AND VISUAL

Monitoring Requirements

4.1 According to EM&A Manual of the Kai Tak Development EIA Study, ET shall monitor and audit the contractor's operation during the construction period on a weekly basis, and to report on the contractor's compliance.

Results and Observations

4.2 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of landscape and visual mitigation measures within the site boundaries of this Project. The summaries of site audits are attached in **Appendix C**.

4.3 No non-compliance of the landscape and visual impact was recorded in the reporting month.

4.4 Should non-compliance of the landscape and visual impact occur, action in accordance with the action plan presented in **Appendix D** shall be performed.

5. ENVIRONMENTAL AUDIT

Site Audits

5.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix C**.

5.2 Site audits were conducted by representatives of the Contractor, Supervising Officer and ET on 1, 8, 15, 22 and 29 March 2017 in the reporting month. IEC joint site inspection was conducted on 22 March 2017. No non-compliance was observed during the site audits.

Status of Environmental Licensing and Permitting

5.3 All permits/licenses obtained for the Project are summarized in Table 5.1.

Table 5.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Details	Status
	From	To		
Environmental Permit (EP)				
EP-337/2009	23/04/09	N/A	Construction of new distributor roads serving the planned Kai Tak development.	Valid
EP-445/2013/A	13/08/14	N/A	Construction of Kai Tak Development roads D3A and D4A	Valid
Effluent Discharge License				
WT00023634-2016	--	31/03/21	Wastewater from the construction site including effluent treated by screen and sedimentation tank	Valid
Registration of Chemical Waste Producer				
5213-247-C4004-01	--	N/A	Chemical Waste Types: Surplus paint, waste contaminated by paint, diesel, waste contaminated by diesel, spent lubricating oil and waste, soil contaminated by lubricating oil.	Valid
Construction Noise Permit (CNP)				
GW-RE1092-16	09/11/16	08/05/17	Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work other than percussive pilling and performing prescribed construction work.	Valid
GW-RE1251-16	10/01/17	08/07/17		Valid

Status of Waste Management

5.4 The amount of wastes generated by the major site activities of this Project during the reporting month is shown in **Appendix G**.

5.5 In respect of the dump truck cover, the Contractor is reminded to take record photos and inspection to ensure that all dump trucks have fully covered the skip before leaving the site.

Implementation Status of Environmental Mitigation Measures

5.6 During site inspections in the reporting month, no non-conformance was identified. ET weekly site inspections were carried out during the reporting month and the observations and recommendations are summarized in Table 5.2.

Table 5.2 Observations and Recommendations of Site Inspections

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	22 Feb 2017	Sandbag bund should be provided at Gate 5A to prevent silty runoff.	Rectification/improvement was observed during the follow-up audit session.
Air Quality	1 Mar 2017	Stockpiles in Section 1 should be properly covered by imperious sheets for dust suppression.	Rectification/improvement was observed during the follow-up audit session.
	15 Mar 2017	Dark smoke emitted by PME in Section 1 should be avoided.	Rectification/improvement was observed during the follow-up audit session.
	22 Mar 2017	Impervious sheets for stockpiles coverage should be maintained more frequently.	Rectification/improvement was observed during the follow-up audit session.
Noise	--	--	--
Waste/ Chemical Management	--	--	--
Landscape and Visual	--	--	--
Permits/ Licences	--	--	--

Summary of Mitigation Measures Implemented

5.7 An updated summary of the EMIS is provided in **Appendix E**.

Implementation Status of Event Action Plans

5.8 The Event Action Plans for noise and landscape and visual are presented in **Appendix D**. No Event Action Plan for air quality is considered necessary.

Construction Noise

5.9 No Action/Limit Level exceedance was recorded in the reporting month.

Landscape and visual

5.10 No non-compliance was recorded in the reporting month.

Summary of Complaint, Warning, Notification of any Summons and Successful Prosecution

5.11 The summaries of environmental complaint, warning, summon and notification of successful prosecution for the Project is presented in **Appendix F**.

6. FUTURE KEY ISSUES

6.1 Major site activities undertaken for the coming two months include:

- Watermain works;
- Construction of boundary wall at EPD recycling centre;
- Pre-bored socketed H-piles;
- TTA implementation at Shing Fung Road and Wang Chiu Road/ Sheung Yee Road;
- Open excavation for box culvert, pile caps and underpass;
- ELS installation for box culvert and underpass; and
- Construction of pile caps, sewer and manholes.

Key Issues for the Coming Month

6.2 Key environmental issues in the coming month include:

- Wastewater and runoff discharge from site;
- Regular removal of silt, mud and sand along u-channels and sedimentation tanks;
- Review and implementation of temporary drainage system for the surface runoff;
- Noise from operation of the equipment, especially for rock-breaking activities, piling works and machinery on-site;
- Dust generation from stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
- Water spraying for dust generating activity and on haul road;
- Proper storage of construction materials on site;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Accumulation of general and construction waste on site.

6.3 The tentative program of major site activities and the impact prediction and control measures for the coming two months, i.e. April and May 2017 are summarized as follows:

Construction Works	Major Impact Prediction	Control Measures
As mentioned in Section 7.1	Air quality impact (dust)	a) Frequent watering of haul road and unpaved/exposed areas; b) Frequent watering or covering stockpiles with tarpaulin or similar means; and c) Watering of any earth moving activities.
	Water quality impact (surface run-off)	d) Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; e) Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; f) Provision of perimeter protection such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and g) Provision of measures to prevent discharge into the stream.

Construction Works	Major Impact Prediction	Control Measures
	Noise Impact	h) Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; i) Controlling the number of plants use on site; j) Regular maintenance of machines; and k) Use of acoustic barriers if necessary.

7. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

7.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 to 31 March 2017.

Air Quality and Construction Noise

7.2 No regular monitoring air quality and noise monitoring is required for the Project. No Action/Limit Level exceedance was recorded.

Landscape and visual

7.3 No non-compliance was recorded in the reporting month.

Complaint and Prosecution

7.4 No environmental complaints and environmental prosecution were received in the reporting month.

7.5 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

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

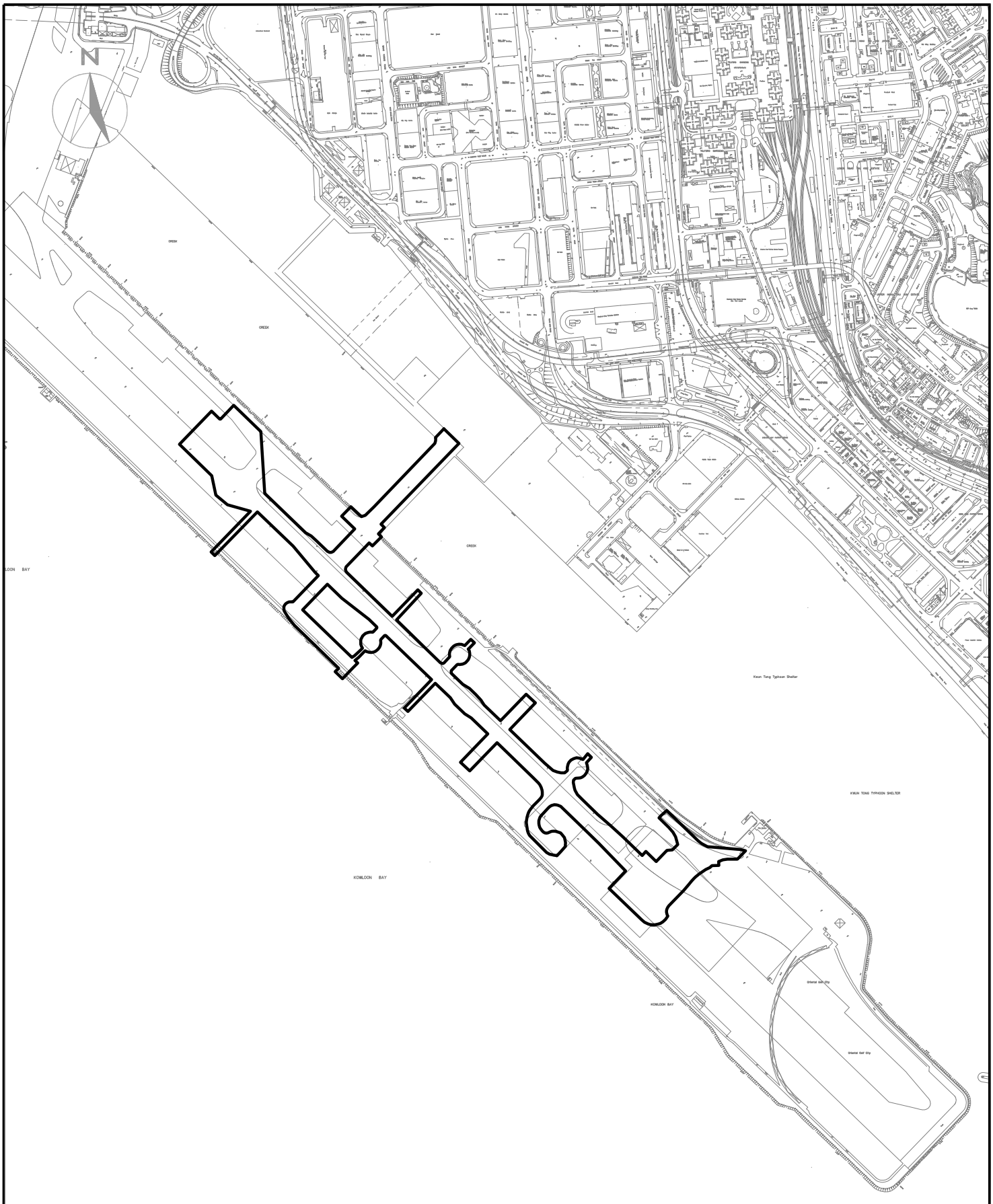
Air Quality Impact

- To regularly maintain anti-erosion sheets to prevent dust generation as far as practicable.
- To properly cover dusty materials with impervious materials for dust suppression.
- To regularly maintain and check PMEs within the Site to prevent black smoke emission.

Water Quality Impact

- To enhance sandbag or concrete bund near the Site boundary to avoid silty and muddy runoff out of the Site into public area.

FIGURES



LEGEND:

SITE BOUNDARY

CINOTECH

Cinotech Consultants Limited

KL/2014/01 KAI TAK DEVELOPMENT - STAGE 2
INFRASTRUCTURE WORKS FOR DEVELOPMENT AT
SOUTHERN PART OF THE FORMER RUNWAY

SITE LAYOUT PLAN

SCALE	1:1000@A4	DATE	MAY 2016
CHECK	JL	DRAWN	JW
JOB No.	MA15046	FIGURE NO. 1	REV -

APPENDIX A
ACTION AND LIMIT LEVELS

Appendix A - Action and Limit Levels

Table A-1 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level[(1)(2)]
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) 70dB(A)/65dB(A)*

Remarks: (1) 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.

(2) No regular noise impact monitoring station for this Contract. It is subject to the noise sensitive receiver(s) and additional monitoring work.

(*) 70dB(A) and 65dB(A) for schools during normal teaching periods and school examination periods, respectively.

APPENDIX B
SUMMARY OF EXCEEDANCE

Contract No. KL/2014/01
Kai Tak Development –Stage 2 Infrastructure Works for Developments at the Southern Part of the Former Runway

Appendix B – Summary of Exceedance

Exceedance Record for Contract No. KL/2014/01

Reporting Month: March 2017

(A) Exceedance Record for Construction Noise

(NIL in the reporting month)

(B) Exceedance Record for Landscape and Visual

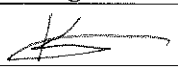
(NIL in the reporting month)

APPENDIX C
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170301
Date	1 March 2017 (Wednesday)
Time	14:00 – 16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170301-R01	• Stockpiles in Section 1 should be properly covered by impervious sheets for dust suppression.	C 7
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit session (Ref. No.:170222), all identified environmental deficiency was observed improved/rectified by the Contractor.	

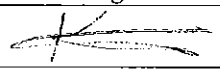
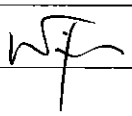
	Name	Signature	Date
Recorded by	Kelvin Koo		1 March 2017
Checked by	Dr. Priscilla Choy		1 March 2017

Contract No. KL/2014/01
Kai Tak Development - Stage 2 Infrastructure Works for Developments at the Southern Part of the Former Runway
EP-337/2009 & EP-445/2013/A

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170308
Date	8 March 2017 (Wednesday)
Time	14:00 – 16:30

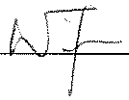
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit session (Ref. No.:170301), all identified environmental deficiency was observed improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kelvin Koo		8 March 2017
Checked by	Dr. Priscilla Choy		8 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170315
Date	15 March 2017 (Wednesday)
Time	14:00 – 16:30

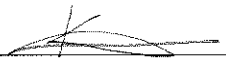
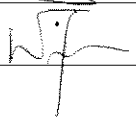
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170315-R01	• Dark smoke emitted by PMEs in Section 1 should be avoided.	C 17
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit session (Ref. No.:170308), no major environmental deficiencies were observed during site inspection.	

	Name	Signature	Date
Recorded by	Kelvin Koo		15 March 2017
Checked by	Dr. Priscilla Choy		15 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170322
Date	22 March 2017 (Wednesday)
Time	14:30 – 17:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170322-R01	• Impervious sheets for stockpiles coverage should be maintained more frequently.	C 7
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit session (Ref. No.:170315), all identified environmental deficiency was observed improved/rectified by the Contractor.	

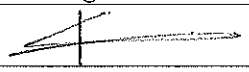
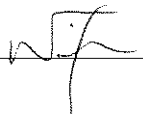
	Name	Signature	Date
Recorded by	Kelvin Koo		22 March 2017
Checked by	Dr. Priscilla Choy		22 March 2017

Contract No. KL/2014/01
Kai Tak Development - Stage 2 Infrastructure Works for Developments at the Southern Part of the Former Runway
EP-337/2009 & EP-445/2013/A

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170329
Date	29 March 2017 (Wednesday)
Time	14:00 – 16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit session (Ref. No.:170322), all identified environmental deficiency was observed improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kelvin Koo		29 March 2017
Checked by	Dr. Priscilla Choy		29 March 2017

APPENDIX D
EVENT ACTION PLANS

Appendix D - Event Action Plans

Event/Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded	4. Notify ER, IEC and Contractor; 5. Carry out investigation; 6. Report the results of investigation to the IEC, ER and Contractor; 7. Discuss with the IEC and Contractor on remedial measures required; 8. Increase monitoring frequency to check mitigation effectiveness. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals. (The above actions should be taken within 2 working days after the exceedance is identified)
Limit Level being exceeded	1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified)

Appendix D - Event Action Plans

Event/Action Plan for Landscape and Visual

EVENT ACTION LEVEL	ACTION			
	ET	IEC	ER	CONTRACTOR
Design Check	• Check final design conforms to the requirements of EP and prepare report.	• Check report. • Recommend remedial design if necessary	• Undertake remedial design if necessary	
Non-conformity on one occasion	• Identify Source • Inform IEC and ER • Discuss remedial actions with IEC, ER and Contractor • Monitor remedial actions until rectification has been completed	• Check report • Check Contractor's working method • Discuss with ET and Contractor on possible remedial measures • Advise ER on effectiveness of proposed remedial measures. • Check implementation of remedial measures.	• Notify Contractor • Ensure remedial measures are properly implemented	• Amend working methods • Rectify damage and undertake any necessary replacement
Repeated Non-conformity	• Identify Source • Inform IEC and ER • Increase monitoring frequency • Discuss remedial actions with IEC, ER and Contractor • Monitor remedial actions until rectification has been completed • If non-conformity stops, cease additional monitoring	• Check monitoring report • Check Contractor's working method • Discuss with ET and Contractor on possible remedial measures • Advise ER on effectiveness of proposed remedial measures • Supervise implementation of remedial measures.	• Notify Contractor • Ensure remedial measures are properly implemented	• Amend working methods • Rectify damage and undertake any necessary replacement

APPENDIX E
ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

Appendix E - Summary of Implementation Schedule of Mitigation Measures for Construction Phase

EIA Ref.	Mitigation Measures	Status
Construction Air Quality		
S3.2 (AEIAR-130/2009)	8 times daily watering of the work site with active dust emitting activities.	^
S4.8 (AEIAR-170/2013)	Control measures stipulated in the approved KTD Schedule 3 EIA Report should be strictly followed.	^
S3.2 (AEIAR-130/2009) and S4.8 (AEIAR-170/2013)	Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. The following mitigation measures, good site practices and a comprehensive dust monitoring and audit programme are recommended to minimize cumulative dust impacts.	
	● Stockpiling site(s) should be lined with impermeable sheeting and bunded. Stockpiles should be fully covered by impermeable sheeting to reduce dust emission.	*
	● Misting for the dusty material should be carried out before being loaded into the vehicle.	^
	● Any vehicle with an open load carrying area should have properly fitted side and tail boards.	^
	● Material having the potential to create dust should not be loaded from a level higher than the side and tail boards and should be dampened and covered by a clean tarpaulin.	^
	● The tarpaulin should be properly secured and should extent at least 300 mm over the edges of the sides and tailboards. The material should also be dampened if necessary before transportation.	^
	● The vehicles should be restricted to maximum speed of 10 km per hour and confined haulage and delivery vehicle to designated roadways insider the site. Onsite unpaved roads should be compacted and kept free of lose materials.	^
	● Vehicle washing facilities should be provided at every vehicle exit point.	^

EIA Ref.	Mitigation Measures	Status
	● The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores. ● Every main haul road should be scaled with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet. ● Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the three sides; and ● Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.	^ ^ ^ ^
Construction Noise		
S3.3 (AEIAR-130/2009)	Use of quiet PME, movable barriers barrier for Asphalt Paver, Breaker, Excavator and Hand-held breaker and full enclosure for Air Compressor, Bar Bender, Concrete Pump, Generator and Water Pump.	^
S3.3 (AEIAR-130/2009)	Good Site Practice: ● Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program. ● Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program. ● Mobile plant, if any, should be sited as far away from NSRs as possible. ● Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. ● Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. ● Material stockpiles and other structures should be effectively utilized, wherever	^ N/A(1) ^ ^ ^

EIA Ref.	Mitigation Measures	Status
	practicable, in screening noise from on-site construction activities.	
S3.3 (AEIAR-130/2009)	Scheduling of Construction Works during School Examination Period	N/A
S3.8 (AEIAR-170/2013)	Provision of a landscaped deck along Roads D3A & D4A.	N/A
S3.8 (AEIAR-170/2013)	● Provision of about 1090 m length of vertical noise barrier (connected to the deck) at Roads D3A & D4A; ● Provision of about 60 m length of overhang vertical noise barrier (connected to the deck) at Road D4A; and ● Provision of staircases with noise barriers next to Sites 4A1 and 4B1 It should be noted that the exact length of the mitigation measures would be subject to minor refinement during the detailed design stage.	N/A N/A N/A
S3.8 (AEIAR-170/2013)	Non-noise sensitive use areas within Sites 4A1 and 4B1.	N/A
S3.8 (AEIAR-170/2013)	Avoid sensitive façade with openable window facing Road D3A.	N/A
Construction Water Quality		
S3.4 (AEIAR-130/2009) and S5.8 (AEIAR-170/2013)	<u>Construction Runoff</u> Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: ● use of sediment traps ● adequate maintenance of drainage systems to prevent flooding and overflow	 ^ ^

EIA Ref.	Mitigation Measures	Status
	Construction site should be provided with adequately designed perimeter channel and pre-treatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles 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.	^
	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	^
S5.8 (AEIAR-170/2013)	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. Appropriate drainage like intercepting channels should be provided where necessary.	^
	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.	^
S3.4 (AEIAR-130/2009)	Sediment tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m^3 capacity, are recommended as a general mitigation measure	^

EIA Ref.	Mitigation Measures	Status
	which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	
S3.4 (AEIAR-130/2009) and S5.8 (AEIAR-170/2013)	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50 m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	^
	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.	^
S3.4 (AEIAR-130/2009)	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, 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.	^
	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	^
S3.4 (AEIAR-130/2009) and S5.8 (AEIAR-170/2013)	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 located wheel washing bay should be provided at every site exit, and 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	^

EIA Ref.	Mitigation Measures	Status
	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.	
S5.8 (AEIAR-170/2013)	<u>Boring and Drilling Water</u> Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be re-circulated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.	^
	<u>Acid Cleaning, Etching and Pickling Wastewater</u> 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	^
S3.4 (AEIAR-130/2009)	<u>Drainage</u> It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There should be no direct discharge of effluent from the site into the sea.	^
S3.4 (AEIAR-130/2009)	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	^

EIA Ref.	Mitigation Measures	Status
S3.4 (AEIAR-130/2009)	All fuel tanks and storage areas should be provided with locks and be located 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 the coastal waters of the Victoria Harbour WCZ.	^
S5.8 (AEIAR-170/2013)	There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. All the runoff and wastewater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS. Minimum distance of 100 m should be maintained between the discharge points of construction site effluent and the existing seawater intakes and the planned WSR mentioned in S5.3.1 as appropriate. The beneficial uses of the treated effluent for other on-site activities such as dust suppression, wheel washing and general cleaning etc., can minimise water 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 (RO) of EPD.	^
S3.4 (AEIAR-130/2009) and S5.8 (AEIAR-170/2013)	<u>Sewage Effluent</u> Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets should be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor should also be responsible for waste disposal and maintenance practices.	^
S5.8	Notices should be posted at conspicuous locations to remind the workers not to discharge	^

EIA Ref.	Mitigation Measures	Status
(AEIAR-170/2013)	any sewage or wastewater into the surrounding environment. Regular environmental audit of the construction site will provide an effective control of any malpractices and can encourage continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the project would not cause water pollution problem after undertaking all required measures.	
S3.4 (AEIAR-130/2009) and S5.8 (AEIAR-170/2013)	<u>Stormwater Discharges</u> Minimum distances of 100 m should be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes.	^
	<u>Debris and Litter</u> In order to maintain water quality in acceptable conditions with regard to aesthetic quality, contractors should be required, under conditions of contract, to ensure that site management is optimised and that disposal of any solid materials, litter or wastes to marine waters does not occur.	^
S5.8 (AEIAR-170/2013)	<u>Accidental Spillage</u> Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation, should be observed and complied with for control of chemical wastes. Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	^

EIA Ref.	Mitigation Measures	Status
	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: ● Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. ● Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. ● Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	^ ^ ^ ^
Construction Waste Management		
S6.7 (AEIAR-170/2013)	Prepare a Waste Management Plan, which becomes a part of the Environmental Management Plan, in accordance with the requirements stipulated in ETWB TC(W) No. 19/2005, approved by the Engineer/Supervising Officer of the Project based on current practices on construction sites.	^
S3.5 (AEIAR-130/2009) and S6.7 (AEIAR-170/2013)	Good Site Practices It is not anticipated that adverse waste management related impacts would arise, provided that good site practices are adhered to. Recommendations for good site practices during construction activities include: ● Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site Training of site personnel in proper waste management and chemical waste handling procedures ● Provision of sufficient waste disposal points and regular collection for disposal	^ ^

EIA Ref.	Mitigation Measures	Status
	● Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers ● A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites) ● Regular cleaning and maintenance systems, sumps and oil interceptors ● Separation of chemical wastes for special handling and appropriate treatment	^ ^ ^ ^
	Waste Reduction Measures Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include: ● Sort C&D waste from demolition of the remaining structures to recover recyclable portions such as metals ● 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 ● Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force ● Any unused chemicals or those with remaining functional capacity should be recycled ● Proper storage and site practices to minimise the potential for damage or contamination of construction materials ● Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste ● Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle.	 ^ ^ ^ ^ ^ ^

EIA Ref.	Mitigation Measures	Status
S3.5 (AEIAR-130/2009)	Construction and Demolition Materials Mitigation measures and good site practices should be incorporated in the contract document to control potential environmental impact from handling and transportation of C&D material. The mitigation measures include: ● Where it is unavoidable to have transient stockpiles of C&D material within the Project work site pending collection for disposal, the transient stockpiles shall be located away from waterfront or storm drains as far as possible. ● Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric. ● Skip hoist for material transport should be totally enclosed by impervious sheeting. ● Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site. ● The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores. ● The load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle. ● All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet. ● The height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading. When delivering inert C&D material to public fill reception facilities, the material should consist entirely of inert construction waste and of size less than 250mm or other sizes as agreed with the Secretary of the Public Fill Committee. In order to monitor the disposal of the surplus C&D material at the designed public fill reception facility and to control fly tipping, a trip-ticket system as stipulated in the ETWB TCW No. 31/2004 “Trip Ticket	^ ^ ^ ^ ^ ^ ^ ^

EIA Ref.	Mitigation Measures	Status
	System for Disposal of Construction and Demolition Materials" should be included as one of the contractual requirement sand implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. An Independent Environmental Checker should be responsible for auditing the results of the system.	
S3.5 (AEIAR-130/2009)	General Refuse General refuse should be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Effective collection and storage methods (including enclosed and covered area) of site wastes would be required to prevent waste materials from being blown around by wind, wastewater discharge by flushing or leaching into the marine environment, or creating odour nuisance or pest and vermin problem	^
Construction Landscape and Visual		
S3.8.12 (AEIAR-130/2009) and S7.9 (AEIAR-170/2013)	● Minimized construction area and contractor's temporary works areas. ● All existing trees should be carefully protected during construction. ● Trees unavoidably affected by the works should be transplanted where practical. Detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBC 2/2004 and 3/2006. Final locations of transplanted trees should be agreed prior to commencement of the work. ● Control of night-time lighting. ● Erection of decorative screen hoarding. ● Reduction of construction period to practical minimum. ● Limitation of / Ensuring no run-off into surrounding landscape and adjacent seawater areas. ● Temporary or advance landscape should be provided along the temporary access roads to the Cruise Terminal until such time as road D3 is open.	^ ^ ^ N/A(1) ^ ^ ^ N/A

Remarks:	EIA Report (AEIAR-130/2009) – Kai Tak Development EIA Report (AEIAR-170/2013) – Kai Tak Development – Roads D3A & D4A	
	^ Compliance of mitigation measure;	X Non-compliance of mitigation measure;
	N/A Not Applicable at this stage; N/A(1) Not observed;	• Non-compliance but rectified by the contractor;
	* Recommendation was made during site audit but improved/rectified by the contractor.	

APPENDIX F
SUMMARIES OF ENVIRONMENTAL COMPLAINT, WARNING, SUMMON AND NOTIFICATION OF SUCCESSFUL PROSECUTION

Contract No. KL/2014/01

Kai Tak Development –Stage 2 Infrastructure Works for Developments at the Southern Part of the Former Runway

Appendix F – Summary of environmental complaint, warning, summon and notification of successful prosecution

Reporting Month: March 2017

Contract No. KL/2014/01

Log Ref.	Location	Received Date	Details of Complaint/warning/summon and prosecution	Investigation/Mitigation Action	Status
N/A	N/A	N/A	N/A	N/A	N/A

Remarks: No environmental complaint/warning/summon and prosecution were received in the reporting period.

APPENDIX G
WASTE GENERATED QUANTITY

Appendix 5. Monthly Summary Waste Flow Table

Name of Department: CEDD

Contract No.: _KL/2014/01_____

Monthly Summary Waste Flow Table for 2017

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in tonne)	(in tonne)	(in tonne)	(in tonne)	(in tonne)	(in tonne)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in tonne)
Jan	15470.22	0	0	0	15470.22	0	0	0.301	0.019	0	53.3
Feb	23173.51	0	0	0	23173.51	0	0	0	0	0	9.2
Mar	27239.72	0	0	0	27239.72	0	0	0	0	0	76.6
Apr											
May											
June											
Sub-total	65883.45	0	0	0	65883.45	0	0	0.301	0.019	0	139.1
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	65883.45	0	0	0	65883.45	0	0	0.301	0.019	0	139.1

MATERIALAB CONSULTANTS LIMITED
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Appendix D

Monthly EM&A Report
For
Contract No. KL/2014/03
Kai Tak Development - Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway

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MONTHLY EM&A REPORT

March 2017

Client : Civil Engineering and Development Department, HKSAR

Contract No. : KLN/2015/07

Contract Name : Environmental Monitoring Works for Contract KL/2014/03 – Kai Tak Development – Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway

Report No. : 0405/15/ED/0762A

EP-337/2009 New Distributor Roads Serving the Planned Kai Tak Development Area

EP-339/2009/A Decommissioning of the Remaining Parts (Ex-GFS Building, Radar Station and Hong Kong Aviation Club) of the former Kai Tak Airport

EP-451/2013 Trunk Road T2

Prepared by : Alfred Y. S. Lam

Reviewed by : Cyrus C. Y. Lai

Certified by :

Colin K. L. Yung
Environmental Team Leader
MateriaLab Consultants Limited

RAMBOLL ENVIRON

Ref.: CEDKTDS3EM00_0_0185L.17

11 April 2017

Hyder-Meinhardt Joint Venture
20/F., AXA Tower,
Landmark East,
100 How Ming Street,
Kwun Tong,
Kowloon, Hong Kong

By Post and Email

Attention: Mr. Wong W K, Chris

Dear Mr. Wong,

Re: Contract No. KL/2014/03 – Kai Tak Development – Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway
Monthly EM&A Report for March 2017

Reference is made to the Environmental Team's submission of the Monthly EM&A Report for March 2017 (Report No. 0405_15_ED_0762A) we received by e-mail on 10 April 2017.

Please be informed that we have no adverse comment on the captioned report. We hereby verify the captioned submission according to Condition 3.3 of EP-337/2009, Condition 3.3 of EP-339/2009/A and Condition 3.4 of EP-451/2013.

Thank you for your attention. Please do not hesitate to contact us should you have any queries.

Yours sincerely,
For and on behalf of
Ramboll Environ Hong Kong Limited

F. C. Tsang
Independent Environmental Checker

c.c.	CEDD	Attn.:	Ms. Amy Chu	Fax: 2369 4980
	MateriaLab	Attn.:	Mr. Colin K. L. Yung	Fax: 2450 8032
	CRBC	Attn.:	Mr. Arnold Chan	Fax: 2283 1689

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FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

i. The Civil Engineering and Development Department HKSAR has appointed MateriaLab Consultants Limited (MCL) to undertake the Environmental Team services for the Project and implement the EM&A works.

ii. This Monthly EM&A report presents the environmental monitoring and audit works for the period between 1 March 2017 and 31 March 2017. As informed by the Contractor, major activities in the reporting month were:

- Temporary utility diversion;
- Implementation of Temporary Traffic Arragement (TTA);
- Construction of Tunnel structure;
- Construction of Socket H-piles;
- Construction of drainage works;
- Construction of guide walls and D-walls; and
- Construction of District Cooling System Works.

Breaches of the Action and Limit Levels

iii. No Action / Limit Level exceedance was recorded for 24-hr TSP and construction noise at KTD1a, KTD2a and KER1b in the reporting month.

Complaint, Notification of Summons and Successful Prosecution

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

Reporting Changes

v. There was no reporting change in the reporting month.

Future Key Issues

vi. The key issues to be considered in the coming reporting month include:

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

1. INTRODUCTION

1.1 Background

1.1.1 The Kai Tak Development is located in the south-eastern part of Kowloon Peninsula of the HKSAR, comprising the apron and runway areas of the former Kai Tak Airport and existing waterfront areas at To Kwa Wan, Ma Tau Kok, Kowloon Bay, Kwun Tong and Cha Kwo Ling.

1.1.2 Contract No. KL/2014/03 is the works package to construct an approximately 420m long supporting underground structure (SUS) underneath Shing Cheong Road and Cheung Yip Street. The EM&A programme under this Contract is governed by three EPs (EP-337/2009, EP-339/2009/A and EP-451/2013) and two EM&A Manuals (AEIAR-130/2009 and AEIAR-174/2013). The Works to be executed under this Contract and corresponding EPs include but not be limited to the following main items:

EP-451/2013 – Trunk Road T2

(i) Construction of approximately 420m long supporting underground structure (SUS) including diaphragm walls, barrettes, piled foundation, top and bottom slabs, end wall and adits underneath Shing Cheong Road and Cheung Yip Street;

EP-337/2009 – New Distributor Roads Serving the Planned Kai Tak Development

(ii) Widening and re-alignment of Cheung Yip Street of approximately 330m long and associated footpaths;
(iii) Demolition, reconstruction and widening of Shing Cheong Road of approximately 410m long and associated footpaths;
(iv) Construction of drainage outfall and modification of existing seawall;
(v) Construction of ancillary works including surface drainage, sewerage, water, fire fighting, street lighting, street furniture, road marking, road signage, utilities and services, irrigation and landscape works.

EP-339/2009/A – Decommissioning of the Remaining Parts (Ex-GFS Building, Radar Station and Hong Kong Aviation Club) of the former Kai Tak Airport

(vi) Demolition of RADAR Tower and guard house;

Other works not covered by any EP

(vii) Construction of two subways between Phase II of New Acute Hospital (Site A) and Hong Kong Children's Hospital (Site C), and between Phase I of New Acute Hospital (Site B) and Site C;
(viii) Construction of District Cooling System (DCS) along Cheung Yip Street and Shing Cheong Road

1.1.3 The location and boundary of the site is shown in **Figure 1**.

1.1.4 This Monthly EM&A report is required under EP-337/2009 Condition 3.3, EP-339/2009/A Condition 3.3 and EP-451/2013 Condition 3.4. It is to report the results and findings of the EM&A programme required in the EM&A Manuals.

1.1.5 This is the thirteenth monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project within the period between 1 March 2017 and 31 March 2017.

1.2 Project Organization

1.2.1 The project proponent was the Civil Engineering and Development Department, HKSAR (CEDD). Hyder Meinhardt Joint Venture (HMJV) was commissioned by CEDD as the Engineer for the Project. Ramboll Environ Hong Kong Limited was commissioned as the Independent Environmental Checker (IEC). China Road and Bridge Corporation (Hong Kong) (CRBC) was appointed as the main contractor for the construction works under the contract KL/2014/03. MateriaLab Consultants Limited (MCL) was appointed as the Environmental Team (ET) by CEDD to implement the EM&A programme for the Project.

1.2.2 The organization structure is shown in **Appendix B**. The key personnel contact names and numbers for the Project are summarized in **Table 1.1**.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
Project Proponent (CEDD)	Co-ordinator	Ms. Amy Chu	3106 3172	2369 4980
Engineer's Representative (HMJV)	Chief Resident Engineer	Mr. W. K., Chris Wong	3742 3803	3742 3899
IEC (Ramboll Environ Hong Kong Limited)	Independent Environmental Checker	Mr. F. C. Tsang	3465 2851	3465 2899
Main Contractor (CRBC)	Site Agent	Mr. Chan See Wai, Arnold	9380 4110	2283 1689
	Environmental Officer	Mr. Andy Choy	6278 2693	2283 1689
ET (MCL)	Environmental Team Leader	Mr. Colin Yung	3565 4114	3565 4160

1.3 Construction Programme and Activities

1.3.1 The construction of the Project commenced in February 2016 and is expected to complete in 2020. The construction programme is shown in **Appendix A**.

1.3.2 A summary of the major construction activities undertaken in the reporting month were:

- Temporary utility diversion;
- Implementation of Temporary Traffic Arragement (TTA);
- Construction of Tunnel structure;
- Construction of Socket H-piles;
- Construction of drainage works;
- Construction of guide walls and D-walls; and
- Construction of District Cooling System Works.

1.4 Inter-relationship with the environmental protection/ mitigation measures with the construction programme

1.4.1 According to the construction activities in the construction programme mentioned in Section 1.3.2, the following environmental protection/ mitigation measures including Air Quality Impact, Construction Noise Impact, Water Quality Impact, Chemical and Waste Management, Landscape and Visual Impact shall be implemented:

- Sufficient watering of the works site with the active dust emitting activities;
- Limitation of the speed for vehicles on unpaved site roads;
- Properly cover or enclosure of the stockpiles and dusty materials;
- Good site practices on loading dusty materials;
- Providing sufficient vehicles washing facilities at every vehicle exit point;
- Good maintenance to the plant and equipment;
- Use of quieter plant and Quality Powered Mechanical Equipment (QPME);
- Use of acoustic fabric and noise barrier;
- Using the approved Non-road Mobile Machineries (NRMMs);
- Proper storage and handling of chemical;
- Appropriate desilting, oil interceptors or sedimentation devices provided on site for treatment before discharge;
- Onsite waste sorting and implementation of trip ticket system;
- Training of the site personnel in proper waste management and chemical waste handling procedures;
- Proper storage of the construction materials;
- Erection of decorative screen hoarding;
- Strictly following the Environmental Permits and Licenses;
- Provide sufficient mitigation measures as recommended in Approved EIA Reports

1.5 Status of Environmental Licences, Notifications and Permits

1.5.1 A summary of the relevant environmental licenses, permits and/or notifications on environmental protection for this Contract is presented in **Table 1.2**.

Table 1.2 Relevant Environmental Licenses, Permits and/or Notifications

Environmental License / Permit / Notification	Reference Number	Valid From	Valid Till
Environmental Permit	EP-337/2009 EP-339/2009/A EP-451/2013	23 April 2009 18 June 2009 19 September 2013	Not Applicable Not Applicable Not Applicable
Notification pursuant to Air Pollution (Construction Dust) Regulation	395601	16 November 2015	Not Applicable
Billing Account for Waste Disposal	A/C No.: 7023814	30 November 2015	Not Applicable
Construction Noise Permit	GW-RE1008-16	19 October 2016	09 April 2017
Construction Noise Permit	PP-RE0032-16	23 November 2016	15 May 2017
Wastewater Discharge License	WT00023125-2015	6 January 2016	31 January 2021
Chemical Waste Producer License	5213-247-C1232-12	23 November 2015	Not Applicable

2. AIR QUALITY

2.1 Monitoring Requirement

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 at least once every 6 days. In case of complaints, 1-hour TSP monitoring should be carried out at least 3 times per 6 days when the highest dust impacts are likely to occur. The Action and Limit Levels of the air quality monitoring are given in **Appendix C**.

2.2 Monitoring Equipment

The 24-hour TSP air quality monitoring was performed using High Volume Air Samplers (HVS) located at each of the designated monitoring station. Portable TSP Monitors would be used in case of complaints for 1-hour TSP monitoring.

Table 2.1 summarizes the equipment used in air quality monitoring.

Table 2.1 Air Quality Monitoring Equipment

Item	Brand	Model	Equipment	Serial Number
1	Tisch	TE-5170 (TSP)	High Volume Sampler	
		TE-300-310X	- Mass Flow Controller	2037
		TE-5005X	- Blower Motor Assembly	3482
		TE-5007X	- Mechanical Timer	4488
		TE-5009X	- Continuous Flow Recorder	4371
2	Tisch	TE-5170 (TSP)	High Volume Sampler	
		TE-300-310X	- Mass Flow Controller	2524
		TE-5005X	- Blower Motor Assembly	4037
		TE-5007X	- Mechanical Timer	5160
		TE-5009X	- Continuous Flow Recorder	4377
3	Tisch	TE-5170 (TSP)	High Volume Sampler	
		TE-300-310X	- Mass Flow Controller	2618
		TE-5005X	- Blower Motor Assembly	3838
		G3031	- Mechanical Timer	2251
		G1051	- Continuous Flow Recorder	2307
4	Tisch	TE-5025A	HVS Sampler Calibrator	0438320 / 2456
5	*Sibata	Model LD-3B	Sibata Portable TSP Monitors	NA

Note:
No complaint of air quality was received. Therefore, no impact 1-hour TSP monitoring was conducted.

2.3 Monitoring Methodology

2.3.1 24-hour TSP air quality monitoring

HVS Installation

The following guidelines were adopted during the installation of HVS:

- Sufficient support is provided to secure the samplers against gusty wind.
- No two samplers are placed less than 2 meters apart.

- The distance between the sampler and an obstacle, such as buildings, is at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses is required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally is required.
- No furnaces or incineration flues are nearby.
- Airflow around the samplers is unrestricted.
- The samplers are 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

Fiberglass filters (provided by the HOKLAS accredited laboratory) shall be used (Note: these filters have a collection efficiency of larger than 99% for particles of 0.3 μm diameter). A HOKLAS accredited laboratory (ALS Technichem (HK) Pty Ltd.) is responsible for the preparation of 24-hr conditioned and pre-weighed filter papers for monitoring team.

All filters are equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature is around 25°C and not variable by more than ±3°C; the relative humidity (RH) is < 50% and not variable by more than ±5%. A convenient working RH is 40%.

Operating / Analytical Procedures

Operating / analytical procedures for the air quality monitoring are highlighted as follows:

- Prior to the commencement of the dust sampling, the flow rate of the HVS are properly set (between 0.6 m^3/min and 1.7 m^3/min) in accordance with the EM&A manual. The flow rate shall be indicated on the flow rate chart.
- The power supply shall be checked to ensure the samplers worked properly.
- On sampling, the samplers shall be operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air quality monitoring station.
- The filter holding frame is then removed by loosening the four nuts and carefully a weighted and conditioned filter is centered with the stamped number upwards, on a supporting screen.
- The filter shall be aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame is tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The shelter lid shall be closed and secured with the aluminum strip.
- The timer is then programmed. Information shall be 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).
- After sampling, the filter shall be removed and sent to laboratory for weighing. The elapsed time is also recorded.
- Before weighing, all filters are equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature 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 are returned to MCL for further analysis of TSP concentrations collected by each filter.

