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6th CONSOLIDATED MONTHLY EM&A REPORT

April 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/0409

Prepared by : Wingo So

Reviewed by : Calvin Leung


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Independent Environmental Checker
MaterialLab Consultants Limited

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EXECUTIVE SUMMARY

- i. This is the 6th Consolidated Monthly EM&A Report which summaries the EM&A works undertaken by respective contract under EP-337/2009 within the period between 1 April and 30 April 2017.
- 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;
- Traffic signal 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, 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.

Contract No. KL/2014/01:

- Watermain works;
- Construction of footpath at EPD recycling centre;
- 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, columns, underpass, noise barrier footings, sewer and manholes.

Contract No. KL/2014/03:

- Temporary utility diversion;

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- Implementation of Temporary Traffic Arrangement (TTA);
- Construction of Tunnel structure;
- Construction of Socket H-piles;
- Construction of drainage works;
- Construction of guide walls and D-walls;
- Construction of District Cooling System Works; and
- Installation of temporary cut-off wall.

Contract No. KL/2015/02:

- Bored piling works at abutment A02;
- Driving sheet piles at Subway SW6 between Staircases ST2 and ST3;
- Carry out protection works to CLP's cables for sheet piling works
- Construction of Box Culvert B3 (Top slab)
- Excavation and Construction Works for Box Culvert B4
- ELS Installation and Excavation Works at Box Culvert B5
- Excavation and Construction Works for Box Culvert B2
- ELS Construction for Sewerage Works near SCL Tunnel; and
- Installation of DCS Pipe in Road L7.

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 complaint, notification of summons or prosecution was received 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)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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

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Major Impact Prediction	Control Measures
	avoid run-off from entering the existing storm water drainage system via public road; and <ul style="list-style-type: none"> Provision of measures to prevent discharge into the stream.
Noise Impact	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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.

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 MaterialLab 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 6th Consolidated Monthly EM&A Report which summaries the EM&A works undertaken by respective contract under EP-337/2009 within the period between 1 April and 30 April 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

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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 6146 6761 (Hotline)	3689 7726
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;

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- Traffic signal 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, 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.

Contract No. KL/2014/01:

- Watermain works;
- Construction of footpath at EPD recycling centre;
- 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, columns, underpass, noise barrier footings, sewer and manholes.

Contract No. KL/2014/03:

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

Contract No. KL/2015/02:

- Bored piling works at abutment A02;
- Driving sheet piles at Subway SW6 between Staircases ST2 and ST3;
- Carry out protection works to CLP's cables for sheet piling works
- Construction of Box Culvert B3 (Top slab)
- Excavation and Construction Works for Box Culvert B4
- ELS Installation and Excavation Works at Box Culvert B5
- Excavation and Construction Works for Box Culvert B2

- ELS Construction for Sewerage Works near SCL Tunnel; and
- Installation of DCS Pipe in Road L7.

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	<ul style="list-style-type: none"> • 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;	<ul style="list-style-type: none"> • 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;)	<ul style="list-style-type: none"> • 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;)	<ul style="list-style-type: none"> • 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.)	<ul style="list-style-type: none"> • Use of quiet plant and well-maintained construction plant; and • Provide hoarding.
Noise, Water Quality (Pipe laying from manhole	<ul style="list-style-type: none"> • Use of quiet plant and well-maintained construction plant; and

Major Environmental Impact	Control Measures
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;)	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Sufficient watering of the works site with active dust emitting activities; Properly cover the stockpiles; On-site waste sorting and implementation of trip ticket

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Major Environmental Impact	Control Measures
	<p>system</p> <ul style="list-style-type: none">• 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-RE1041-16	27/10/2016	23/04/2017
	GW-RE1054-16	28/10/2016	23/04/2017
	GW-RE0069-17	27/01/2017	31/05/2017
	GW-RE0070-17	09/02/2017	31/05/2017
	GW-RE0351-17	30/04/2017	01/05/2017
Contract No. KL/2012/03:			
Environmental Permit	EP-337/2009	23/04/2009	N/A
	EP-344/2009	23/04/2009	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-RE0149-17	29/03/2017	28/09/2017
Contract No. KL/2014/01:			
Environmental Permit	EP-337/2009	23/04/2009	N/A
	EP-445/2013/A	13/08/2009	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
	GW-RE0294-17	20/04/2017	12/10/2017
Contract No. KL/2014/03:			
Environmental Permit	EP-337/2009	23/04/2009	N/A
	EP-339/2009/A	18/06/2009	N/A
	EP-451/2013	19/09/2013	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
	GW-RE0270-17	03/04/2017	08/10/2017
	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 ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
Contract No. KL/2012/02:					
1-hr TSP	AM1(B)	154	99 – 227	342	500
	AM2	111	82 – 167	346	
24-hr TSP	AM1(B)	100	46 – 155	159	260
	AM2	93	42 – 152	157	
Contract No. KL/2012/03:					
1-hr TSP	AM2	111.4	81.6 – 167.2	346	500
	AM3(A)	148.2	99.7 – 201.5	351	
	AM4(C)	111.0	58.9 – 187.1	371	
	AM5(A)	143.5	115.3 – 170.1	345	
	AM5	89.0	39.5 – 136.4	345	
24-hr TSP	AM2	93.2	42.0 – 152.0	157	260
	AM3(A)	88.3	47.0 – 148.0	167	
	AM4(C)	93.0	22.0 – 118.0	187	
	AM5	83.0	38.0 – 117.0	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	64	33 – 108	177	260
	KTD2a	52	31 – 78	157	
	KER1b	73	52 – 123	172	
Contract No. KL/2015/02:					
1-hr TSP	AM2	111	82 – 167	346	500
24-hr TSP	AM2	93	42 – 152	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:				
M3	65.4 – 77.8 [#]	When one documented complaint is received	70*	
M4	60.4 – 73.7 [#]		70*	
M9	65.0 – 68.1		75	
Contract No. KL/2012/03:				
M6(A)	60.1 – 65.9		70*	
M7	60.4 – 69.4		70*	
M8	54.3 – 66.1		70*	
M9	65.2 – 68.1		75	
Contract No. KL/2014/01:				
NA (No Construction noise monitoring is required for the Project.)				NA
Contract No. KL/2014/03:				
KTD1a	62 - 71		75	
KTD2a	61 - 69		75	
KER1a	61 - 70		75	
Contract No. KL/2015/02:				
M3	65.4 – 77.8 [#]	70*		
M4	60.4 – 73.7 [#]	70*		
M5(C)	64.9 – 73.4	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 7, 13, 18 and 26 April 2017 in the reporting month. IEC site inspection was conducted on 18 April 2017.