2.3.2 1-hour TSP air quality monitoring

Operating / Analytical Procedures

The measuring procedures of the 1-hr dust meter are in accordance with the Manufacturer's instruction Manual as follows:

- Pull up the air sampling inlet cover
- Change the Mode 0 to BG once
- Push Start/Stop switch once
- Turn the knob to SENSI.ADJ and press it
- Push Start/Stop switch once
- Return the knob to the position MEASURE slowly
- Push the timer set switch to set measuring time
- Remove the cap and make a measurement

2.4 Maintenance / Calibration

2.4.1 24-hour TSP air quality monitoring

The following maintenance / calibration are required for the HVS:

- The high volume motors and their accessories are properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking are made to ensure that the equipments and necessary power supply are in good working condition.
- All HVS shall be calibrated (five point calibration) using Calibration Kit upon installation and thereafter in every 3 months.
- A copy of the calibration certificates for the HVS and calibrator are provided in **Appendix D**.

2.4.2 1-hour TSP air quality monitoring

The portable TSP monitor should be calibrated at 1 year intervals

2.5 Monitoring Locations

2.5.1 According to the EM&A Manual, three air quality monitoring locations, namely KTD1, KTD2 and KER1, are covered by this Contract within the South Apron Area of Former Kai Tak Airport. The other two air quality monitoring locations, which are identified in Cha Kwo Ling area, are farther than 500m away from the site boundary and thus not covered by this Contract. The monitoring works in Cha Kwo Ling area are covered by other Contract(s) respectively.

2.5.2 According to the approved alternative baseline air quality and noise monitoring locations (EPD reference: EP2/K19/A/21 Pt.5), the original monitoring locations (KTD1, KTD2 and KER1) are proposed to be replaced by alternative monitoring locations (KTD1a, KTD2a and KER1b) for air quality monitoring, they are summarized in **Table 2.2** and shown in **Figure 2**.

Table 2.2 Location of Air Quality Monitoring Station

Monitoring Station	Location
KTD1a	Centre of Excellence in Paediatrics (Children's Hospital)
KTD2a	G/IC Zone next to Kwun Tong Bypass (Future Hospital at Site 3C1)
KER1b	Site Boundary at Cheung Yip Street

2.6 Results and Observations

2.6.1 The schedule of air quality monitoring in reporting month is provided in **Appendix E**.

2.6.2 No Action / Limit Level exceedance was recorded for 24-hr TSP at KTD1a, KTD2a and KER1b in the reporting month.

2.6.3 No complaint of air quality was received. Therefore, no impact 1-hour TSP monitoring was conducted in the reporting month.

2.6.4 During the reporting month, major dust sources including loading and unloading of C&D wastes, vehicles movement were observed in the site. Non-project related construction activities at the nearby construction site and road traffic along Shing Cheong Road, Cheung Yip Street and the Kwun Tong By-pass were observed. The above factors may affect the monitoring results.

2.6.5 The weather conditions during the monitoring are provided in **Appendix K**.

2.6.6 The monitoring data of 24-hr TSP are summarized in **Table 2.3**. Detailed monitoring data are presented in **Appendix F**.

Table 2.3 Summary of 24-hr TSP Monitoring Results

Parameter	Monitoring Station	Average ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
24-hr TSP in $\mu g/m^3$	KTD1a	100	75 – 157	177	260
	KTD2a	56	39 – 83	157	
	KER1b	80	55 – 106	172	

2.6.7 The Event and Action Plan for air quality is given in **Appendix H**.

2.7 Comparison of 24-hr TSP Monitoring Results with EIA Predictions

2.7.1 The monitoring data of 24-hr TSP was compared with the EIA predictions as summarized in **Table 2.4**.

Table 2.4 Comparison of 24-hr TSP data with EIA predictions

Monitoring Station	Receiver Reference	Predicted Maximum 24-hour TSP Concentration ($\mu g/m^3$)	24-hour TSP concentration in March 2017 ($\mu g/m^3$)	Average 24-hour TSP concentration in March 2017 ($\mu g/m^3$)
KTD1a	KTD3	126	75 – 157	100
KTD2a	-	-	39 – 83	56
KER1b	KTD6	169	55 – 106	80

Note:
For KTD2a, there was no receiver reference in the EIA report, EIAR-174/2013.
Predicted Maximum TSP Concentration extracted from Table 4.14 of EIA Report, EIAR-174/2013.

2.7.2 The 24-hour TSP monitoring results at KER1b was below the Predicted Maximum 24-hr TSP concentration in the approved Environmental Impact Assessment (EIA) Report and no Action / Limit Level exceedance was recorded in the reporting period.

2.7.3 The 24-hour TSP monitoring result of KTD 1a on 27 March 2017 exceeded the prediction in the approved EIA report. However, the result did not exceed the Action Level. Mitigation measures, including water spraying and covering of stockpiles of dusty materials were adopted and observed near the monitoring station KTD1a during the site inspections in March 2017. The discrepancy between the 24-hour TSP concentration and EIA Prediction in KTD1a is considered due to dust source from the non-project related construction activities near the monitoring station and the road travel along Shing Fung Road.

3. NOISE

3.1 Monitoring Requirement

In accordance with the approved EM&A Manuals, Leq (30min) monitoring is conducted for at least once a week during the construction phase between 0700 and 1900 on normal weekdays at the designated monitoring locations.

3.2 Monitoring Equipment

The sound level meter used in noise monitoring will comply with the International Electrotechnical Commission Publication (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications as referred to in the Technical Memorandum issued under the Noise Control Ordinance (NCO).

Sound level calibrator will be used for the on-site calibration of the meter. This calibrator complies with the IEC Publication 942 (1988) Class 1 and ANSI S1.40 - 1984. Noise measurements were only accepted to be valid if the calibration levels from before and after the measurement agree to within 1.0dB.

Measurements shall be recorded to the nearest 0.1dB. This noise monitors are programmed to measure A-weighted equivalent continuous sound pressure level at 30-minute intervals between 0700 and 1900 on normal weekdays at least once a week when construction activities are underway.

Table 3.1 summarizes the noise monitoring equipment model being used for this project.

Table 3.1 Noise Monitoring Equipment

Item	Brand	Model	Equipment	Serial Number
1	Casella	CEL-63X Series	Integrating Sound Level Meter	2451083
2	Casella	CEL-63X Series	Integrating Sound Level Meter	2451028
3	Casella	CEL-633A Series	Integrating Sound Level Meter	3756072
4	Casella	CEL-120/1	Calibrator	5230950
5	Casella	CEL-120/1	Calibrator	4358251
6	Casella	CEL-120/1	Calibrator	3321858
7	Smart Sensor	AR816+	Wind Speed Anemometer	MC-A-001

3.3 Monitoring Parameters and Frequency

Table 3.2 presents the noise monitoring parameters and frequencies.

Table 3.2 Monitoring Parameters and Frequencies of Noise Monitoring

Parameter	Frequency and Period
$L_{Aeq\ (30min)}$ L10 and L90 will be recorded for reference	At each station at 0700-1900 hours on normal weekdays at a frequency of once a week

3.4 Monitoring Methodology

The monitoring procedures are as follows:

- The monitoring station is set at a point 1m from the exterior of the sensitive receivers building façade and set at a position 1.2m above the ground.
- The battery condition is checked to ensure good functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time are set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - measurement time : Weekly 30 minutes between 0700-1900 on normal weekdays
- Prior to and after noise measurement, the meter shall be 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 will be considered invalid and repeat of noise measurement is required after re-calibration or repair of the equipment.
- Noise monitoring should be 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 should be paused during periods of high intrusive noise if possible and observation shall be recorded when intrusive noise is not avoided.
- At the end of the monitoring period, the Leq, L10 and L90 are recorded. In addition, site conditions and noise sources are recorded on a standard record sheet.

3.5 Maintenance / Calibration

Maintenance and Calibration procedures are as follows:

- The microphone head of the sound level meter and calibrator should be cleaned with a soft cloth at quarterly intervals.
- The sound level meter and calibrator should be calibrated annually by a HOKLAS laboratory.
- Relevant calibration certificates are provided in **Appendix D**.

3.6 Monitoring Locations

3.6.1 According to the EM&A Manual, three noise monitoring locations, namely KTD1, KTD2 and KER1, are covered by this Contract within the South Apron Area of Former Kai Tak Airport. The other two noise quality monitoring locations, which are identified in Cha Kwo Ling area, are farther than 300m away from the site boundary and thus not covered by this Contract. The monitoring works in Cha Kwo Ling area are covered by other Contract(s) respectively.

3.6.2 According to the approved alternative baseline air quality and noise monitoring locations (EPD reference: EP2/K19/A/21 Pt.5), the original monitoring locations (KTD1, KTD2 and KER1) are proposed to be replaced by alternative monitoring locations (KTD1a, KTD2a and KER1b) for noise monitoring, they are summarized in **Table 3.3** and shown in **Figure 2**.

Table 3.3 Location of Noise Monitoring Station

Monitoring Station	Location
KTD1a	Centre of Excellence in Paediatrics (Children's Hospital)
KTD2a	G/IC Zone next to Kwun Tong Bypass (Future Hospital at Site 3C1)
KER1b	Site Boundary at Cheung Yip Street

3.7 Results and Observations

3.7.1 The schedule of noise monitoring in reporting month is provided in **Appendix E**.

3.7.2 During the monitoring month, at KTD1a, non-project related construction activities at the nearby construction site and road traffic along Shing Cheong Road were observed in the surroundings. At KTD2a, road traffic along the Kwun Tong By-pass was observed. At KER1b, road traffic along Cheung Yip Street was observed. Major noise sources including noise emission from plant & PME and some other construction activities, travel of vehicles, loading and unloading of C&D waste were observed in the site. The above factors may affect the monitoring results.

3.7.3 No raining and wind with speed over 5 m/s was observed during noise monitoring according to the onsite observation. The weather conditions during the monitoring month are provided in **Appendix K**.

3.7.4 The noise monitoring data are summarized in **Table 3.4**. Detailed monitoring data are presented in **Appendix G**.

Table 3.4 Summary of Noise Impact Monitoring Results

Time Period	Leq $_{(30min)}$ dB(A) (Range)			Action Level	Limit Level
	Noise Monitoring Stations				
	KTD1a	KTD2a	KER1b		
0700-1900 hrs on normal weekdays	66 - 71	61 - 68	66 - 70	When one documented complaint is received	75 dB(A)

Note:
KTD1a: Façade Measurement
KTD2a & KER1b: Free-field measurement (+3dB(A) correction has been applied)

3.7.5 No Action / Limit Level exceedance was recorded for construction noise in the reporting month.

3.7.6 The Action and Limit Levels for noise impact monitoring have been set are presented in **Appendix C**.

3.7.7 The Event and Action Plan for noise is given in **Appendix H**.

3.8 Comparison of Noise Monitoring Results with EIA Predictions

3.8.1 The noise monitoring data was compared with the EIA predictions as summarized in **Table 3.5**.

Table 3.5 Comparison of Noise Monitoring data with EIA predictions

Monitoring Station	Receiver Reference	Maximum Predicted Mitigated Construction Noise Level, dB(A)	$Leq_{(30min)}$ dB(A) in March 2017
KTD1a	KTD1	74	66 - 71
KTD2a	KTD2	75	61 - 68
KER1b	KER1	75	66 - 70

Note:
Maximum Predicted Mitigated Construction Noise Level extracted from Table 5.13 of EIA Report, EIAR-174/2013.

3.8.2 The impact noise monitoring results in the reporting month were below the Maximum Predicted Mitigated Construction Noise Level in the approved Environmental Impact Assessment (EIA) Report and no Action / Limit Level exceedance was recorded in the reporting period.

4. LANDSCAPE AND VISUAL

4.1 Audit Requirements

4.1.1 As per the Trunk Road T2 EM&A Manual, the landscape and visual mitigation measures during the construction phase shall be audited by a Registered Landscape Architect, as a member of the Environmental Team, at least once every two weeks to ensure compliance with the intended aims of the measures.

4.1.2 According to the Kai Tak Development EM&A Manual, measures to mitigate landscape and visual impacts during construction should be checked to ensure compliance with the intended aims of the measures. The progress of the engineering works shall be regularly reviewed onsite to identify the earliest practical opportunities for the landscape works to be undertaken. The ET shall report on the Contractor's compliance on a weekly basis.

4.2 Results and Observations

4.2.1 To monitor and audit the implementation of landscape and visual mitigation measures, five weekly Landscape and Visual Site audits were carried out on 2, 9, 15, 23 and 30 March 2017 and three of them, 2, 15 and 30 March 2017 were carried out by a Registered Landscape Architect. The weekly Landscape and Visual Impact reports were counter-signed by IEC as according to the requirement of EM&A Manual (AEIAR-130/2009).

4.2.2 During the Site audit on 30 March 2017, it was observed that the excavated materials at Zone 3 were not fully covered by impervious sheeting. The item was rectified by the Contractor and inspected on 6 April 2017.

4.2.3 Should non-compliance of the landscape and visual impact occur, action in accordance to the event action plan presented in **Appendix H** shall be carried out.

5. WASTE MANAGEMENT

5.1 Audit Requirements

5.1.1 The effective management of waste arising during the construction phase will be monitored through the site audit programme. Regular audits and site inspections should be carried out to ensure that the recommended good site practices and other mitigation measures are implemented by the Contractor.

5.1.2 The audit should look at all aspects of on-site waste management practices including the waste generation, storage, recycling, transport and disposal. The aims of waste audit are:

- to ensure the waste arising from the works are handled, stored, collected, transferred and disposed of in an environmentally acceptable manner;
- verify the implementation status and evaluate the effectiveness of the mitigation measures; and
- to encourage the reuse and recycling of material.

5.2 Results and Observations

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

5.2.2 The amount of wastes generated by the site activities in the reporting month is shown in **Appendix I**.

5.2.3 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.

5.2.4 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.

6. SITE INSPECTION

6.1 Site Inspection

6.1.1 Site inspections were carried out weekly to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the mitigation measures implementation schedule is provided in **Appendix J**.

6.1.2 In the reporting month, five site inspections were carried out on 2, 9, 15, 23 and 30 March 2017. Three of them, held on 2, 15 and 30 March 2017 were the joint inspections with the IEC, ER, the Contractor and the ET.

6.1.3 No outstanding issues were reported during the reporting month. Details of observations recorded during the site inspections are summarized in **Appendix M**.

6.1.4 All the follow-up actions requested by Contractor's ET and IEC during the site inspections were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting month.

7. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

7.1 Environmental Exceedance

7.1.1 No Action / Limit Level exceedance was recorded for 24-hr TSP and construction noise at KTD1a, KTD2a and KER1b in the reporting month.

7.2 Complaints, Notification of Summons and Prosecution

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

7.2.2 Cumulative complaint log, summaries of complaints, notification of summons and successful prosecutions are presented in **Appendix L**.

8. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

8.1 Implementation Status

8.1.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Reports, the EP and the EM&A Manuals. The implementation status of the mitigation measures during the reporting month is summarized in **Appendix J**. Status of required submission under the EP during the reporting period is summarized in **Table 8.1**.

Table 8.1 Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
EP-337/2009		
Condition 2.3	Management Organization of Main Construction Companies	18/12/2015
Condition 2.4	Design Drawing of the Project	18/12/2015
Condition 2.11	Landscape Mitigation Plan(s)	18/12/2015
Condition 3.3	Monthly EM&A Report (February 2017)	13/03/2017
EP-339/2009/A		
Condition 2.4	Management Organization of Main Construction Companies	18/12/2015
Condition 2.5	Design Drawing of the Project	18/12/2015
Condition 3.3	Monthly EM&A Report (February 2017)	13/03/2017
EP-451/2013		
Condition 2.3	Management Organization of Main Construction Companies	18/12/2015
Condition 2.4	Design Drawing of the Project	18/12/2015
Condition 2.5	Landscape Mitigation Plan(s)	18/12/2015
Condition 2.10	Supplementary Contamination Assessment Report	18/12/2015
Condition 3.3	Baseline Monitoring Report	12/02/2016
Condition 3.4	Monthly EM&A Report (February 2017)	13/03/2017

9. FUTURE KEY ISSUES

9.1 Construction Programme for the Next Two Months

- Temporary utility diversion;
- Implementation of Temporary Traffic Arragement (TTA);
- Construction of Socked H-piles;
- Construction of drainage works;
- Pumping test;
- Construction of Tunnel structure;
- Construction of guide walls and D-walls; and
- Construction of District Cooling System Works.

9.2 Key Issues for the Coming Month

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

9.3 Monitoring Schedules for the Next Three Months

9.3.1 The tentative schedules for environmental monitoring in the coming three months are provided in **Appendix E**.

10. CONCLUSIONS

10.1.1 24-hour TSP impact monitoring and construction noise monitoring were carried out in the reporting month, no Action / Limit Level exceedance was recorded during the period.

10.1.2 No complaint of air quality was received. Therefore, no impact 1-hour TSP monitoring was conducted in the reporting month.

10.1.3 Five environmental site inspections were carried out in March 2017. Recommendations on mitigation measures on air quality, water quality, noise, waste management and landscape and visual impact were given to the Contractor for remediating the deficiencies identified during the site inspections.

10.1.4 Five weekly Landscape and Visual Site audits were carried out on 2, 9, 15, 23 and 30 March 2017 and three of them, 2, 15 and 30 March 2017 were carried out by a Registered Landscape Architect in the reporting month. The weekly Landscape and Visual Impact reports were counter-signed by IEC as according to the requirement of EM&A Manual (AEIAR-130/2009).

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

10.2 Comment and Recommendations

10.2.1 The recommended environmental mitigation measures, as proposed in the EIA reports and EM&A Manuals shall be effectively implemented to minimize the potential environmental impacts from the Project. The EM&A programme would effectively monitor the environmental impacts generated from the construction activities and ensure the proper implementation of mitigation measures.

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

Air Quality Impact
- Open stockpile shall be covered with impermeable sheeting to prevent dust emission.
- Main haul road shall be kept clear of muddy or dusty materials or sprayed with water regularly.

Construction Noise Impact
- The door of the air compressor shall be closed to reduce noise emission.

Water Quality Impact
- No specific observation was identified in the reporting month.

Chemical and Waste Management
- The skip containing general refuse should be stored properly.
- The empty fuel bottle shall be handled properly.

Landscape and Visual Impact
- Open stockpiles shall be covered by unobtrusive sheeting to prevent dust and dirt spreading to adjacent landscape areas and vegetation, and to create a neat and tidy visual appearance.

General Condition

- Proper wheel washing facilities in every vehicle exit point shall be provided or otherwise to ensure no vehicle would exit.
- Contractor was reminded to prevent flooding occurred at the sink.

Permit / Licenses

- No specific observation was identified in the reporting month.

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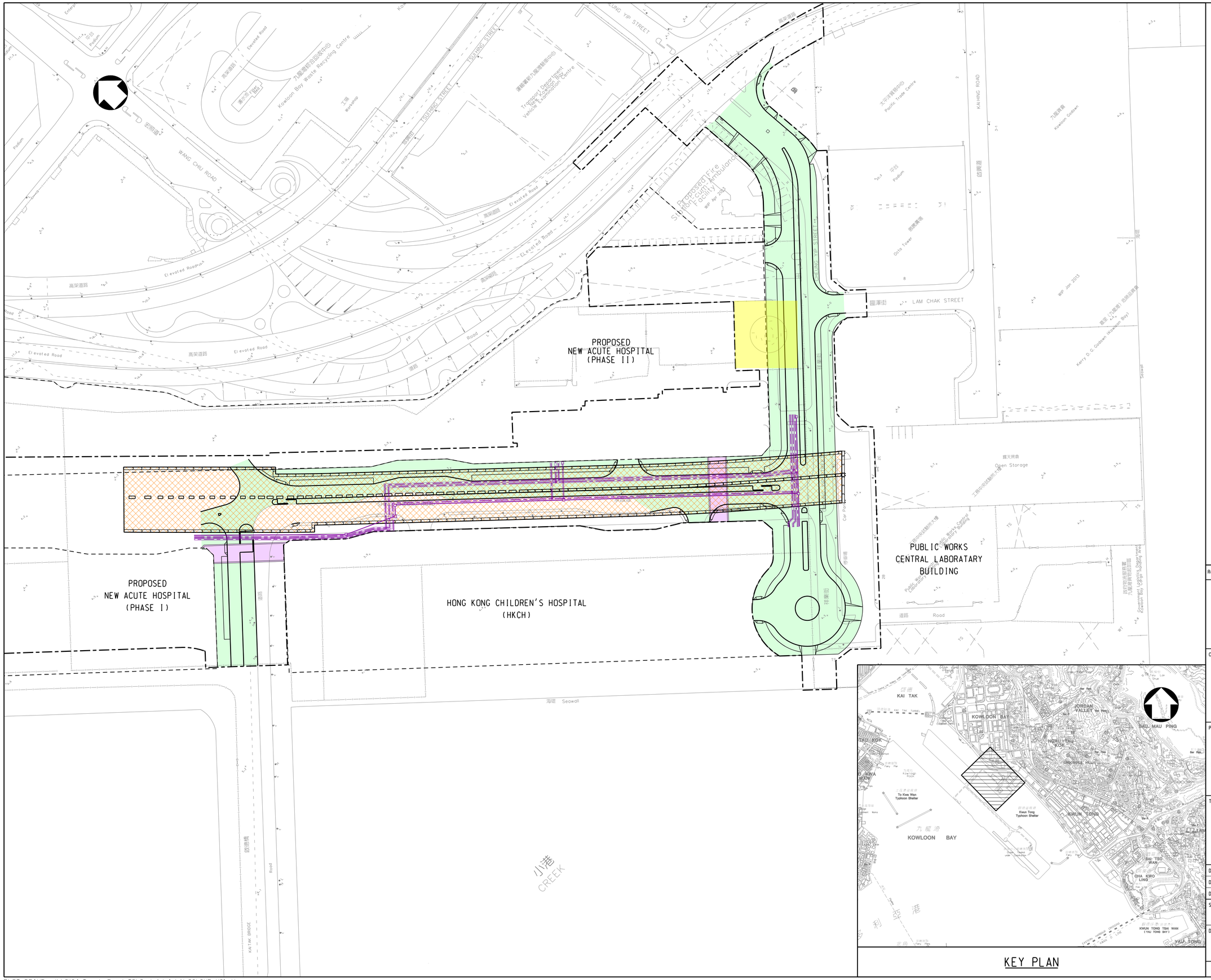
Figure 1

Project General Layout



LEGENDS:

- SITE BOUNDARY
- HOSPITAL SITE BOUNDARY
- PROPOSED SUPPORTING UNDERGROUND STRUCTURE
- PROPOSED SUBWAYS
- PROPOSED ROADWORKS
- PROPOSED DISTRICT COOLING SYSTEM
- DEMOLITION OF RADAR TOWER

Rev.	Date	Drawn	Description	Checked	Approved

Hyder MEINHARDT
Hyder-Meinhardt JV

CLIENT

CEDD 土木工程拓展署
Civil Engineering and Development Department
九龍拓展處
Kowloon Development Office

PROJECT

CONTRACT NO. KL/2014/03
KAI TAK DEVELOPMENT - STAGE 3
INFRASTRUCTURE WORKS FOR DEVELOPMENTS AT THE SOUTHERN PART OF THE FORMER RUNWAY

TITLE

GENERAL LAYOUT PLAN

DESIGNED			ENG. CHECK		
DRAWN			COORDINATION		
DWG. CHECK			APPROVED		

SCALE AT A1	STATUS	REV
1 : 1000		A

Drawing No.

FIGURE 1.0

KEY PLAN

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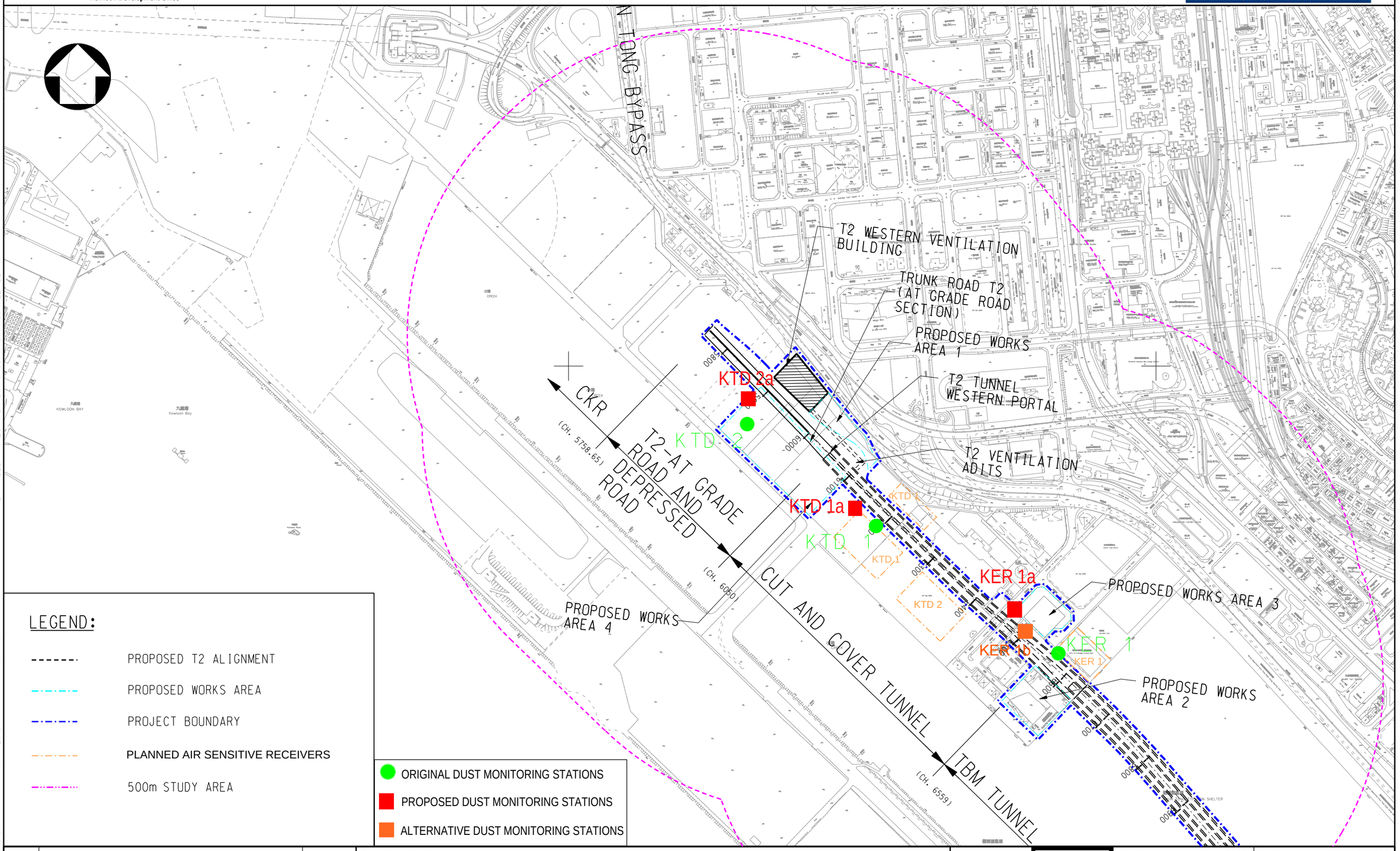
Figure 2

Air and Noise Monitoring Locations

土木工程拓展署
Civil Engineering and Development Department
九龍拓展處
Kowloon Development Office

AGREEMENT NO. CE 38/2008(HY)
KAI TAK DEVELOPMENT - TRUNK ROAD T2 AND INFRASTRUCTURE AT SOUTH APRON - INVESTIGATION, DESIGN AND CONSTRUCTION

Hyder-Meinhardt JV



LEGEND:

- PROPOSED T2 ALIGNMENT
- PROPOSED WORKS AREA
- PROJECT BOUNDARY
- PLANNED AIR SENSITIVE RECEIVERS
- 500m STUDY AREA

- ORIGINAL DUST MONITORING STATIONS
- PROPOSED DUST MONITORING STATIONS
- ALTERNATIVE DUST MONITORING STATIONS

Rev.	Description	Date

Drawing title

IDENTIFIED DUST MONITORING STATIONS AT SOUTH APRON OF FORMER KAI TAK AIRPORT

Original Size: A3

Scale: 1 : 6000 | Date: 30/01/2012

File name

Drawing No.: FIGURE 2.1a (revised)

Rev.: --

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Civil Engineering and Development Department
九龍拓展處
Kowloon Development Office

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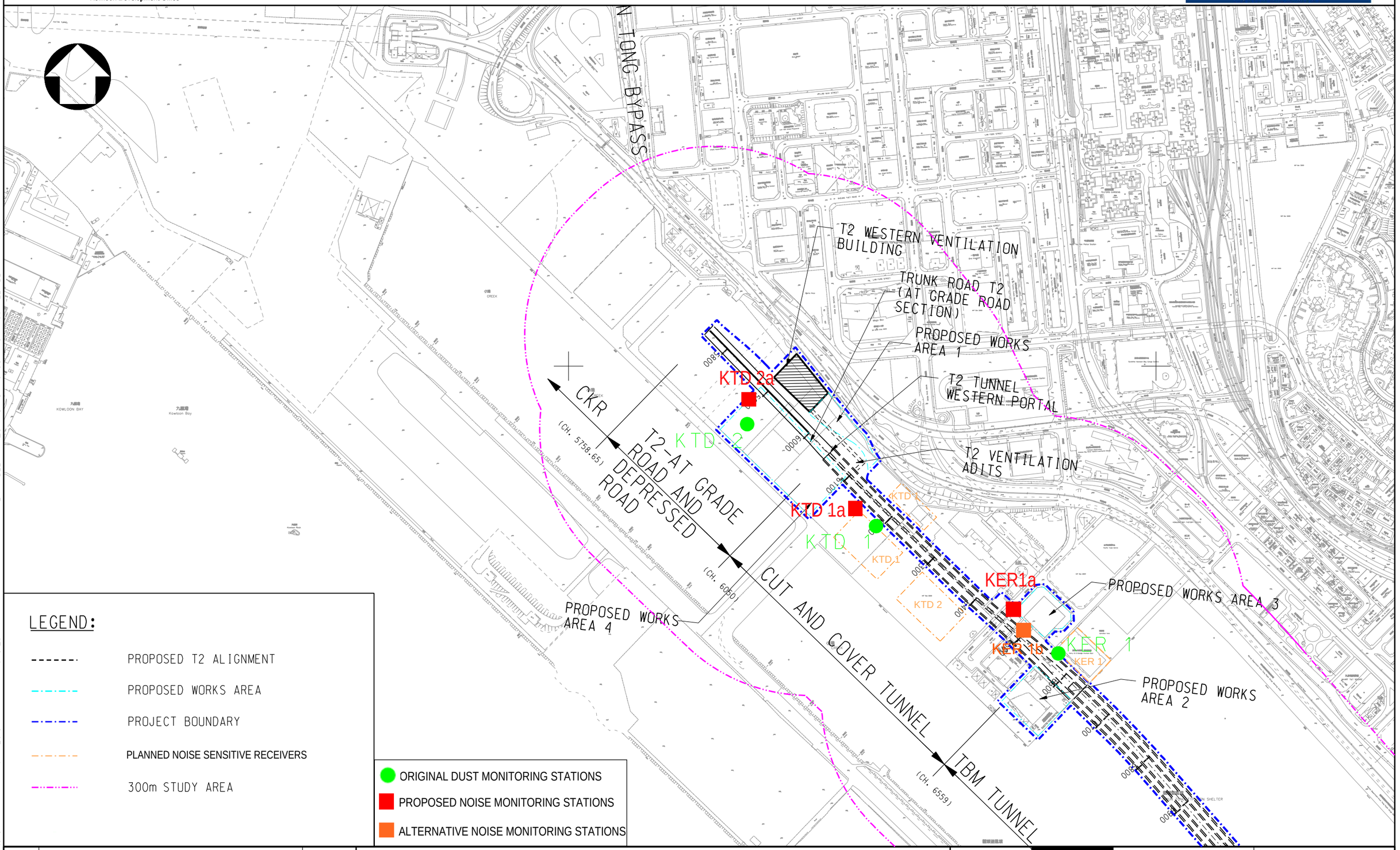
Hyder-Meinhardt JV



LEGEND:

- PROPOSED T2 ALIGNMENT
- PROPOSED WORKS AREA
- PROJECT BOUNDARY
- PLANNED NOISE SENSITIVE RECEIVERS
- 300m STUDY AREA

- ORIGINAL DUST MONITORING STATIONS
- PROPOSED NOISE MONITORING STATIONS
- ALTERNATIVE NOISE MONITORING STATIONS

Rev.	Description	Date

Drawing title

IDENTIFIED NOISE MONITORING STATIONS AT SOUTH APRON OF FORMER KAI TAK AIRPORT

Original Size: A3

Scale: 1 : 6000 | Date: 30/01/2012

File name

Drawing No.: FIGURE 3.1a (revised)

Rev.: --

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Appendix A

Construction Programme

Hyder MEINHARDT
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KL/2014/03 Kai Tak Development - Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway

CEDD 土木工程拓展署 Civil Engineering and Development Department 九龍拓展處 Kowloon Development Office

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
KL/2014/03-Stage 3 Infrastructure Works for Developments at the Southern		1200	835	04-Jan-16 A	12-Jun-19
Project Key Dates		1190	835	01-Feb-16 A	12-Jun-19
Site Possession Date		0	0	01-Apr-17	01-Apr-17
K-PK-SPD-1800	Portion I	0	0	01-Apr-17*	
Site Handover Date		0	0	28-Apr-17	28-Apr-17
K-PK-SHD-1100	Portion B	0	0		28-Apr-17*
General Submission		407	143	11-May-16 A	20-Jul-17
Programming / Reporting		28	28	09-Jun-16 A	27-Mar-17
Works Programme		28	28	09-Jun-16 A	27-Mar-17
K-PA-GSP-4300	Acceptance of the Works Programme	28	28	09-Jun-16 A	27-Mar-17
Condition Survey & Construction Impact Assessment		239	58	11-May-16 A	26-Apr-17
K-DR-PRE-1190	Condition survey at HKCH	7	7	15-Mar-17	21-Mar-17
K-DR-PRE-1195	Submission of condition survey report at HKCH	14	14	22-Mar-17	04-Apr-17
K-DR-PRE-1320	Revise & Resubmit CIA Report for Zone 2 to 4	56	30	11-May-16 A	29-Mar-17
K-DR-PRE-1330	Approval of the CIA report submissions	28	28	30-Mar-17	26-Apr-17
Alternative Design Submission and Approval		288	43	15-Feb-17 A	11-Apr-17
Package B05 : SUS D-wall from (CH6+291 to CH6+568)		288	43	15-Feb-17 A	11-Apr-17
K-PA-ADS-1575	Resubmission of DDA drawing (Rev.J SUS D-Wall Panels EM10 to EM14, WM12 toWM16, WH01 toWH03 and SH05 to SH07)	28	0	15-Feb-17 A	25-Feb-17 A
K-PA-ADS-1580	Engineer's review and approval	28	16	25-Feb-17 A	15-Mar-17
K-PA-ADS-1590	Submission of DDA drawing (SUS D-Wall Panels at Westbound CH6+220 to CH6+291 in Zone 2)	28	15	15-Feb-17 A	14-Mar-17
K-PA-ADS-1600	Engineer's review and approval	28	28	15-Mar-17	11-Apr-17
Major Temporary Works Design		127	127	16-Mar-17	20-Jul-17
K-PA-GSP-6820	ELS design for construction of SUS from CH6+220 to CH6+291 in Zone 2 - horizontal members	56	56	26-May-17	20-Jul-17
K-PA-GSP-6835	ELS design for construction of SUS from CH6+291 to CH6+568 in Zone 4 - horizontal members	56	56	26-Apr-17	20-Jun-17
K-PA-GSP-8860	Submission of Pumping Test for SUS Cofferdam in Zone 4	14	14	16-Mar-17	29-Mar-17
K-PA-GSP-8865	Engineer's review and approval	28	28	30-Mar-17	26-Apr-17
K-PA-GSP-8870	Submission of Pumping Test for SUS Cofferdam in Zone 2	14	14	12-Apr-17	25-Apr-17
K-PA-GSP-8880	Engineer's review and approval	28	28	26-Apr-17	23-May-17
Major Construction Works Method Statement		264	103	06-Sep-16 A	10-Jun-17
K-PA-GSP-7145	Engineer's comments and approval for Method statement of Excavation and ELS for SUS Construction for Zone 1	28	8	06-Sep-16 A	07-Mar-17
K-PA-GSP-7150	Method statement of Excavation and ELS for SUS Construction for Zone 3	28	28	17-Mar-17	13-Apr-17
K-PA-GSP-7155	Engineer's comments and approval	28	28	14-Apr-17	11-May-17
K-PA-GSP-7160	Method statement of Excavation and ELS for SUS Construction for Zone 4	28	28	14-May-17	10-Jun-17
K-PA-GSP-7405	Engineer's comments and approval	28	12	29-Oct-16 A	11-Mar-17
K-PA-GSP-7490	Method statement for Erection and Removal of the temporary vehicular and pedestrian access for HKCH	28	15	15-Dec-16 A	14-Mar-17
K-PA-GSP-7495	Engineer's comments and approval	28	28	15-Mar-17	11-Apr-17

中國路橋工程有限責任公司
CHINA ROAD AND BRIDGE CORPORATION

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3 MRP Mar 2017- May 2017

Project ID :15 3MPR Mar - May 17
Layout : KL201403 WP4 3MRP

3 Months Rolling Programme			
Date	Revision	Checked	Approved
28-Feb-17	Mar 17 - May 17		

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
K-PA-GSP-7500	Method statement for Erection and Removal of the temporary support for the utilities	28	0	26-Nov-16 A	17-Feb-17 A
K-PA-GSP-7505	Engineer's comments and approval	28	20	20-Feb-17 A	19-Mar-17
Temporary Utility Diversion Works		226	96	05-Sep-16 A	26-Jun-17
Temporary Diversion for Watermain Works		0	0	22-Mar-17	22-Mar-17
Laying Proposed (Fresh) Watermain		0	0	22-Mar-17	22-Mar-17
K-PA-TUD-1150	DN600 connected (X1 and X2)	0	0		22-Mar-17
K-PA-TUD-1170	DN100 connected (X3)	0	0		22-Mar-17
K-PA-TUD-2050	DN450 DI connected (X4)	0	0		22-Mar-17
Laying Proposed (Salt) Watermain		0	0	22-Mar-17	22-Mar-17
K-PA-TUD-1250	Connection to DN300 DI (Y1)	0	0		22-Mar-17
K-PA-TUD-2250	Connection to DN300 DI (Y2 and Y3)	0	0		22-Mar-17
Temporary Diversion for Drainage Works		226	96	05-Sep-16 A	26-Jun-17
K-PA-TUD-2400	Diversion of 2100 storm drain at zone 4	60	15	05-Sep-16 A	16-Mar-17
K-PA-TUD-2500	Excavation and laying of DN600 MS pipe and manhole (N-CP-1) at zone 4 for HKCH connection	25	25	17-May-17	14-Jun-17
K-PA-TUD-2600	Excavation and laying of DN300 MS pipe and manhole (FMH23-15D) at zone 4	70	70	30-Mar-17	26-Jun-17
Temporary Diversion for CLP Cable at CH6+560		76	68	19-Jan-17 A	24-May-17
K-PA-TUD-3555	Trench excavation area 3 for cable diversion by CLP at zone 4	27	15	19-Jan-17 A	16-Mar-17
K-PA-TUD-3560	Handover area 4 to CLP cable diversion at zone 4	0	0		29-Mar-17
K-PA-TUD-3700	Trench excavation area 4 for cable diversion and CLP cable slewing works by CLP	42	42	30-Mar-17	24-May-17
K-PA-TUD-3750	Fabrication and Erection temporary support to utilities at zone 4	14	14	30-Mar-17	19-Apr-17
Temporary Diversion for Sewage Rising Main		88	88	20-Feb-17 A	16-Jun-17
K-PA-TUD-1500	Construction of 3xDN350 sewage rising main and manhole	28	18	20-Feb-17 A	13-May-17
K-PA-TUD-1600	Construction of DN750 sewage pipe and manhole - stage 1	20	20	29-Mar-17	25-Apr-17
K-PA-TUD-1700	Construction of DN750 sewage pipe - stage 2 (crossing tunnel box structure)	10	10	22-Apr-17	05-May-17
K-PA-TUD-1800	Connection to existing rising main	0	0		22-May-17
K-PA-TUD-2750	Construction of DN450 sewerage pipe at zone 2 - stage 1	48	48	23-Feb-17 A	28-Apr-17
K-PA-TUD-2800	Construction of DN450 sewerage pipe at zone 2 - stage 2	16	16	30-May-17	16-Jun-17
Temporary Diversion for Telecommunication Cable		68	68	24-Feb-17 A	24-May-17
K-PA-TUD-4000	Diversion of Fibre cable at Zone 2 (PCCW)	18	3	24-Feb-17 A	02-Mar-17
K-PA-TUD-4050	Diversion of Fibre cable at Zone 4 (PCCW)	18	18	04-May-17	24-May-17
K-PA-TUD-4060	Diversion of Fibre optical cable (HGC)	18	18	04-May-17	24-May-17
Temporary Traffic Management		304	92	31-Jul-16 A	30-May-17
Temp Traffic Arrangement Schemes		302	70	31-Jul-16 A	08-May-17
K-PA-TTA-8100	Submission and approval of TTA schemes-TTA stage 2 for D-wall W/B at Zone 2	90	28	31-Jul-16 A	27-Mar-17
K-PA-TTA-8900	Submission and approval of TTA schemes-TTA stage 3 for re-construction of Cheung	90	70	11-Feb-17 A	08-May-17
Implementation of Temporary Traffic Arrangement		18	18	09-May-17	30-May-17
K-PA-TTA-3000	TTA stage 2 - Road diversion at Shing Cheong Road for D-wall W/B at Zone 2	0	0	30-May-17	
K-PA-TTA-4000	TTA stage 3 - Road diversion at Cheung Yip Street phase 1	0	0	09-May-17	