Contract No. KL/2012/03:

Site audits were conducted on 7, 13, 19 and 28 April 2017 in the reporting month. IEC site inspection was conducted on 19 April 2017.

Contract No. KL/2014/01:

Site audits were conducted by representatives of the Contractor, Supervising Officer and ET on 5, 12, 19 and 26 April 2017 in the reporting month. IEC joint site inspection was conducted on 26 April 2017.

Contract No. KL/2014/03:

In the reporting month, four site inspections were carried out on 6, 13, 19 and 27 April 2017. Two of them, held on 19 and 27 April 2017 were the joint inspections with the IEC, ER, the Contractor and the ET.

Contract No. KL/2015/02:

Site audits were conducted on 7, 12, 21 and 28 April 2017 in the reporting month. A joint site audit with the representative of IEC, ER, the Contractor and the ET was carried out on 12 April 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	0	NA
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;
- Landscaping works at King Fuk 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, 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

Contract No. KL/2014/01:

- Watermain works;
- Construction of footpath at EPD recycling centre;
- 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, columns, underpass, noise barrier footings, sewer and manholes.

Contract No. KL/2014/03:

- Temporary utility diversion;
- Implementation of Temporary Traffic Arrangement (TTA);
- Construction of Socked H-piles;
- Construction of drainage works;
- Pumping test;
- Construction of Tunnel structure;
- Construction of guide walls and D-walls;
- Construction of District Cooling System Works; and
- Installation of temporary cut-off wall.

Contract No. KL/2015/02:

- Bored piling works at Abutment A02 and Pier S15;
- Demolition of part of existing Pier S15;
- Construction of temporary slip road and decking for TTA at PERE;
- Hoarding erection along PERE;
- Carry out trial pits for subway at footpath of PRER E/B;
- Tree felling works inside Shek Ku Lung Road Playground;
- Excavation and Construction Works for Box Culvert B2;
- Construction of Wall and Top Slab of Box Culvert B3;
- Excavation and Construction Works for Box Culvert B4;
- ELS and Excavation Works at Box Culvert B5;
- Sewerage Works near SCL Tunnels;
- Installation of DCS Pipes in Road L7;
- Installation of Drainage Pipes in Road L7 ;
- Trench excavation for DCS in Road D1 (Portion 6); and
- Trench excavation for Sewerage in Portion 2.

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
<u>Contract No. KL/2012/02:</u>	
Air quality impact (dust)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.
<u>Contract No. KL/2012/03:</u>	
Air quality impact (dust)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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.

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Major Impact Prediction	Control Measures
Noise Impact	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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
	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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 complaint, notification of summons or prosecution was received 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

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

Your reference:

Our reference: HKCEDD04/50/104393

Date: 27 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 April 2017

We refer to emails of 11 May 2017 and 21 and 26 June 2017 attaching a Monthly EM&A Report for April 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.

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

Yours faithfully
ANEWR CONSULTING LIMITED

James Choi
Independent Environmental Checker

CPSJ/LYMA/LHHN/lhnh

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EXECUTIVE SUMMARY

Introduction

1. This is the 43rd 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 – 30 April 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. 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;
 - Traffic signal 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

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 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

6. 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

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

Environmental Licenses and Permits

8. Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, EP-337/2009 issued on 23 April 2009.
9. Registration of Chemical Waste Producer (License: 5213-286-K3022-04).
10. Water Discharge License (License No.: WT00016873-2013 and WT00016723-2013).
11. Construction Noise Permit (License No.: GW-RE1041-16, GW-RE1054-16, GW-RE0069-17, GW-RE0070-17 & GW-RE0351-17).

Key Information in the Reporting Month

12. 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

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 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 43rd Monthly EM&A report summarizing the EM&A works for the Project from 1 – 30 April 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;
- Traffic signal 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.
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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 – 30 April 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	1
1-hour TSP Dust Meter	TSI Model AM510 SidePak Personal Aerosol Monitor	3
HVS Sampler	GMWS 2310 c/w of TSP sampling inlet	7
Wind Anemometer	Davis Weather Monitor II, Model no. 7440	1

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 m³/min. and 1.4 m³/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/m ³)	Action Level, µg/m ³	Limit Level, µg/m ³
AM1(B) – Contractor Site Office (KL/2012/02)				
1-hr TSP	5/4/2017	202	342	500
	5/4/2017	208		
	5/4/2017	215		
	10/4/2017	165		
	10/4/2017	175		
	10/4/2017	171		
	13/4/2017	108		
	13/4/2017	102		
	13/4/2017	99		
	19/4/2017	216		
	19/4/2017	227		
	19/4/2017	210		
	22/4/2017	102		
	22/4/2017	109		
	22/4/2017	100		
	27/4/2017	127		
	27/4/2017	117		
27/4/2017	115			
24-hr TSP	5/4/2017	109	159	260
	10/4/2017	103		
	13/4/2017	46		
	19/4/2017	118		
	22/4/2017	155		
	27/4/2017	71		
AM2 – Lee Kau Yan Memorial School				
1-hr TSP	5/4/2017	157	346	500
	5/4/2017	167		
	5/4/2017	158		
	10/4/2017	118		
	10/4/2017	116		
	10/4/2017	110		
	13/4/2017	97		
	13/4/2017	91		
	13/4/2017	82		
	19/4/2017	112		
	19/4/2017	108		
	19/4/2017	116		
	22/4/2017	91		
	22/4/2017	88		
	22/4/2017	94		
	27/4/2017	98		
	27/4/2017	102		
27/4/2017	100			
24-hr TSP	5/4/2017	101	157	260
	10/4/2017	119		
	13/4/2017	152		
	19/4/2017	46		
	22/4/2017	99		
	27/4/2017	42		

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	RION NL-52	2
Calibrator	RION NC-73 & NC-74	2

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. 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
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⁾	--
6/4/2017	76.5	75.8	68.2
11/4/2017	79.9	77.9	75.6
18/4/2017	77.8	78.2	77.8 Measured ≤ Background
24/4/2017	77.2	76.9	65.4
M4 – Lee Kau Yan Memorial School			
6/4/2017	73.6	76.7	73.6 Measured ≤ Baseline
11/4/2017	73.7		73.7 Measured ≤ Baseline
18/4/2017	76.8		60.4
24/4/2017	77.1		66.5
M9 – Tak Long Estate			
5/4/2017	68.7	59.9	68.1
10/4/2017	66.3		65.2
19/4/2017	66.3		65.2
27/4/2017	66.2		65.0

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/m ³	Scenario 2 (Mid 2013 to Late 2016), µg/m ³	Reporting Month (Apr 17), µg/m ³
AM1(B) – Contractor Site Office of KL/2012/02	192	298	154
AM 2 – Lee Kau Yan Memorial School	290	312	111

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/m ³	Scenario 2 (Mid 2013 to Late 2016), µg/m ³	Reporting Month (Apr 17), µg/m ³
AM1(B) – Contractor Site Office of KL/2012/02	121	156	100
AM2 – Lee Kau Yan Memorial School	145	169	93

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 (Apr 17), $L_{eq(30min)}$ dB(A)
M3 – Cognito College	47 – 75	65.4 – 77.8 ⁽¹⁾⁽³⁾
M4 – Lee Kau Yan Memorial School	47 – 74	60.4 – 73.7 ⁽²⁾
M9 – Tak Long Estate	Not Predicted in EIA Report	65.0 – 68.1

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 11 April 2017 at monitoring station M3 was considered as non-project related exceedance and the details could refer to Section 3.8 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 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.

- 4.5 The noise data at M4 were not within the range of predicted mitigated construction noise levels in the EIA report, M4 exceeded the prediction of mitigated scenario in EIA report but did not exceed the baseline level.
- 4.6 Noise Limit Level exceedance was recorded at M3 on 11 April 2017. According to the investigation, the exceedance was considered as non-project related.

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 7th, 13th, 18th and 26th April 2017 in the reporting month. IEC site inspection was conducted on 18th April 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, Spent solvent, Spent alkali and acid	Valid
Construction Noise Permit (CNP)				
GW-RE1041-16	27/10/16	23/04/17	Construction Noise Permit for the use of powered mechanical equipment for carrying out construction work other than percussive piling and performing prescribed construction work.	Valid until 23/04/17
GW-RE1054-16	28/10/16	23/04/17		Valid until 23/04/17
GW-RE0069-17	27/01/17	31/05/17		Valid
GW-RE0070-17	09/02/17	31/05/17		Valid
GW-RE0351-17	30/04/17	01/05/17		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
<i>Water Quality</i>	--	--	--
<i>Air Quality</i>	7 April 2017	<u>Reminder:</u> The dusty track on the haul road near the Sze Mei Street should be cleared.	Rectification/improvement was observed during the follow-up audit session.
	13 April 2017	<u>Reminder:</u> Stockpile of dusty material placed at near Concorde Road should be properly covered.	Rectification/improvement was observed during the follow-up audit session
	18 April 2017	<u>Reminder:</u> Clear the silty tyre marks near the site access of Tsat Po Street.	Rectification/improvement was observed during the follow-up audit session
	26 April 2017	<u>Reminder:</u> Silty tyre marks near Sze Mei Street should be cleared.	Follow up action will be reported in the next reporting month.
<i>Noise</i>	--	--	--
<i>Waste/ Chemical Management</i>	26 April 2017	<u>Reminder:</u> Accumulated general refuse near former KTOB should be cleared.	Follow up action will be reported in the next reporting month.
<i>Landscape and Visual</i>	31 March 2017	<u>Observation:</u> The construction material should be placed away from the tree protection zone at SW3.	This item was remarked on 7 April 2017.
	7 April 2017	<u>Observation:</u> The construction material should be placed away from the tree protection zone at SW3.	Rectification/improvement was observed during the follow-up audit session.
<i>Permits/ Licenses</i>	--	--	--

Summary of Mitigation Measures Implemented

- 6.8 The monthly IEC audit was carried out on 18th April 2017, the observations were recorded and they are presented as follows:

Observations:

- Dusty materials were found at the site entrance in Tsat Po Street. The Contractor was requested to remove the dusty materials at the entrance.
- It was observed that some works debug the cement in outdoor areas without sheltered. To avoid dust emission from cement debuggging /mixing process, the Contractor was recommended to inform workers carrying the debuggging / mixing process in indoor areas / with shelters.

Follow up of last observation:

- Stockpiles had been properly covered / back-filled by the Contractor.
- Debugged cement bags had been removed from the site on Concorde Road.
- Chemical containers were properly stored on the site.

- 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;
- Landscaping works at King Fuk 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. May 2017 and June 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 projected 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 No environmental complaint 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 properly clear the dusty track/type marks on the haul road.
- To properly cover the stockpile stored within the site area to prevent dust generation.