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KL/2014/03 Kai Tak Development - Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway

CEDD 土木工程拓展署 Civil Engineering and Development Department 九龍拓展處 Kowloon Development Office

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
	Construction of Temporary Diversion Road for Shing Cheong Road (TTA stage 2)	23	23	04-May-17	30-May-17
K-PA-TTA-6000	Construction of concrete pavement (CH0 to CH100)	20	20	04-May-17	26-May-17
K-PA-TTA-6050	Construction of footpath and U-channel (CH0 to CH100)	8	8	19-May-17	27-May-17
K-PA-TTA-6100	Installation of street lighting and setup the TTA	5	5	24-May-17	29-May-17
K-PA-TTA-6150	Road marking	1	1	30-May-17	30-May-17
	Interfacing Works	60	60	17-Mar-17	15-May-17
K-PA-INT-6030	Handover Area B1 to HKCH's Consrtuction (CSSOJV) for Telecom Lead-in Works	14	14	17-Mar-17	30-Mar-17
K-PA-INT-6070	Handover Area C2 to HKCH's Consrtuction (CSSOJV) for Stormwater Drainage Cor	16	16	30-Apr-17	15-May-17
	Materials Procurement (Major Materials)	901	525	01-Feb-16 A	06-Aug-18
	ELS struct / waling	360	240	10-Jun-16 A	25-Oct-17
K-PA-MP-1150	Manufacturing & delivery to site	360	240	10-Jun-16 A	25-Oct-17
	Water Works	240	240	06-Apr-17	01-Dec-17
K-PA-MP-1050	Manufacturing & delivery to site	240	240	06-Apr-17	01-Dec-17
	Steel H-Pile	420	100	01-Feb-16 A	07-Jun-17
K-PA-MP-1250	Manufacturing & delivery to site	420	100	01-Feb-16 A	07-Jun-17
	Chilled Water Pipes - DCS	550	520	06-Feb-17 A	06-Aug-18
K-PA-MP-1300	Order of chilled water pipes	0	0	05-Mar-17	
K-PA-MP-1350	Manufacturing & delivery to site	550	520	06-Feb-17 A	06-Aug-18
	Prelimiaries	1190	835	11-Mar-16 A	12-Jun-19
K-DR-PRE-1800	Submission of time-lapsed photographs and video	1190	835	11-Mar-16 A	12-Jun-19
	Barge Loading Facilities	48	48	17-Mar-17	19-May-17
K-DR-PRE-1450	Setup of temporary barging point	48	48	17-Mar-17	18-May-17
K-DR-PRE-1480	Operation of the barging point	0	0	19-May-17	
	Instrumentation and Monitoring	363	182	03-Aug-16 A	28-Aug-17
	Eastbound Instrumentation and Monitoring	25	25	15-Mar-17	13-Apr-17
	Inclinometer (INC)	25	25	15-Mar-17	13-Apr-17
K-IM-INC-1330	Installation of INC at Zone 3	15	15	15-Mar-17	31-Mar-17
K-IM-INC-1340	Installation of INC at Zone 4	15	15	27-Mar-17	13-Apr-17
	Westbound Instrumentation and Monitoring	60	60	21-Mar-17	05-Jun-17
	Extensomter (EXT)	60	60	21-Mar-17	05-Jun-17
K-IM-EXT-1370	Installation of EXT at Zone 3	15	15	21-Mar-17	07-Apr-17
K-IM-EXT-1380	Installation of EXT at Zone 4	15	15	19-May-17	05-Jun-17
	Piezometer/Standpipe (PZR)	38	38	01-Apr-17	22-May-17
K-IM-PZR-1360	Installation of PZR at Zone 2	10	10	27-Apr-17	10-May-17
K-IM-PZR-1370	Installation of Remaining PZR at Zone 3	3	3	01-Apr-17	05-Apr-17
K-IM-PZR-1380	Installation of Remainging PZR at Zone 4	15	15	05-May-17	22-May-17
	Inclinometer (INC)	26	26	06-Apr-17	11-May-17
K-IM-INC-1370	Installation of INC at Zone 3	10	10	06-Apr-17	20-Apr-17

中國路橋工程有限責任公司 CHINA ROAD AND BRIDGE CORPORATION

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

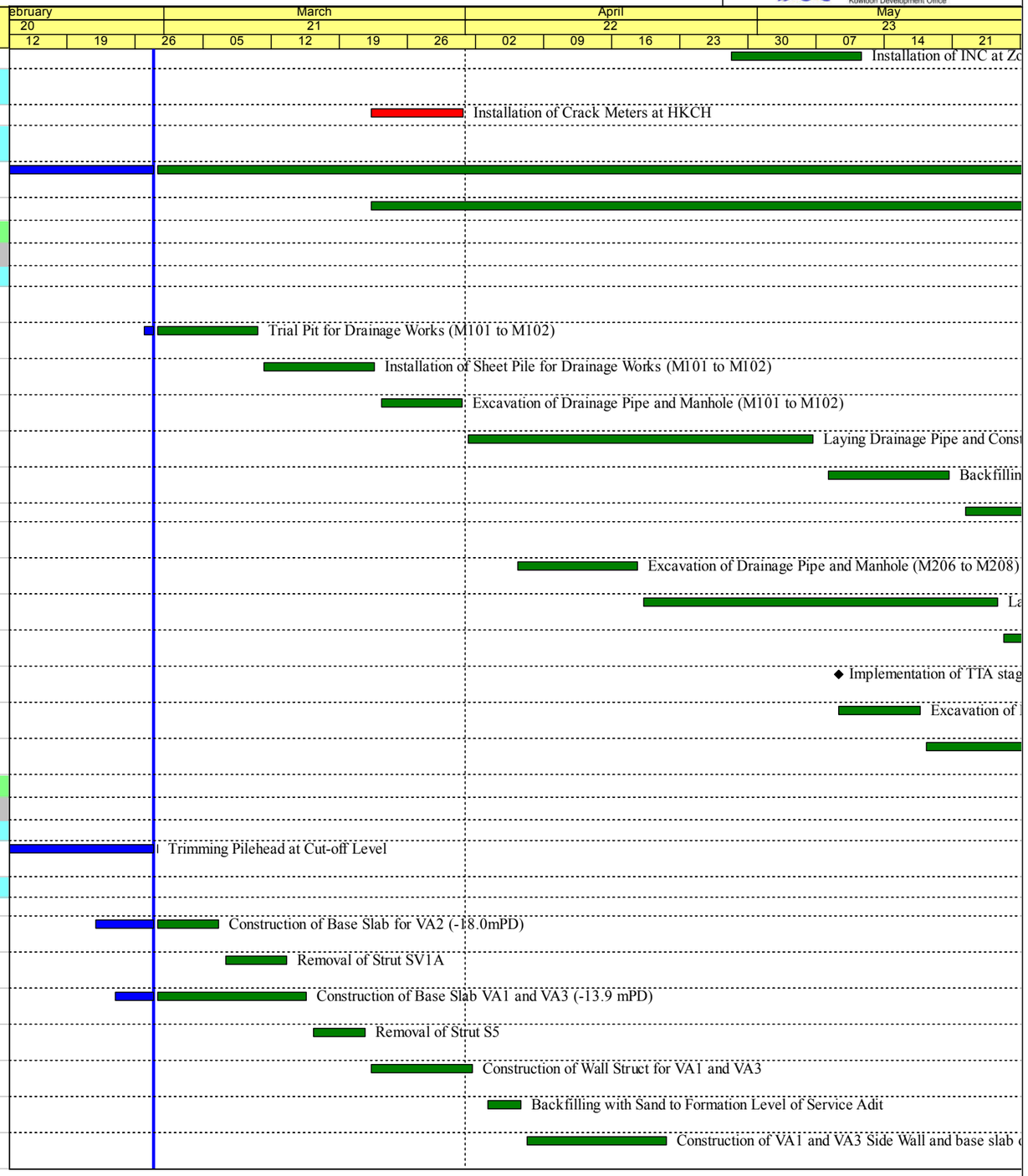
3 MRP Mar 2017- May 2017

Project ID :15 3MPR Mar - May 17
Layout : KL201403 WP4 3MRP

3 Months Rolling Programme

Date	Revision	Checked	Approved
28-Feb-17	Mar 17 - May 17		

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
K-IM-INC-1380	Installation of INC at Zone 4	10	10	28-Apr-17	11-May-17
Crack Meters		10	10	22-Mar-17	31-Mar-17
K-IM-CRM-1010	Installation of Crack Meters at HKCH	10	10	22-Mar-17	31-Mar-17
Tilt Monitoring Tile Plates		363	182	03-Aug-16 A	28-Aug-17
K-IM-TMT-1000	Tilt Monitoring near PWCL	310	120	03-Aug-16 A	27-Jun-17
K-IM-TMT-1020	Tilt Monitoring near HKCH	160	160	22-Mar-17	28-Aug-17
Section 1 of the Works-Remainder of the Works		82	92	27-Feb-17 A	21-Jun-17
Roadwork and Drainage Works		82	92	27-Feb-17 A	21-Jun-17
Road D4-4 (Cheung Yip Street)		82	92	27-Feb-17 A	21-Jun-17
Drainage Works (CH100 to CH200)		67	77	27-Feb-17 A	03-Jun-17
K-01-RWS-2080	Trial Pit for Drainage Works (M101 to M102)	10	10	27-Feb-17 A	10-Mar-17
K-01-RWS-2090	Installation of Sheet Pile for Drainage Works (M101 to M102)	10	10	11-Mar-17	22-Mar-17
K-01-RWS-2100	Excavation of Drainage Pipe and Manhole (M101 to M102)	8	8	23-Mar-17	31-Mar-17
K-01-RWS-2110	Laying Drainage Pipe and Construction Manhole (M101 to M102)	25	25	01-Apr-17	06-May-17
K-01-RWS-2120	Backfilling of Drainage Pipe and Manhole (M101 to M102)	12	12	08-May-17	20-May-17
K-01-RWS-9300	Installation of Sheet Pile for Drainage Works (M102h to M102e)	12	12	22-May-17	03-Jun-17
Drainage Works (CH200 to CH420)		61	61	06-Apr-17	21-Jun-17
K-01-RWS-1490	Excavation of Drainage Pipe and Manhole (M206 to M208)	8	8	06-Apr-17	18-Apr-17
K-01-RWS-1492	Laying Drainage Pipe and Construction Manhole (M206 to M208)	30	30	19-Apr-17	25-May-17
K-01-RWS-1495	Backfilling of Drainage Pipe and Manhole (M206 to M208)	12	12	26-May-17	08-Jun-17
K-01-RWS-1500	Implementation of TTA stage 3 - phase 1	0	0	09-May-17	
K-01-RWS-1600	Excavation of Drainage Pipe and Manhole (M208 to M213)	8	8	09-May-17	17-May-17
K-01-RWS-1610	Laying Drainage Pipe and Construction Manhole (M208 to M213)	30	30	18-May-17	21-Jun-17
Section 1A of the Works -Construction of Supporting Underground Structure (Alter		311	107	22-Sep-16 A	10-Jul-17
SUS and Ventilation Adits from CH6+150 to CH6+220 in Zone 1		122	76	19-Dec-16 A	02-Jun-17
Construction of Socketed H-Pile		40	0	19-Dec-16 A	28-Feb-17
K-1A-SV1-3400	Trimming Pilehead at Cut-off Level	40	0	19-Dec-16 A	28-Feb-17
Construction of Tunnel Box Structure		71	76	22-Feb-17 A	02-Jun-17
SUS Bay 1 (Ch6150-Ch6167.5)		70	76	22-Feb-17 A	02-Jun-17
K-1A-SV1-8070	Construction of Base Slab for VA2 (-18.0mPD)	10	6	22-Feb-17 A	06-Mar-17
K-1A-SV1-8100	Removal of Strut SV1A	6	6	07-Mar-17	13-Mar-17
K-1A-SV1-8140	Construction of Base Slab VA1 and VA3 (-13.9 mPD)	20	14	24-Feb-17 A	15-Mar-17
K-1A-SV1-8170	Removal of Strut S5	5	5	16-Mar-17	21-Mar-17
K-1A-SV1-8190	Construction of Wall Struct for VA1 and VA3	10	10	22-Mar-17	01-Apr-17
K-1A-SV1-8210	Backfilling with Sand to Formation Level of Service Adit	3	3	03-Apr-17	06-Apr-17
K-1A-SV1-8240	Construction of VA1 and VA3 Side Wall and base slab of SA	10	10	07-Apr-17	21-Apr-17



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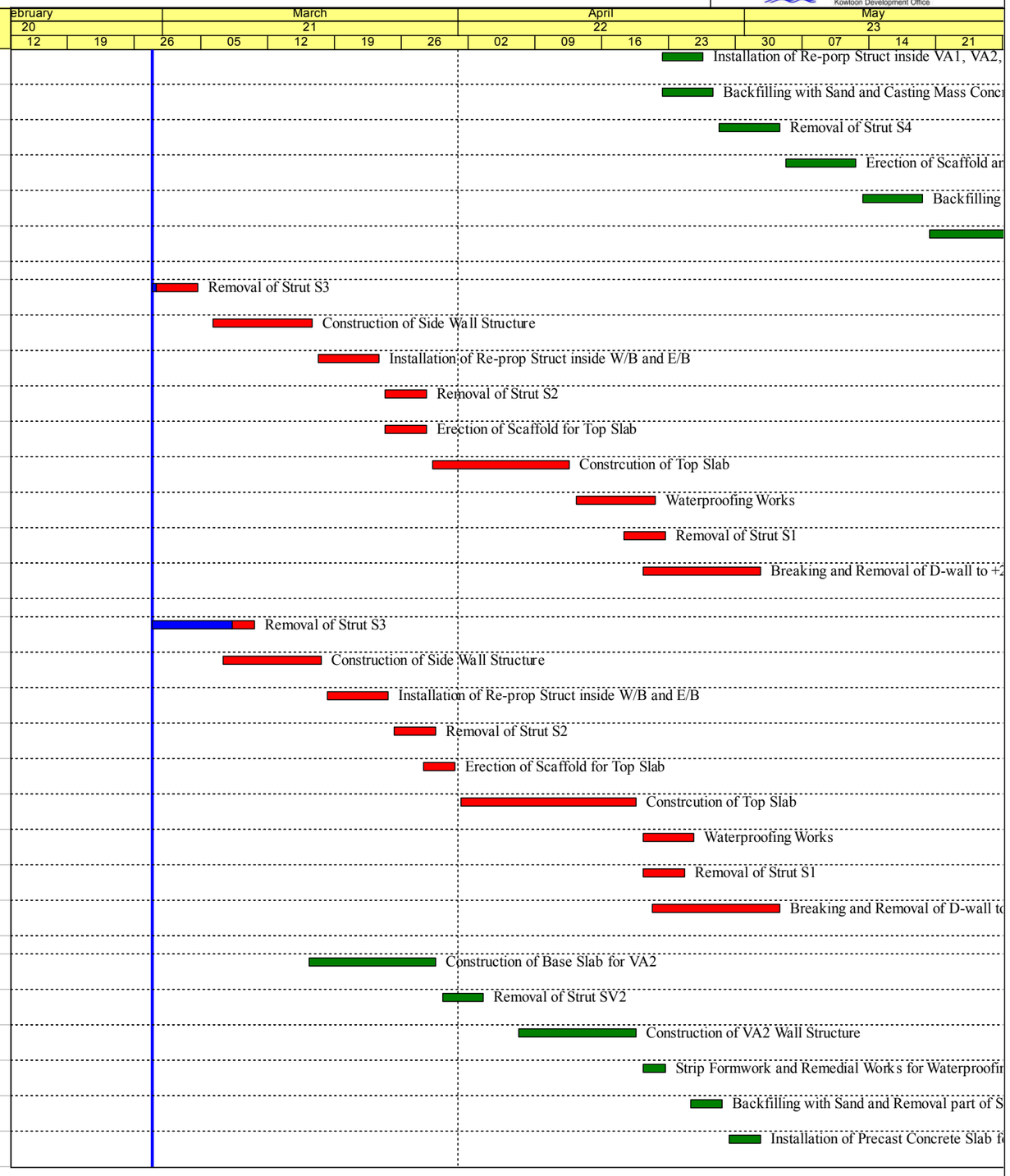
KL/2014/03 Kai Tak Development - Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway

CEDD 土木工程拓展署 Civil Engineering and Development Department 九龍拓展處 Kowloon Development Office

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
K-1A-SV1-8250	Installation of Re-porp Struct inside VA1, VA2, VA3 and SA	4	4	22-Apr-17	26-Apr-17
K-1A-SV1-8260	Backfilling with Sand and Casting Mass Concrete between VA1, VA2 and SA	5	5	22-Apr-17	27-Apr-17
K-1A-SV1-8270	Removal of Strut S4	4	4	28-Apr-17	04-May-17
K-1A-SV1-8290	Erection of Scaffold and Formwork for Base Slab Construction (inside VA1 and VA3)	7	7	05-May-17	12-May-17
K-1A-SV1-8300	Backfilling with Sand to Formation Level	6	6	13-May-17	19-May-17
K-1A-SV1-8320	Construction of Base Slab for SUS	12	12	20-May-17	02-Jun-17
SUS Bay 4 (Ch6202.5-Ch6220)		45	50	28-Feb-17 A	02-May-17
K-1A-SV1-8560	Removal of Strut S3	4	5	28-Feb-17 A	04-Mar-17
K-1A-SV1-8580	Construction of Side Wall Structure	10	10	06-Mar-17	16-Mar-17
K-1A-SV1-8590	Installation of Re-prop Struct inside W/B and E/B	6	6	17-Mar-17	23-Mar-17
K-1A-SV1-8600	Removal of Strut S2	4	4	24-Mar-17	28-Mar-17
K-1A-SV1-8605	Erection of Scaffold for Top Slab	4	4	24-Mar-17	28-Mar-17
K-1A-SV1-8610	Constrcution of Top Slab	12	12	29-Mar-17	12-Apr-17
K-1A-SV1-8625	Waterproofing Works	5	5	13-Apr-17	21-Apr-17
K-1A-SV1-8640	Removal of Strut S1	5	5	18-Apr-17	22-Apr-17
K-1A-SV1-8650	Breaking and Removal of D-wall to +2.5mPD	10	10	20-Apr-17	02-May-17
SUS Bay 3 (Ch6185-Ch6202.5)		45	45	28-Feb-17 A	04-May-17
K-1A-SV1-8720	Removal of Strut S3	4	3	28-Feb-17 A	10-Mar-17
K-1A-SV1-8740	Construction of Side Wall Structure	10	10	07-Mar-17	17-Mar-17
K-1A-SV1-8750	Installation of Re-prop Struct inside W/B and E/B	6	6	18-Mar-17	24-Mar-17
K-1A-SV1-8760	Removal of Strut S2	4	4	25-Mar-17	29-Mar-17
K-1A-SV1-8765	Erection of Scaffold for Top Slab	4	4	28-Mar-17	31-Mar-17
K-1A-SV1-8770	Constrcution of Top Slab	12	12	01-Apr-17	19-Apr-17
K-1A-SV1-8785	Waterproofing Works	5	5	20-Apr-17	25-Apr-17
K-1A-SV1-8800	Removal of Strut S1	4	4	20-Apr-17	24-Apr-17
K-1A-SV1-8810	Breaking and Removal of D-wall to +2.5mPD	10	10	21-Apr-17	04-May-17
SUS Bay 2 (Ch6167.5-Ch6185)		60	60	16-Mar-17	31-May-17
K-1A-SV1-8840	Construction of Base Slab for VA2	12	12	16-Mar-17	29-Mar-17
K-1A-SV1-8860	Removal of Strut SV2	4	4	30-Mar-17	03-Apr-17
K-1A-SV1-8870	Construction of VA2 Wall Structure	8	8	07-Apr-17	19-Apr-17
K-1A-SV1-8880	Strip Formwork and Remedial Works for Waterproofing	3	3	20-Apr-17	22-Apr-17
K-1A-SV1-8890	Backfilling with Sand and Removal part of SV1	4	4	25-Apr-17	28-Apr-17
K-1A-SV1-8900	Installation of Precast Concrete Slab for Base Slab Constrcution	2	2	29-Apr-17	02-May-17



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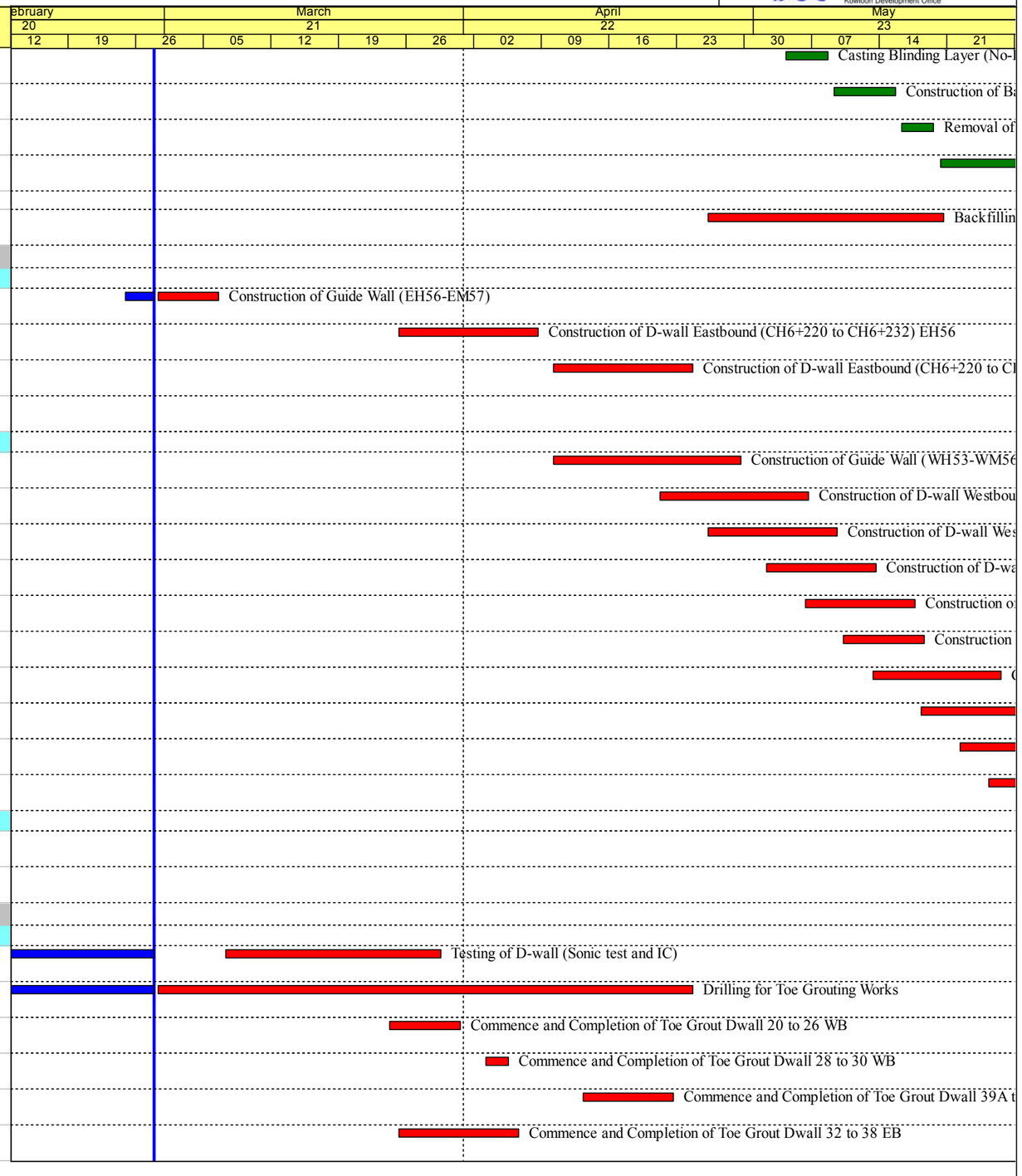
KL/2014/03 Kai Tak Development - Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway

CEDD 土木工程拓展署 Civil Engineering and Development Department 九龍拓展處 Kowloon Development Office

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
K-1A-SV1-8910	Casting Blinding Layer (No-Fine) and Laying Waterproofing Works	4	4	04-May-17	08-May-17
K-1A-SV1-8920	Construction of Base Slab	6	6	09-May-17	15-May-17
K-1A-SV1-8930	Removal of Strut S3	4	4	16-May-17	19-May-17
K-1A-SV1-8950	Construction of Side Wall Construction	10	10	20-May-17	31-May-17
Backfilling Works		20	20	26-Apr-17	20-May-17
K-1A-SV1-6800	Backfilling (bay 3 to bay 4) (to +3.7m)	20	20	26-Apr-17	20-May-17
SUS and Ventilation Adits from CH6+220 to CH6+291 in Zone 2		291	87	25-Feb-17 A	15-Jun-17
E/B Construction of D-Wall		281	77	25-Feb-17 A	03-Jun-17
K-1A-SV2-1205	Construction of Guide Wall (EH56-EM57)	10	6	25-Feb-17 A	06-Mar-17
K-1A-SV2-2500	Construction of D-wall Eastbound (CH6+220 to CH6+232) EH56	12	12	25-Mar-17	08-Apr-17
K-1A-SV2-2505	Construction of D-wall Eastbound (CH6+220 to CH6+232) EM57	10	10	10-Apr-17	24-Apr-17
K-1A-SV2-2700	Construction of Guide Wall (EH53A)	5	5	30-May-17	03-Jun-17
W/B Construction of D-Wall in TTA Stage 1A		46	46	10-Apr-17	07-Jun-17
K-1A-SV2-5000	Construction of Guide Wall (WH53-WM56)	15	15	10-Apr-17	29-Apr-17
K-1A-SV2-5500	Construction of D-wall Westbound (CH6+241 to CH6+291) WH48	12	12	21-Apr-17	06-May-17
K-1A-SV2-5502	Construction of D-wall Westbound (CH6+241 to CH6+291) WM51	10	10	26-Apr-17	09-May-17
K-1A-SV2-5504	Construction of D-wall Westbound (CH6+241 to CH6+291) WM53	10	10	02-May-17	13-May-17
K-1A-SV2-5505	Construction of D-wall Westbound (CH6+241 to CH6+291) WM49	10	10	06-May-17	17-May-17
K-1A-SV2-5506	Construction of D-wall Westbound (CH6+241 to CH6+291) WH51A	8	8	10-May-17	18-May-17
K-1A-SV2-5507	Construction of D-wall Westbound (CH6+241 to CH6+291) WH54	12	12	13-May-17	26-May-17
K-1A-SV2-5508	Construction of D-wall Westbound (CH6+241 to CH6+291) WH50	10	10	18-May-17	29-May-17
K-1A-SV2-5510	Construction of D-wall Westbound (CH6+241 to CH6+291) WM52	10	10	22-May-17	01-Jun-17
K-1A-SV2-5515	Construction of D-wall Westbound (CH6+241 to CH6+291) WH55	12	12	25-May-17	07-Jun-17
W/B Construction of D-Wall in TTA Stage 2		15	15	30-May-17	15-Jun-17
K-1A-SV2-4300	Implementation of TTA stage 2	0	0	30-May-17	
K-1A-SV2-4400	Construction of Guide Wall	15	15	30-May-17	15-Jun-17
SUS Structure from CH6+291 to 6+467 in Zone 3		104	81	22-Sep-16 A	08-Jun-17
E/B Construction of D-Wall		73	49	22-Sep-16 A	29-Apr-17
K-1A-SV3-2400	Testing of D-wall (Sonic test and IC)	30	20	22-Sep-16 A	29-Mar-17
K-1A-SV3-7585	Drilling for Toe Grouting Works	50	44	10-Feb-17 A	24-Apr-17
K-1A-SV3-7625	Commence and Completion of Toe Grout Dwall 20 to 26 WB	7	7	24-Mar-17	31-Mar-17
K-1A-SV3-7635	Commence and Completion of Toe Grout Dwall 28 to 30 WB	2	2	03-Apr-17	05-Apr-17
K-1A-SV3-7645	Commence and Completion of Toe Grout Dwall 39A to 45 WB	6	6	13-Apr-17	22-Apr-17
K-1A-SV3-7655	Commence and Completion of Toe Grout Dwall 32 to 38 EB	10	10	25-Mar-17	06-Apr-17



中國路橋工程有限責任公司 CHINA ROAD AND BRIDGE CORPORATION

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3 MRP Mar 2017- May 2017

Project ID :15 3MPR Mar - May 17
Layout : KL201403 WP4 3MRP

3 Months Rolling Programme			
Date	Revision	Checked	Approved
28-Feb-17	Mar 17 - May 17		

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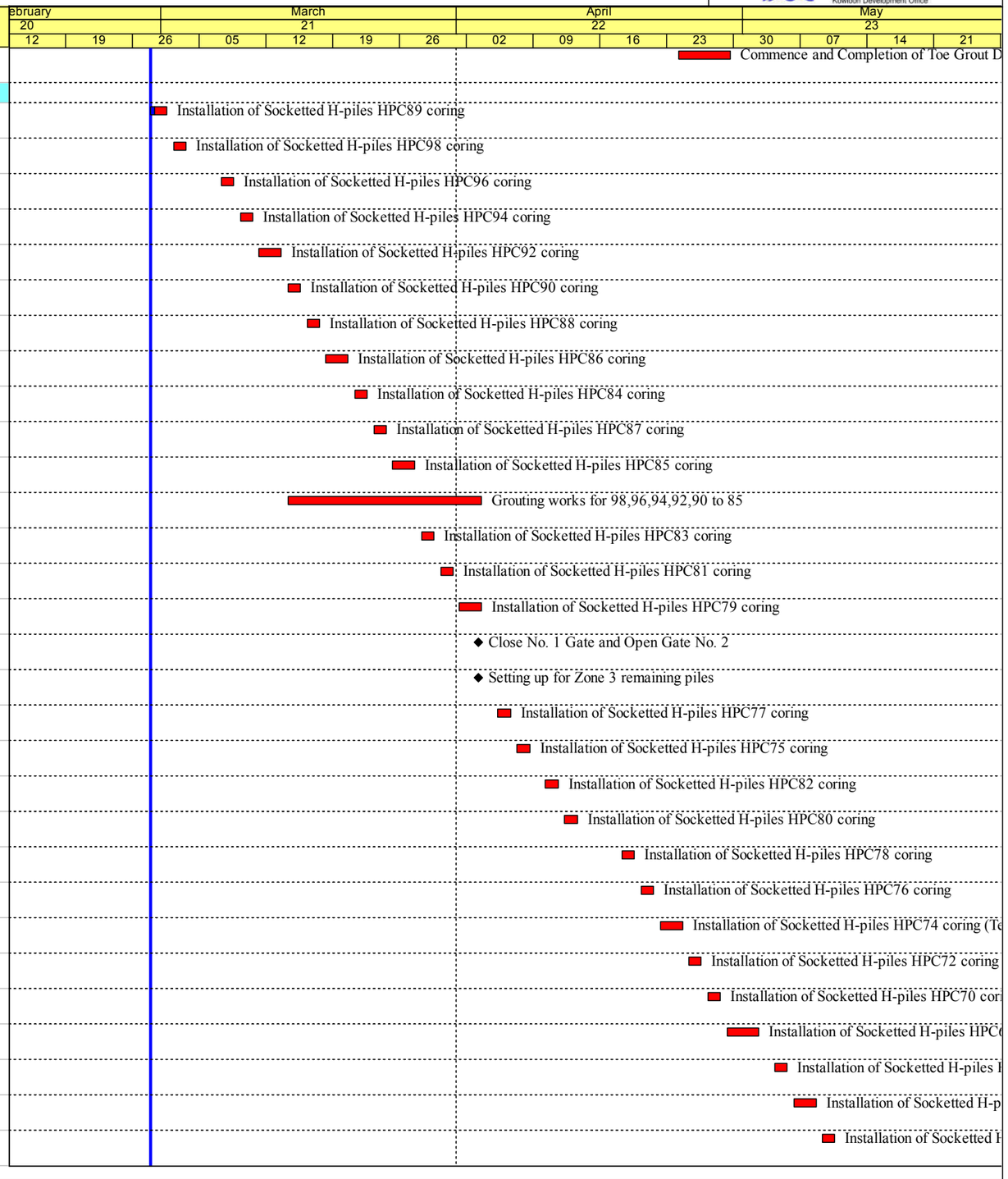
KL/2014/03 Kai Tak Development - Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway

CEDD 土木工程拓展署 Civil Engineering and Development Department 九龍拓展處 Kowloon Development Office

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
K-1A-SV3-7665	Commence and Completion of Toe Grout Dwall 39A to 43 EB	6	6	24-Apr-17	29-Apr-17
Construction of Socketed H-Pile		72	74	28-Feb-17 A	31-May-17
K-1A-SV3-3008	Installation of Socketted H-piles HPC89 coring	2	2	28-Feb-17 A	01-Mar-17
K-1A-SV3-3009	Installation of Socketted H-piles HPC98 coring	2	2	02-Mar-17	03-Mar-17
K-1A-SV3-3010	Installation of Socketted H-piles HPC96 coring	2	2	07-Mar-17	08-Mar-17
K-1A-SV3-3012	Installation of Socketted H-piles HPC94 coring	2	2	09-Mar-17	10-Mar-17
K-1A-SV3-3013	Installation of Socketted H-piles HPC92 coring	2	2	11-Mar-17	13-Mar-17
K-1A-SV3-3014	Installation of Socketted H-piles HPC90 coring	2	2	14-Mar-17	15-Mar-17
K-1A-SV3-3016	Installation of Socketted H-piles HPC88 coring	2	2	16-Mar-17	17-Mar-17
K-1A-SV3-3017	Installation of Socketted H-piles HPC86 coring	2	2	18-Mar-17	20-Mar-17
K-1A-SV3-3019	Installation of Socketted H-piles HPC84 coring	2	2	21-Mar-17	22-Mar-17
K-1A-SV3-3021	Installation of Socketted H-piles HPC87 coring	2	2	23-Mar-17	24-Mar-17
K-1A-SV3-3023	Installation of Socketted H-piles HPC85 coring	2	2	25-Mar-17	27-Mar-17
K-1A-SV3-3024	Grouting works for 98,96,94,92,90 to 85	18	18	14-Mar-17	03-Apr-17
K-1A-SV3-7430	Installation of Socketted H-piles HPC83 coring	2	2	28-Mar-17	29-Mar-17
K-1A-SV3-7440	Installation of Socketted H-piles HPC81 coring	2	2	30-Mar-17	31-Mar-17
K-1A-SV3-7450	Installation of Socketted H-piles HPC79 coring	2	2	01-Apr-17	03-Apr-17
K-1A-SV3-7455	Close No. 1 Gate and Open Gate No. 2	0	0	03-Apr-17*	
K-1A-SV3-7460	Setting up for Zone 3 remaining piles	0	0	03-Apr-17	
K-1A-SV3-7470	Installation of Socketted H-piles HPC77 coring	2	2	05-Apr-17	06-Apr-17
K-1A-SV3-7480	Installation of Socketted H-piles HPC75 coring	2	2	07-Apr-17	08-Apr-17
K-1A-SV3-7490	Installation of Socketted H-piles HPC82 coring	2	2	10-Apr-17	11-Apr-17
K-1A-SV3-7500	Installation of Socketted H-piles HPC80 coring	2	2	12-Apr-17	13-Apr-17
K-1A-SV3-7510	Installation of Socketted H-piles HPC78 coring	2	2	18-Apr-17	19-Apr-17
K-1A-SV3-7520	Installation of Socketted H-piles HPC76 coring	2	2	20-Apr-17	21-Apr-17
K-1A-SV3-7530	Installation of Socketted H-piles HPC74 coring (Tempo Bridge No.1)	2	2	22-Apr-17	24-Apr-17
K-1A-SV3-7540	Installation of Socketted H-piles HPC72 coring (Tempo Bridge No.1)	2	2	25-Apr-17	26-Apr-17
K-1A-SV3-7550	Installation of Socketted H-piles HPC70 coring (Tempo Bridge No.1)	2	2	27-Apr-17	28-Apr-17
K-1A-SV3-7560	Installation of Socketted H-piles HPC68 coring (Tempo Bridge No.1)	2	2	29-Apr-17	02-May-17
K-1A-SV3-7562	Installation of Socketted H-piles HPC73 coring (Tempo Bridge No.1)	2	2	04-May-17	05-May-17
K-1A-SV3-7564	Installation of Socketted H-piles HPC71 coring (Tempo Bridge No.1)	2	2	06-May-17	08-May-17
K-1A-SV3-7566	Installation of Socketted H-piles HPC69 coring (Tempo Bridge No.1)	2	2	09-May-17	10-May-17



中國路橋工程有限責任公司 CHINA ROAD AND BRIDGE CORPORATION

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3 MRP Mar 2017- May 2017

Project ID :15 3MPR Mar - May 17
Layout : KL201403 WP4 3MRP

3 Months Rolling Programme			
Date	Revision	Checked	Approved
28-Feb-17	Mar 17 - May 17		

Hyder - Meinhardt JV

KL/2014/03 Kai Tak Development - Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway

CEDD 土木工程拓展署 Civil Engineering and Development Department 九龍拓展處 Kowloon Development Office

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
K-1A-SV3-7570	Grouting works for HPC68 to 83	30	30	07-Apr-17	17-May-17
K-1A-SV3-7595	Setting Up for Pile Test (HPC138)	5	5	19-May-17	24-May-17
K-1A-SV3-7605	Loading Test for Pile HPC138	6	6	25-May-17	31-May-17
W/B Construction of D-Wall in TTA Stage 1A		84	64	10-Jan-17 A	19-May-17
K-1A-SV3-4250	Construction of D-wall Westbound (CH6+291 to CH6+344) WH42	12	10	23-Feb-17 A	10-Mar-17
K-1A-SV3-4252	Construction of D-wall Westbound (CH6+291 to CH6+344) WM41	8	8	11-Mar-17	20-Mar-17
K-1A-SV3-4254	Construction of D-wall Westbound (CH6+291 to CH6+344) WM43	8	8	21-Mar-17	29-Mar-17
K-1A-SV3-4270	Testing of D-wall (Sonic test and IC)	30	10	10-Jan-17 A	19-Apr-17
K-1A-SV3-4280	Drilling for Toe Grouting Works (WM20 to WM39A)	24	11	14-Feb-17 A	11-Mar-17
K-1A-SV3-4282	Drilling for Toe Grouting Works (WM47)	3	3	06-Mar-17	08-Mar-17
K-1A-SV3-4284	Drilling for Toe Grouting Works (WM41 to WM45)	9	9	31-Mar-17	11-Apr-17
K-1A-SV3-4286	Toe Grouting Works for WM20 to WM39A	10	10	10-Mar-17	21-Mar-17
K-1A-SV3-4287	Toe Grouting Works for WM47	3	3	22-Mar-17	24-Mar-17
K-1A-SV3-4288	Toe Grouting Works for WM41 to WM45	6	6	12-Apr-17	21-Apr-17
K-1A-SV3-4290	Construction of remaining temporary cut-off wall at CH6+291	32	32	22-Mar-17	04-May-17
K-1A-SV3-4300	Construction of temporary cut-off wall at CH6+467	55	55	10-Mar-17	19-May-17
Pumping Test		70	70	13-Mar-17	08-Jun-17
K-1A-SV3-5100	Installation of Dewatering Well (DW15-20) in Zone 3	25	25	13-Mar-17	11-Apr-17
K-1A-SV3-5102	Installation of Dewatering Well (DW07-10) in Zone 3	21	21	24-Mar-17	21-Apr-17
K-1A-SV3-5104	Installation of Dewatering Well (DW01-02) in Zone 3	6	6	29-Apr-17	08-May-17
K-1A-SV3-5106	Installation of Dewatering Well (DW21-22) in Zone 3	6	6	09-May-17	15-May-17
K-1A-SV3-5108	Installation of Dewatering Well (DW03-06) in Zone 3	12	12	18-May-17	31-May-17
K-1A-SV3-5115	Installation of Observation Well (OW03-06) in Zone 3	12	12	08-Apr-17	25-Apr-17
K-1A-SV3-5120	Installation of Observation Well (OW08) in Zone 3	2	2	26-Apr-17	27-Apr-17
K-1A-SV3-5125	Installation of Observation Well (OW17-19) in Zone 3	9	9	28-Apr-17	10-May-17
K-1A-SV3-5130	Installation of Observation Well (OW10-11) in Zone 3	4	4	11-May-17	15-May-17
K-1A-SV3-5135	Installation of Observation Well (OW12-15) in Zone 3	12	12	18-May-17	31-May-17
K-1A-SV3-5140	Installation of Recharge Well (OW12-15) in Zone 3	16	16	22-May-17	08-Jun-17
SUS Structure from CH6+467 to 6+568 in Zone 4		153	107	06-Dec-16 A	10-Jul-17
E/B Construction of D-Wall		88	65	14-Jan-17 A	20-May-17
K-1A-SV4-2120	Construction of Guide Wall (CH6+510 to CH6+555)	24	20	21-Jan-17 A	22-Mar-17
K-1A-SV4-2172	Construction of D-wall Eastbound (CH6+480 to CH6+510)	40	40	17-Mar-17	09-May-17
K-1A-SV4-2175	Construction of D-wall Eastbound (CH6+510 to CH6+555)	55	45	14-Jan-17 A	25-Apr-17

中國路橋工程有限責任公司 CHINA ROAD AND BRIDGE CORPORATION

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3 MRP Mar 2017- May 2017

Project ID :15 3MPR Mar - May 17
Layout : KL201403 WP4 3MRP

3 Months Rolling Programme

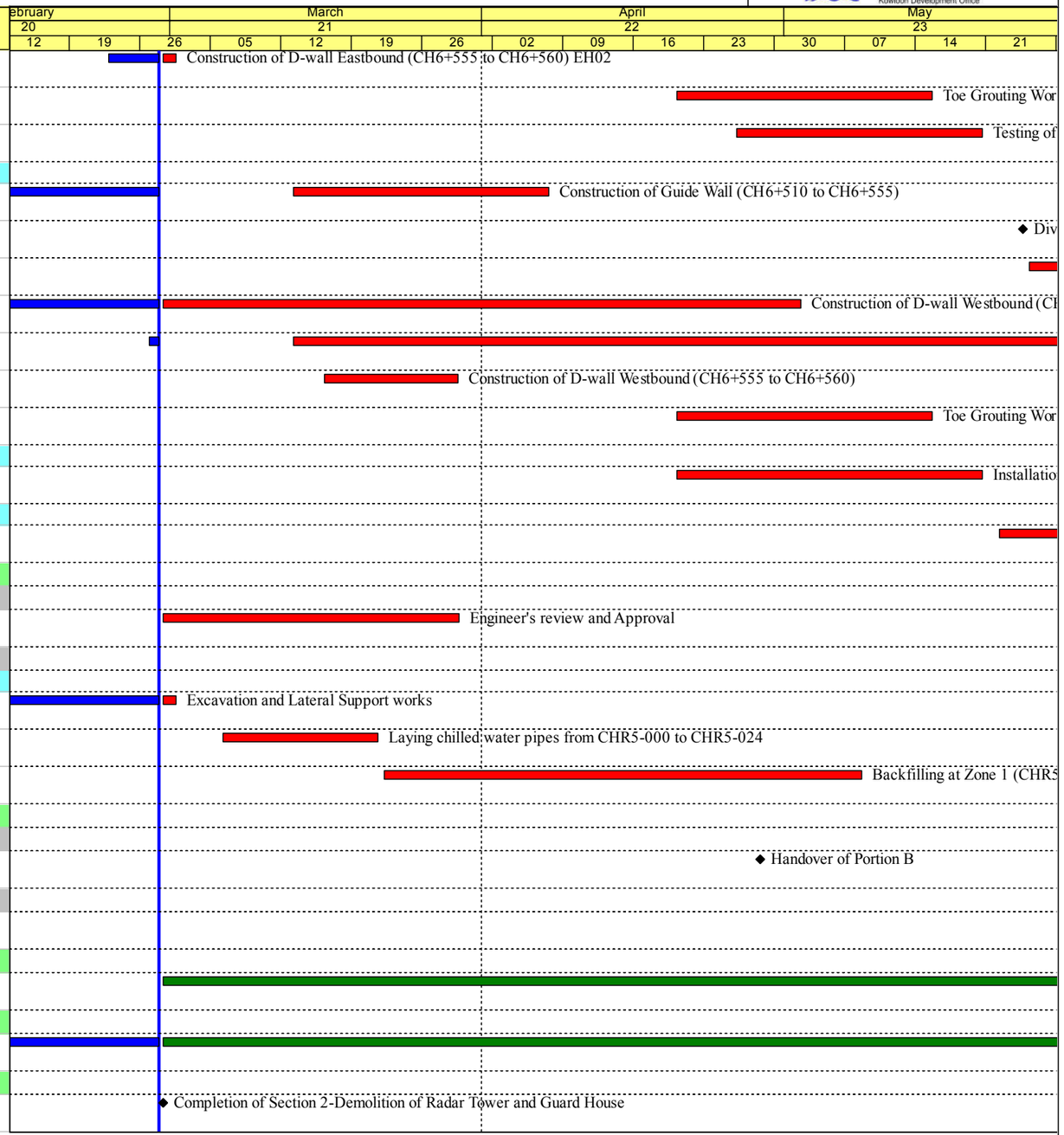
Date	Revision	Checked	Approved
28-Feb-17	Mar 17 - May 17		

Hyder - Meinhardt JV

KL/2014/03 Kai Tak Development - Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway

CEDD 土木工程拓展署 Civil Engineering and Development Department 九龍拓展處 Kowloon Development Office

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish
K-1A-SV4-2180	Construction of D-wall Eastbound (CH6+555 to CH6+560) EH02	12	2	23-Feb-17 A	01-Mar-17
K-1A-SV4-2430	Toe Grouting Works for CH6+467 to CH6+500	20	20	20-Apr-17	15-May-17
K-1A-SV4-2450	Testing of D-wall for CH6+467 to CH6+500 (Sonic test and IC)	20	20	26-Apr-17	20-May-17
W/B and End Construction of D-Wall in TTA Stage 1A		142	96	06-Dec-16 A	26-Jun-17
K-1A-SV4-3996	Construction of Guide Wall (CH6+510 to CH6+555)	24	22	06-Dec-16 A	07-Apr-17
K-1A-SV4-4040	Diversion of 132kV CLP cable across SUS at CH6+560 by CLP	0	0		24-May-17
K-1A-SV4-4050	Construction of Guide Wall (End Wall)	28	28	25-May-17	26-Jun-17
K-1A-SV4-4400	Construction of D-wall Westbound (CH6+480 to CH6+510)	35	50	06-Feb-17 A	02-May-17
K-1A-SV4-4500	Construction of D-wall Westbound (CH6+510 to CH6+555)	35	72	27-Feb-17 A	10-Jun-17
K-1A-SV4-4600	Construction of D-wall Westbound (CH6+555 to CH6+560)	12	12	16-Mar-17	29-Mar-17
K-1A-SV4-4730	Toe Grouting Works for CH6+467 to CH6+500	20	20	20-Apr-17	15-May-17
Pumping Test		25	25	20-Apr-17	20-May-17
K-1A-SV4-4950	Installation of Dewatering Well, Observation Well and Recharging Well at CH6+467 to CH6+500 in Zone 4	25	25	20-Apr-17	20-May-17
Excavation and ELS Construction		42	42	22-May-17	10-Jul-17
K-1A-SV4-5500	Construction of temporary vehicular access at CH6+482(approx.)	42	42	22-May-17	10-Jul-17
Section 3 of the Works- Construction of District Cooling System (Subject to Excision)		70	70	07-Feb-17 A	08-May-17
Preparation Works		30	30	28-Feb-17	29-Mar-17
K-03-DCS-0830	Engineer's review and Approval	30	30	28-Feb-17	29-Mar-17
Construction of District Cooling System		54	54	07-Feb-17 A	08-May-17
Construction of DCS Works at Zone 1		54	54	07-Feb-17 A	08-May-17
K-03-DCS-1150	Excavation and Lateral Support works	14	2	07-Feb-17 A	01-Mar-17
K-03-DCS-1200	Laying chilled water pipes from CHR5-000 to CHR5-024	14	14	06-Mar-17	21-Mar-17
K-03-DCS-1300	Backfilling at Zone 1 (CHR5-000 to CHR5-024)	35	35	22-Mar-17	08-May-17
Section 4B of the Works- Construction of Subway B (Subject to Excision)		31	31	28-Apr-17	30-May-17
Bay 1 & 2		0	0	28-Apr-17	28-Apr-17
K-4B-BAY-3100	Handover of Portion B	0	0		28-Apr-17*
Bay 3 & 4		0	0	30-May-17	30-May-17
K-4B-BAY-2480	Interface Connection Details for HKCN of subway B	0	0	30-May-17	
Section 5 of the Works-Completion of All Landscape Softworks		90	90	28-Feb-17	28-May-17
K-05-LCS-1000	Procurement of plant species	90	90	28-Feb-17	28-May-17
Section 7 of the Works-Preservation and Protection of Existing Trees		1200	826	04-Jan-16 A	03-Jun-19
K-07-001-1000	Section 7 of the Works-Preservation and Protection of Existing Trees	1200	826	04-Jan-16 A	03-Jun-19
Sections Completion Date		0	0	28-Feb-17	28-Feb-17
K-PK-SCC-2100	Completion of Section 2-Demolition of Radar Tower and Guard House	0	0		28-Feb-17



中國路橋工程有限責任公司 CHINA ROAD AND BRIDGE CORPORATION

◆ Milestone
Critical Activity
Non-Critical Activity
Remaining Level of Effort
Actual Work

3 MRP Mar 2017- May 2017

Project ID :15 3MPR Mar - May 17
Layout : KL201403 WP4 3MRP

3 Months Rolling Programme			
Date	Revision	Checked	Approved
28-Feb-17	Mar 17 - May 17		

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Appendix B

Project Organization Chart

MATERIALAB CONSULTANTS LIMITED
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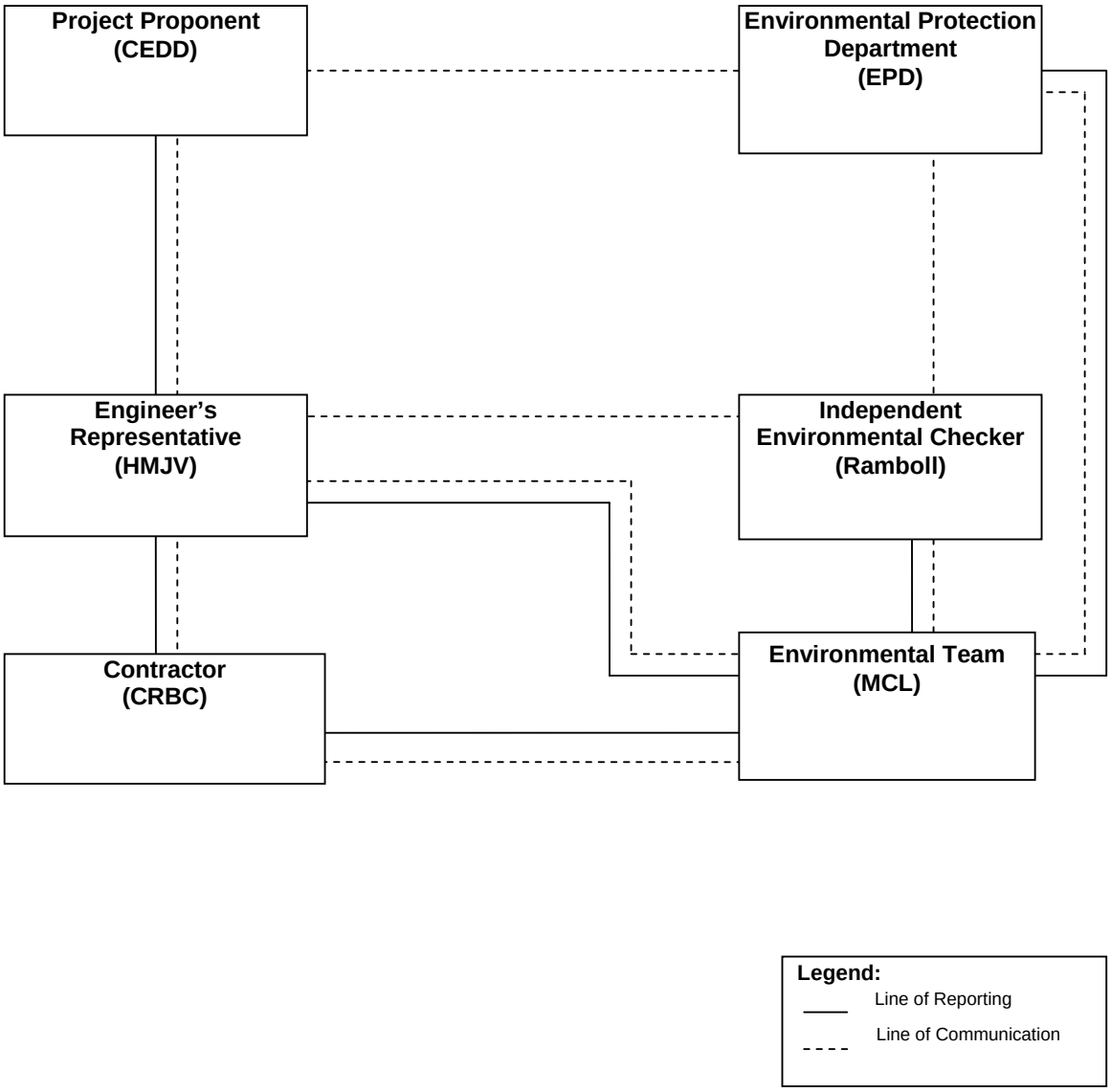

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Appendix C

Action and Limit Levels for Air Quality and Noise

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Action and Limit Levels for 24-hr TSP and 1-hr TSP

Parameter	Monitoring Station	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/ m^3$)
24-hr TSP ($\mu g/m^3$)	KTD1a	177	260
	KTD2a	157	
	KER1b	172	
*1-hr TSP ($\mu g/m^3$)	KTD1a	285	500
	KTD2a	279	
	KER1b	295	

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

Action and Limit Levels for Construction Noise, Leq (30min), dB(A)

Time Period	Location	Action	Limit
0700-1900 hrs on normal weekdays	KTD1a KTD2a KER1b	When one documented complaint is received	75 dB(A)

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Appendix D

Calibration Certificates of Monitoring Equipment

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jan 14, 2016 Rootsmeter S/N 0438320 Ta (K) - 292
Operator Tisch Orifice I.D. - 2456 Pa (mm) - 748.03

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	1.4420	3.2	2.00
2	NA	NA	1.00	1.0220	6.4	4.00
3	NA	NA	1.00	0.9130	7.9	5.00
4	NA	NA	1.00	0.8670	8.8	5.50
5	NA	NA	1.00	0.7170	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0002	0.6936	1.4174		0.9957	0.6905	0.8836
0.9959	0.9745	2.0045		0.9915	0.9701	1.2496
0.9938	1.0885	2.2411		0.9893	1.0836	1.3971
0.9926	1.1449	2.3504		0.9882	1.1398	1.4653
0.9874	1.3771	2.8347		0.9830	1.3710	1.7672
Qstd slope (m) =		2.07173		Qa slope (m) =		1.29728
intercept (b) =		-0.01761		intercept (b) =		-0.01098
coefficient (r) =		0.99996		coefficient (r) =		0.99996
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}

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MaterialLab

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Environmantal Monitoring Works For Contract No. KLN/2015/07
Location : KER1b
Brand: Tisch
Model: TE-5170 S/N: 3482

Date of Calibration: 10-Jan-17
Next Calibration Date: 7-Apr-17
Technician: Jimmy Lui

CONDITIONS

Sea Level Pressure (hPa):	1018.1	Corrected Pressure (mm Hg):	764
Temperature (°C):	19	Temperature (K):	292

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.07173
Model:	TE-5025A	Qstd Intercept:	-0.01761
Calibration Date:	14-Jan-16	Expiry Date:	14-Jan-17
S/N:	2456		

CALIBRATIONS

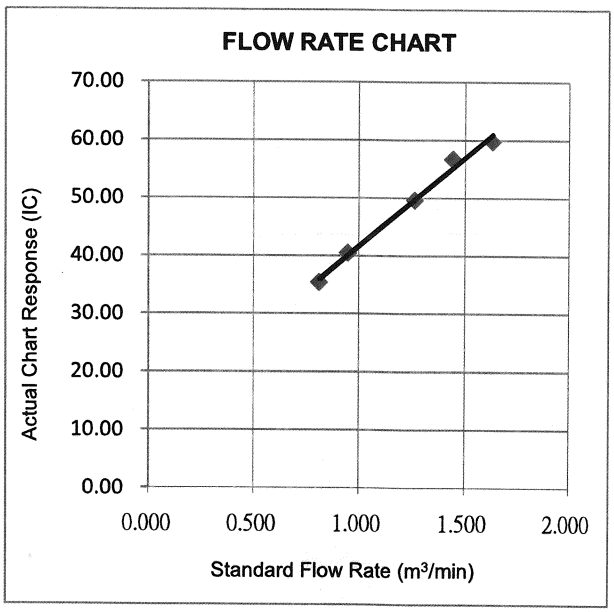
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m^3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
18	-0.60	-11.60	11.000	1.630	59.00	59.76	Slope =	30.4307
13	-1.80	-10.40	8.600	1.442	56.00	56.72	Intercept =	11.3049
10	-2.80	-9.40	6.600	1.265	49.00	49.63	Corr. coeff.=	0.9952
7	-4.20	-7.90	3.700	0.949	40.00	40.52		
5	-4.70	-7.40	2.700	0.812	35.00	35.45		

Calculations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]
Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)
m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



CHOI KAM HO
Project Consultant

Report Date: 10th January, 2017

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MaterialLab

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Environmantal Monitoring Works For Contract No. KLN/2015/07
Date of Calibration: 10-Jan-17
Location : KTD1a
Next Calibration Date: 7-Apr-17
Technician: Jimmy Lui

Brand: Tisch
Model: TE-5170 S/N: 4037

CONDITIONS

Sea Level Pressure (hPa):	1018.1	Corrected Pressure (mm Hg):	764
Temperature (°C):	19	Temperature (K):	292

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.07173
Model:	TE-5025A	Qstd Intercept:	-0.01761
Calibration Date:	14-Jan-16	Expiry Date:	14-Jan-17
S/N:	2456		

CALIBRATIONS

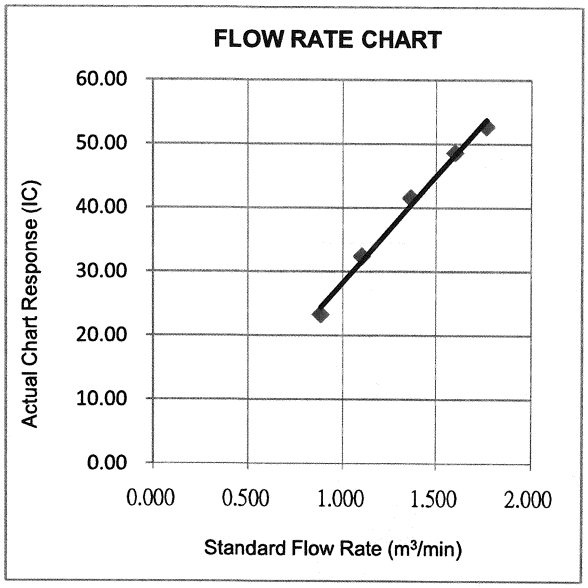
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m^3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
18	0.40	-12.50	12.900	1.764	52.00	52.67	Slope =	33.2726
13	-0.80	-11.40	10.600	1.600	48.00	48.62	Intercept =	-4.9783
10	-2.20	-9.90	7.700	1.365	41.00	41.53	Corr. coeff.=	0.9963
7	-3.50	-8.50	5.000	1.102	32.00	32.41		
5	-4.40	-7.60	3.200	0.883	23.00	23.30		

Calculations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]
Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)
m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



CHOI KAM HO
Project Consultant

Report Date: 10th January, 2017

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MaterialLab

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Environmantal Monitoring Works For Contract No. KLN/2015/07
Location : KTD2a
Brand: Tisch
Model: TE-5170 S/N: 3838

Date of Calibration: 10-Jan-17
Next Calibration Date: 7-Apr-17
Technician: Jimmy Lui

CONDITIONS

Sea Level Pressure (hPa):	1018.1	Corrected Pressure (mm Hg):	764
Temperature (°C):	19	Temperature (K):	292

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.07173
Model:	TE-5025A	Qstd Intercept:	-0.01761
Calibration Date:	14-Jan-16	Expiry Date:	14-Jan-17
S/N:	2456		

CALIBRATIONS

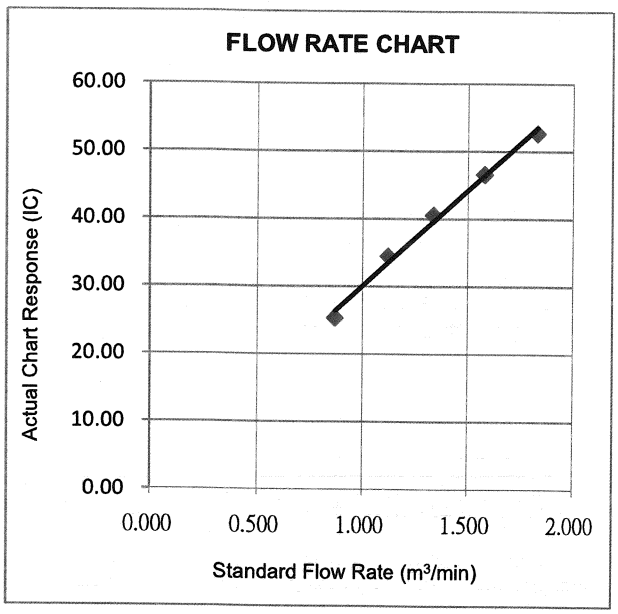
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m^3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
18	0.80	-13.00	13.800	1.825	52.00	52.67	Slope =	28.2743
13	-0.80	-11.10	10.300	1.578	46.00	46.59	Intercept =	1.8309
10	-2.30	-9.70	7.400	1.338	40.00	40.52	Corr. coeff.=	0.9964
7	-3.30	-8.50	5.200	1.123	34.00	34.44		
5	-4.40	-7.50	3.100	0.869	25.00	25.32		

Calculations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]
Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)
m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



CHOI KAM HO
Project Consultant

Report Date: 10th January, 2017

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Website : www.materialab.com

MateriaLab

Report No. : 161966CA161195

CALIBRATION CERTIFICATE OF ANEMOMETER

Client Supplied Information

Client : Materialab Consultants Ltd.

Address: Room 723 & 725, 7/F., Block B Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Chung, N.T.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Anemometer

Manufacturer : Smart Sensor

Model No. : AR816+

Equipment ID. : MC-A-001

Next Calibration Date : 05-Jun-2017

Laboratory Information

Details of Reference Equipment –

Description : Reference Anemometer

Equipment ID. : R-101-4

Date of Calibration : 06-Jun-2016 Ambient Temperature : 21 °C

Calibration Location : Calibration Laboratory of MateriaLab

Method Used : By direct Comparison

Calibration Results :

Reference Reading (m/s)	UUT Reading (m/s)	Error (m/s)
0.00	0.0	0.00
0.99	1.0	+0.01
2.02	2.0	-0.02
5.00	5.0	0.00
9.98	9.9	-0.08

Remarks :

1. The equipment being used in this calibration is traceable to recognized National Standards.

Checked by : _____ Date : 7-6-2016 Certified by : _____ Date : 7.6.2016.

CA-R-297 (22/07/2009)

Chan Chun Wai (Manager)

** End of Report **

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Website : www.materialab.com.hk

MateriaLab

Report no.: 161966CA161737

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client : Materialab Consultants Ltd.

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	:	Sound Level Meter
Manufacturer	:	Casella (Model no. CEL-63X(meter), CEL-251(microphone), CEL-495(Preamplifier))
Serial No.	:	2451083 (meter), 01361(microphone), 002845 (Preamplifier))
Next Calibration Date	:	23-Aug-2017
Specification Limit	:	EN 61672: 2003 Type 1

Laboratory Information

Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)

Equipment ID. : R-108-1

Date of Calibration : 24-Aug-2016 Ambient Temperature : 21 °C

Calibration Location : Calibration Laboratory of MateriaLab

Method Used : By direct comparison

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weighing frequency response	4000Hz	0.6	2.6 to -0.6
	2000Hz	0.5	2.8 to -0.4
	1000Hz	0.0	1.1 to -1.1
	500Hz	-3.0	-1.8 to -4.6
	250Hz	-8.3	-7.2 to -10.0
	125Hz	-15.7	-14.6 to -17.6
	63Hz	-25.7	-24.7 to -27.7
	31.5Hz	-37.4	-37.4 to -41.4
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.0	± 0.6

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighing is fast
4. The equipment does comply with EN 61672: 2003 Type 1 sound level meter for the above measurement.

Checked by : _____ Date : 26.8.2016 Certified by : _____ Date : 26.8.2016

CA-R-297 (22/07/2009)

Chan Chun Wai (Manager) /
~~Kwok Chi Wa (Assistant Manager)~~

** End of Report **

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Website : www.materialab.com.hk

MateriaLab

Report no.: 161966CA162338

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : MateriaLab Consultants Ltd.

Address : Room 723 & 725, 7/F., Block B Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Chung, N.T.

Project : Calibration Services

Details of Unit Under Test, UUT

Description	:	Sound Level Meter
Manufacturer	:	Casella
Model No.		Casella (Model no. CEL-63X(meter), CEL-251(microphone), CEL-495(Preamplifier))
Serial No.	:	2451028 (meter), 01231(microphone), 002850 (Preamplifier))
Next Calibration Date	:	16-Nov-2017
Specification Limit	:	EN 61672: 2003 Type 1

Laboratory Information

Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)

Equipment ID. : R-108-1

Date of Calibration : 17-Nov-2016 Ambient Temperature : 22 °C

Calibration Location : Calibration Laboratory of MateriaLab

Method Used : By direct comparison

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weighing frequency response	4000Hz	2.6	2.6 to -0.6
	2000Hz	0.8	2.8 to -0.4
	1000Hz	-1.0	1.1 to -1.1
	500Hz	-4.5	-1.8 to -4.6
	250Hz	-9.9	-7.2 to -10.0
	125Hz	-17.3	-14.6 to -17.6
	63Hz	-27.3	-24.7 to -27.7
	31.5Hz	-39.5	-37.4 to -41.4
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.0	± 0.6

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighing is fast
4. The equipment does comply with EN 61672: 2003 Type 1 sound level meter for the above measurement.

Checked by : _____ Date : 23.11.2016 Certified by : _____ Date : 23.11.2016

CA-R-297 (22/07/2009)

Chan Chun Wai (Manager)

** End of Report **

CASELLA

Certificate of Conformity and Calibration

Instrument Model:-	**CEL-633A**		
Serial Number	3756072		
Firmware revision	V129-09		
Microphone Type:-	**CEL-251**	**Preamplifier Type:-**	**CEL-495**
Serial Number	1361	Serial Number	003527
Instrument Class/Type:-	**1**		

Applicable standards:-

IEC 61672: 2002 / EN 60651 (Electroacoustics - Sound Level Meters)
IEC 60651 1979 (Sound Level Meters), ANSI S1.4: 1983 (Specifications For Sound Level Meters)

Note:- The test sequences performed in this report are in accordance with the current Sound level meter *Standard - IEC61672. The combination of tests performed are considered to confirm the products electro-acoustic performance to all applicable standards including superceeded Sound Level Meter Standards - IEC60651 and IEC60804.*

Test Conditions:-	25 °C	**Test Engineer:-**	Millie Duncan
	52 %RH	**Date of Issue:-**	May 13, 2016
	1010 mBar		

Declaration of conformity:-

This test certificate confirms that the instrument specified above has been successfully tested to comply with the manufacturer's published specifications. Tests are performed using equipment traceable to national standards in accordance with Casella's ISO 9001:2008 quality procedures. This product is certified as being compliant to the requirements of the CE Directive.

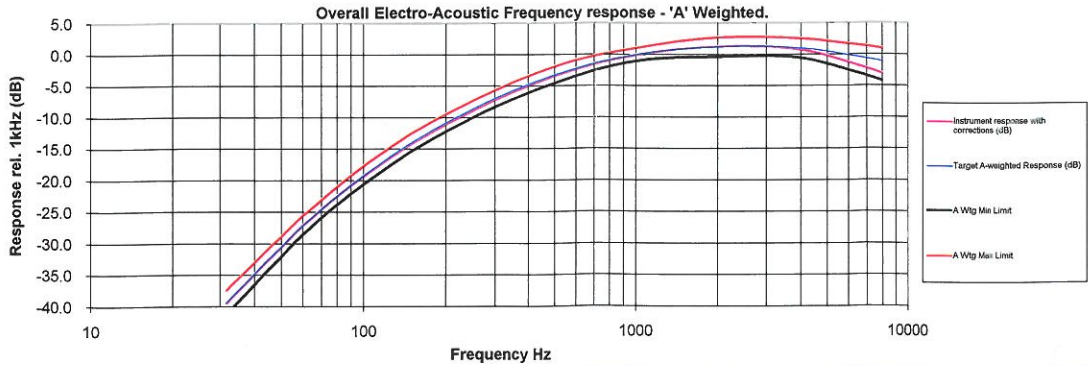
Test Summary:-

Self Generated Noise Test	**All Tests Pass**
Electrical Signal Test Of Frequency Weightings	**All Tests Pass**
Frequency & Time Weightings At 1 kHz	**All Tests Pass**
Level Linearity On The Reference Level Range	**All Tests Pass**
Toneburst Response Test	**All Tests Pass**
C-peak Sound Levels	**All Tests Pass**
Overload Indication	**All Tests Pass**
Acoustic Tests	**All Tests Pass**

Combined Electro-Acoustic Frequency Response - A Weighted

Combined Electro-Acoustic Frequency Response - A Weighted (IEC 61672-3:2006)

The following A-Weighted frequency response graph shows this instruments overall frequency response based upon the application of multi-frequency pressure field calibrations. The microphones Pressure to Free field correction coefficients are applied to pressure response. Reference level taken at 1kHz.



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MateriaLab

Report no.: 161966CA161645

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : MateriaLab Consultants Ltd.

Address : Room 723 & 725, 7F., Block B Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Chung, N.T.

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	:	Sound calibrator
Manufacturer	:	Casella (Model no. CEL-120/1)
Serial No.	:	5230950
Next Calibration Date	:	09-Aug-2017
Specification Limit	:	±0.5dB

Laboratory Information

Description : 1. Reference sound level meter 2. Multifunction acoustic calibrator

Equipment ID. : 1. R-119-1 2. R-108-1

Date of Calibration : 10-Aug-2016 Ambient Temperature : 21 °C

Calibration Location : Calibration Laboratory of MateriaLab

Method Used : By direct comparison

Calibration Results :

Parameters (Setting of UUT)	Mean of measured value	Specification limit
94dB	93.8 dB	±0.5dB
114dB	114.0 dB	

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The equipment does comply with the specification limit.

Checked by : _____ Date : 12-8-2016 Certified by : _____ Date : 16 AUG 2016

CA-R-297 (22/07/2009)

Kwok Chi Wa (Assistant Manager)

** End of Report **

CASELLA CEL

Certificate of Conformance and Calibration for

CEL-120 Acoustic Calibrator

Applicable Standards :-IEC 60942: 2003 & ANSI S1.40: 2006

CEL-120/1 Class 1 [✓]

CEL-120/2 Class 2 [ ]

Serial No: 4358251

Firmware: 03

Temperature: 22.0 °C Pressure: 999.5 mb %RH 55.0

Frequency = 1.00kHz ± 2Hz T.H.D. = < 1%	Calibration Level
SPL @ 114.0dB Setting	113.99 dB
SPL @ 94.0dB Setting (CEL-120/1 only)	93.93 dB/N.A

Engineer :- M. Rouse Date :- 12 MAY 2016

Company test equipment and acoustic working standards, used for conformance testing, are subject to periodic calibration, traceable to UK national standards, in accordance with the company's ISO9001 Quality System.

DECLARATION OF CONFORMITY

This certificate confirms that the instrument specified above has been produced and tested to comply with the manufacturer's published specifications and the relevant European Community CE directives.

Casella CEL (U.K.),
Regent House, Wolseley Road, Kempston, Bedford. MK42 7JY
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E-mail: info@casellacel.com
Web: www.casellameasurement.com

198032A-01

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Website : www.materialab.com.hk

MateriaLab

Report no.: 161966CA162202(1)

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client Supplied Information

Client : Materialab Consultants Ltd.

Address : Room 723 & 725, 7/F., Block B Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Chung, N.T.

Project : Calibration Services

Details of Unit Under Test, UUT

Description	:	Sound Calibrator
Manufacturer	:	Casella (Model no. CEL-120/1)
Serial No.	:	3321858
Next Calibration Date	:	31-Oct-2017
Specification Limit	:	±0.5dB

Laboratory Information

Description : Reference Sound level meter

Equipment ID. : R-119-1

Date of Calibration : 01-Nov-2016 Ambient Temperature : 22 °C

Calibration Location : Calibration Laboratory of MateriaLab

Method Used : By direct comparison

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.3 dB	±0.5dB
114dB	-0.2 dB	

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The equipment does comply with the specification limit.

Checked by : _____ Date : 3-11-2016 Certified by : _____ Date : 4/11/2016

CA-R-297 (22/07/2009)

Chan Chun Wai (Manager)

** End of Report **

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Appendix E

Environmental Monitoring Schedule

MATERIALAB CONSULTANTS LIMITED
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Project: **KL/2014/03 - Kai Tak Development – Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway**

Impact Monitoring Schedule (March 2017)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
			1 March	2	3 TSP Monitoring Noise Monitoring	4
5	6	7	8	9 TSP Monitoring Noise Monitoring	10	11
12	13	14	15 TSP Monitoring Noise Monitoring	16	17	18
19	20	21 TSP Monitoring Noise Monitoring	22	23	24	25
26	27 TSP Monitoring Noise Monitoring	28	29	30	31	

Remarks

1. Monitoring Locations – KTD1a: Centre of Excellence in Paediatric (Children's Hospital), KTD2a: G/IC Zone next to Kwun Tong Bypass (Future at Site 3C1), KER1b: Site Boundary at Cheung Yip Street, close to open space car park area
2. TSP Monitoring: 24-hours TSP Monitoring per 6 days, and 3 x 1-hour TSP Monitoring per 6 days (as required in case of complaints)
3. Noise Monitoring: Leq (30 min) between 0700 and 1900 hours.

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Project: **KL/2014/03 - Kai Tak Development – Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway**

Impact Monitoring Schedule (April 2017)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1 April TSP Monitoring Noise Monitoring
2	3	4	5	6	7 TSP Monitoring Noise Monitoring	8
9	10	11	12	13 TSP Monitoring Noise Monitoring	14	15
16	17	18	19 TSP Monitoring Noise Monitoring	20	21	22
23	24	25 TSP Monitoring Noise Monitoring	26	27	28	29 TSP Monitoring Noise Monitoring
30						

Remarks

1. Actual monitoring may be subjected to change due to any safety concern or adverse weather condition
2. Monitoring Locations – KTD1a: Centre of Excellence in Paediatric (Children's Hospital), KTD2a: G/IC Zone next to Kwun Tong Bypass (Future at Site 3C1), KER1b: Site Boundary at Cheung Yip Street
3. TSP Monitoring: 24-hours TSP Monitoring per 6 days, and 3 x 1-hour TSP Monitoring per 6 days (as required in case of complaints)
4. Noise Monitoring: Leq (30 min) between 0700 and 1900 hours.

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Project: **KL/2014/03 - Kai Tak Development – Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway**

Impact Monitoring Schedule (May 2017)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
	1 May	2	3	4	5 TSP Monitoring Noise Monitoring	6
7	8	9	10	11 TSP Monitoring Noise Monitoring	12	13
14	15	16	17 TSP Monitoring Noise Monitoring	18	19	20
21	22	23 TSP Monitoring Noise Monitoring	24	25	26	27
28	29 TSP Monitoring Noise Monitoring	30	31			

Remarks

1. Actual monitoring may be subjected to change due to any safety concern or adverse weather condition
2. Monitoring Locations – KTD1a: Centre of Excellence in Paediatric (Children's Hospital), KTD2a: G/IC Zone next to Kwun Tong Bypass (Future at Site 3C1), KER1b: Site Boundary at Cheung Yip Street
3. TSP Monitoring: 24-hours TSP Monitoring per 6 days, and 3 x 1-hour TSP Monitoring per 6 days (as required in case of complaints)
4. Noise Monitoring: Leq (30 min) between 0700 and 1900 hours.

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Project: **KL/2014/03 - Kai Tak Development – Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway**

Impact Monitoring Schedule (June 2017)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
				1 June	2	3 TSP Monitoring Noise Monitoring
4	5	6	7	8	9 TSP Monitoring Noise Monitoring	10
11	12	13	14	15 TSP Monitoring Noise Monitoring	16	17
18	19	20	21 TSP Monitoring Noise Monitoring	22	23	24
25	26	27 TSP Monitoring Noise Monitoring	28	29	30	

Remarks

1. Actual monitoring may be subjected to change due to any safety concern or adverse weather condition
2. Monitoring Locations – KTD1a: Centre of Excellence in Paediatric (Children's Hospital), KTD2a: G/IC Zone next to Kwun Tong Bypass (Future at Site 3C1), KER1b: Site Boundary at Cheung Yip Street
3. TSP Monitoring: 24-hours TSP Monitoring per 6 days, and 3 x 1-hour TSP Monitoring per 6 days (as required in case of complaints)
4. Noise Monitoring: Leq (30 min) between 0700 and 1900 hours.

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Appendix F

Air Quality Monitoring Data

24-hour TSP Monitoring Result for
Kai Tak Development - Stage 3 Infrastructure Works for
Developments at the Southern Part of the Former Runway

KTD1a - Centre of Excellence in Paediatrics (Children's Hospital)

Start Date	Weather Condition	Air Temperature (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Sampling Time(hrs)	Flow Rate (m^3/min.)		Average flow (m^3/min.)	Total volume ($m^{3)}$	Conc. (ug/m^3)	Action Level	Limit Level
				Initial	Final			Initial	Final				(ug/m^3)	(ug/m^3)
3-Mar-17	Fine	290.4	762.8	2.8274	2.9982	0.1708	24	1.60	1.57	1.58	2279.9	75		
9-Mar-17	Fine	290.0	761.8	2.8398	3.0531	0.2133	24	1.66	1.64	1.65	2373.6	90		
15-Mar-17	Cloudy	289.8	763.7	2.7812	2.9463	0.1651	24	1.53	1.51	1.52	2188.1	75	177	260
21-Mar-17	Cloudy	295.9	761.3	2.8136	3.0769	0.2633	24	1.51	1.51	1.51	2536.3	104		
27-Mar-17	Cloudy	291.9	767.1	2.7432	3.1391	0.3959	24	1.69	1.67	1.68	2521.6	157		
											Min	75		
											Max	157		
											Average	100		

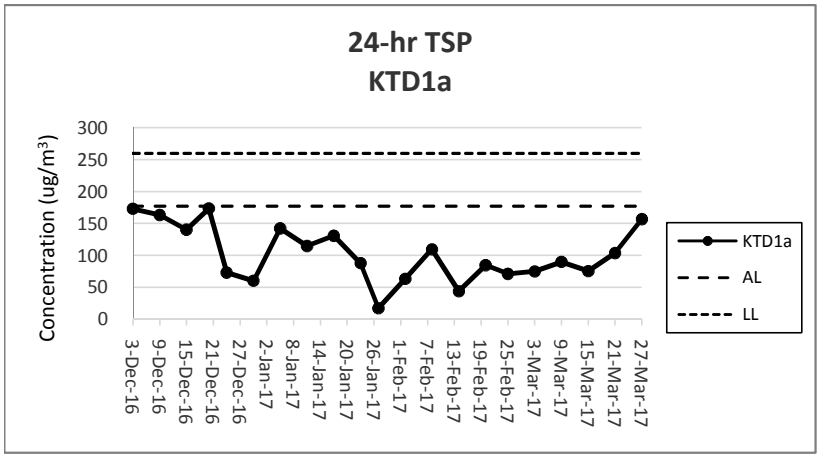
KTD2a - G/IC Zone next to Kwun Tong Bypass (Future Hospital at Site 3C1)

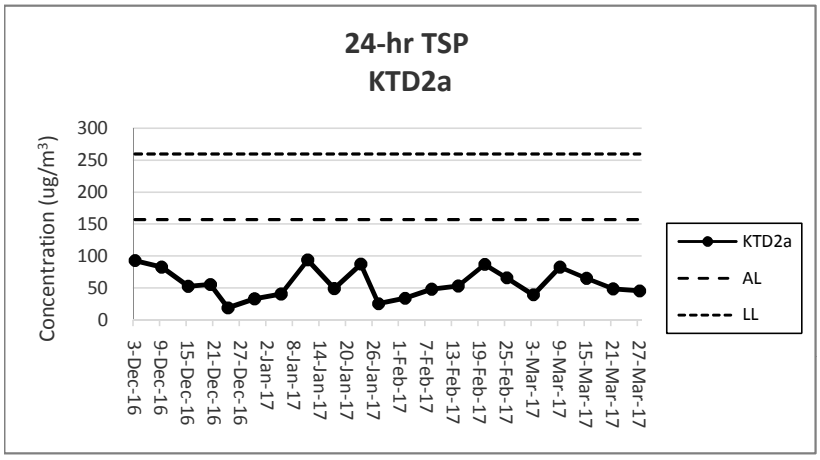
Start Date	Weather Condition	Air Temperature (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Sampling Time(hrs)	Flow Rate (m^3/min.)		Average flow (m^3/min.)	Total volume ($m^{3)}$	Conc. (ug/m^3)	Action Level	Limit Level
				Initial	Final			Initial	Final				(ug/m^3)	(ug/m^3)
3-Mar-17	Fine	290.4	762.8	2.8192	2.9003	0.0811	24	1.45	1.42	1.43	2064.8	39		
9-Mar-17	Fine	290.0	761.8	2.8319	3.0200	0.1881	24	1.60	1.57	1.58	2277.8	83		
15-Mar-17	Cloudy	289.8	763.7	2.8127	2.9681	0.1554	24	1.67	1.64	1.66	2386.5	65	157	260
21-Mar-17	Cloudy	295.9	761.3	2.8365	2.9413	0.1048	24	1.50	1.49	1.50	2158.0	49		
27-Mar-17	Cloudy	291.9	767.1	2.7722	2.8781	0.1059	24	1.67	1.57	1.62	2331.7	45		
											Min	39		
											Max	83		
											Average	56		

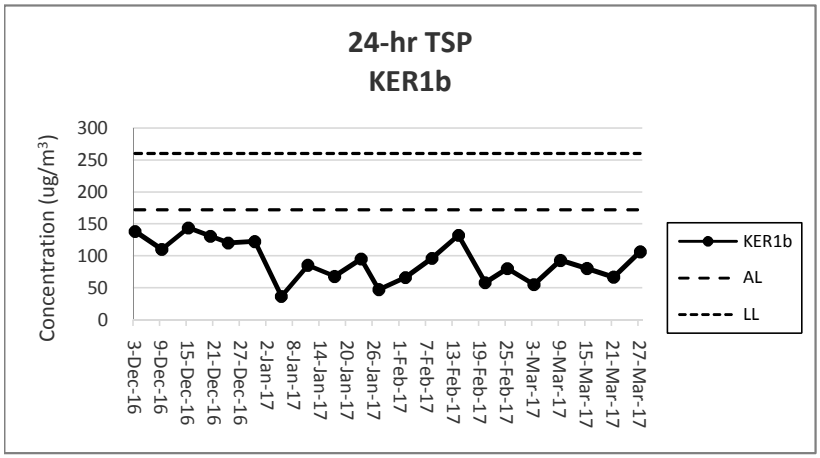
KER1b - Site Boundary at Cheung Yip Street

Start Date	Weather Condition	Air Temperature (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Sampling Time(hrs)	Flow Rate (m^3/min.)		Average flow (m^3/min.)	Total volume ($m^{3)}$	Conc. (ug/m^3)	Action Level	Limit Level
				Initial	Final			Initial	Final				(ug/m^3)	(ug/m^3)
3-Mar-17	Fine	290.4	762.8	2.8193	2.9318	0.1125	24	1.44	1.41	1.42	2049.5	55		
9-Mar-17	Fine	290.0	761.8	2.8274	3.0259	0.1985	24	1.50	1.47	1.49	2139.2	93		
15-Mar-17	Cloudy	289.8	763.7	2.8199	2.9663	0.1464	24	1.28	1.26	1.27	1827.2	80	172	260
21-Mar-17	Cloudy	295.9	761.3	2.8176	2.9593	0.1417	24	1.48	1.47	1.48	2126.1	67		
27-Mar-17	Cloudy	291.9	767.1	2.7588	2.9672	0.2084	24	1.40	1.32	1.36	1960.5	106		
											Min	55		
											Max	106		
											Average	80		

Note:
Underline: Exceedance of Action Level
Underline and Bold: Exceedance of Limit Level







Note:

1) The major activities being carried out on site during the reporting period can be referred to Section 1.3.2.
2) The weather conditions during the reporting period can be referred to Appendix K.
3) Any other factors which might affect the monitoing results can be referred to Section 2.6.4.
4) QA/QC results, calibration results and detection limits can be referred to Appendix D.