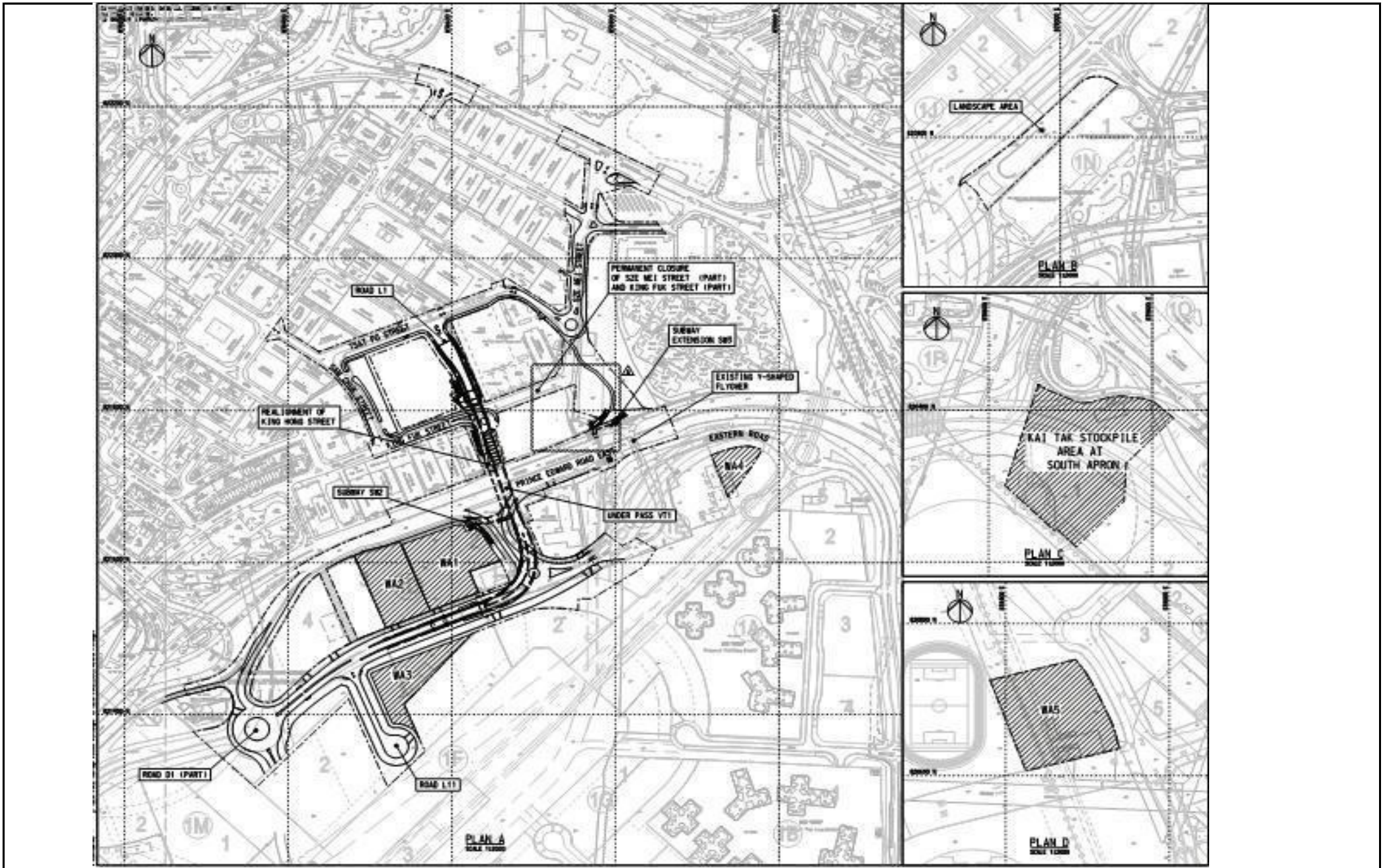
Waste / Chemical Management

- To dispose the general refuse regularly to avoid accumulation.

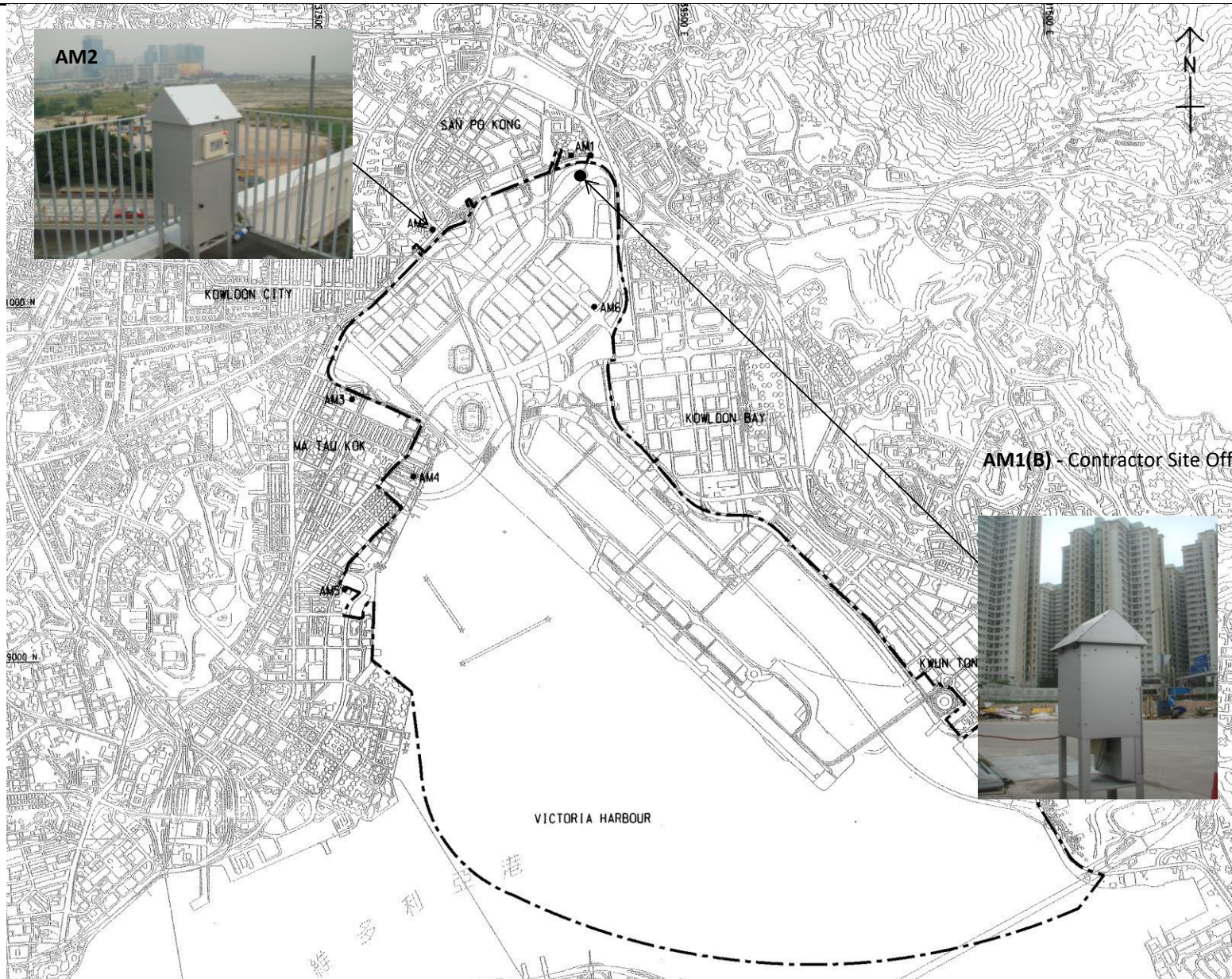
Landscape and Visual

- 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



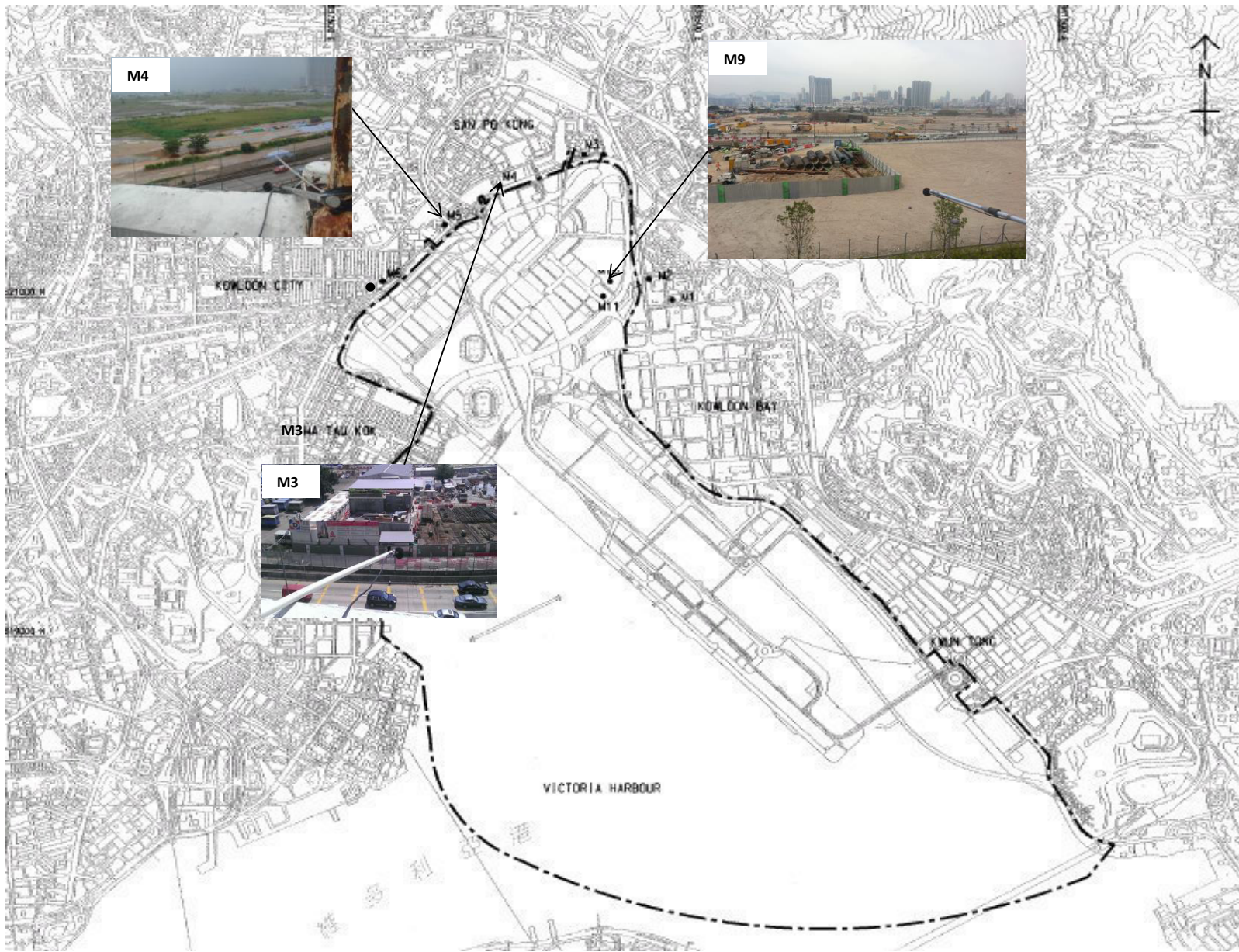
Title	Contract No. KL/2012/02		Scale	Project
	Kai Tak Development –Stage 3A Infrastructure at Former North Apron Area		N.T.S	No. MA13043
Site Layout Plan			Date	Figure
		Aug-13	1	