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Appendix G

Noise Monitoring Data

Noise Impact Monitoring Result for
Kai Tak Development - Stage 3 Infrastructure Works for
Developments at the Southern Part of the Former Runway

KTD 1a: Centre of Excellence in Paediatrics (Children's Hospital)

Date	Start Time	Leq 30min dB(A)	L10 dB(A)	L90 dB(A)	Wind Speed (m/s)	Weather
3-Mar-17	10:44	70	72	68	1.3	Fine
9-Mar-17	9:36	69	72	66	0.6	Fine
15-Mar-17	10:36	68	70	66	1.6	Cloudy
21-Mar-17	11:16	71	72	69	0.7	Cloudy
27-Mar-17	10:45	66	69	60	0.9	Cloudy
	Max	71				
	Min	66				
	Limit Level	**75**				

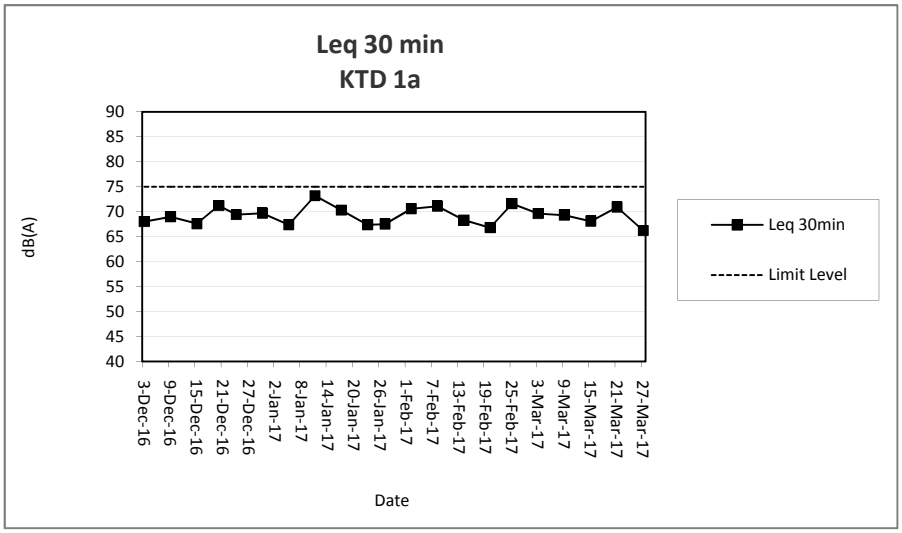
KTD 2a: G/IC Zone next to Kwun Tong Bypass (Future Hospital at Site 3C1)

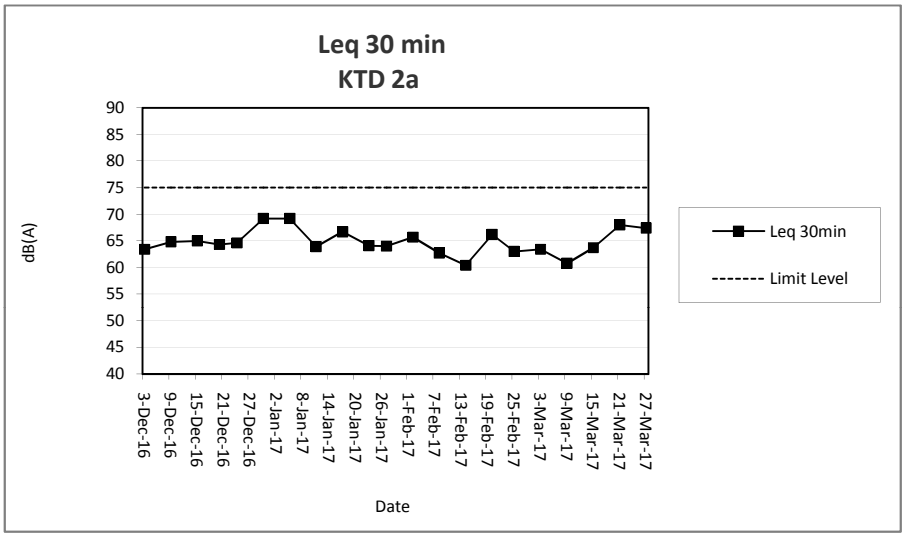
Date	Start Time	Leq 30min dB(A)	L10 dB(A)	L90 dB(A)	Wind Speed (m/s)	Weather
3-Mar-17	10:08	63	64	62	0.7	Fine
9-Mar-17	10:12	61	62	59	2.8	Fine
15-Mar-17	9:57	64	65	62	1.4	Cloudy
21-Mar-17	10:41	68	71	63	0.6	Cloudy
27-Mar-17	11:10	67	70	62	0.5	Cloudy
	Max	68				
	Min	61				
	Limit Level	**75**				

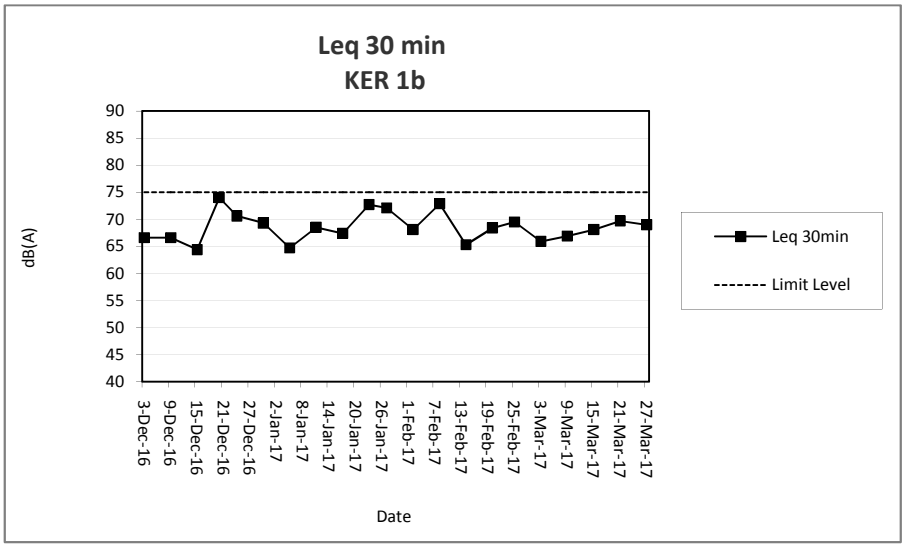
KER 1b: Site Boundary at Cheung Yip Street

Date	Start Time	Leq 30min dB(A)	L10 dB(A)	L90 dB(A)	Wind Speed (m/s)	Weather
3-Mar-17	11:21	66	68	62	0.5	Fine
9-Mar-17	10:54	67	69	65	0.7	Fine
15-Mar-17	11:15	68	70	65	1.0	Cloudy
21-Mar-17	10:04	70	74	65	0.7	Cloudy
27-Mar-17	10:30	69	71	67	0.6	Cloudy
	Max	70				
	Min	66				
	Limit Level	**75**				

Note:
KTD1a: Façade Measurement
KTD2a & KER1b: Free-field measurement (+3dB(A) correction has been applied)
No raining or wind with speed over 5 m/s was observed during noise monitoring according to the onsite observation.







Note:

1) The major activities being carried out on site during the reporting period can be referred to Section 1.3.2.
2) The weather conditions during the reporting period can be referred to Appendix K.
3) Any other factors which might affect the monitoing results can be referred to Section 3.7.2.
4) QA/QC results, calibration results and detection limits can be referred to Appendix D.

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Appendix H

Events and Action Plan

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Event and Action Plan for Construction Dust Monitoring

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action Level				
Exceedance for one sample.	1. Identify sources, investigate the causes of complaint and propose remedial measures. 2. Inform IEC and ER. 3. Repeat measurement to confirm finding;. 4. Increase monitoring frequency	1. Check monitoring data submitted by the ET. 2. Check the Contractor's working methods.	1. Notify the Contractor.	1. Rectify any unacceptable practices. 2. Amend working methods agreed with the ER as appropriate.
Exceedance for two or more consecutive samples.	1.Identify sources. 2.Inform the IEC and ER. 3.Advise the ER on the effectiveness of the proposed remedial measures; 4.Repeat measurements to confirm findings. 5.Increase monitoring frequency to daily. 6.Discuss with the IEC, ER and Contractor on remedial action required. 7.If exceedance continues, arrange meeting with the IEC, Contractor and ER. **8.**If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET. 2. Check the Contractor's working methods. 3. Discuss with the ET, ER and Contractor on possible remedial measures if required. 4. Advise the ER on the effectiveness of proposed remedial measures if required.	1. Notify the Contractor. 2. Ensure remedial measures properly implemented.	1. Submit proposals for remedial action to the ER within 3 working days of notification. 2. Implement the agreed proposals. 3. Amend proposal as appropriate
Limit Level				
Exceedance for one sample.	1. Identify sources, investigate causes of exceedance and proposed remedial measures. 2. Inform the IEC, ER, and Contractor. 3. Repeat measurement to confirm finding. 4. 4. Increase monitoring frequency to daily. 5. Assess effectiveness of the Contractor's remedial action and keep the IEC and ER informed of the results	1. Check monitoring data submitted by the ET. 2. Check the Contractor's working methods. 3. Discuss with the ET, ER and Contractor on possible remedial measures. 4. Advise the ER and ET on the effectiveness of the proposed remedial measures. 5. Supervise the implementation of remedial measures.	1. Confirm receipt of the notification of exceedance in writing. 2. Notify the Contractor. 3. Ensure remedial measures are properly implemented.	1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial action to the ER and copy to the ET and IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Amend proposal as appropriate.
Exceedance for two or more consecutive samples	1. Notify the IEC, ER and Contractor. 2. Identify sources. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Carry out analysis of the Contractor's working procedures with the ER to determine the possible mitigation to be implemented. 6. Arrange meeting with the IEC and ER to	1. Discuss amongst the ER, ET and Contractor on the potential remedial action. 2. Review the Contractor's remedial action whenever necessary to assure their effectiveness and advise the ER and ET accordingly. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of the notification of exceedance in writing. 2. Notify the Contractor. 3. In consultation with the IEC and ET, agree with the Contractor on the remedial measures to be implemented. 4. Ensure remedial measures are properly implemented. 5. If exceedance	1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial action to the ER and copy to the IEC and ET within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problems still not under control. 5. Stop the relevant portion of works as

EVENT	ACTION			
	ET	IEC	ER	Contractor
	discuss the remedial action to be taken. 7. Assess the effectiveness of the Contractor's remedial action and keep the IEC, EPD and ER informed of the results. 8. If exceedance stops, cease additional monitoring		continues, consider what portion of works is responsible and instruct the Contractor to stop that portion of works until the exceedance is abated.	determined by the ER until the exceedance is abated.

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Event and Action Plan for Noise Impact

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action Level	1.Notify the IEC, ER and Contractor. 2.Carry out investigation. 3.Report the results of investigation to the IEC and Contractor. 4.Discuss jointly with the ER and Contractor and formulate remedial measures. 5.Increase the monitoring frequency to check the mitigation effectiveness	1. Review the monitoring data submitted by the ET. 2. Review the construction methods and proposed redial measures by the Contractor, and advise the ET and ER if the proposed remedial measures would be sufficient	1. Notify the Contractor. 2. Require the Contractor to propose remedial measures for implementation if required.	1.Submit noise mitigation proposals to the ER and copy to the IEC and ET. 2.Implement noise mitigation proposals.
Limit Level	1.Notify the IEC, ER and Contractor. 2.Identify sources. 3.Repeat measurements to confirm findings. 4.Carry out analysis of the Contractor's working procedures with the ER and Contractor to determine possible mitigations to be implemented. 5.Record the causes and action taken for the exceedances. 6.Increase the monitoring frequency. 7.Assess the effectiveness of the Contractor's remedial action with the ER and keep the IEC informed of the results. **8.**If exceedance stops, cease additional monitoring	1.Discuss amongst the ER, ET and Contractor on the potential remedial action. 2.Review the Contractor's remedial action whenever necessary to assure their effectiveness and advise the ER accordingly. **3.**Supervise the implementation of remedial measures.	1.Confirm receipt of notification of exceedance in writing. 2.Notify the Contractor. 3.Require the Contractor to propose remedial measures for the analysed noise problems. 4.Ensure remedial measures are properly implemented. **5.**If exceedance continues, consider what portion of work is responsible and instruct the Contractor to stop that portion of works until the exceedance is abated.	1.Take immediate action to avoid further exceedance. 2.Submit proposals for remedial action to the ER and copy to the ET and IEC within 3 working days of notification. 3.Implement the agreed proposals. 4.Resubmit proposals if problems still not under control. **5.**Stop the relevant portion of works as determined by the ER until the exceedance is abated.

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Event and Action Plan for Landscape and Visual Impact

EVENT	ACTION			
	ET	IEC	ER	Contractor
Non-conformity on one occasion	1. Identify Source 2. Inform the IEC and the ER 3. Discuss remedial actions with the IEC, the ER and the Contractor 4. Monitor remedial actions until rectification has been completed	1. Check 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. 5. Check implementation of remedial measures.	1. Notify Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source 2. Inform the IEC and the ER 3. Increase monitoring frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring	1. Check monitoring 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 5. Supervise implementation of remedial measures.	1. Notify the Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement

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Appendix I

Waste Flow Table

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MaterialLab

Waste Flow Table for Year 2016

Monthly Ending	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated (Inert C&D)	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	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)
2016 Jan	0.159	0.101	0.058	Nil	Nil	Nil	Nil	0.023	0.00002	0.0158	0.0335
2016 Feb	0.291	0.050	0.241	Nil	Nil	Nil	1.34	0.023	0.00002	0.0158	0.0335
2016 Mar	2.7389	0.0407	0.0662	Nil	2.632	Nil	5.92	0.023	0.00002	0.0158	0.0571
2016 Apr	4.1718	0.0578	0.462	Nil	3.652	Nil	12.5	0.023	0.00002	0.0158	0.0426
2016 May	3.592	Nil	0.299	Nil	3.293	Nil	5.23	0.023	0.00002	0.0158	0.0621
2016 June	4.6035	Nil	0.8555	Nil	3.748	Nil	Nil	0.023	0.00002	0.0158	0.0619
2016 July	6.155	0.153	0.015	Nil	5.987	Nil	7.84	0.023	0.00002	0.0158	0.0433
2016 Aug	5.1155	Nil	Nil	Nil	5.1155	Nil	19.93	0.023	Nil	Nil	0.0147
2016 Sept	7.2267	Nil	Nil	Nil	7.2267	Nil	33.65	0.023	Nil	Nil	0.0103
2016 Oct	4.6448	Nil	Nil	Nil	4.6448	Nil	13.30	0.023	Nil	Nil	0.0385
2016 Nov	6.1626	Nil	Nil	Nil	6.1626	Nil	27.06	0.023	Nil	Nil	0.0192
2016 Dec	6.3522	Nil	Nil	Nil	6.3522	Nil	13.30	0.023	Nil	Nil	0.0121
Total	51.213	0.4025	1.9967	Nil	48.8138	Nil	140.07	0.276	0.00014	0.1106	0.4288

Note:
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 materials.

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MateriaLab

Waste Flow Table for Year 2017

Monthly Ending	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated (Inert C&D)	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	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)
2017 Jan	4.2300	Nil	Nil	Nil	4.2300	Nil	0.015	0.023	Nil	Nil	0.0109
2017 Feb	3.2128	Nil	Nil	Nil	3.2128	Nil	0.015	0.023	Nil	Nil	0.0096
2017 Mar	9.4759	Nil	Nil	Nil	9.4759	Nil	0.034	0.023	Nil	Nil	0.0162
Total	16.9197	Nil	Nil	Nil	16.9197	Nil	0.064	0.069	Nil	Nil	0.0367

Note:
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 materials.

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Appendix J

Environmental Mitigation Implementation Schedule (EMIS)

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EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
Air Quality Measures					
New Distributor Roads Serving the Planned KTD					
AEIAR-130/2009 S3.2	AEIAR 130/2009 EM&A Manual S2.2	8 times daily watering of the work site with active dust emitting activities.	Contractor	All relevant worksites	Implemented
Decommissioning of the Radar Station of the former Kai Tak Airport					
AEIAR-130/2009 S5.2.19	AEIAR 130/2009 EM&A Manual S4.2.4	The excavation area should be limited to as small in size as possible and backfilled with clean and/or treated soil shortly after excavation work. The exposed excavated area should be covered by the tarpaulin during night time. The top layer soils should be sprayed with fine misting of water immediately before the excavation.	Contractor	All relevant worksites	Not Applicable
Trunk Road T2					
AEIAR-174/2013 S4.9.2.1	AEIAR-174/2013 EM&A Manual S2.3.1.1	Watering of the construction areas 12 times per day to reduce dust emissions by 91.7%, with reference to the “Control of Open Fugitive Dust Sources” (USEPA AP-42). The amount of water to be applied would be 0.91L/m2 for the respective watering frequency.	Contractor	All relevant worksites	Implemented
		Dust enclosures with watering would be provided along the loading ramps and conveyor belts for unloading the C&D materials to the barge for dust suppression.	Contractor	All relevant worksites	Not Applicable
		8 km per hour is the recommended limit of the speed for vehicles on unpaved site roads.	Contractor	All relevant worksites	Implemented
		Good Site Practices			
AEIAR-130/2009	AEIAR 130/2009	Stockpiling site(s) should be lined with impermeable sheeting and bunded. Stockpiles should	Contractor	All relevant	Partially

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EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
S3.2, S5.2.19, AEIAR-174/2013 S4.9.2.2	EM&A Manual S2.2, S4.2, AEIAR-174/2013 EM&A Manual S2.3.1.2	be fully covered by impermeable sheeting to reduce dust emission.		worksites	Implemented
		Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. Use of frequent watering for particularly dusty construction areas and areas close to ASRs.	Contractor	All relevant worksites	Implemented
		Misting for the dusty material should be carried out before being loaded into the vehicle. Any vehicle with an open load carrying area should have properly fitted side and tail boards.	Contractor	All relevant worksites	Implemented
		Material having the potential to create dust should not be loaded from a level higher than the side and tail boards and should be dampened and covered by a clean tarpaulin.	Contractor	All relevant worksites	Implemented
		Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations; The tarpaulin should be properly secured and should extent at least 300 mm over the edges of the sides and tailboards. The material should also be dampened if necessary before transportation.	Contractor	All relevant worksites	Implemented
		The vehicles should be restricted to maximum speed of 10 km per hour. Confined haulage and delivery vehicle to designated roadways insider the site. Onsite unpaved roads should be compacted and kept free of lose materials.	Contractor	All relevant worksites	Implemented
		Vehicle washing facilities should be provided at every vehicle exit point. Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites. The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.	Contractor	All relevant worksites	Partially Implemented
		Every main haul road should be scaled with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet.	Contractor	All relevant worksites	Partially Implemented
		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.	Contractor	All relevant worksites	Implemented

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EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed.	Contractor	All relevant worksites	Implemented
		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.	Contractor	All relevant worksites	Implemented
		Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.	Contractor	All relevant worksites	Partially Implemented
		Open stockpiles shall be avoided or covered. Prevent placing dusty material storage piles near ASRs.	Contractor	All relevant worksites	Partially Implemented
		Routing of vehicles and position of construction plant should be at the maximum possible distance from ASRs.	Contractor	All relevant worksites	Not Applicable
		<u>Dark smoke</u>			
		Dark smoke emission shall be control in accordance with the Air Pollution Control (Smoke) Regulation and ETWB TCW 19/2005.	Contractor	All relevant worksites	Partially Implemented
		Plant and equipment should be well maintained to prevent dark smoke emission.	Contractor	All relevant worksites	Partially Implemented
<u>Noise Measures</u>					
Trunk Road T2					
AEIAR-174/2013 S5.9.2.1	AEIAR-174/2013 EM&A Manual S3.4.1.1	The use of quieter plant, including Quality Powered Mechanical Equipment (QPME) is specified for the list of equipment: • Concrete lorry mixer • Dump Truck, 5.5 tonne < gross vehicle weight <= 38 tonne • Generator, Super Silenced, 70 dB(A) at 7m	Contractor	All relevant worksites	Implemented

EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		• Poker, vibratory, Hand-held (electric) • Water Pump, Submersible (Electric) • Mobile Crane - KOBELCO CKS900 • Excavator, wheeled/tracked - HYUNDAI R80CR-9			
		Use of temporary or fixed noise barriers with a surface density of at least 10kg/m^2 to screen noise from movable and stationary plant.	Contractor	All relevant worksites	Implemented
		Use of enclosures with covers at top and three sides and a surface density of at least 10kg/m^2 to screen noise from generally static noisy plant such as air compressors.	Contractor	All relevant worksites	Implemented
		Use of acoustic fabric for the silent piling system, drill rigs, rock drills etc.	Contractor	All relevant worksites	Implemented
		<u>Good Site Practices</u>			
AEIAR-130/2009 S3.3, S5.3.10, AEIAR-174/2013 S5.9.2.1	AEIAR 130/2009 EM&A Manual S2.3, S4.3.2, AEIAR-174/2013 EM&A Manual S3.4.1.1	Only well-maintained plant should be operated on-site and plant shall be serviced regularly during the construction/ decommissioning program.	Contractor	All relevant worksites	Implemented
		Silencers or mufflers on construction equipment should be utilized and shall be properly maintained during the construction/ decommissioning program.	Contractor	All relevant worksites	Implemented
		Mobile plant, if any, should be sited as far away from NSRs as possible.	Contractor	All relevant worksites	Implemented
		Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or should be throttled down to a minimum.	Contractor	All relevant worksites	Implemented
		Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.	Contractor	All relevant worksites	Implemented
		Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction/ decommissioning activities.	Contractor	All relevant worksites	Implemented

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EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		Use of site hoarding as a noise barrier to screen noise at low level NSRs.	Contractor	All relevant worksites	Implemented
		For the use of hand held percussive breakers (with mass of above 10kg) and portable air compressors (supply air at 500 kPa or above), the noise level of such PME shall comply with a stringent noise emission standard and a noise emission label shall be obtained from the DEP before use at any time in construction site.	Contractor	All relevant worksites	Implemented
		Quiet powered mechanical equipment (PME) shall be used for the construction of the Project.	Contractor	All relevant worksites	Implemented
		Full enclosures shall be used to screen noise from relatively static PMEs (including air compressor, bar bender, concrete pump, generator and water pump) from sensitive receiver(s).	Contractor	All relevant worksites	Implemented
		Movable cantilevered noise barriers shall be used to screen noise from mobile PMEs (including asphalt paver, breaker, excavator and hand-held breaker) from sensitive receiver(s). These movable cantilevered noise barriers shall be located close to the mobile PMEs and shall be moved/adjusted iteratively in step with each movement of the corresponding mobile PMEs in order to maximize their noise reduction effects.	Contractor	All relevant worksites	Implemented
		Only approved or exempted Non-road Mobile Machineries (NRMMs) including regulated machines and non-road vechicles with proper labels are allowed to be used in specified activities on-site.	Contractor	All relevant worksites	Implemented
<u>Water Quality Measures</u>					
Trunk Road T2					
		<u>Accidental Spillage</u>			
AEIAR-174/2013 S6.4.8.5	AEIAR-174/2013 EM&A Manual S4.2.1.1	All bentonite slurry should be stored in a container that resistant to corrosion, maintained in good conditions and securely closed; The container should be labelled in English and Chinese and note that the container is for storage of bentonite slurry only.	Contractor	All relevant worksites	Implemented

EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		The storage container should be placed on an area of impermeable flooring and bunded with capacity to accommodate 110% of the volume of the container size or 20% by volume stored in the area and enclosed with at least 3 sides.	Contractor	All relevant worksites	Implemented
		The storage container should be sufficiently covered to prevent rainfall entering the container or bunded area (water collected within the bund must be tested and disposed of as chemical waste, if necessary). An emergency clean up kit shall be readily available where bentonite fluid will be stored or used.	Contractor	All relevant worksites	Implemented
		The handling and disposal of bentonite slurries should be undertaken in accordance within ProPECC PN 1/94. Surplus bentonite slurries used in construction works shall be reconditioned and reused wherever practicable. Residual bentonite slurry shall be disposed of from the site as soon as possible as stipulated in Clause 8.56 of the General Specification for Civil Engineering Works. The Contractor should explore alternative disposal outlets for the residual bentonite slurry (dewatered bentonite slurry to be disposed to a public filling area and liquid bentonite slurry, if mixed with inert fill material, to be disposed to a public filling area) and disposal at landfill should be the last resort.	Contractor	All relevant worksites	Implemented
AEIAR-174/2013 S6.4.8.8	AEIAR-174/2013 EM&A Manual S4.2.1.1	In order to protect against impacts to the surrounding marine waters of the KTTS and Victoria Harbour in the event of an accidental spillage of fuel or oil, the Contractor will be required to prepare a spill response plan to the satisfaction of AFCD, EPD, FSD, Police, TD and WSD to define procedures for the control, containment and clean-up of any spillage that could occur on the construction site.	Contractor	All relevant worksites	Implemented
		<u>Dredging, Reclamation and Filling</u>			
		No dredging, reclamation or filling in the marine environment shall be carried out.	Contractor	All relevant worksites	Implemented
Decommissioning of the Radar Station of the former Kai Tak Airport					
		<u>Building Demolition</u>			

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EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
AEIAR-130/2009 S5.4	AEIAR 130/2009 EM&A Manual S4.4	The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be followed as far as practicable in order to minimise surface runoff and the chance of erosion.	Contractor	All relevant worksites	Implemented
		There is a need to apply to EPD for a discharge licence under the WPCO for discharging effluent from the construction site. The discharge quality is required to meet the requirements specified in the discharge licence. All the runoff, wastewater or extracted groundwater generated from the works areas should be treated so that it satisfies all the standards listed in the TM-DSS. It is anticipated that the wastewater generated from the works areas would be of small quantity. Monitoring of the treated effluent quality from the works areas should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD.	Contractor	All relevant worksites	Implemented
		<u>General Construction Works</u>			
		<u>Construction Runoff</u>			
AEIAR-130/2009 S3.4, S5.4/ AEIAR-174/2013 S6.4.8.1	AEIAR 130/2009 EM&A Manual S2.4, S4.4/ AEIAR-174/2013 EM&A Manual S4.2.1.1	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include the use of sediment traps and adequate maintenance of drainage systems to prevent flooding and overflow.	Contractor	All relevant worksites	Implemented
		Construction site should be provided with adequately designed perimeter channel and pre-treatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles 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.	Contractor	All relevant worksites	Implemented
		Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the	Contractor	All relevant worksites	Implemented

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EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.			
		Sediment tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m3 capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	Contractor	All relevant worksites	Implemented
		Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50 m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	Contractor	All relevant worksites	Implemented
		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.	Contractor	All relevant worksites	Implemented
		Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, 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.	Contractor	All relevant worksites	Implemented
		Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	Contractor	All relevant worksites	Not Applicable
		An adequately designed and located wheel washing bay should be provided at every site exit, and 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.	Contractor	All relevant worksites	Implemented

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EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		<u>Drainage</u>			
		It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There should be no direct discharge of effluent from the site into the sea.	Contractor	All relevant worksites	Implemented
		All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	Contractor	All relevant worksites	Implemented
		<u>Stormwater Discharges</u>			
		Minimum distances of 100 m should be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes.	Contractor	All relevant worksites	Not Applicable
		<u>Sewage Effluent</u>			
		Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets should be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor should also be responsible for waste disposal and maintenance practices.	Contractor	All relevant worksites	Implemented
		<u>Debris and Litter</u>			
		In order to maintain water quality in acceptable conditions with regard to aesthetic quality, contractors should be required, under conditions of contract, to ensure that site management is optimised and that disposal of any solid materials, litter or wastes to marine waters does not occur. Debris and refuse generated on-site should be collected, handled and disposed of	Contractor	All relevant worksites	Implemented

EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		properly to avoid entering into the adjacent harbour waters. Stockpiles of cement and other construction materials should be kept covered when not being used.			
		Accidental Spillage			
		Oils and fuels should only be used and stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to the nearby harbour waters, all fuel tanks and storage areas should be provided with locks and be 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 the coastal waters of the Victoria Harbour WCZ. The bund should be drained of rainwater after a rain event.	Contractor	All relevant worksites	Implemented
		Waste Management Measures			
		Waste Management Plan			
AEIAR-174/2013 S11.4.8.1	AEIAR-174/2013 EM&A Manual S9.2.1.2	Contractor should be requested to submit an outline Waste Management Plan (WMP) prior to the commencement of construction work, in accordance with the ETWB TC(W) No.19/2005 so as to provide an overall framework of waste management and reduction.	Contractor	All relevant worksites	Implemented
		Good Site Practices			
AEIAR-130/2009 S3.5, S5.5	AEIAR 130/2009 EM&A Manual S2.5, S4.5	Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.	Contractor	All relevant worksites	Implemented
		Training of site personnel in proper waste management and chemical waste handling procedures.	Contractor	All relevant worksites	Implemented
		Provision of sufficient waste disposal points and regular collection for disposal.	Contractor	All relevant worksites	Partially Implemented
		Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.	Contractor	All relevant worksites	Implemented

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EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).	Contractor	All relevant worksites	Implemented
		<u>Waste Reduction Measures</u>			
		Sort C&D waste from demolition of the remaining structures to recover recyclable portions such as metals.	Contractor	All relevant worksites	Implemented
		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.	Contractor	All relevant worksites	Implemented
		Encourage collection of aluminum cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force.	Contractor	All relevant worksites	Implemented
		Any unused chemicals or those with remaining functional capacity should be recycled.	Contractor	All relevant worksites	Implemented
		Proper storage and site practices to minimize the potential for damage or contamination of construction materials.	Contractor	All relevant worksites	Implemented
		<u>Construction and Demolition Materials</u>			
		Where it is unavoidable to have transient stockpiles of C&D material within the work site pending collection for disposal, the transient stockpiles shall be located away from waterfront or storm drains as far as possible.	Contractor	All relevant worksites	Implemented
		Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric.	Contractor	All relevant worksites	Partially Implemented
		Skip hoist for material transport should be totally enclosed by impervious sheeting.	Contractor	All relevant worksites	Implemented

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EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site.	Contractor	All relevant worksites	Implemented
		The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.	Contractor	All relevant worksites	Implemented
		The load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle.	Contractor	All relevant worksites	Implemented
		All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.	Contractor	All relevant worksites	Implemented
		The height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading.	Contractor	All relevant worksites	Implemented
		When delivering inert C&D material to public fill reception facilities, the material should consist entirely of inert construction waste and of size less than 250mm or other sizes as agreed with the Secretary of the Public Fill Committee. In order to monitor the disposal of the surplus C&D material at the designed public fill reception facility and to control fly tipping, a trip-ticket system as stipulated in the ETWB TCW No. 31/2004 “Trip Ticket System for Disposal of Construction and Demolition Materials” should be included as one of the contractual requirements and implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. An Independent Environmental Checker should be responsible for auditing the results of the system.	Contractor	All relevant worksites	Implemented
		<u>Chemical Waste</u>			
		After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Spent chemicals should be collected by a licensed collector for disposal at the CWTF or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Contractor	All relevant worksites	Partially Implemented

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EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		General Refuse			
		General refuse should be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Effective collection and storage methods (including enclosed and covered area) of site wastes would be required to prevent waste materials from being blown around by wind, wastewater discharge by flushing or leaching into the marine environment, or creating odour nuisance or pest and vermin problem.	Contractor	All relevant worksites	Implemented
Land Contamination Measures					
		For any excavation works conducted at Radar Station			
AEIAR-130/2009 S3.6.57	AEIAR 130/2009 EM&A Manual S4.6	As the risk due to dermal contact with groundwater by site workers is uncertain, it is recommended that personnel protective equipment (PPE) be used by site workers as a mitigation measure.	Contractor	All relevant worksites	Not Applicable
Landscape and Visual Impact					
New Distributor Roads Serving the Planned KTD					
		Construction Phase			
AEIAR-130/2009 S3.8.12	AEIAR 130/2009 EM&A Manual S2.8	All existing trees should be carefully protected during construction.	Contractor	All relevant worksites	Not Applicable
		Trees unavoidably affected by the works should be transplanted where practical. Detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBC 2/2004 and 3/2006. Final locations of transplanted trees should be agreed prior to commencement of the work.	Contractor	All relevant worksites	Not Applicable
		Control of night-time lighting.	Contractor	All relevant worksites	Not Applicable

EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		Erection of decorative screen hoarding.	Contractor	All relevant worksites	Implemented
Trunk Road T2					
		Construction Phase			
AEIAR-174/2013 S9.9.1.1	AEIAR-174/2013 EM&A Manual S7.2.1.2	All works shall be carefully designed to minimize impacts on existing landscape resources and visually sensitive receivers. Existing trees within works area shall be retained and protected.	Contractor	All relevant worksites	Not Applicable
		Existing trees of good quality and condition that are unavoidably affected by the works should be transplanted.	Contractor	All relevant worksites	Not Applicable
		Large temporary stockpiles of excavated material shall be covered with unobtrusive sheeting to prevent dust and dirt spreading to adjacent landscape areas and vegetation, and to create a neat and tidy visual appearance.	Contractor	All relevant worksites	Partially Implemented
		Construction plant and building material shall be orderly and carefully stored in order to create a neat and tidy visual appearance.	Contractor	All relevant worksites	Implemented
		Erection of decorative screen hoarding should be designed to be compatible with the existing urban context.	Contractor	All relevant worksites	Implemented
		All lighting in construction site shall be carefully controlled to minimize light pollution and night-time glare to nearby residences and GIC user. The contractor shall consider other security measures, which shall minimize the visual impacts.	Contractor	All relevant worksites	Not Applicable
General Condition					
		The Permit Holder shall display conspicuously a copy of this Permit on the Project site(s) at all vehicular site entrances/exits or at a convenient location for public's information at all times. The Permit Holder shall ensure that the most updated information about the Permit, including any amended Permit, is displayed at such locations. If the Permit Holder surrenders a part or the whole of the Permit, the notice he sends to the Director shall also be displayed at the same	Contractor	All relevant worksites	Implemented

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EIA Ref	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Who to implement the measure	Location / Timing	Construction Phase Implementation Status
		locations as the original Permit. The suspended, varied or cancelled Permit shall be removed from display at the Project site(s).			

Implementation status: Implemented / Partially Implemented / Not Implemented / Not Applicable

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Appendix K

Weather and Meteorological Conditions during Reporting Month

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Date	Mean Pressure (hPa)	Air Temperature			Mean Relative Humidity (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)		
March 2017						
01	1019.5	22.9	18.8	15.9	67	0.0
02	1019.2	23.9	19.4	17.2	45	0.0
03	1017.0	20.1	17.4	15.7	67	0.0
04	1014.1	21.8	18.7	16.8	73	0.0
05	1012.4	24.0	20.7	18.7	83	0.0
06	1013.7	23.5	20.3	17.9	80	Trace
07	1016.5	20.7	18.0	17.1	75	Trace
08	1017.5	17.3	16.3	15.0	86	2.8
09	1015.7	19.6	17.0	16.0	74	Trace
10	1012.5	19.2	17.8	16.4	90	Trace
11	1015.1	18.4	17.5	16.7	88	Trace
12	1014.3	19.5	18.4	17.0	90	1.0
13	1011.8	24.4	21.7	19.4	92	0.0
14	1015.8	22.0	19.1	16.8	94	8.5
15	1018.2	17.9	16.8	16.2	75	Trace
16	1016.4	19.0	17.8	16.8	78	Trace
17	1017.2	20.4	18.1	17.0	86	Trace
18	1017.8	20.1	18.9	17.4	90	0.3
19	1017.3	20.6	19.8	18.9	94	10.7
20	1015.1	27.1	21.9	18.6	86	Trace
21	1015.0	27.6	22.9	19.1	85	0.6
22	1014.1	19.7	18.8	17.6	88	0.9
23	1015.0	24.6	21.2	19.0	84	0.0
24	1016.3	22.4	20.8	18.9	83	Trace
25	1017.2	23.4	20.2	16.5	84	Trace
26	1022.0	16.9	15.8	13.8	76	1.0
27	1022.7	21.5	18.9	16.3	55	0.0
28	1019.2	24.9	20.6	18.1	70	0.0
29	1018.3	23.7	21.7	20.4	84	0.3
30	1017.3	23.1	21.9	21.0	89	Trace
31	1015.3	23.7	20.1	15.5	92	21.9

Source: Hong Kong Observatory – Hong Kong Observatory

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Appendix L

Cumulative statistics on Environmental Complaints, Notifications of Summons and Successful Prosecution

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Environmental Complaints Log

Complaint Log No.	Date of Notification	Received From and Received By	Nature of Complaint	Date of Investigation	Outcome	Date of Reply
1	15 December 2016	Andy Choy	Air	13 February 2017	Project-related	13 February 2017
2	21 February 2017	Andy Choy	Air	22 February 2017	Not Project-related	7 March 2017

Cumulative Statistics on Complaints

Environmental Parameters	Cumulative No. Brought Forward	No. of Complaints This Month	Cumulative Project-to-Date
Air	2	0	2
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	0

Cumulative Statistics on Notification of Summons and Successful Prosecutions

Environmental Parameters	Cumulative No. Brought Forward	No. of Notification of Summons and Prosecutions This Month	Cumulative Project-to-Date
Air	0	0	0
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	0

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Appendix M

Summary of Site Audit in the Reporting Month

Summary of Site Audit in the Reporting Month

Parameters	Date	Observations and Recommendations	Follow-up
Air Quality	30 March 2017	Open stockpile shall be covered with impermeable sheeting to prevent dust emission. (Zone 3)	The item was rectified by the Contractor and inspected on 6 April 2017.
	2 March 2017	Main haul road shall be kept clear of muddy or dusty materials or sprayed with water regularly. (Zone 1)	The item was rectified by the Contractor and inspected on 9 March 2017.
Noise	30 March 2017	The door of the air compressor shall be closed to reduce noise emission. (Zone 3)	The item was rectified by the Contractor and inspected on 6 April 2017.
Water Quality	NA		
Chemical and Waste Management	23 March 2017	The skip containing general refuse should be stored properly. (Zone 1)	The item was rectified by the Contractor and inspected on 30 March 2017.
	30 March 2017	The empty fuel bottle shall be handled properly (Zone 3).	The item was rectified by the Contractor and inspected on 6 April 2017.
Land Contamination	NA		
Landscape and Visual Impact	30 March 2017	Open stockpiles shall be covered by unobtrusive sheeting to prevent dust and dirt spreading to adjacent landscape areas and vegetation, and to create a neat and tidy visual appearance. (Zone 3)	The item was rectified by the Contractor and inspected on 6 April 2017.
General Condition	2 March 2017	Proper wheel washing facilities in every vehicle exit point shall be provided or otherwise to ensure no vehicle would exit. (Zone 3)	The item was rectified by the Contractor and inspected on 9 March 2017.
	9 March 2017	Contractor was reminded to prevent flooding occurred at the sink. (Zone 4)	The item was rectified by the Contractor and inspected on 15 March 2017.