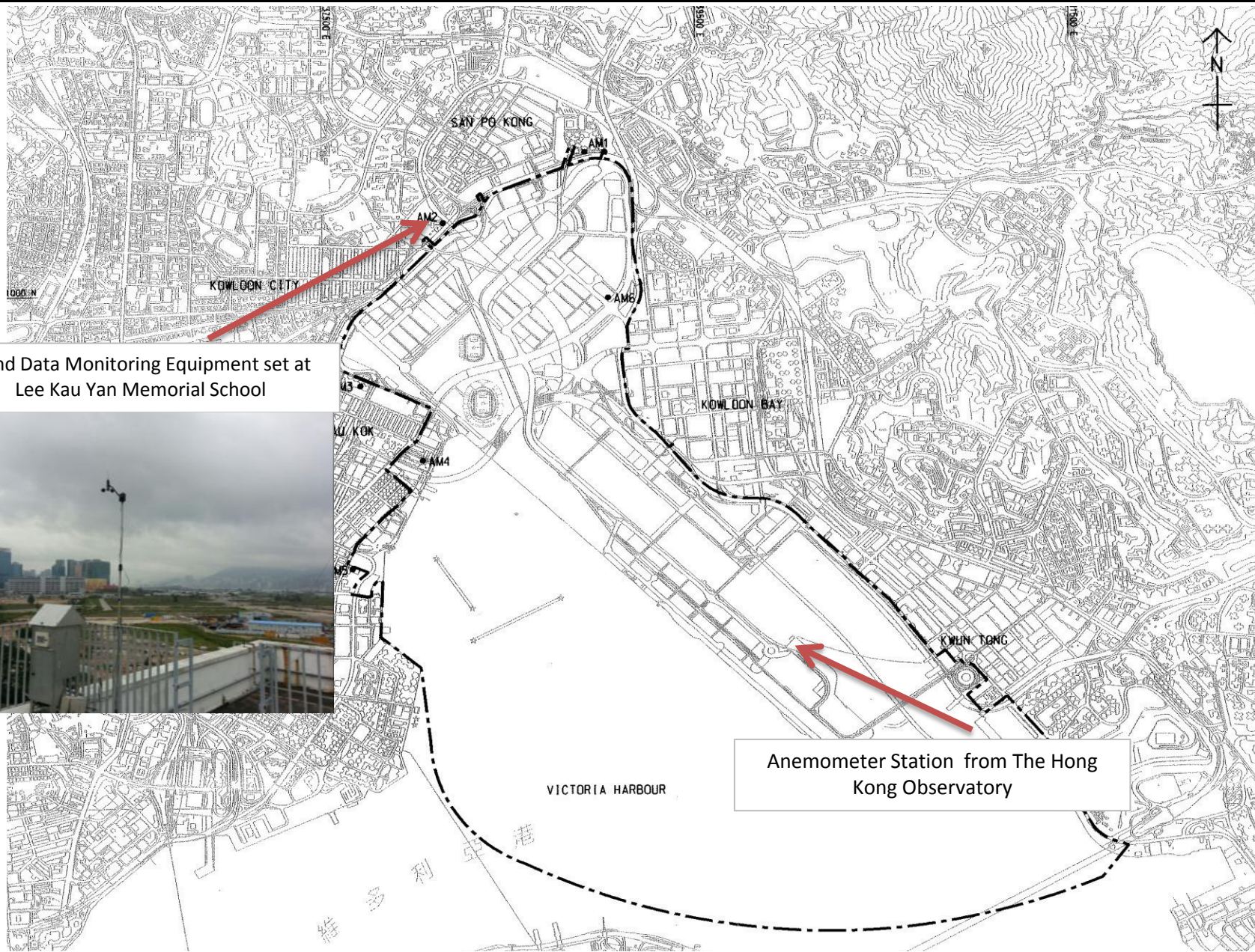
AM1(B) - Contractor Site Office (KL/2012/02)

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	Apr-17	Figure	2
Location of Air Quality Monitoring Stations under this Project						





Title Contract No. KL/2012/02 Kai Tak Development –Stage 3A Infrastructure at Former North Apron Area Location of Noise Monitoring Stations under this Project	Scale N.T.S	Project No. MA13043	
	Date Apr-17	Figure 3	



Wind Data Monitoring Equipment set at Lee Kau Yan Memorial School



Anemometer Station from The Hong Kong Observatory

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	Project No.	MA13043
Date	Oct-13	Figure	4



**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, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AM1(B)	342	500
AM2	346	

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

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
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
CERTIFICATES**

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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2768	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2
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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-Axis (corrected)
1	6.10	1.208	42.0	42.06
2	5.40	1.138	40.0	40.06
3	4.60	1.053	38.0	38.06
4	3.20	0.884	33.0	33.05
5	2.00	0.705	30.0	30.05

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

m= 24.3862 b= 12.3264 Corr. Coeff= 0.9948
 Sampler set point(SSP) 42 CFM

Calculations

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 14, 2016 Rootmeter 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

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

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

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

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

For subsequent flow rate calculations:

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

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



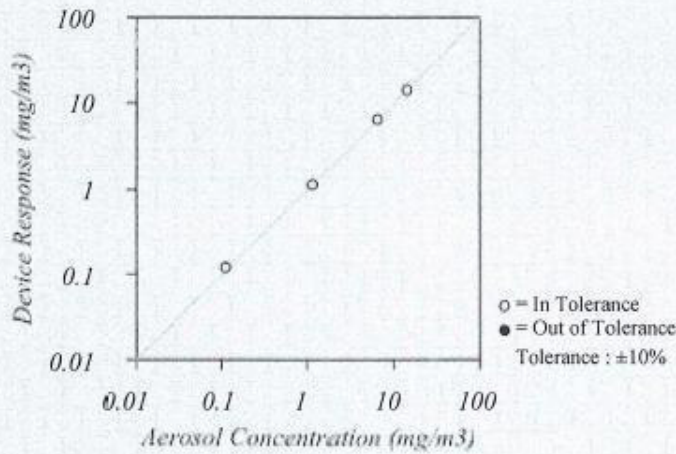
CERTIFICATE OF CALIBRATION AND TESTING

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			Model	AM510
Temperature	74.7 (23.7)	°F (°C)	Serial Number	11404005
Relative Humidity	33	%RH		
Barometric Pressure	28.55 (966.8)	inHg (hPa)		

- | | |
|---|--|
| <input checked="" type="checkbox"/> As Left | <input checked="" type="checkbox"/> In Tolerance |
| <input type="checkbox"/> As Found | <input type="checkbox"/> Out of Tolerance |

Concentration Linearity Plot



System ID: DT1101-02

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

<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal.</u>	<u>Cal. Due</u>	<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal.</u>	<u>Cal. Due</u>
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

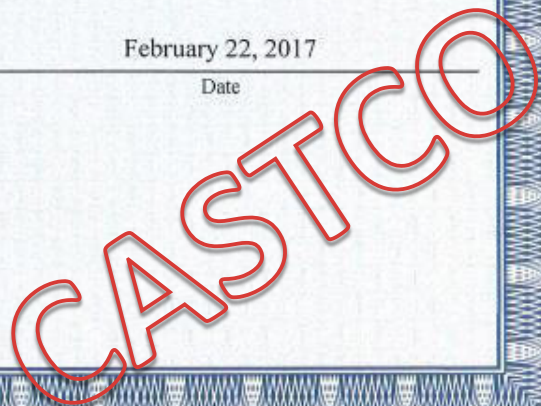
Tass Young

Calibrated

Final Function
Check

February 22, 2017

Date



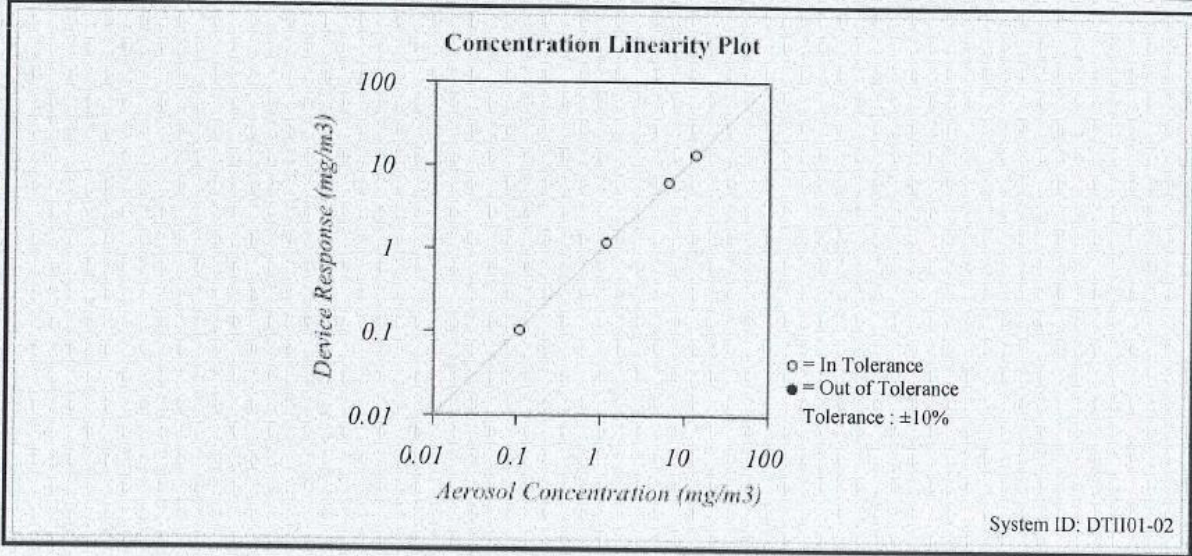


CERTIFICATE OF CALIBRATION AND TESTING

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			Model	AM510
Temperature	75.7 (24.3)	°F (°C)	Serial Number	11108001
Relative Humidity	26	%RH		
Barometric Pressure	28.93 (979.7)	inHg (hPa)		

- | | |
|---|--|
| <input checked="" type="checkbox"/> As Left | <input checked="" type="checkbox"/> In Tolerance |
| <input type="checkbox"/> As Found | <input type="checkbox"/> Out of Tolerance |



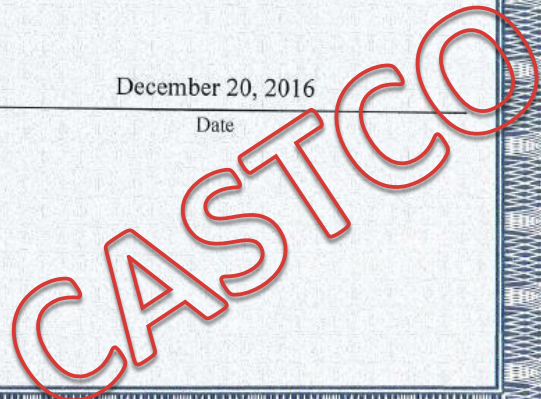
TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required 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

<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal.</u>	<u>Cal. Due</u>	<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal.</u>	<u>Cal. Due</u>
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

Tan Yang
Calibrated

Final Function Check

December 20, 2016
Date



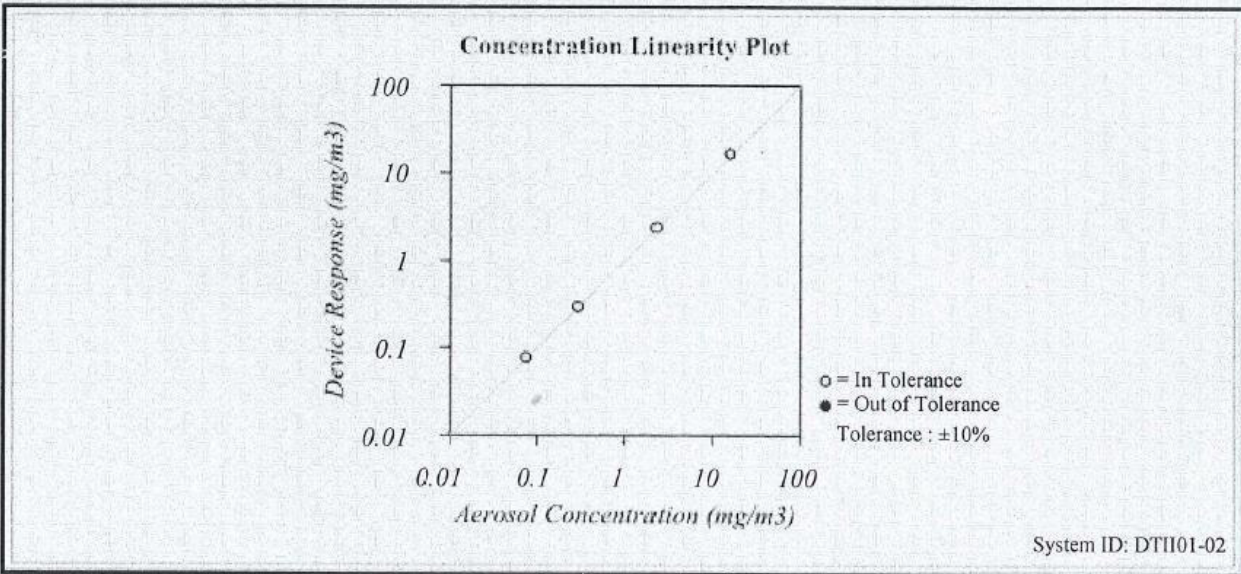


CERTIFICATE OF CALIBRATION AND TESTING

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			Model	AM510
Temperature	75.16 (24.0)	°F (°C)	Serial Number	11208032
Relative Humidity	23.8	%RH		
Barometric Pressure	29.36 (994.2)	inHg (hPa)		