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Appendix N

Outstanding Issues and Deficiencies

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Summary of Outstanding Issues and Deficiencies in the Reporting Month

Parameters	Outstanding Issues	Deficiencies
Air Quality	NA	Any items of deficiencies can be referred to **Appendix M**.
Noise	NA	
Water Quality	NA	
Chemical and Waste Management	NA	
Land Contamination	NA	
Landscape and Visual Impact	NA	
General Condition	NA	
Others	NA	

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Appendix E

Monthly EM&A Report
For
Contract No. KL/2015/02
Kai Tak Development - Stage 5A Infrastructure at Former North Apron Area

Civil Engineering and Development Department

EP-337/2009 – New Distributor Roads Serving the Planned KTD

Contract No. KLN/2016/04
Environmental Monitoring Works for
Contract No. KL/2015/02
Kai Tak Development – Stage 5A Infrastructure at Former North Apron Area

Monthly EM&A Report

March 2017

(version 1.0)

Approved By	(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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Date 16 May 2017
Our Ref. MCL/ED/0287/2017/C

Cinotech Consultants Limited
Rm 1710, Technology Park,
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New Territories,
Hong Kong

BY EMAIL

Attn.: Dr. Priscilla Choy

Dear Madam,

Contract No. KL/2015/02
Kai Tak Development –Stage 5A Infrastructure at Former North Apron
Verification of Monthly EM&A Report for March 2017

We refer to your emails dated 7 April 2017, 10 and 15 May 2017 regarding the Monthly EM&A Report for March 2017 for the captioned project prepared by the ET.

We have no further comment and hereby verify the Report in accordance with Clause 3.3 of Environmental Permit no. EP-337/2009.

Should you require further information, please do not hesitate to contact Mr. Wingo So at 3565 4374 or the undersigned on 3565 4114.

Assuring you of our best attention at all times.

Yours faithfully,
For and on behalf of
MATERIALAB CONSULTANTS LIMITED

Colin K. L. Yung
Independent Environmental Checker

CY/ws

c.c. CEDD – Attn.: Ms. K. Pong
Attn.: Mr. Keith Chu
AECOM – Attn.: Mr. John Yam
Attn.: Mr. Jacky Pun

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EXECUTIVE SUMMARY

Introduction

1. This is the 3rd Monthly Environmental Monitoring and Audit Report prepared by Cinotech Consultants Ltd. for "Contract No. KL/2015/02 - Kai Tak Development – Stage 5A Infrastructure at Former North Apron Area" (Hereafter referred to as "the Project"). This contract comprises one Schedule 2 designated project (DP), namely the new distributor road D1 serving the planned KTD. The DP is part of the designated project under Environmental Permit (EP) No.: EP-337/2009 ("New distributor roads serving the planned Kai Tak Development") respectively. This report documents the findings of EM&A Works conducted from 1 – 31 March 2017.

2. With reference to the same principle of EIA report of the Project, air quality monitoring stations within 500m and noise monitoring stations within 300m from the boundary of this Project are considered as relevant monitoring locations. In such regard, the relevant air quality and noise monitoring locations are tabulated in **Table I** (see **Figure 2 and 3** for their locations).

Table I – Air Quality and Noise Monitoring Stations for this Project

Locations	Monitoring Stations In accordance with EM&A Manual	Alternative Monitoring Stations
Air Quality Monitoring Stations		
AM2 - Lee Kau Yan Memorial School	Yes	N/A
Noise Monitoring Stations		
M3 - Cognitio College	Yes	N/A
M4 - Lee Kau Yan Memorial School	Yes	N/A
M5 – Nam Yuen	No	M5(C) – Mercy Grace's Home

3. According to the Environmental Monitoring and Audit Manual (EM&A Manual) of the Kai Tak Development (KTD) Schedule 3 Environmental Impact Assessment (EIA) Report, the impact monitoring at the designated monitoring stations as required in KTD EM&A Manual under the EP, have been conducted in Contract No. KLN/2013/16 and KLN/2016/09 – Environmental Monitoring Works for Kai Tak Development under Schedule 3 of KTD, which is on-going starting from December 2010. The impact monitoring data under Contract No. KLN/2013/16 and KLN/2016/09 will be adopted for the Project. Therefore, this report presents the air quality and noise monitoring works extracted from Contract No. KLN/2013/16 and KLN/2016/09.

4. The major site activities undertaken in the reporting month included:
   - Bored piling works at abutment A02;
   - Carrying out pre-bored works and driving sheet piles at Subway SW6 between Staircases ST2 and ST3;
   - Drilling works for standpipe and piezometer;
   - Trench excavation for DCS works at Road L7;
   - Construction of Box Culvert B3 (Top slab);
   - Excavation and Construction Works for Box Culvert B4;
   - ELS Works and Excavation Works at Box Culvert B5;
   - Excavation Works for Box Culvert B2; and
   - ELS Construction for Sewerage Works near SCL Tunnels.

Environmental Monitoring Works

5. Environmental monitoring for the Project was performed in accordance with the EM&A Manual and the monitoring results were checked and reviewed. Site Inspections/Audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

6. Summary of the non-compliance in the reporting month for the Project is tabulated in Table II.

Table II Non-compliance Recorded for the Project in the Reporting Month

Parameter	No. of Project-related Exceedance		Action Taken
	Action Level	Limit Level	
1-hr TSP	0	0	N/A
24-hr TSP	0	0	N/A
Noise	0	0	N/A

1-hour & 24-hour TSP Monitoring

7. All 1-hour & 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

8. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Licenses and Permits

9. Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, EP-337/2009 issued on 23 April 2009.

10. Construction Noise Permit (License No.: GW-RE0033-17 & GW-RE1236-16).

11. Billing Account for Construction Waste Disposal (A/C# 7026164).

12. Registration of Chemical Waste Producer (WPN5213-229-P3239-01).

13. Effluent Discharge License (WT00027495-2017).

Key Information in the Reporting Month

14. Summary of key information in the reporting month is tabulated in **Table III**.

Table III Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Reporting Changes	0	---	N/A	N/A	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

Future Key Issues

15. The future key environmental issues in the coming month include:
- Dust generation from stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
- Water spraying for dust generating activity and on haul road;
- Proper storage of construction materials on site;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Accumulation of general and construction waste on site;
- Noise from operation of the equipment, especially for rock-breaking activities, piling works and machinery on-site;
- Wastewater and runoff discharge from site;
- Regular removal of silt, mud and sand along u-channels and sedimentation tanks; and
- Review and implementation of temporary drainage system for the surface runoff.

1. INTRODUCTION

Background

1.1 The Kai Tak Development (KTD) is located in the south-eastern part of Kowloon Peninsula, comprising the apron and runway areas of the former Kai Tak Airport and existing waterfront areas at To Kwa Wan, Ma Tau Kok, Kowloon Bay, Kwun Tong and Cha Kwo Ling. It covers a land area of about 328 hectares. Stage 5A Infrastructure at Former North Apron Area is one of the construction stages of KTD. It contains one Schedule 2 DP including new distributor roads serving the planned KTD. The general layout of the Project is shown in **Figure 1.**

1.2 An Environmental Permit (EP) No. EP-337/2009 was issued on 23 April 2009 for new distributor roads serving the planned KTD to Civil Engineering and Development Department as the Permit Holder.

1.3 A study of environmental impact assessment (EIA) was undertaken to consider the key issues of air quality, noise, water quality, waste, land contamination, cultural heritage and landscape and visual impact, and identify possible mitigation measures associated with the works. An EIA Report (Register No. AEIAR-130/2009) was approved by the Environmental Protection Department (EPD) on 4 April 2009.

1.4 Cinotech Consultants Limited (Cinotech) was commissioned by Civil Engineering and Development Department (CEDD) to undertake the role of the Environmental Team (ET) for the Contract No. KL/2015/02 – Stage 5A Infrastructure at Former North Apron Area. The construction work under KL/2015/02 comprises the construction of part of the Road D1 under the EP (EP-337/2009).

1.5 Cinotech Consultants Limited was commissioned by Civil Engineering and Development Department (CEDD) to undertake the Environmental Monitoring and Audit (EM&A) works for the Project. The commencement date of construction of Road D1 (part) under this Contract was on 16 January 2017.

1.6 This is the 3rd Monthly EM&A report summarizing the EM&A works for the Project from 1 – 31 March 2017.

Project Organizations

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

- Project Proponent – Civil Engineering and Development Department (CEDD).
- The Engineer and the Engineer's Representative (ER) – AECOM Asia Co. Ltd (AECOM).
- Environmental Team (ET) – Cinotech Consultants Limited (Cinotech).
- Independent Environmental Checker (IEC) – MateriaLab Consultants Limited (MCL).
- Contractor – Peako - Wo Hing Joint Venture (PWHJV).

1.8 The key contacts of the Project are shown in **Table 1.1**.

Table 1.1 Key Project Contacts

Party	Role	Contact Person	Position	Phone No.	Fax No.
CEDD	Project Proponent	Ms. K. Pong	Senior Engineer	2301 1466	2369 4980
AECOM	Engineer's Representative	Mr. John Yam	SRE	2798 0771	2210 6110
Cinotech	Environmental Team	Dr. Priscilla Choy	Environmental Team Leader	2151 2089	3107 1388
		Ms. Ivy Tam	Audit Team Leader	2151 2090	
MCL	Independent Environmental Checker	Mr. Colin Yung	Independent Environmental Checker	3565 4114	2450 8032
PWHJV	Contractor	Mr. W.M. Wong	Site Agent	6386 3535	2398 8301

Construction Activities undertaken during the Reporting Month

1.9 The site activities undertaken in the reporting month included:

- Bored piling works at abutment A02;
- Carrying out pre-bored works and driving sheet piles at Subway SW6 between
- Staircases ST2 and ST3;
- Drilling works for standpipe and piezometer;
- Trench excavation for DCS works at Road L7;
- Construction of Box Culvert B3 (Top slab);
- Excavation and Construction Works for Box Culvert B4;
- ELS Works and Excavation Works at Box Culvert B5;
- Excavation Works for Box Culvert B2; and
- ELS Construction for Sewerage Works near SCL Tunnels.

1.10 The construction programme showing the inter-relationship with environmental protection/mitigation measures are presented in **Table 1.2**.

Table 1.2 Construction Programme Showing the Inter-Relationship with Environmental Protection/Mitigation Measures

Construction Works	Major Environmental Impact	Control Measures
As mentioned in Section 1.9	Noise, dust impact, water quality and waste generation	Sufficient watering of the works site with active dust emitting activities; Properly cover the stockpiles; On-site waste sorting and implementation of trip ticket system Appropriate desilting/sedimentation devices provided on site for treatment before discharge; Use of quiet plant and well-maintained construction plant; Provide movable noise barrier; Well maintain the drainage system to

		prevent the spillage of wastewater during heavy rainfall; Provide sufficient mitigation measures as recommended in Approved EIA Report/Lease requirement.

Summary of EM&A Requirements

1.11 The EM&A programme requires construction noise monitoring, air quality monitoring, landscape and visual monitoring and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental requirements and mitigation measures, as recommended in the EM&A Manual under the EP.

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

1.13 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely air quality and noise levels and audit works for the Project from 1 – 31 March 2017.

2. AIR QUALITY

Monitoring Requirements

2.1 According to EM&A Manual under the EP, 1-hour and 24-hour TSP monitoring were conducted to monitor the air quality for this Project. For regular impact monitoring, a sampling frequency of at least once in every six days at all of the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six days shall be undertaken when the highest dust impact occurs. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

2.2 One designated monitoring station was selected for air quality monitoring programme. Impact dust monitoring was conducted at the air quality monitoring station, Lee Kau Yan Memorial School (AM2) in the reporting month. **Table 2.1** describes the air quality monitoring locations, which are also depicted in **Figure 2**.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Stations	Locations	Location of Measurement
AM2	Lee Kau Yan Memorial School	Rooftop (about 8/F) Area

Monitoring Equipment

2.3 **Table 2.2** summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates are attached in **Appendix B**.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	TISCH TE-5025A	2
1-hour TSP Dust Meter	• Laser Dust Monitor – Model LD-3, LD-3B, AEROCET-531 • TSI Model AM510 SidePak Personal Aerosol Monitor	7
HVS Sampler	GMWS 2310 c/w of TSP sampling inlet	7
Wind Anemometer	Davis Weather Monitor II, Model no. 7440	2

Monitoring Parameters, Frequency and Duration

2.4 **Table 2.3** summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting month is shown in **Appendix D**.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hr TSP	Three times / 6 days
24-hr TSP	Once / 6 days

Monitoring Methodology and QA/QC Procedure

1-hour TSP Monitoring

(Equipment: Sibata; Model no. LD-3, LD-3B)

Measuring Procedures

2.5 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows:

- Pull up the air sampling inlet cover
- Change the Mode 0 to BG with once
- Push Start/Stop switch once
- Turn the knob to SENSI.ADJ and press it
- Push Start/Stop switch once
- Return the knob to the position MEASURE slowly
- Push the timer set switch to set measuring time
- Remove the cap and make a measurement

Maintenance/Calibration

2.6 The following maintenance/calibration was required for the direct dust meters:

Check the meter at a 3-month interval and calibrate the meter at a 1-year interval throughout all stages of the air quality monitoring.

24-hour TSP Monitoring

Instrumentation

2.7 High volume (HVS) samplers (Model GMWS-2310 Accu-Vol) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in section 2.5 of the updated EM&A Manual.

Operating/Analytical Procedures

2.8 Operating/analytical procedures for the operation of HVS were as follows:

- A horizontal platform was provided with appropriate support 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 sampler was more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

2.9 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

2.10 For TSP sampling, fiberglass filters have a collection efficiency of > 99% for particles of 0.3μm diameter were used.

2.11 The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.12 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.

2.13 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. The applied pressure should be sufficient to avoid air leakage at the edges.

2.14 The shelter lid was closed and secured with the aluminum strip.

2.15 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).

2.16 After sampling, the filter was removed and sent to the HOKLAS laboratory (Wellab Ltd.) for weighing. The elapsed time was also recorded.

2.17 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature 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%.

Maintenance/Calibration

2.18 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.
- High volume samplers were calibrated at bi-monthly intervals using TE-5025A Calibration Kit throughout all stages of the air quality monitoring.

Results and Observations

2.19 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

2.20 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

2.21 The air temperature, precipitation and the relative humidity data was obtained from Hong Kong Observatory where the wind speed and wind direction were recorded by the installed Wind Anemometer set at rooftop (about 8/F) Lee Kau Yan Memorial School. The location is shown in **Figure 4**. This weather information for the reporting month is summarized in **Appendix C.**

2.22 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices E and F** respectively.

2.23 The summary of exceedance record in reporting month is shown in **Appendix H**. No exceedance was recorded for the air quality monitoring.

2.24 According to our field observations, the major dust source identified at the designated air quality monitoring stations are as follows:

Station	Major Dust Source
AM2 – Lee Kau Yan Memorial School	Road Traffic Dust Exposed site area and open stockpiles Excavation works Site vehicle movement

2.25 **Table 2.4** shows the summary of air quality monitoring results during the reporting month.

Table 2.4 Summary Table of Air Quality Monitoring Results during the reporting month

Parameter	Date	Concentration (µg/m3)	Action Level, µg/m3	Limit Level, µg/m3
AM2 – Lee Kau Yan Memorial School				
1-hr TSP	3-Mar-17	174.9	346	500
	3-Mar-17	182.6		
	3-Mar-17	185.6		
	8-Mar-17	96.0		
	8-Mar-17	98.0		
	8-Mar-17	95.0		
	14-Mar-17	46.0		
	14-Mar-17	47.0		
	14-Mar-17	42.0		
	20-Mar-17	55.0		
	20-Mar-17	58.0		
	20-Mar-17	64.0		
	24-Mar-17	59.0		
	24-Mar-17	58.0		
	24-Mar-17	59.0		
	30-Mar-17	69.0		
	30-Mar-17	62.0		
	30-Mar-17	65.0		
24-hr TSP	2-Mar-17	118.2	157	260
	8-Mar-17	75.4		
	14-Mar-17	31.0		
	20-Mar-17	55.0		
	24-Mar-17	62.0		
	30-Mar-17	64.0		

3. NOISE

Monitoring Requirements

3.1 According to EM&A Manuals under the EP, construction noise monitoring was conducted to monitor the construction noise arising from the construction activities within KTD. The regular monitoring frequency for each monitoring station shall be on a weekly basis and conduct one set of measurements between 0700 and 1900 hours on normal weekdays. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

3.2 Three designated monitoring stations were selected for noise monitoring programme. Noise monitoring was conducted at three designated monitoring stations (M3, M4, M5(C)). **Figure 3** shows the locations of these stations.

Table 3.1 Noise Monitoring Stations

Monitoring Stations	Locations	Location of Measurement
M3	Cognitio College	Rooftop (about 6/F) Area
M4	Lee Kau Yan Memorial School	Rooftop (about 7/F) Area
M5(C)	Mercy Grace's Home	Rooftop (about 5/F) Area

Monitoring Equipment

3.3 **Table 3.2** summarizes the noise monitoring equipment. Copies of calibration certificates are provided in **Appendix B**.

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Qty.
Integrating Sound Level Meter	• SVAN 955 & 957, BSWA 801 • RION NL52	4
Calibrator	• SVAN 30A, B&K4231 • RION NC 73 & 74	4

Monitoring Parameters, Frequency and Duration

3.4 **Table 3.3** summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency	Measurement
M3 M4 M5(C)	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A)	0700-1900 hrs on normal weekdays	Once per week	Façade

Monitoring Methodology and QA/QC Procedures

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
- The battery condition was checked to ensure the correct 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
  - time measurement : 30 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused temporarily during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- 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.

Maintenance and Calibration

3.5 The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.

3.6 The sound level meter and calibrator were checked and calibrated at yearly intervals.

3.7 Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Results and Observations

3.8 All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. The summary of exceedance record in reporting month is shown in **Appendix H**.

3.9 The baseline noise level and the Noise Limit Level at each designated noise monitoring station are presented in **Table 3.4**.

3.10 Noise monitoring results and graphical presentations are shown in **Appendix G**.

3.11 The major noise source identified at the designated noise monitoring stations are as follows:

Monitoring Stations	Locations	Major Noise Source
M3	Cognitio College	Traffic Noise Daily school activities
M4	Lee Kau Yan Memorial School	Traffic Noise Site vehicle movement Excavation works Piling works Daily school activities
M5(C)	Mercy Grace's Home	Traffic Noise Site vehicle movement

Table 3.4 Baseline Noise Level and Noise Limit Level for Monitoring Stations

Station	Baseline Noise Level, dB (A)	Noise Limit Level, dB (A)
M3	76.3/78.6(1) (at 0700 – 1900 hrs on normal weekdays)	70* (at 0700 – 1900 hrs on normal weekdays)
M4	76.7 (at 0700 – 1900 hrs on normal weekdays)	
M5(C)	N/A(2) (at 0700 – 1900 hrs on normal weekdays)	75 (at 0700 – 1900 hrs on normal weekdays)

(*) Noise Limit Level is 65 dB(A) during school examination periods.
Note (1): The baseline noise review report submitted under KLN/2013/16 for M3 was approved by EPD on 23rd August 2013. (Baseline Level was found to be 78.6 dB(A) at Rooftop of Cognitio College)
Note (2): The background Noise Level was recorded during the Lunch Hour of Construction Site (i.e. 12:00-13:00) under KLN/2013/16 & KLN/2016/09 ,and to be used as the referencing value for compliance checking for Noise Action and Limit Level.

Table 3.5 Summary Table of Noise Monitoring Results during the Reporting Month

Date	Measured Noise Level, Leq(30min) dB (A)	Baseline Level dB (A)	Construction Noise Level (1) : Leq(30min) dB (A)
M3 – Cognitio College			
--	--	Background Noise(2)	--
9-Mar-17	67.5	68.7	67.5 Measured ≦Background
15-Mar-17	70.8	78.6	70.8 Measured ≦Background
21-Mar-17	78.1	78.4	78.1 Measured ≦Background
27-Mar-17	77.4	77.6	77.4 Measured ≦Background
M4 – Lee Kau Yan Memorial School			
9-Mar-17	76.6	76.7	76.6 Measured ≦Baseline
15-Mar-17	79.4		76.1
21-Mar-17	73.9		73.9 Measured ≦Baseline
27-Mar-17	75.7		75.7 Measured ≦Baseline
M5(C) – Mercy Grace's Home			
--	--	Background Noise(2)	--
3-Mar-17	77.9	77.1	70.2
10-Mar-17	78.3	77.1	72.1
15-Mar-17	76.4	77.1	76.4 Measured ≦ Background
21-Mar-17	76.7	77.1	76.7 Measured ≦ Background
27-Mar-17	75.7	77.1	75.7 Measured ≦ Background

Note (1): The noise level due to the construction work (CNL) was calculated by the following formula:

$CNL = 10 \log (10^{MNL/10} – 10^{BNL/10})$

Remarks: MNL = Measured Noise Level BNL = Baseline Noise Level

(2): The background Noise Level was recorded during the Lunch Hour of Construction Site (i.e. 12:00-13:00) and to be used as the referencing value for compliance checking for Noise Action and Limit Level.

4. COMPARISON OF EM&A RESULTS WITH EIA PREDICTIONS

4.1 The EM&A data was compared with the EIA predictions as summarized in Tables 4.1 to 4.3.

Table 4.1 Comparison of 1-hr TSP data with EIA predictions

Station	Predicted 1-hr TSP conc.		
	Scenario1 (Mid 2009 to Mid 2013), µg/m3	Scenario2 (Mid 2013 to Late 2016), µg/m3	Reporting Month (Mar 17), µg/m3
AM 2 – Lee Kau Yan Memorial School	290	312	42.0 – 186.0

Table 4.2 Comparison of 24-hr TSP data with EIA predictions

Station	Predicted 24-hr TSP conc.		
	Scenario1 (Mid 2009 to Mid 2013), µg/m3	Scenario2 (Mid 2013 to Late 2016), µg/m3	Reporting Month (Mar 17), µg/m3
AM2 – Lee Kau Yan Memorial School	145	169	31.0 – 118.2

Table 4.3 Comparison of Noise Monitoring Data with EIA predictions

Stations	Predicted Mitigated Construction Noise Levels during Normal Working Hour ($L_{eq\ (30min)}$ dB(A))	Reporting Month (Mar 17), $L_{eq\ (30min)}$ dB(A)
M3 – Cognitio College	47 – 75	67.5 – 78.1
M4 – Lee Kau Yan Memorial School	47 – 74	73.9 – 76.6
M5(C) – Mercy Grace's Home	Not Predicted in EIA Report	70.2 – 76.7

Remarks:
(1) Since the background noise level recorded during 12:00 to 13:00 was higher than those recorded during the construction period, the recorded noise levels were considered non-valid exceedance of Noise Limit Level.
(2) Since the baseline noise level was higher than those recorded during the construction period, the recorded noise levels were considered non-valid exceedance of Noise Limit Level.

4.2 The 1-hour TSP concentrations in the reporting month were below to the prediction in the approved Environmental Impact Assessment (EIA) Report.

4.3 The 24-hour TSP concentrations in the reporting month were below to the prediction in the approved Environmental Impact Assessment (EIA) Report.

4.4 The noise monitoring results in the reporting month at M3 and M4 were not within the range of predicted mitigated construction noise levels in the EIA report. Mitigated construction noise levels at M5(C) were not predicted in EIA Report.

5. LANDSCAPE AND VISUAL

Monitoring Requirements

5.1 According to EM&A Manual of the Kai Tak Development EIA Study, ET shall monitor and audit the contractor's operation during the construction period on a weekly basis, and to report on the contractor's compliance.

Results and Observations

5.2 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of landscape and visual mitigation measures within the site boundaries of this Project. The summaries of site audits are attached in **Appendix I**.

5.3 No non-compliance of the landscape and visual impact was recorded in the reporting month.

5.4 Should non-compliance of the landscape and visual impact occur, action in accordance with the action plan presented in **Appendix J** shall be performed.

6. ENVIRONMENTAL AUDIT

Site Audits

6.1 Site audits were carried out on a 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 I**.

6.2 Site audits were conducted on 3, 10, 15, 24 & 31 March 2017 in the reporting month. A joint site audit with the representative of IEC, ER, the Contractor and the ET was carried out on 15 March 2017. The details of observations during site audit are summarized in **Table 6.2**.

Review of Environmental Monitoring Procedures

6.3 The monitoring works conducted by the monitoring team were inspected regularly. The following observations have been recorded for the monitoring works:

Air Quality Monitoring

- The monitoring team recorded all observations around the monitoring stations within and outside the construction site.
- The monitoring team recorded the temperature and weather conditions on the monitoring days.

Noise Monitoring

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

Status of Environmental Licensing and Permitting

6.4 All permits/licenses obtained for the Project are summarized in **Table 6.1**.

Table 6.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-337/2009	23/04/09	N/A	Valid
Effluent Discharge License			
WT00027495-2017	N/A	31/03/22	Valid
Billing Account for Construction Waste Disposal			
A/C# 7026164	20/10/16	N/A	Valid
Registration of Chemical Waste Producer			
WPN5213-229-P3239-01	24/10/16	N/A	Valid
Construction Noise Permit (CNP)			
GW-RE0033-17	24/01/17	05/07/17	Valid
GW-RE1236-16	05/01/17	29/06/17	Valid

Status of Waste Management

6.5 The amount of wastes generated by the major site activities of this Project during the reporting month is shown in **Appendix M**.

Implementation Status of Environmental Mitigation Measures

6.6 During site inspections in the reporting month, no non-conformance was identified. ET weekly site inspections were carried out during the reporting month and the observations and recommendations are summarized in **Table 6.2**.

Table 6.2 Observations and Recommendations of Site Inspections

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	--	--	--
Air Quality	3 March 2017	Reminder: Water spraying should be provided at haul road to avoid dust generation.	Rectification/improvement was observed during the follow-up audit session.
	10 March 2017	Observation: Excavated material should be properly covered for dust suppression. (Portion 2)	Rectification/improvement was observed during the follow-up audit session.
	10 March 2017	Observation: Water spray should be provided at haul road. (Portion 1)	Rectification/improvement was observed during the follow-up audit session.
	24 March 2017	Reminder: Water spraying should be provided to unpaved area to avoid dust generation.	Rectification/improvement was observed during the follow-up audit session.
	24 March 2017	Reminder: Stockpile of dusty material should be covered by impervious materials properly.	Rectification/improvement was observed during the follow-up audit session.
Noise	--	--	--
Waste/ Chemical Management	10 March 2017	Reminder: Oil stain accumulated near KCD should be properly cleared. (Portion 1)	Rectification/improvement was observed during the follow-up audit session.
	24 March 2017	Reminder: Drip tray near the generator-set should be maintained more regularly.	Rectification/improvement was observed during the follow-up audit session.

Parameters	Date	Observations and Recommendations	Follow-up
	31 March 2017	Reminder: To clear the general refuse at the box culvert at Portion 2.	Follow up action will be reported in the next reporting month.
Landscape and Visual	31 March 2017	Observation: To properly maintain the hoarding at the site boundary of Portion 1.	Follow up action will be reported in the next reporting month.
Permits/ Licenses	--	--	--

Summary of Mitigation Measures Implemented

6.7 An updated summary of the EMIS is provided in **Appendix K**.

Implementation Status of Event Action Plans

6.8 The Event Action Plans for air quality, noise and landscape and visual are presented in **Appendix J**.

1-hr TSP Monitoring

6.9 No Action/Limit Level exceedance was recorded in the reporting month.

24-hr TSP Monitoring

6.10 No Action/Limit Level exceedance was recorded in the reporting month.

Construction Noise

6.11 No Action/Limit Level exceedance was recorded in the reporting month.

Landscape and visual

6.12 No non-compliance was recorded in the reporting month.

Summary of Complaint, Warning, Notification of any Summons and Successful Prosecution

6.13 The summaries of environmental complaint, warning, summon and notification of successful prosecution for the Project is presented in **Appendix L**.

7. FUTURE KEY ISSUES

7.1 Major site activities undertaken for the coming two months include:

- Demolition of part of existing Pier S15;
- Driving sheet piles at Subway SW6 between Staircases ST2 and ST3;
- Construction of temporary slip road and decking for TTA at PERE;
- Hoarding erection along PERE;
- Trench excavation for DCS works at Road D1;
- Installing DCS pipes at Road L7 and test for DCS at Road L7;
- ELS excavation for sewerage at Box 2;
- Installation of sewerage at Box 2;
- ELS excavation for DCS at Road D1;
- Construction of Box Culvert B3;
- Excavation and Construction Works for Box Culvert B4;
- ELS and Excavation Works at Box Culvert B5;
- Construction of Box Culvert B2; and
- Sewerage Works near SCL Tunnels.

Key Issues for the Coming Month

7.2 Key environmental issues in the coming month include:

- Wastewater and runoff discharge from site;
- Regular removal of silt, mud and sand along u-channels and sedimentation tanks;
- Review and implementation of temporary drainage system for the surface runoff;
- Noise from operation of the equipment, especially for rock-breaking activities, piling works and machinery on-site;
- Dust generation from stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
- Water spraying for dust generating activity and on haul road;
- Proper storage of construction materials on site;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Accumulation of general and construction waste on site.

7.3 The tentative program of major site activities and the impact prediction and control measures for the coming two months, i.e. April and May 2017 are summarized as follows:

Construction Works	Major Impact Prediction	Control Measures
As mentioned in Section 7.1	Air quality impact (dust)	(a) Frequent watering of haul road and unpaved/exposed areas; (b) Frequent watering or covering stockpiles with tarpaulin or similar means; and (c) Watering of any earth moving activities.
	Water quality impact (surface run-off)	(a) Diversion of the collected effluent to de-silting facilities for treatment prior to discharge to public storm water drains; (b) Provision of adequate de-silting facilities for treating surface run-off and other collected effluents prior to discharge; (c) Provision of perimeter protection such as sealing of hoarding footings to avoid run-off from entering the existing storm water drainage system via public road; and (d) Provision of measures to prevent discharge into the stream.
	Noise Impact	(a) Scheduling of noisy construction activities if necessary to avoid persistent noisy operation; (b) Controlling the number of plants use on site; (c) Regular maintenance of machines; and (d) Use of acoustic barriers if necessary.

Monitoring Schedule for the Next Month

7.4 The tentative environmental monitoring schedules for the next month are shown in **Appendix D**.

8. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

8.1 Environmental monitoring works were performed in the reporting month and all monitoring results were checked and reviewed.

1-hr TSP Monitoring

8.2 All 1-hr TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hr TSP Monitoring

8.3 All 24-hr TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

8.4 All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Landscape and visual

8.5 No non-compliance was recorded in the reporting month.

Complaint and Prosecution

8.6 No environmental complaints and environmental prosecution were received in the reporting month.

8.7 No environmental prosecution was received in the reporting month.

Recommendations

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

Air quality
- To provide water spraying on the haul road and exposed area for dust suppression.
- To properly cover the dusty stockpile or excavated material with impervious sheeting to avoid dust generation.

Waste / Chemical Management
- To properly remove accumulated the oil stain and oily mixture as chemical waste.
- To provide adequate enclosed bins for disposal of general refuse.

Landscape and Visual
- To properly maintain and erect the hoarding at the site boundary.

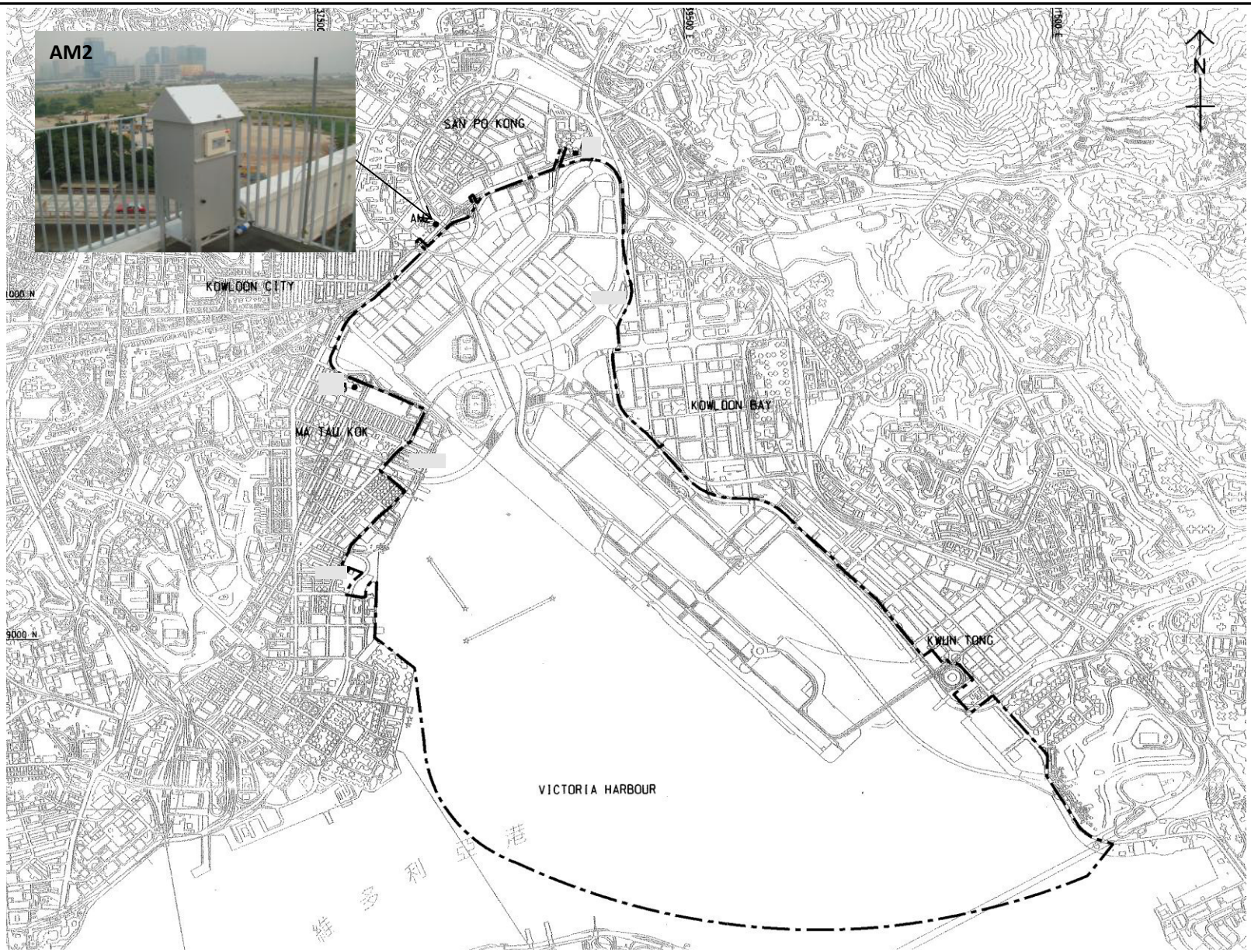
FIGURES

CINOTECH
Cinotech Consultants Limited

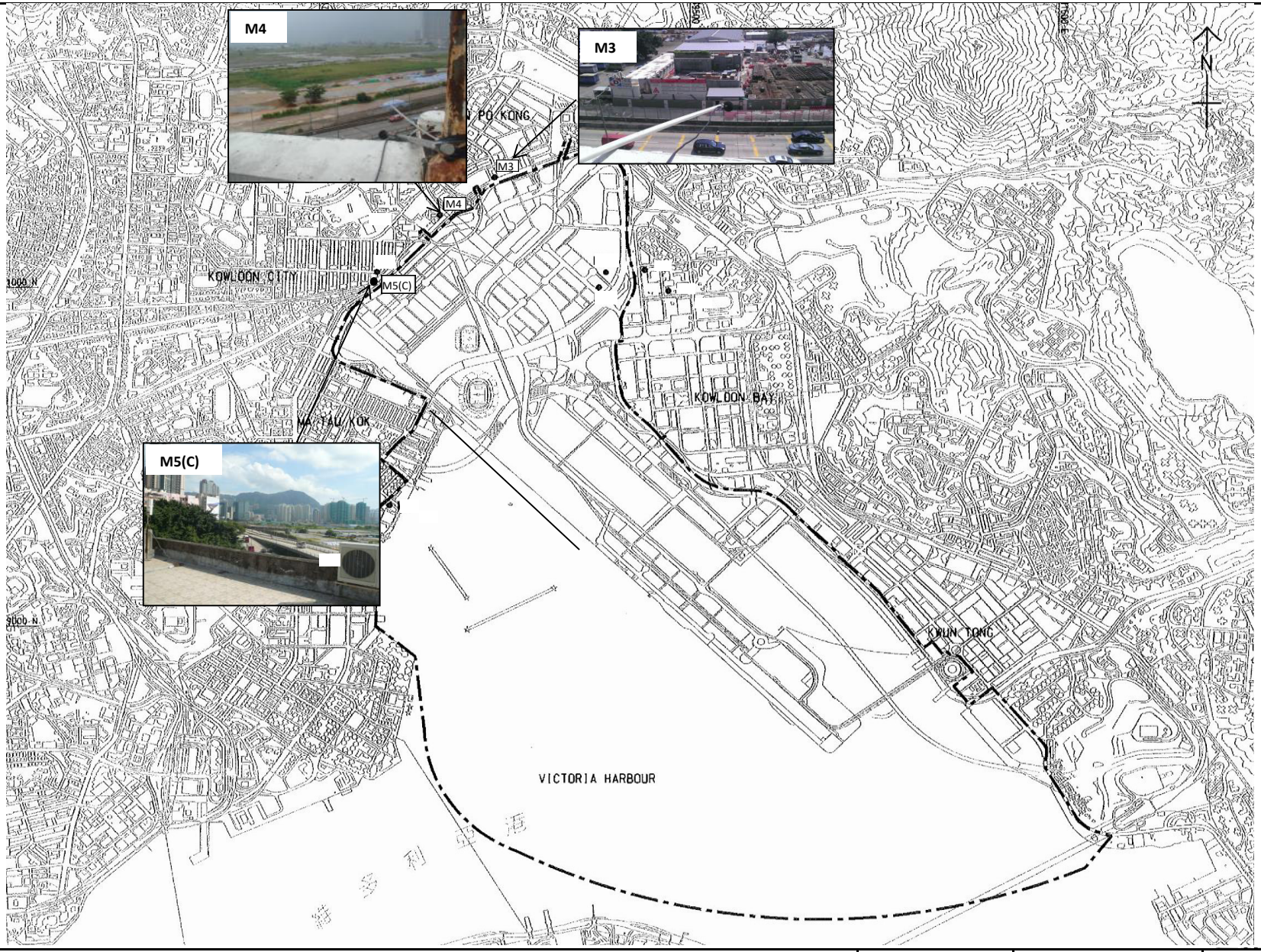
KL/2015/02 KAI TAK - STAGE 5A INFRASTRUCTURE AT FORMER NORTH APRON AREA

SITE LAYOUT PLAN

SCALE	1:1500@A4	DATE	DEC 2016
CHECK	KC	DRAWN	JW
JOB No.	MA16043	FIGURE NO. 1	REV -

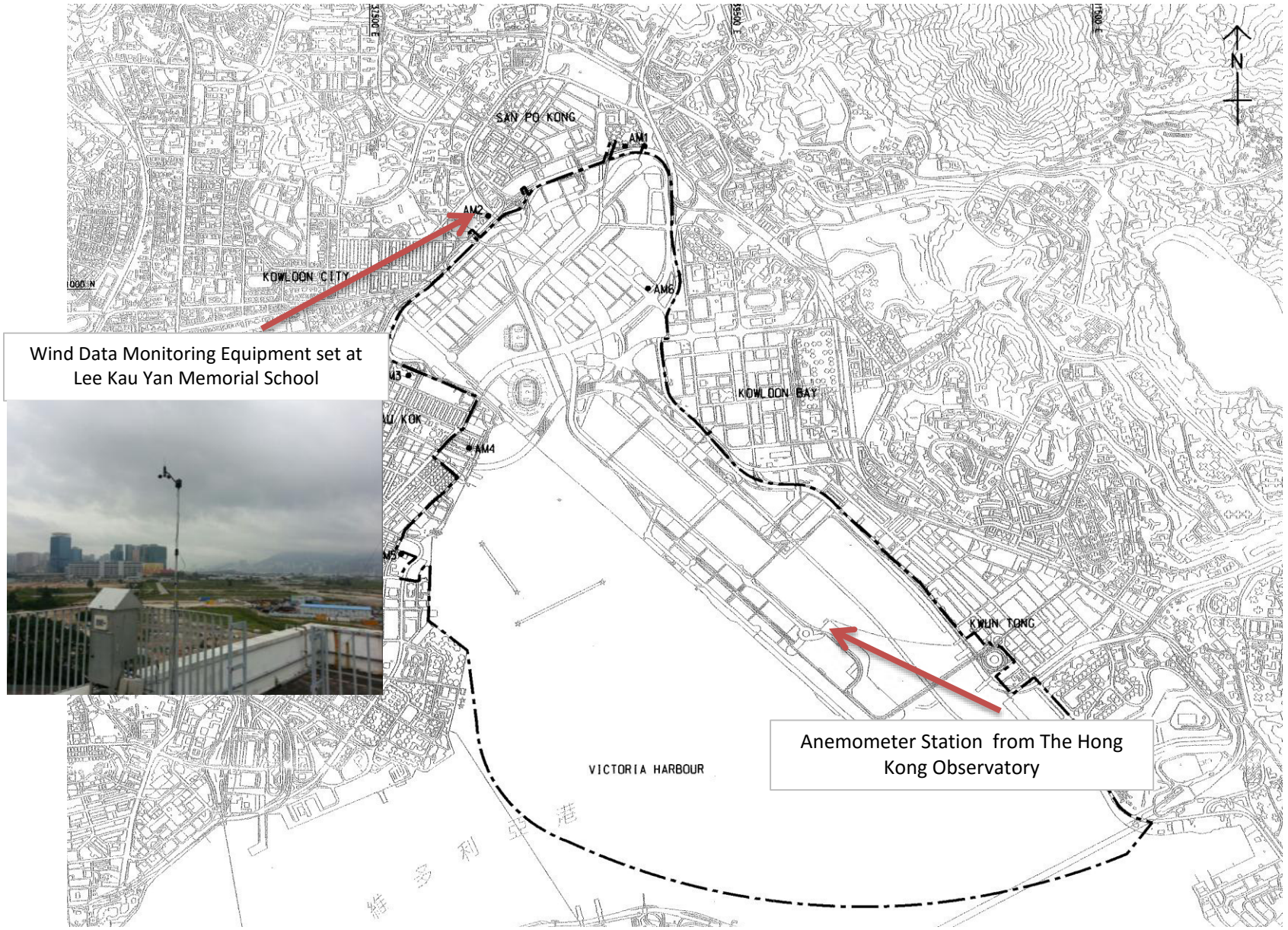


Title	Scale	Project	
Contract No. KLN/2016/04 Environmental Monitoring Works for Contract No. KL/2015/02 Kai Tak Development –Stage 5A Infrastructure at Former North Apron Area Air Quality Monitoring Stations under Contract No.: KLN/2013/16 and KLN/2016/09	N.T.S	No. MA16043	CINOTECH
	Date Mar-17	Figure 2	



Title	Contract No. KLN/2016/04 Environmental Monitoring Works for Contract No. KL/2015/02 Kai Tak Development –Stage 5A Infrastructure at Former North Apron Area Noise Monitoring Stations under Contract No.: KLN/2013/16 and KLN/2016/09	Scale: N.T.S Date: Mar-17	Project No.: MA16043 Figure: 3

CINOTECH



Title	Contract No. KLN/2016/04 Environmental Monitoring Works for Contract No. KL/2015/02 Kai Tak Development –Stage 5A Infrastructure at Former North Apron Area Location of Wind Data Monitoring Equipment	Scale: N.T.S Date: Jan-17	Project No.: MA16043 Figure: 4

CINOTECH

APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR QUALITY AND NOISE

Appendix A - Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AM2	346	500

Table A-2 Action and Limit Levels for 24-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
AM2	157	260

Table A-3 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) 70dB(A)/65dB(A)*

Remarks: 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. *70dB(A) and 65dB(A) for schools during normal teaching periods and school examination periods, respectively.

APPENDIX B
COPIES OF CALIBRATION CERTIFCATES

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA14008/59/0040

Station: AM2 - Lee Kau Yan Memorial School Operator: WK

Date: 20-Jan-17 Next Due Date: 19-Mar-17

Equipment No.: A-01-59 Serial No. 2354

Ambient Condition			
Temperature, Ta (K)	287.8	Pressure, Pa (mmHg)	770.6

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

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.7	3.50	59.47	7.6	2.82
2	9.8	3.21	54.50	6.5	2.61
3	7.5	2.81	47.78	5.1	2.31
4	5.0	2.29	39.17	3.2	1.83
5	3.4	1.89	32.45	2.3	1.55

By Linear Regression of Y on X

Slope , mw = 0.0480 **Intercept, bw =** -0.0147

Correlation coefficient* = 0.9988

*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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.01**

Remarks:

Conducted by: wk Tang Signature: Kwai Date: 20/1/2017

Checked by: lx Signature: Date: 20 January 2017

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

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

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

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

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

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

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

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

WELLAB 匯力 Testing & Research

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

TEST REPORT

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

Test Report No.:	C/W/161001
Date of Issue:	2016-10-03
Date Received:	2016-10-01
Date Tested:	2016-10-01
Date Completed:	2016-10-03
Next Due Date:	2017-04-02

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

Certificate of Calibration

Item for calibration:

Description	: Weather Monitor II
Manufacturer	: Davis Instruments
Model No.	: 7440
Serial No.	: MC20813A11

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 56 %

Test Specifications:

1. Performance check of anemometer
2. Performance check of wind direction sensor

Methodology:

In-house method with reference anemometer (RS232 Integral Vane Digital Anemometer)

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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

TEST REPORT

Test Report No.:	C/W/161001
Date of Issue:	2016-10-03
Date Received:	2016-10-01
Date Tested:	2016-10-01
Date Completed:	2016-10-03
Next Due Date:	2017-04-02

Results:

1. Performance check of anemometer

Air Velocity, m/s		Difference D (m/s)
Instrument Reading (V1)	Reference Value (V1)	D = V1 – V2
2.00	2.00	0.00

2. Performance check of wind direction sensor

Wind Direction (°)		Difference D (°)
Instrument Reading (W1)	Reference Value (W2)	D = W1 - W2
0	0	0
45.1	45	0.1
90	90	0
135.1	135	0.1
180	180	0
225.2	225	0.2
270.3	270	0.3
315	315	0
360	360	0

**********END OF REPORT**********

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TEST REPORT

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

Test Report No.:	C/A/170106A
Date of Issue:	2017-01-09
Date Received:	2017-01-06
Date Tested:	2017-01-06
Date Completed:	2017-01-09
Next Due Date:	2017-03-08

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3
Serial No.	: 251634
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 550 CPM
Equipment No.	: A-02-01

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0037

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Rms 1516, 1701 & 1716, Technology Park,
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TEST REPORT

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

Test Report No.:	C/A/170106B
Date of Issue:	2017-01-09
Date Received:	2017-01-06
Date Tested:	2017-01-06
Date Completed:	2017-01-09
Next Due Date:	2017-03-08

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 853944
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 685 CPM
Equipment No.	: A-02-04

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0038

****

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PATRICK TSE
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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
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18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	C/A/170106
Date of Issue:	2017-01-09
Date Received:	2017-01-06
Date Tested:	2017-01-06
Date Completed:	2017-01-09
Next Due Date:	2017-03-08

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 541146
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 625 CPM
Equipment No.	: A-02-07

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 63 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0033

****

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

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TEST REPORT

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

Test Report No.:	C/161230D
Date of Issue:	2017-01-03
Date Received:	2016-12-30
Date Tested:	2016-12-30
Date Completed:	2017-01-03
Next Due Date:	2017-03-02

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-531
Serial No.	: N6734
Flow rate	:0.1 cfm
Zero Count Test	:0 mg (The result of the 2-minute sample)
Equipment No.	: A-02-13

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 66 %

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.183

****

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PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/N/161230
Date of Issue:	2017-01-03
Date Received:	2016-12-30
Date Tested:	2016-12-30
Date Completed:	2017-01-03
Next Due Date:	2018-01-02
Page:	1 of 1

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

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 14303
Microphone No.	: 35222
Equipment No.	: N-08-05

Test conditions:

Room Temperatre	: 21 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

Remark: 1)This report supersedes the one dated 2012/01/21 with certificate number C/N/120120/1.

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

Test Report No.:	C/N/160919
Date of Issue:	2016-09-21
Date Received:	2016-09-19
Date Tested:	2016-09-19
Date Completed:	2016-09-21
Next Due Date:	2017-09-20

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 977
Serial No.	: 45482
Microphone No.	: 63626
Equipment No.	: N-08-14

Test conditions:

Room Temperatre	: 22 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

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TEST REPORT

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

Test Report No.:	C/N/161028/1
Date of Issue:	2016-10-31
Date Received:	2016-10-28
Date Tested:	2016-10-28
Date Completed:	2016-10-31
Next Due Date:	2017-10-30

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

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 10965
Equipment No.	: N-09-02

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 60 %

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

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

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

Item for calibration:

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

Test conditions:

Room Temperatre	: 25 degree Celsius
Relative Humidity	: 60%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2752	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.50	1.246	44.0	44.07
2	5.90	1.188	41.0	41.06
3	4.70	1.064	39.0	39.06
4	3.60	0.935	33.0	33.05
5	2.40	0.770	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 33.1537 b= 2.5544 Corr. Coeff= 0.9921

Sampler set point(SSP) 43 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew. Date: 13-Mar-17

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2754	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.40	1.236	40.0	40.06
2	5.50	1.149	38.0	38.06
3	4.60	1.053	36.0	36.05
4	3.30	0.897	30.0	30.05
5	2.20	0.738	26.0	26.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 29.1511 b= 4.4741 Corr. Coeff= 0.9951

Sampler set point(SSP) 40 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew. Date: 13-Mar-17

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2763	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.70	1.264	39.0	39.06
2	5.90	1.188	35.0	35.05
3	4.80	1.075	32.0	32.05
4	3.50	0.923	28.0	28.04
5	2.40	0.770	22.0	22.03

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.4948 b= -2.6780 Corr. Coeff= 0.9945

Sampler set point(SSP) 37 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew. Date: 13-Mar-17

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2765	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.60	1.255	40.0	40.06
2	5.70	1.169	38.0	38.06
3	4.80	1.075	36.0	36.05
4	3.40	0.910	30.0	30.05
5	2.30	0.754	24.0	24.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.2966 b= 0.3031 Corr. Coeff= 0.9936

Sampler set point(SSP) 39 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew. Date: 13-Mar-17

Calibration Certificate for High Volume Sampler (HVS)

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2766	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	7.50	1.336	48.0	48.07
2	6.40	1.236	44.0	44.07
3	4.40	1.031	39.0	39.06
4	3.30	0.897	32.0	32.05
5	2.00	0.705	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 32.2524 b= 4.6824 Corr. Coeff= 0.9919

Sampler set point(SSP) 44 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2767	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2

Calibration Orifice

Model:	TE-2025A	Slope:	2.10326
Serial No.:	2454	Intercept:	-0.06696
Calibration Due Date:	14-Mar-17	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axia (corrected)
1	6.60	1.255	42.0	42.06
2	5.50	1.149	41.0	41.06
3	4.80	1.075	37.0	37.06
4	3.40	0.910	33.0	33.05
5	2.20	0.738	28.0	28.04

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 28.2377 b= 7.3012 Corr. Coeff= 0.9903

Sampler set point(SSP) 41 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature
Pav = average pressure

Checked by: Matthew Date: 13-Mar-17

Calibration Certificate for High Volume Sampler (HVS)

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

TISCH Environmental

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - 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

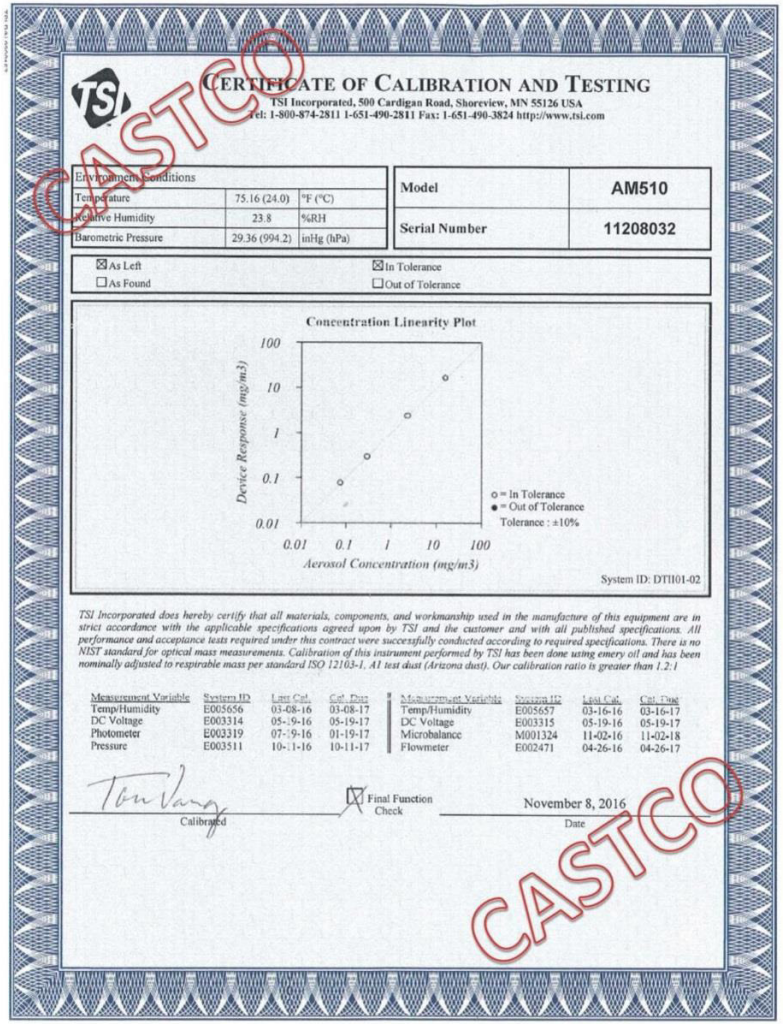
Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

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}

Calibration Certificate of Dust Meter



CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Conditions		
Temperature	75.16 (24.0)	°F (°C)
Relative Humidity	23.8	%RH
Barometric Pressure	29.36 (994.2)	inHg (hPa)

Model	AM510
Serial Number	11208032

☒ As Left ☐ As Found ☒ In Tolerance ☐ Out of Tolerance

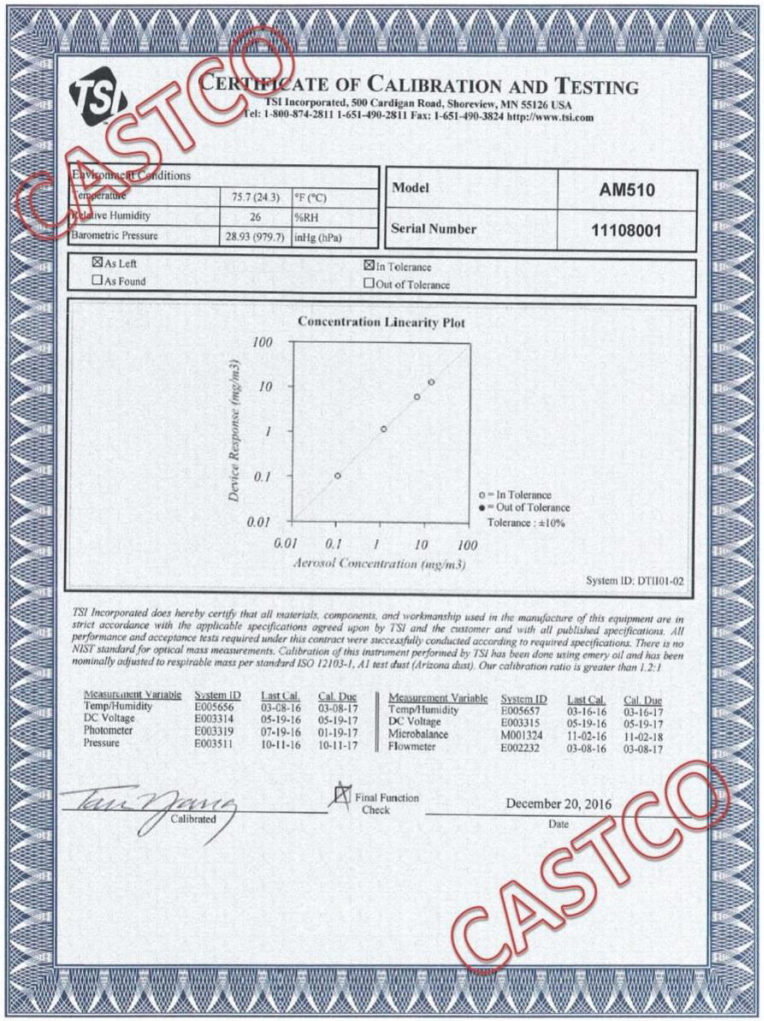
Concentration Linearity Plot

System ID: DTI101-02

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17	Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003314	05-19-16	05-19-17	DC Voltage	E003315	05-19-16	05-19-17
Photometer	E003319	07-19-16	01-19-17	Microbalance	M001324	11-02-16	11-02-18
Pressure	E003511	10-11-16	10-11-17	Flowmeter	E002471	04-26-16	04-26-17

Calibrated ☒ Final Function Check November 8, 2016 Date



CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Conditions		
Temperature	75.7 (24.3)	°F (°C)
Relative Humidity	26	%RH
Barometric Pressure	28.93 (979.7)	inHg (hPa)

Model	AM510
Serial Number	11108001

☒ As Left ☐ As Found ☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot

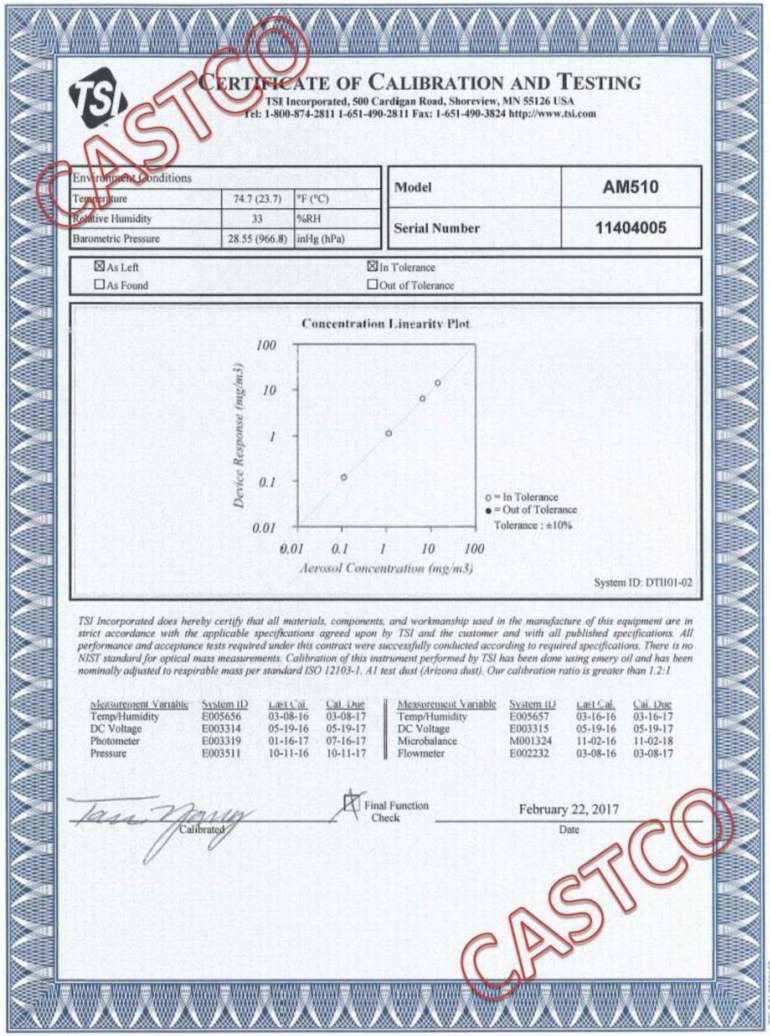
System ID: DTI101-02

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17	Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003314	05-19-16	05-19-17	DC Voltage	E003315	05-19-16	05-19-17
Photometer	E003319	07-19-16	01-19-17	Microbalance	M001324	11-02-16	11-02-18
Pressure	E003511	10-11-16	10-11-17	Flowmeter	E002232	03-08-16	03-08-17

Calibrated ☒ Final Function Check December 20, 2016 Date

Calibration Certificate of Dust Meter



CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Conditions		
Temperature	74.7 (23.7)	°F (°C)
Relative Humidity	33	%RH
Barometric Pressure	28.55 (966.8)	inHg (hPa)

Model	**AM510**
Serial Number	**11404005**

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot

System ID: DTI101-02

TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass per standard ISO 12103-1, A1 test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005656	03-08-16	03-08-17
DC Voltage	E003314	05-19-16	05-19-17
Photometer	E003319	01-16-17	07-16-17
Pressure	E003511	10-11-16	10-11-17

Measurement Variable	System ID	Last Cal.	Cal. Due
Temp/Humidity	E005657	03-16-16	03-16-17
DC Voltage	E003315	05-19-16	05-19-17
Microbalance	M001324	11-02-16	11-02-18
Flowmeter	E002232	03-08-16	03-08-17

Calibrated ☒ Final Function Check

February 22, 2017
Date

TSI P/N 2001157

Certificate of Sound Level Meter

中 国 赛 宝 实 验 室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L0462

校 准 证 书
CALIBRATION CERTIFICATE

证书编号： 2HB17000013-0001
Certificate No.

委托单位：Client	Castco Testing Centre Limited
委托方地址：Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称：Description	Sound Level Meter
型号规格：Model/Type	NL-52
制造商：Manufacturer	RION
机身号：Serial No.	00921213
管理号：Asset No.	AAST-SLM-04
校准日期：Cal. Date	2017 年 01 月 05 日
建议再校日期：Next Cal. Date	2018 年 01 月 05 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 罗志满　　核验：Inspected by 杨雨振

签发：Approved by 郑木为　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
香港分部地址：香港上水洲桥广场6/F2
客服电话：852-26680871 传真：852-26686197
投诉电话：852-26680936 020-87236789
邮件：cal@ceprei.com.hk
网址：www.ceprei-cal.com

CEPREI Calibration and Testing Center
H.Q. Addr: No.110 Dongguanzhuang Road, Tianhe District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Castbridge Plaza sheung Shui N.T. Hong Kong
Tel: 852-26680871 Fax: 852-26686197
Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

中 国 赛 宝 实 验 室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

CNAS 中国认可 国际互认 校准 CALIBRATION CNAS L0462

校 准 证 书
CALIBRATION CERTIFICATE

证书编号： 2HB16001326-0003
Certificate No.

委托单位：Client	Castco Testing Centre Limited
仪器名称：Description	SOUND LEVEL METER
型号规格：Model/Type	NL-52
制造商：Manufacturer	RION
机身号：Serial No.	00164461
管理号：Asset No.	AAST-SLM-06
校准日期：Cal. Date	2016 年 09 月 22 日
建议再校日期：Next Cal. Date	2017 年 09 月 22 日
结论：Conclusion	所校准项目合格(Passed at Calibration Items)

校准：Calibrated by 杨雨振　　核验：Inspected by

签发：Approved by 郑木为　　印章：Stamp

赛宝计量检测中心
广州总部地址：广州天河区东莞庄路110号
香港分部地址：香港上水洲桥广场6/F2
客服电话：852-26680871 传真：852-26686197
投诉电话：852-26680936 020-87236789
邮件：cal@ceprei.com.hk
网址：www.ceprei-cal.com

CEPREI Calibration and Testing Center
H.Q. Addr: No.110 Dongguanzhuang Road, Tianhe District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Castbridge Plaza sheung Shui N.T. Hong Kong
Tel: 852-26680871 Fax: 852-26686197
Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

Calibration Certificate of Sound Calibrator

中 国 赛 宝 实 验 室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

中国认可 国际互认 校准 CALIBRATION CNAS L0462

校 准 证 书
CALIBRATION CERTIFICATE

证书编号: 2HB17000084-0002
Certificate No.

委托单位: Client	Castco Testing Centre Limited
委托方地址: Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称: Description	Sound Level Calibrator
型号规格: Model/Type	NC-73
制造商: Manufacturer	RION
机身号: Serial No.	20652
管理号: Asset No.	AAST-SLC-01
校准日期: Cal. Date	2017 年 01 月 20 日
建议再校日期: Next Cal. Date	2018 年 01 月 20 日
结论: Conclusion	所校准项目合格(Passed at Calibration Items)

校准: Calibrated by 　　核验: Inspected by

签发: Approved by 　　印章: Stamp

赛宝计量检测中心
广州总部地址: 广州天河区东莞庄路110号
香港分部地址: 香港上水剑桥广场G/F2
客服电话: 852-26680871 传真: 852-26686197
投诉电话: 852-26680936 020-87236789
邮件: cal@ceprei.com.hk
网址: www.ceprei-cal.com

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CEPREI(H.K.) Addr.: G/F2 Cambridge Plaza Sheung Shui N.T. Hong Kong
Tel: 852-26680871 Fax: 852-26686197
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中 国 赛 宝 实 验 室
(工业和信息化部电子第五研究所)
CEPREI CHINA CEPREI LABORATORY

中国认可 国际互认 校准 CALIBRATION CNAS L0462

校 准 证 书
CALIBRATION CERTIFICATE

证书编号: 2HB16001157-0001
Certificate No.

委托单位: Client	Castco Testing Centre Limited
委托方地址: Address	29A,On Chuen Street, On Lok Tsuen, Fanling, N.T.
仪器名称: Description	SOUND LEVEL CALIBRATOR
型号规格: Model/Type	NC-74
制造商: Manufacturer	RION
机身号: Serial No.	34546624
管理号: Asset No.	AAST-SLC-03
校准日期: Cal. Date	2016 年 08 月 18 日
建议再校日期: Next Cal. Date	2017 年 08 月 18 日
结论: Conclusion	所校准项目合格(Passed at Calibration Items)

校准: Calibrated by 　　核验: Inspected by

签发: Approved by 　　印章: Stamp

赛宝计量检测中心
广州总部地址: 广州天河区东莞庄路110号
香港分部地址: 香港上水剑桥广场G/F2
客服电话: 852-26680871 传真: 852-26686197
投诉电话: 852-26680936 020-87236789
邮件: cal@ceprei.com.hk
网址: www.ceprei-cal.com

CEPREI Calibration and Testing Center
H.Q. Addr: No.110 Dongguanzhuang Road, Tianhe District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Cambridge Plaza Sheung Shui N.T. Hong Kong
Tel: 852-26680871 Fax: 852-26686197
Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

Calibration Certificate of Wind Anemometer

广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

校准证书
CALIBRATION CERTIFICATE

证书编号 Certificate No. LC-20172600　　第 1 页 Page　　共 3 页 of

委托方 Client：佳力高試驗中心有限公司 CASTCO TESING CENTRE LTD

地址 Address：香港新界粉嶺安樂村安居街33號 33 On Kui Street On Lok Tsue Fanling, N.T, H.K.

计量器具名称 Measuring instruments：Davis Weather Station

规格型号 Model/Type：Vantage Pro2

制造者 Manufacturer：

编号 Serial No.：A70604D29N/自编號:EN52-01

主管 Approved by：陈金明

审核 Inspected by：

校准 Calibrated by：

证书专用章 Issued by (Stamp)

校准日期 Calibration Date　2017 年 Y　03 月 M　14 日 D

建议校准周期 The recommended calibration period　一年

本院地址：广州市广仁路11号　邮政编码：510030　电话：020-83362165　传真：020-83369351
广州市科学城尖塔山路19号　邮政编码：510663　电话：020-32086301　传真：020-32086300
开发区中心电话：020-82223272　白云区中心电话：020-36200320　南沙中心电话：020-34970774
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广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

说明
DIRECTIONS

证书编号：LC-20172600 Certificate No.　　第 2 页 Page　　共 3 页 of

1、本院是政府依法设置的法定计量检定机构，工作职责为承担授权范围内的量值传递工作和向社会开展计量校准技术服务工作。
Guangzhou Institute of Measurement and Testing Technology (GIMTT) is a legal metrological organization set by government, which is responsible for value dissemination within authorization, and to provide metrological and calibration services for social benefit.

2、本院的质量管理体系符合ISO/IEC 17025：2005标准的要求。
The quality system of GIMTT is in accordance with ISO/IEC 17025:2005.

3、本院出具的数据均可溯源到国家计量基准和SI单位标准。
All data issued by GIMTT are traceable to national measurement standards and SI unit standards.

4、本次校准所依据的技术文件是：
Reference documents for the calibration:
JJG 613-1989 《电接风向风速仪》检定规程
V.R. of Verification Regulation of Contact Anemorumbometer

5、本次校准所使用的计量标准是：
Standards of measurement used in the calibration:

设备名称/型号 Equipment/Model	编号 Serial No.	证书号 Certificate No.	技术特征 Technique character
皮托静压管(Pitot Tubes)	0471	NSC201750171/2022-02-16	MPE: ±0.01
补偿式微压计 (Compensated micromanometer)	200509032	LY-201534497/2017-12-19	准确度等级：二等 Grade 2
空盒气压表(Aneroid barometer)	06-0008	LY-201619205/2017-07-01	MPE: ±2.5 hPa
风洞(Wind tunel)	08	LC-20167300/2017-06-28	均匀性≤1%；稳定性≤0.5%；
数显倾角仪(Digital Inclinometer)	N2955	CJ-20169223/2017-5-25	MPE：±5′

6、依据JJF 1059.1-2012《测量结果不确定度评定与表示》，本次校准中部分测量结果的不确定度分别是：
The uncertainty of measurement results in accordance with JJF 1059.1-2012:
U=0.20 m/s；k=2

7、本次校准的地点与校准时的环境条件：
Site of the calibration and environmental conditions during the calibration:
地点 Site　科学城实验室　温度 Temperature　19.4℃　相对湿度 RH　53%

Calibration Certificate of Wind Anemometer

广州计量检测技术研究院
GUANGZHOU INSTITUTE OF MEASUREMENT AND TESTING TECHNOLOGY

校准结果
RESULTS OF CALIBRATION

证书编号 LC-20172600　　原始记录号 17205J0338　　第 3 页　　共 3 页
Certificate No.　　Page　　Of

1、外 观：正 常
Appearance: Pass

2、空气密度修正系数(Correction factor of air density)：1.007；
总修正系数(Correction factor of total)：1.013；
大气压力 (Atmospheric pressure)：1018.0 hPa；

3、风速仪示值校准：
Indication calibrated of anemometer:

微压计示值 Indication of micromanometer (mmH_2O)	标准值 Values of standard (m/s)	仪器示值 Indication of anemometer (m/s)	修正值 Values of correction (m/s)
6.10	2.0	1.8	+0.2

4、风向角示值校准：
Indication calibrated of wind direction sensor:

标准值 (°) Values of standard	仪器示值 (°) Instrument Reading
0.0	0
45.0	45
90.0	90
135.0	135
180.0	180
225.0	225
270.0	270
315.0	315
360.0	360

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注：1、此结果只与受校准的项目有关。
2、未经本院书面批准，不得部分复制此证书。
3、此证书无本院盖章无效。

Note: 1、The results relate only to the items verified.
2、This certificate shall not be reproduced except in full, without the written approval of our institute .
3、This certificate shall not be valid without stamp of our institute .

APPENDIX C
WEATHER INFORMATION

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
1 March 2017	15.9 – 22.9	54 – 82	0
2 March 2017	17.2 – 23.9	25 – 72	0
3 March 2017	15.7 – 20.1	49 – 76	0
4 March 2017	16.8 – 21.8	64 – 79	0
5 March 2017	18.7 – 24.0	79 – 97	0
6 March 2017	17.9 – 23.5	62 – 96	Trace
7 March 2017	17.1 – 20.7	62 – 83	Trace
8 March 2017	15.0 – 17.3	80 – 95	2.8
9 March 2017	16.0 – 19.6	50 – 90	Trace
9 March 2017	16.0 – 19.6	50 – 90	Trace
10 March 2017	16.4 – 19.2	84 – 93	Trace
11 March 2017	16.7 – 18.4	84 – 93	Trace
12 March 2017	17.0 – 19.5	83 – 96	1.0
13 March 2017	19.4 – 24.4	82 – 98	0
14 March 2017	16.8 – 22.0	90 – 97	8.5
15 March 2017	16.2 – 17.9	66 – 91	Trace
16 March 2017	16.8 – 19.0	73 – 83	Trace
17 March 2017	17.0 – 20.4	80 – 91	Trace
18 March 2017	17.4 – 20.1	83 – 95	0.3

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
19 March 2017	18.9 – 20.6	90 – 99	10.7
20 March 2017	18.6 – 27.1	67 – 98	Trace
21 March 2017	19.1 – 27.6	69 – 96	0.6
22 March 2017	17.6 – 19.7	83 – 94	0.9
23 March 2017	19.0 – 24.6	68 – 91	0
24 March 2017	18.9 – 22.4	76 – 91	Trace
25 March 2017	16.5 – 23.4	72 – 93	Trace
26 March 2017	13.8 – 16.9	64 – 93	1.0
27 March 2017	16.3 – 21.5	39 – 71	0
28 March 2017	18.1 – 24.9	61 – 86	0
29 March 2017	20.4 – 23.7	74 – 90	0.3
30 March 2017	21.0 – 23.1	81 – 94	Trace
31 March 2017	15.5 – 23.7	79 – 97	21.9

* The above information was extracted from the daily weather summary by Hong Kong Observatory.

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

II. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m/s	Direction
1-Mar-2017	0:00	0.9	SSE
1-Mar-2017	1:00	0.9	SE
1-Mar-2017	2:00	0.6	N
1-Mar-2017	3:00	0.8	N
1-Mar-2017	4:00	0.9	N
1-Mar-2017	5:00	0.8	WNW
1-Mar-2017	6:00	0.7	SSW
1-Mar-2017	7:00	0.8	S
1-Mar-2017	8:00	1.1	S
1-Mar-2017	9:00	1.3	SSW
1-Mar-2017	10:00	1.2	SE
1-Mar-2017	11:00	1.3	SE
1-Mar-2017	12:00	1.4	SE
1-Mar-2017	13:00	1.3	NW
1-Mar-2017	14:00	0.9	WSW
1-Mar-2017	15:00	1.1	N
1-Mar-2017	16:00	0.9	WNW
1-Mar-2017	17:00	0.9	S
1-Mar-2017	18:00	0.9	SE
1-Mar-2017	19:00	0.7	SSW
1-Mar-2017	20:00	0.9	SE
1-Mar-2017	21:00	0.9	E
1-Mar-2017	22:00	0.9	WNW
1-Mar-2017	23:00	1.0	WSW
2-Mar-2017	0:00	1.3	SSE
2-Mar-2017	1:00	1.2	SE
2-Mar-2017	2:00	1.2	E
2-Mar-2017	3:00	0.8	NNW
2-Mar-2017	4:00	1	NW
2-Mar-2017	5:00	0.9	NNW
2-Mar-2017	6:00	0.7	NW
2-Mar-2017	7:00	0.6	SSE
2-Mar-2017	8:00	0.7	SW
2-Mar-2017	9:00	0.8	SW
2-Mar-2017	10:00	0.8	SW
2-Mar-2017	11:00	1.1	SSE

II. Mean Wind Speed and Wind Direction

2-Mar-2017	12:00	1.2	WSW
2-Mar-2017	13:00	1.2	ENE
2-Mar-2017	14:00	1.1	E
2-Mar-2017	15:00	1.2	E
2-Mar-2017	16:00	1	ENE
2-Mar-2017	17:00	0.8	NE
2-Mar-2017	18:00	0.8	NNE
2-Mar-2017	19:00	0.9	N
2-Mar-2017	20:00	0.9	N
2-Mar-2017	21:00	0.9	N
2-Mar-2017	22:00	1.1	ENE
2-Mar-2017	23:00	0.9	S
3-Mar-2017	0:00	0.9	SW
3-Mar-2017	1:00	0.9	ENE
3-Mar-2017	2:00	0.7	N
3-Mar-2017	3:00	0.7	NNE
3-Mar-2017	4:00	0.9	NE
3-Mar-2017	5:00	0.7	ENE
3-Mar-2017	6:00	0.6	NNE
3-Mar-2017	7:00	0.6	NNE
3-Mar-2017	8:00	0.8	NE
3-Mar-2017	9:00	1.2	N
3-Mar-2017	10:00	1.1	NE
3-Mar-2017	11:00	1.1	N
3-Mar-2017	12:00	1.1	NE
3-Mar-2017	13:00	1.2	N
3-Mar-2017	14:00	1	N
3-Mar-2017	15:00	1	N
3-Mar-2017	16:00	1.1	W
3-Mar-2017	17:00	1.1	W
3-Mar-2017	18:00	1.1	W
3-Mar-2017	19:00	1.1	SW
3-Mar-2017	20:00	1.1	SW
3-Mar-2017	21:00	1.3	WSW
3-Mar-2017	22:00	1.2	NE
3-Mar-2017	23:00	1.4	NE
4-Mar-2017	0:00	1.1	ENE

II. Mean Wind Speed and Wind Direction

4-Mar-2017	1:00	1.3	NE
4-Mar-2017	2:00	1.3	N
4-Mar-2017	3:00	1.5	NE
4-Mar-2017	4:00	1	NE
4-Mar-2017	5:00	1.2	W
4-Mar-2017	6:00	1.3	N
4-Mar-2017	7:00	1	ENE
4-Mar-2017	8:00	1	ENE
4-Mar-2017	9:00	1.3	ENE
4-Mar-2017	10:00	1.5	ENE
4-Mar-2017	11:00	1.7	SSE
4-Mar-2017	12:00	1.6	NW
4-Mar-2017	13:00	1.9	ENE
4-Mar-2017	14:00	1.9	SW
4-Mar-2017	15:00	1.6	WSW
4-Mar-2017	16:00	1.4	W
4-Mar-2017	17:00	1.3	WSW
4-Mar-2017	18:00	1	WSW
4-Mar-2017	19:00	0.9	WSW
4-Mar-2017	20:00	1.5	WSW
4-Mar-2017	21:00	0.5	WSW
4-Mar-2017	22:00	1.1	S
4-Mar-2017	23:00	1	WNW
5-Mar-2017	0:00	0.9	WNW
5-Mar-2017	1:00	0.9	SSW
5-Mar-2017	2:00	1.2	WSW
5-Mar-2017	3:00	0.6	W
5-Mar-2017	4:00	0.5	W
5-Mar-2017	5:00	0.6	WSW
5-Mar-2017	6:00	0.4	W
5-Mar-2017	7:00	0.5	W
5-Mar-2017	8:00	0.8	W
5-Mar-2017	9:00	1.2	W
5-Mar-2017	10:00	1.3	WSW
5-Mar-2017	11:00	1.3	W
5-Mar-2017	12:00	1.5	SSW
5-Mar-2017	13:00	1.6	SW

II. Mean Wind Speed and Wind Direction

5-Mar-2017	14:00	1.5	SW
5-Mar-2017	15:00	1.3	W
5-Mar-2017	16:00	1.1	WSW
5-Mar-2017	17:00	0.9	SSW
5-Mar-2017	18:00	1.2	WSW
5-Mar-2017	19:00	1.1	WSW
5-Mar-2017	20:00	1.1	WSW
5-Mar-2017	21:00	0.8	SSW
5-Mar-2017	22:00	0.8	SSW
5-Mar-2017	23:00	0.6	S
6-Mar-2017	0:00	2.2	SSW
6-Mar-2017	1:00	2	WSW
6-Mar-2017	2:00	1.8	WSW
6-Mar-2017	3:00	1.5	W
6-Mar-2017	4:00	1.2	W
6-Mar-2017	5:00	1.1	W
6-Mar-2017	6:00	1.1	WSW
6-Mar-2017	7:00	1	WSW
6-Mar-2017	8:00	1	WSW
6-Mar-2017	9:00	1.3	SW
6-Mar-2017	10:00	1.4	WSW
6-Mar-2017	11:00	1.7	SSW
6-Mar-2017	12:00	1.3	W
6-Mar-2017	13:00	1.6	W
6-Mar-2017	14:00	1	WSW
6-Mar-2017	15:00	1	ESE
6-Mar-2017	16:00	1.2	ESE
6-Mar-2017	17:00	1.3	SSW
6-Mar-2017	18:00	1.4	W
6-Mar-2017	19:00	1.1	W
6-Mar-2017	20:00	1.2	W
6-Mar-2017	21:00	0.7	ENE
6-Mar-2017	22:00	0.6	W
6-Mar-2017	23:00	0.9	W
7-Mar-2017	0:00	2	WNW
7-Mar-2017	1:00	1.3	W
7-Mar-2017	2:00	1.4	WNW

II. Mean Wind Speed and Wind Direction

7-Mar-2017	3:00	1.1	W
7-Mar-2017	4:00	1.1	W
7-Mar-2017	5:00	1.3	WSW
7-Mar-2017	6:00	0.9	WSW
7-Mar-2017	7:00	1.2	W
7-Mar-2017	8:00	1.2	WNW
7-Mar-2017	9:00	2.2	W
7-Mar-2017	10:00	2.8	W
7-Mar-2017	11:00	3	W
7-Mar-2017	12:00	3.4	W
7-Mar-2017	13:00	3.6	WSW
7-Mar-2017	14:00	3.6	NNE
7-Mar-2017	15:00	4	S
7-Mar-2017	16:00	3.4	W
7-Mar-2017	17:00	3.2	SSW
7-Mar-2017	18:00	2.1	W
7-Mar-2017	19:00	1.4	WNW
7-Mar-2017	20:00	1.3	W
7-Mar-2017	21:00	2.3	WSW
7-Mar-2017	22:00	2.4	W
7-Mar-2017	23:00	1.6	WSW
8-Mar-2017	0:00	1	SSW
8-Mar-2017	1:00	0.5	SSW
8-Mar-2017	2:00	0.6	WSW
8-Mar-2017	3:00	1	WSW
8-Mar-2017	4:00	0.9	WSW
8-Mar-2017	5:00	0.9	WSW
8-Mar-2017	6:00	0.7	W
8-Mar-2017	7:00	0.8	W
8-Mar-2017	8:00	0.9	W
8-Mar-2017	9:00	1	W
8-Mar-2017	10:00	1.5	W
8-Mar-2017	11:00	1.4	W
8-Mar-2017	12:00	1.5	WSW
8-Mar-2017	13:00	1.5	W
8-Mar-2017	14:00	1.7	SSE
8-Mar-2017	15:00	1.8	SSE

II. Mean Wind Speed and Wind Direction

8-Mar-2017	16:00	1.6	ENE
8-Mar-2017	17:00	1	NE
8-Mar-2017	18:00	0.8	S
8-Mar-2017	19:00	0.6	S
8-Mar-2017	20:00	0.5	WSW
8-Mar-2017	21:00	0.5	WSW
8-Mar-2017	22:00	0.4	SW
8-Mar-2017	23:00	0.5	W

NOTE:

*: Due to mechanical failure of weather station, No wind speed and wind direction data was recorded from 9 March 2017 under KLN/2016/09 in the reporting month.

APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Contract No. KLN/2016/04
Environmental Monitoring Works for Contract No. KL/2015/02
Kai Tak Development –Stage 5A Infrastructure at Former North Apron Area
Tentative Impact Air and Noise Monitoring Schedule for March 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Mar	2-Mar	3-Mar	4-Mar
				24 hr TSP	1 hr TSP X3 Noise M5(C)	
5-Mar	6-Mar	7-Mar	8-Mar	9-Mar	10-Mar	11-Mar
			1 hr TSP X3 Noise (M4) 24 hr TSP	Noise (M3)	Noise M5(C)	
12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar
		1 hr TSP X3 24 hr TSP	Noise M3, M4, M5(C)			
19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar
	1 hr TSP X3 24 hr TSP	Noise M3, M4, M5(C)			1 hr TSP X3 24 hr TSP	
26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar	
	Noise M3, M4, M5(C)			1 hr TSP X3 24 hr TSP		

Monitoring which is conducted by ET of schedule 3 of Kai Tak Development under Contract No. KLN/2016/09 is highlighted in blue.

Air Quality Monitoring Station

AM2 - Lee Kau Yan Memorial School

Noise Monitoring Station

M3 - Cognitio College
M4 - Lee Kau Yan Memorial School
M5(C) - Mercy Grace's Home

Contract No. KLN/2016/04

Environmental Monitoring Works for Contract No. KL/2015/02

Kai Tak Development –Stage 5A Infrastructure at Former North Apron Area

Tentative Impact Air and Noise Monitoring Schedule for April 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Apr
2-Apr	3-Apr	**4-Apr**	5-Apr	6-Apr	7-Apr	8-Apr
			1 hr TSP X3 24 hr TSP	Noise M3, M4, M5(C)		
9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	**14-Apr**	15-Apr
	1 hr TSP X3 24 hr TSP	Noise M3, M4, M5(C)	1 hr TSP X3	1 hr TSP X3 24 hr TSP		
16-Apr	**17-Apr**	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr
		Noise M3, M4, M5(C)	1 hr TSP X3 24 hr TSP			1 hr TSP X3 24 hr TSP
23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr
	Noise M3, M4, M5(C)			1 hr TSP X3 24 hr TSP		
30-Apr						

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)
Monitoring which is conducted by ET of schedule 3 of Kai Tak Development under Contract No. KLN/2016/09 is highlighted in blue.

Air Quality Monitoring Station

AM2 - Lee Kau Yan Memorial School

Noise Monitoring Station

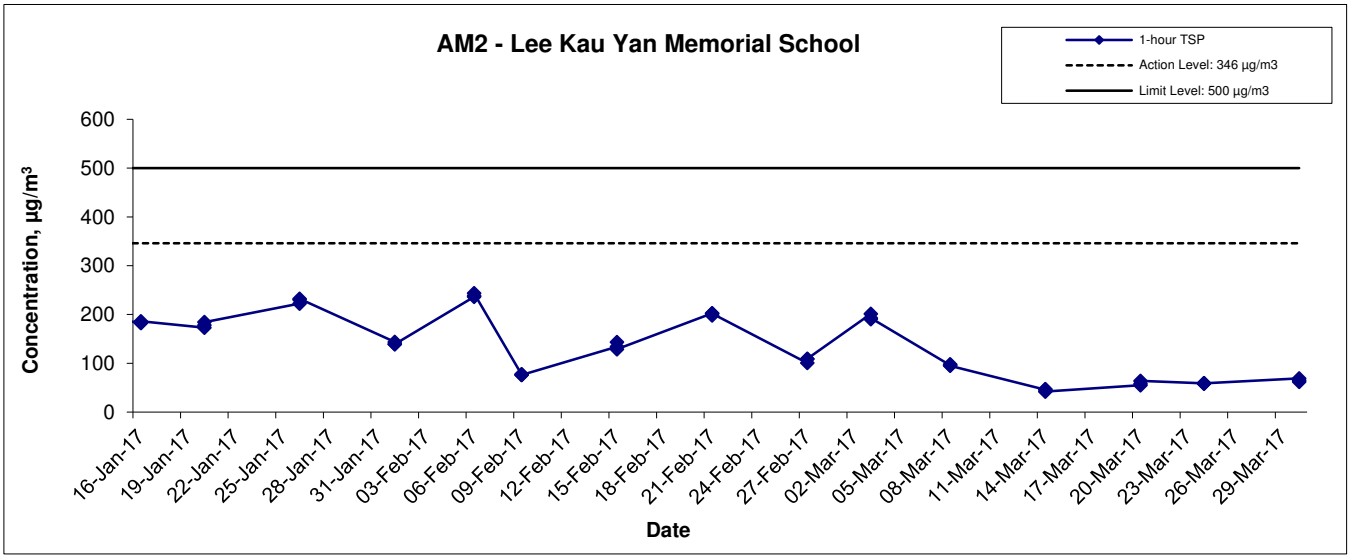
M3 - Cognitio College
M4 - Lee Kau Yan Memorial School
M5(C) - Mercy Grace's Home

APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix E - 1-hour TSP Monitoring Results

Location AM2 - Lee Kau Yan Memorial School			
Date	Time	Weather	Particulate Concentration (µg/m3)
3-Mar-17	09:00	Sunny	174.9
3-Mar-17	10:00	Sunny	182.6
3-Mar-17	11:00	Sunny	185.6
8-Mar-17	13:00	Cloudy	96.0
8-Mar-17	14:00	Cloudy	98.0
8-Mar-17	15:00	Cloudy	95.0
14-Mar-17	09:00	Cloudy	46.0
14-Mar-17	10:00	Cloudy	47.0
14-Mar-17	11:00	Cloudy	42.0
20-Mar-17	13:00	Cloudy	55.0
20-Mar-17	14:00	Cloudy	58.0
20-Mar-17	15:00	Cloudy	64.0
24-Mar-17	13:00	Sunny	59.0
24-Mar-17	14:00	Sunny	58.0
24-Mar-17	15:00	Sunny	59.0
30-Mar-17	13:00	Cloudy	69.0
30-Mar-17	14:00	Cloudy	62.0
30-Mar-17	15:00	Cloudy	65.0
		Average	84.0
		Maximum	186.0
		Minimum	42.0

1-hr TSP Concentration Levels



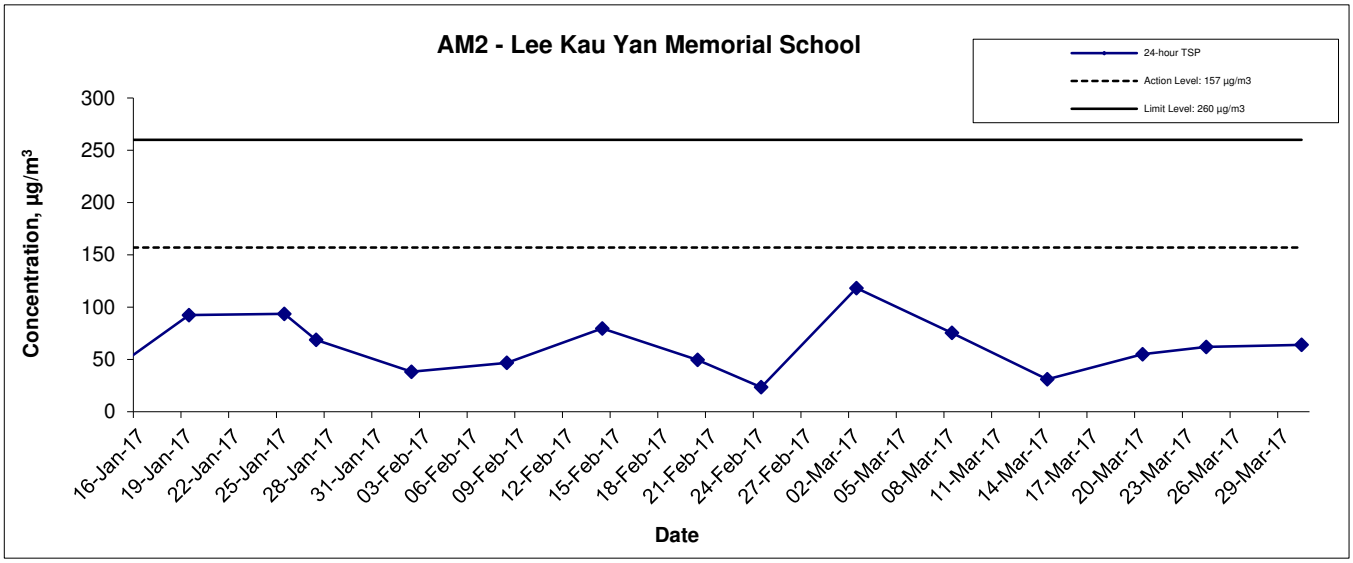
Title	Contract No. KLN/2016/04 Environmental Monitoring Works for Contract No. KL/2015/02 Kai Tak Development –Stage 5A Infrastructure at Former North Apron Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S Date Mar 17	Project No. MA16043 Appendix E	CINOTECH

APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix F - 24-hour TSP Monitoring Results

Location AM2 - Lee Kau Yan Memorial School		
Start Date	Weather	Particulate Concentration (µg/m3)
2-Mar-17	Sunny	118.2
8-Mar-17	Cloudy	75.4
14-Mar-17	Cloudy	31.0
20-Mar-17	Cloudy	55.0
24-Mar-17	Sunny	62.0
30-Mar-17	Cloudy	64.0
	Average	67.6
	Maximum	118.2
	Minimum	31.0

24-hr TSP Concentration Levels



Title	Contract No. KLN/2016/04 Environmental Monitoring Works for Contract No. KL/2015/02 Kai Tak Development –Stage 5A Infrastructure at Former North Apron Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S Date Mar 17	Project No. MA16043 Appendix F	CINOTECH

APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

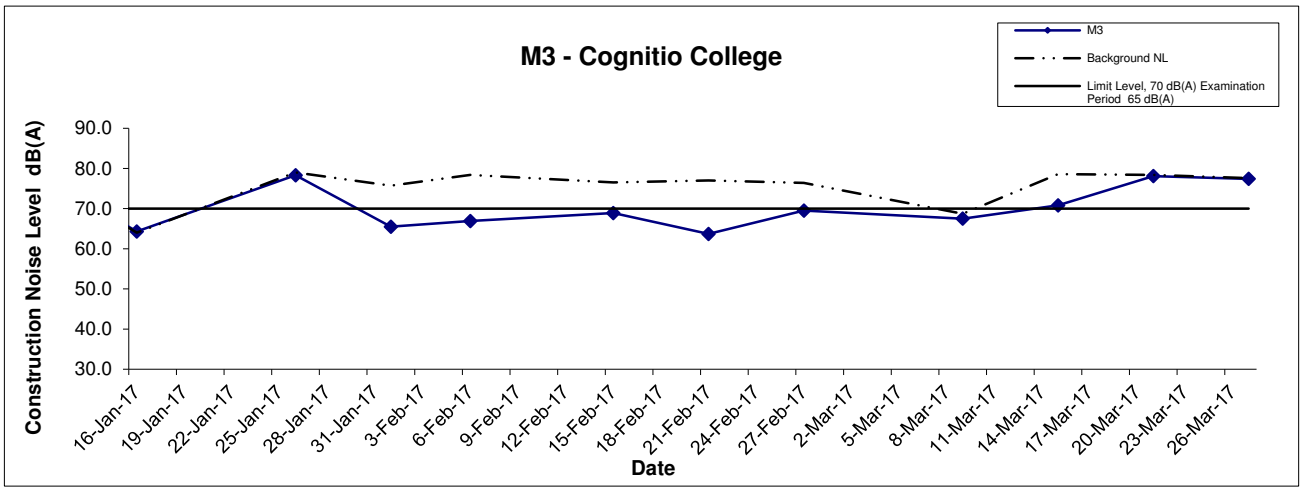
Appendix G - Noise Monitoring Results

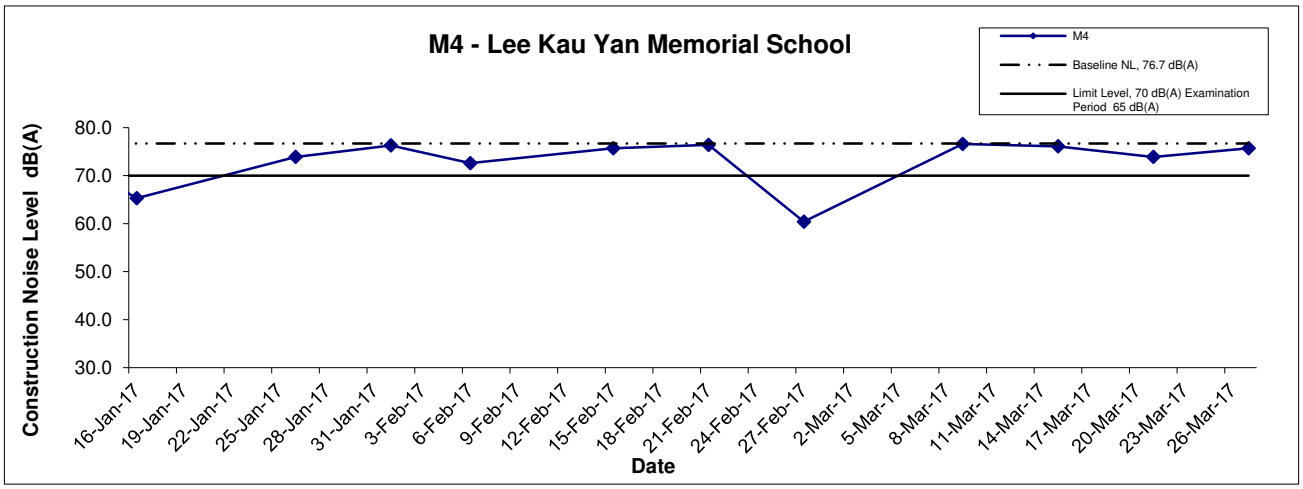
Location M3 - Cognitio College							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Background Noise	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
9-Mar-17	13:30	Cloudy	67.5	68.7	66.2	68.7	67.5 Measured ≦ Background
15-Mar-17	13:45	Cloudy	70.8	71.9	69.2	78.6	70.8 Measured ≦ Background
21-Mar-17	11:30	Sunny	78.1	78.6	77.6	78.4	78.1 Measured ≦ Background
27-Mar-17	11:30	Sunny	77.4	80.7	68.3	77.6	77.4 Measured ≦ Background

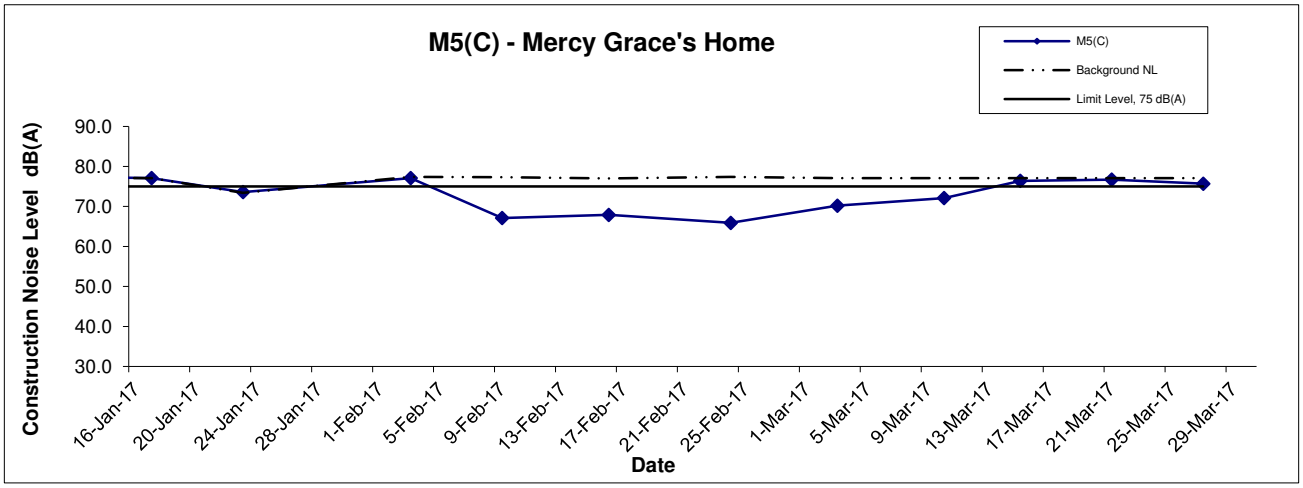
Location M4 - Lee Kau Yan Memorial School							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
9-Mar-17	15:30	Cloudy	76.6	77.7	75.3	76.7	76.6 Measured ≦ Baseline
15-Mar-17	12:30	Cloudy	79.4	81.6	77.4		76.1
21-Mar-17	14:00	Cloudy	73.9	76.2	70.4		73.9 Measured ≦ Baseline
27-Mar-17	13:15	Sunny	75.7	77.0	73.8		75.7 Measured ≦ Baseline

Location M5(C) - Mercy Grace's Home							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Background Noise	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
3-Mar-17	09:00	Sunny	77.9	78.8	75.5	77.1	70.2
10-Mar-17	11:00	Cloudy	78.3	79.8	76.3	77.1	72.1
15-Mar-17	14:30	Cloudy	76.4	78.6	72.1	77.1	76.4 Measured ≦ Background
21-Mar-17	13:20	Sunny	76.7	78.5	74.6	77.1	76.7 Measured ≦ Background
27-Mar-17	14:00	Sunny	75.7	77.5	72.2	77.1	75.7 Measured ≦ Background

Noise Levels







Remarks: The construction noise levels in the Tables in Appendix G were adopted for plotting the graphs

Title: Contract No. KLN/2016/04 Environmental Monitoring Works for Contract No. KL/2015/02 Kai Tak Development –Stage 5A Infrastructure at Former North Apron Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Mar 17	Project No.: MA16043 Appendix: G	CINOTECH

APPENDIX H
SUMMARY OF EXCEEDANCE

Contract No. KLN/2016/04
Environmental Monitoring Works for Contract No. KL/2015/02
Kai Tak Development – Stage 5A Infrastructure at Former North Apron Area

Appendix H – Summary of Exceedance

Exceedance Report for Contract No. KL/2015/02

(A) Exceedance Report for Air Quality
(NIL in the reporting month)

(B) Exceedance Report for Construction Noise
(NIL in the reporting month)

(C) Exceedance Report for Landscape and Visual
(NIL in the reporting month)

APPENDIX I
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170303
Date	3 March 2017
Time	15:00 – 16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170303-R01	• Water spraying should be provided at haul road to avoid dust generation.	C5
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during the site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170224), no major environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Andy Chan	Andy	3 March 2017
Checked by	Dr. Priscilla Choy		3 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170310
Date	10 March 2017
Time	14:00 – 15:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170310-O01	• Excavated material should be properly covered for dust suppression. (Portion 2)	C 7
170310-O02	• Water spray should be provided at haul road. (Portion 1)	C 5
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
170310-R03	• Oil stain accumulated near KCD should be cleared. (Portion 1)	E 8
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170303), all environmental deficiencies were improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	KC Chung	Chung	10 March 2017
Checked by	Dr. Priscilla Choy		10 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170315
Date	15 March 2017
Time	09:30 – 10:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170310), all environmental deficiencies were improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	KC Chung		15 March 2017
Checked by	Dr. Priscilla Choy		15 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170324
Date	24 March 2017
Time	14:00 – 16:00

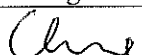
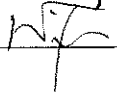
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
170324-R01	• Water spraying should be provided to unpaved area to avoid dust generation.	C 6
170324-R03	• Stockpile of dusty material should be covered by impervious materials properly.	C 7
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
170324-R02	• Drip tray near the generator-set should be maintained more regularly.	E 9
	F. Visual and Landscape	
	• No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170315), no major environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Andy Chan		24 March 2017
Checked by	Dr. Priscilla Choy		24 March 2017

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170331
Date	31 March 2017
Time	14:00 – 15:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
170331-R02	• To clear the general refuse at the box culvert at Portion 2.	E 1 ii & E 1iii
	F. Visual and Landscape	
170331-O01	• To properly maintain the hoarding at the site boundary of Portion 1.	F 4
	G. Permits /Licences	
	• No environmental deficiency was identified during site inspection.	
	H. Others	
	• Follow-up on previous audit section (Ref. No.: 170324), all environmental deficiencies were rectified/improved by the Contractor.	

	Name	Signature	Date
Recorded by	KC Chung		31 March 2017
Checked by	Dr. Priscilla Choy		31 March 2017

APPENDIX J
EVENT ACTION PLANS

Appendix J - Event Action Plans

Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded by one sampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contactor, IEC and ER; 3. Repeat measurement to confirm finding.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action Level being exceeded by two or more consecutive sampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contractor, IEC and ER; 3. Increase monitoring frequency to daily; 4. Discuss with IEC and Contractor on remedial actions required; 5. Assess the effectiveness of Contractor's remedial actions; 6. If exceedance continues, arrange meeting with IEC and ER; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise implementation of remedial measures; 5. Conduct meeting with ET and IEC if exceedance continues.	1. Discuss with ET and IEC on proper remedial actions; 2. Submit proposals for remedial actions to ER and IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit Level being exceeded by one sampling	1. Identify source and investigate the causes of exceedance; 2. Inform Contractor, IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Assess effectiveness of Contractor's remedial actions and keep	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures;	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be	1. Take immediate action to avoid further exceedance; 2. Discuss with ET and IEC on proper remedial actions; 3. Submit proposals for remedial actions to ER and IEC within three

	EPD, IEC and ER informed of the results.	4. Advise the ER on the effectiveness of the proposed remedial measures.	implemented; 4. Supervise implementation of remedial measures; 5. Conduct meeting with ET and IEC if exceedance continues.	working days of notification; 4. Implement the agreed proposals.
Limit Level being exceeded by two or more consecutive sampling	1. Notify IEC, ER, Contractor and EPD; 2. Repeat measurement to confirm findings; 3. Carry out analysis of Contractor's working procedures to identify source and investigate the causes of exceedance; 4. Increase monitoring frequency to daily; 5. Arrange meeting with IEC, ER and Contractor to discuss the remedial actions to be taken; 6. Assess effectiveness of Contractor's remedial actions and keep EPD, IEC and ER informed of the results; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Discuss with ET, ER and IEC on proper remedial actions; 3. Submit proposals for remedial actions to IEC within three working days of notification; 4. Implement the agreed proposals; 5. Submit further remedial actions if problem still not under control; 6. Stop the relevant portion of works as instructed by the ER until the exceedance is abated.

Appendix J - Event Action Plans

Event/Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded	1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified)	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals. (The above actions should be taken within 2 working days after the exceedance is identified)
Limit Level being exceeded	1. Inform IEC, ER, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance;	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification; 3. Implement the agreed proposals;

	5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. (The above actions should be taken within 2 working days after the exceedance is identified)	(The above actions should be taken within 2 working days after the exceedance is identified)	measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified)	4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified)

Appendix J - Event Action Plans

Event/Action Plan for Landscape and Visual

EVENT ACTION LEVEL	ACTION			
	ET	IEC	ER	CONTRACTOR
Design Check	1. Check final design conforms to the requirements of EP and prepare report.	1. Check report. 2. Recommend remedial design if necessary	1. Undertake remedial design if necessary	
Non-conformity on one occasion	1. Identify Source 2. Inform IEC and ER 3. Discuss remedial actions with IEC, ER and Contractor 4. Monitor remedial actions until rectification has been completed	1. Check report 2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures. 5. Check implementation of remedial measures.	1. Notify Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source Inform IEC and	1. Check monitoring report	1. Notify Contractor 2. Ensure remedial measures are properly	1. Amend working methods 2. Rectify damage and

	ER 2. Increase monitoring frequency 3. Discuss remedial actions with IEC, ER and Contractor 4. Monitor remedial actions until rectification has been completed 5. If non-conformity stops, cease additional monitoring	2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise ER on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures.	implemented	undertake any necessary replacement

APPENDIX K
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

Appendix K – Summary of Implementation Schedule of Mitigation Measures for Construction Phase

EIA Ref.	Recommended Mitigation Measures	Implementation Status
Construction Air Quality		
S6.5	8 times daily watering of the work site with active dust emitting activities.	^
S6.8	Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. The following mitigation measures, good site practices and a comprehensive dust monitoring and audit programme are recommended to minimize cumulative dust impacts.	
	• Stockpiling site(s) should be lined with impermeable sheeting and bunded. Stockpiles should be fully covered by impermeable sheeting to reduce dust emission.	*
	• Misting for the dusty material should be carried out before being loaded into the vehicle. Any vehicle with an open load carrying area should have properly fitted side and tail boards.	^
	• Material having the potential to create dust should not be loaded from a level higher than the side and tail boards and should be dampened and covered by a clean tarpaulin.	^
	• The tarpaulin should be properly secured and should extent at least 300 mm over the edges of the sides and tailboards. The material should also be dampened if necessary before transportation.	^
	• The vehicles should be restricted to maximum speed of 10 km per hour and confined haulage and delivery vehicle to designated roadways insider the site. Onsite unpaved roads should be compacted and kept free of lose materials.	^
	• Vehicle washing facilities should be provided at every vehicle exit point.	^
	• The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.	^
	• Every main haul road should be scaled with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet.	*
	• Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the three sides.	^
	• Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.	^

S6.8	• DWFI compound for JVBC: A DWFI compound is proposed at the downstream of JVC to contain pollution in drainage systems entering the KTAC and KTTS by interception facilities until the ultimate removal of the pollution sources. Tidal barriers and desiliting facilities will form part of the compounds to prevent any accumulation of sediment within the downstream section of JVBC and hence fully mitigate the potential odour emissions from the headspace of JVBC near the existing discharge locations. The odour generating operations within the proposed desilting compound will be fully enclosed and the odorous air will be collected and treated by high efficiency deodorizers before discharge to the atmosphere. • Desilting compound for KTN: Two desilting compounds are proposed for KTN (at Site 1D6 and Site 1P1) to contain pollution in drainage systems entering the KTAC and KTTS by interception facilities until the ultimate removal of the pollution sources. Tidal barriers and desiliting facilities will form part of the compounds to prevent any accumulation of sediment within the downstream section of KTN and hence fully mitigate the potential odour emissions from the headspace of KTN near the existing discharge locations. The odour generating operations within the proposed desilting compound will be fully enclosed and the odorous air will be collected and treated by high efficiency deodorizers before discharge to the atmosphere. • Decking or reconstruction of KTN within apron area: It is proposed to deck the KTN or reconstruct the KTN within the former Apron area into Kai Tak River from the south of Road D1 to the north of Road D2 along the existing alignment of KTN. The Kai Tak River will compose of a number of channels flowing with nonodorous fresh water and THEES effluent. The channel flowing with THEES effluent will be designed with the width of water surface of not more than 16m. • Localised maintenance dredging: Localised maintenance dredging should be conducted to provide water depth of not less than 3.5m over the whole of KTAC and KTTS. With reference to the water depth data recorded during the odour survey, only some of the areas in the northern part of KTAC (i.e. to the north of taxiway bridge) including the area near the northern edge of KTAC, the area near western bank of KTAC, and the area near the JVC discharge have water depths shallower than 3.5m. The area involved would be about 40% of the northern KTAC and the dredging depth required would be from about 2.7m to less than 1m. The maintenance dredging to be carried out prior to the occupation of any new development in the immediate vicinity of KTAC to avoid potential localized odour	N/A N/A N/A N/A

Appendix K – Summary of Implementation Schedule of Mitigation Measures for Construction Phase

	impacts at the future ASRs during the maintenance dredging operation. • Improvement of water circulation in KTAC and KTTS: 600m gap opening at the northern part of the former Kai Tak runway, the water circulation in KTAC and KTTS would be substantially improved. Together with the improvement in water circulation, the DO level in KTAC and KTTS would also be increased. • In-situ sediment treatment by bioremediation: Bioremediation would be applied to the entire KTAC and KTTS.	N/A N/A
Construction Noise		
S7.8	Use of quiet PME, movable barriers barrier for Asphalt Paver, Breaker, Excavator and Hand-held breaker and full enclosure for Air Compressor, Bar Bender, Concrete Pump, Generator and Water Pump.	^
S7.9	Good Site Practice: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program. • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program. • Mobile plant, if any, should be sited as far away from NSRs as possible. • Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. • Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	 ^ ^ ^ ^ ^ ^
S7.9	Scheduling of Construction Works during School Examination Period	^
S7.8	(i) Provision of low noise surfacing in a section of Road L2; and (ii) Provision of structural fins	N/A N/A
S7.8	(i) Avoid the sensitive façade of class room facing Road L2 and L4; and (ii) Provision of low noise surfacing in a section of Road L2 & L4	N/A N/A

S7.8	(i) Provision of low noise surfacing in a section of Road L4 before occupation of Site 1I1; and (ii) Setback of building about 5m from site boundary.	N/A N/A
S7.8	Setback of building about 35m to the northwest direction at 1L3 and 5m at Site 1L2.	N/A
S7.8	(i) avoid any sensitive façades with openable window facing the existing Kowloon City Road network; and Avoid the sensitive façade of class room facing Road L2 and L4; and (ii) for the sensitive facades facing the To Kwa Wan direction, either setback the facades by about 5m to the northeast direction or do not provide the facades with openable window.	N/A N/A
S7.8	(i) avoid any sensitive facades with openable window facing the existing To Kwa Wan Road or (ii) provision of 17.5m high noise tolerant building fronting To Kwa Wan Road and restrict the height of the residential block(s) located at less than 55m away from To Kwa Wan Road to no more than 25m above ground	N/A N/A
S7.8	(i) avoid any sensitive facades with openable window facing the slip road connecting Prince Edward Road East and San Po Kong or other alternative mitigation measures and at-source mitigation measures for the surrounding new local roads to minimise the potential traffic noise impacts from the slip road	^
S7.8	All the ventilation fans installed in the below will be provided with silencers or acoustics treatment. (i) SPS (ii) ESS (iii) Tunnel Ventilation Shaft (iv) EFTS depot	 N/A N/A N/A N/A
S7.8	Installation of retractable roof or other equivalent measures	N/A
Construction Water Quality		
S8.8	The following mitigation measures are proposed to be incorporated in the design of the SPS at KTD, including: • Dual power supply or emergency generator should be provided at all the SPSs to secure electrical power supply; • Standby pumps should be provided at all SPSs to ensure smooth operation of the SPS during maintenance of the duty pumps; • An alarm should be installed to signal emergency high water level in the wet well at all SPSs; and	 N/A N/A N/A

	• For all unmanned SPSs, a remote monitor system connecting SPSs with the control station through telemetry system should be provided so that swift actions could be taken in case of malfunction of unmanned facilities	N/A
S8.8	**Construction Phase** Marine-based Construction *Capital and Maintenance Dredging for Cruise Terminal* Mitigation measures for construction of the proposed cruise terminal should follow those recommended in the approved EIA for CT Dredging.	N/A
S8.8	*Fireboat Berth, Runway Opening and Road T2* Silt curtains should be deployed around the close grab dredger to minimize release of sediment and other contaminants for any dredging and filling activities in open water.	N/A
S8.8	Dredging at and near the seawall area for construction of the public landing steps cum fireboat berth should be carried out at a maximum production rate of 1,000m^3 per day using one grab dredger.	N/A
S8.8	The proposed construction method for runway opening should adopt an approach where the existing seawall at the runway will not be removed until completion of all excavation and dredging works for demolition of the runway. Thus, excavation of bulk fill and majority of the dredging works will be carried out behind the existing seawall, and the sediment plume can be effectively contained within the works area. As there is likely some accumulation of sediments alongside the runway, there will be a need to dredge the existing seabed after completion of all the demolition works. Dredging alongside the 600m opening should be carried out at a maximum production rate of 2,000m^3 per day using one grab dredger.	N/A
8.8	Dredging for Road T2 should be conducted at a maximum rate of 8,000m^3 per day (using four grab dredgers) whereas the sand filling should be conducted at a maximum rate of 2,000m3 per day (using two grab dredgers).	N/A
8.8	Silt screens shall be applied to seawater intakes at WSD seawater intake.	N/A

S8.8	Land-based Construction *Construction Runoff* Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: • use of sediment traps • adequate maintenance of drainage systems to prevent flooding and overflow	 ^ ^
S8.8	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	^
S8.8	Construction site should be provided with adequately designed perimeter channel and pre-treatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles 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.	^
S8.8	Sediment tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m^3 capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	^
S8.8	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50 m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	^
S8.8	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.	^
S8.8	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, 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.	
S8.8	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	N/A(1)
S8.8	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 located wheel washing bay should be provided at every site exit, and 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.	^
S8.8	*Drainage* It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There should be no direct discharge of effluent from the site into the sea	^
S8.8	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	^
S8.8	All fuel tanks and storage areas should be provided with locks and be located 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 the coastal waters of the Victoria Harbour WCZ.	^
S8.8	*Sewage Effluent* Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets should be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor should also be responsible for waste disposal and maintenance practices.	^

S8.8	*Stormwater Discharges* Minimum distances of 100 m should be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes	^
S8.8	*Debris and Litter* In order to maintain water quality in acceptable conditions with regard to aesthetic quality, contractors should be required, under conditions of contract, to ensure that site management is optimised and that disposal of any solid materials, litter or wastes to marine waters does not occur	^
S8.8	*Construction Works at or in Close Proximity of Storm Culvert or Seafront* The proposed works should preferably be carried out within the dry season where the flow in the drainage channel /storm culvert/ nullah is low.	^
S8.8	The use of less or smaller construction plants may be specified to reduce the disturbance to the bottom sediment at the drainage channel /storm culvert / nullah.	^
S8.8	Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works	^
S8.8	Stockpiling of construction materials and dusty materials should be covered and located away from any water courses.	^
S8.8	Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers.	^
S8.8	Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable.	^
S8.8	Mitigation measures to control site runoff from entering the nearby water environment should be implemented to minimize water quality impacts. Surface channels should be provided along the edge of the waterfront within the work sites to intercept the runoff.	^
S8.8	Construction effluent, site run-off and sewage should be properly collected and/or treated.	^
S8.8	Any works site inside the storm water courses should be temporarily isolated, such as by placing of sandbags or silt curtains with lead	N/A

	edge at bottom and properly supported props to prevent adverse impact on the storm water quality.	
S8.8	Silt curtain may be installed around the construction activities at the seafront to minimize the potential impacts due to accidental spillage of construction materials.	N/A
S8.8	Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert/drainage channel/sea.	N/A
S8.8	Supervisory staff should be assigned to station on site to closely supervise and monitor the works	^
S8.8	Marine water quality monitoring and audit programme shall be implemented for the proposed sediment treatment operation.	N/A
Construction Waste Management		
S9.5	Good Site Practices It is not anticipated that adverse waste management related impacts would arise, provided that good site practices are adhered to. Recommendations for good site practices during the dredging activities include: • Nomination of an approved person, such as a site manager, be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site. • Training of site personnel in proper waste management and chemical waste handling procedures. • Provision of sufficient waste disposal points and regular collection for disposal. • Appropriate measure to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. • A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).	^ ^ ^ ^ ^
S9.5	Waste Reduction Measures Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of the remaining structures to recover recyclable portions such as metals • 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 • Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force	^ ^ ^

	• Any unused chemicals or those with remaining functional capacity should be recycled • Proper storage and site practices to minimise the potential for damage or contamination of construction materials	^ ^
S9.5	Dredged Marine Sediment The basic requirements and procedures for dredged mud disposal are specified under the ETWB TCW No. 34/2002. The management of the dredging, use and disposal of marine mud is monitored by the MFC, while the licensing of marine dumping is required under the Dumping at Sea Ordinance and is the responsibility of the Director of Environmental Protection (DEP)	N/A
S9.5	The dredged marine sediments would be loaded onto barges and transported to the designated disposal sites allocated by the MFC depending on their level of contamination. Sediment classified as Category L would be suitable for Type 1 - Open Sea Disposal. Contaminated sediment would require either Type 1 – Open Sea Disposal (Dedicated Sites), Type 2 - Confined Marine Disposal, or Type 3 – Special Treatment / Disposal and must be dredged and transported with great care in accordance with ETWB TCW No. 34/2002. Subject to the final allocation of the disposal sites by MFC, the dredged contaminated sediment must be effectively isolated from the environment and disposed properly at the designated disposal site	N/A
S9.5	It will be the responsibility of the contractor to satisfy the appropriate authorities that the contamination levels of the marine sediment to be dredged have been analysed and recorded. According to the ETWB TCW No. 34/2002, this will involve the submission of a formal Sediment Quality Report to the DEP, prior to the dredging contract being tendered. The contractor for the dredging works should apply for allocation of marine disposal sites and all necessary permits from relevant authorities for the disposal of dredged sediment. During transportation and disposal of the dredged marine sediments requiring Type 1, Type 2, or Type 3 disposal, the following measures should be taken to minimise potential impacts on water quality: • Bottom opening of barges should be fitted with tight fitting seals to prevent leakage of material. Excess material should be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved • Monitoring of the barge loading should be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels should be equipped with automatic selfmonitoring devices as required under the Dumping at Sea Ordinance and as specified by the DEP • Barges or hopper barges should not be filled to a level that would cause the overflow of materials or sediment laden water during loading or transportation	N/A N/A N/A

S9.5	Construction and Demolition Material Mitigation measures and good site practices should be incorporated into contract document to control potential environmental impact from handling and transportation of C&D material. The mitigation measures include: • Where it is unavoidable to have transient stockpiles of C&D material within the Project work site pending collection for disposal, the transient stockpiles should be located away from waterfront or storm drains as far as possible • Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric • Skip hoist for material transport should be totally enclosed by impervious sheeting • Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site • The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores • The load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle • All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet • The height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading When delivering inert C&D material to public fill reception facilities, the material should consist entirely of inert construction waste and of size less than 250mm or other sizes as agreed with the Secretary of the Public Fill Committee. In order to monitor the disposal of the surplus C&D material at the designed public fill reception facility and to control fly tipping, a trip-ticket system as stipulated in the ETWB TCW No. 31/2004 “Trip Ticket System for Disposal of Construction and Demolition Materials” should be included as one of the contractual requirements and implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. An Independent Environmental Checker should be responsible for auditing the results of the system.	^ ^ ^ ^ ^ ^ ^ ^

Appendix K – Summary of Implementation Schedule of Mitigation Measures for Construction Phase

S9.5	Chemical Waste After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Spent chemicals should be collected by a licensed collector for disposal at the CWTF or other licensed facility, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*		*
S9.5	General Refuse General refuse should be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Effective collection and storage methods (including enclosed and covered area) of site wastes would be required to prevent waste materials from being blown around by wind, wastewater discharge by flushing or leaching into the marine environment, or creating odour nuisance or pest and vermin problem		*
Construction Landscape and Visual			
S13.9	CM1	All existing trees should be carefully protected during construction.	^
	CM2	Trees unavoidably affected by the works should be transplanted where practical. Detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBC 2/2004 and 3/2006. Final locations of transplanted trees should be agreed prior to commencement of the work.	^
	CM3	Control of night-time lighting.	N/A(1)
	CM4	Erection of decorative screen hoarding.	*

Remarks:

^	Compliance of mitigation measure
*	Recommendation was made during site audit but improved/rectified by the Contractor
•	Non-compliance but rectified by the Contractor
X	Non-compliance of mitigation measure
N/A	Not Applicable at this stage
N/A(1)	Not observed

APPENDIX L
SUMMARIES OF ENVIRONMENTAL COMPLAINT, WARNING, SUMMON AND NOTIFICATION OF SUCCESSFUL PROSECUTION

Contract No. KLN/2016/04
Environmental Monitoring Works for Contract No. KL/2015/02
Kai Tak Development – Stage 5A Infrastructure at Former North Apron Area

Appendix L – Summary of environmental complaint, warning, summon and notification of successful prosecution

Reporting Period: March 2017

Contract No. KL/2015/02

Log Ref.	Location	Received Date	Details of Complaint/warning/summon and prosecution	Investigation/Mitigation Action	Status
N/A	N/A	N/A	N/A	N/A	N/A

Remarks: No environmental complaint/warning/summon and prosecution were received in the reporting period.

APPENDIX M
SUMMARY OF WASTE GENERATION AND DISPOSAL RECORDS

Department: CEDD
Contract No.: KL/2015/02
Project : Kai Tak Development - Stage 5A Infrastructure at Former North Apron Area

Peako - Wo Hing Joint Venture

Monthly Summary Waste Flow Table for 2017

As at 1 April 2017

Month	Actual Quantities of Inert C & D Materials Generated Monthly						Actual Quantities of C & D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ Cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m³)
Jan	6651	0	0	0	6651	0	0	0	0	0	7
Feb	8100	0	0	0	8100	0	0	0	0	0	0
Mar	24534	0	0	0	24534	0	0	0	0	0	21
Apr											
May											
June											
Sub-total											
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	39285	0	0	0	39285	0	0	0	0	0	28

Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ Cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000m³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m³)

Notes:
(1) The performance targets are given in PS clause 6(14).
(2) The waste flow table shall also include C & D materials that are specified in the Contract to be imported for use at the Site.
(3) Plastics refer to plastic bottles/ containers, plastic sheets/ foam from packaging material.
(4) The Contractor shall also submit the latest forcast of the total amount of C&D materials exected to be generated from the Works, together with a braskdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or excreeding 50,00 m³. (PS Cleuse 25.02A(7) refers).