- | | |
|---|--|
| <input checked="" type="checkbox"/> As Left | <input checked="" type="checkbox"/> In Tolerance |
| <input type="checkbox"/> As Found | <input type="checkbox"/> Out of Tolerance |



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

Tom Vang

Calibrated

Final Function
Check

November 8, 2016

Date





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

CASSTCO

校准证书

CALIBRATION CERTIFICATE

证书编号: 2HB17000013-0001
Certificate No.



委托单位: Castco Testing Centre Limited
Client

委托方地址: 29A, On Chuen Street, On Lok Tsuen, Fanling, N.T.
Address

仪器名称: Sound Level Meter
Description

型号规格: NL-52
Model/Type

制造商: RION
Manufacturer

机身号: 00921213
Serial No.

管理号: AAST-SLM-04
Asset No.

校准日期: 2017年01月05日
Cal. Date

建议再校日期: 2018年01月05日 (R)
Next Cal. Date

结论: 所校准项目合格(Passed at Calibration Items)
Conclusion

校准: 罗志满
Calibrated by 罗志满

签发: 鄒木力
Approved by 鄒木力

核验: 杨西梅
Inspected by 杨西梅

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 Dongguan Zhuang 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

CASSTCO



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: 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)

CEPREI

校准:
Calibrated by

签发:
Approved by

核验:
Inspected 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
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网址: www.ceprei-cal.com

CEPREI Calibration and Testing Center
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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

CASTCO

说 明 DIRECTIONS

证书编号(Certificate No.): 2HB16001326-0003

1. 本机构质量管理体系符合ISO/IEC 17025的要求, 获得中国合格评定国家认可委员会(CNAS)认可, 认可证书号为: CNAS L0462。

This laboratory quality management system meets the ISO/IEC 17025 and is accredited by the China National Accreditation Service for Conformity Assessment, No. CNAS L0462.

2. 本机构出具的数据均可溯源到国家计量基准和国际单位制(SI)。

The data issued by this laboratory is traceable to national primary standards and International system of Units (SI).

3. 本次校准的技术依据及CNAS认可范围如下。详细认可范围请查看CNAS网站的NO.L0462证书附件。

Reference documents and CNAS accredited scopes. Please see the attachment of certificate No. L0462 at CNAS website for details.

▪ JJG 188-2002 声级计检定规程 声压级: (20~130)dB; 频率计权: (20~130)dB@ (10Hz~20kHz)

4. 本次校准所使用的主要测量标准 (The main measurement standards used during the calibration):

名称 (Description)	技术指标 (Specification)	证书编号 (Certificate No.)	有效期至 (Due Date)
Sound Calibrator	1级	2HB16000447-0004	2017-04-14
音频分析仪/Audio Analyzer	失真度测量: ±5%	2HB16000010-0019	2017-01-07

5. 校准地点 (The calibration place): 赛宝计量检测中心广州实验室

6. 环境条件 (Environmental conditions): 温度(Temperature): 21℃ 相对湿度(Relative Humidity): 54%

7. 依据《JJF 1059.1-2012 测量不确定度评定与表示》进行测量结果不确定度评定。

The evaluation was made according to JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement.

8. 证书中"P"、"合格"代表"测量结果在允许范围内", "F"、"不合格"代表"测量结果不在允许范围内", "N/A"代表"不适用"。

"P" and "Pass" in this certificate stand for "Low Limit≤the measured value ≤High Limit", "F" and "Fail" stand for "the measured value <Low Limit or the measured value >High Limit", "N/A" stands for "Not Applicable".

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CASTCO

注: 1. 本证书未经本机构书面授权, 不得部分复制。(The certificate shall not be partly reproduced without written approval of the laboratory.)

2. 本次校准结果仅与被校物有关。(The results are only related to the items calibrated.)



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赛宝计量检测中心

CEPREI CALIBRATION & TESTING CENTER

证书编号(Certificate No.): 2HB16001326-0003

1 外观与工作正常性检查 (Appearance and Function Check)

结论
(Pass/Fail)
P

2.内部校准值(Interior Calibration Value) :

A-Weighting

标准值 (Reference)	Cal值 (dB)	U (k=2) (dB)
114.0	114.1	0.2

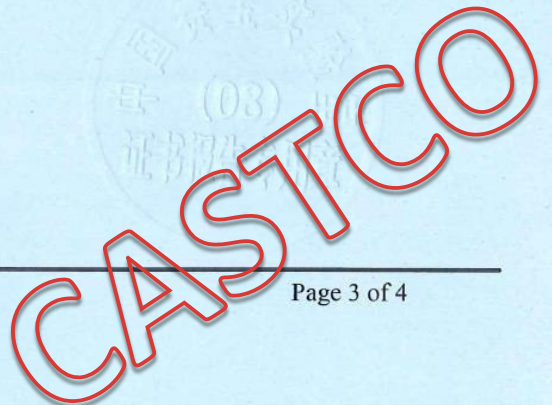
3. 声压级测量(SPL Measurement)

Frequency=1000Hz

A Weighting

标准值 (Reference)	示值 (Indication)	误差 (Error)	允许误差 (Limit)	U (k=2)	结论 (Pass/Fail)
(dB)	(dB)	(dB)	(dB)	(dB)	(P/F)
114.0	114.1	0.1	±1.0	0.2	P
104.0	104.1	0.1	±1.0	0.2	P
94.0	94.1	0.1	±1.0	0.2	P
84.0	84.2	0.2	±1.0	0.2	P
74.0	74.2	0.2	±1.0	0.2	P
64.0	64.4	0.4	±1.0	0.2	P
54.0	54.6	0.6	±1.0	0.2	P

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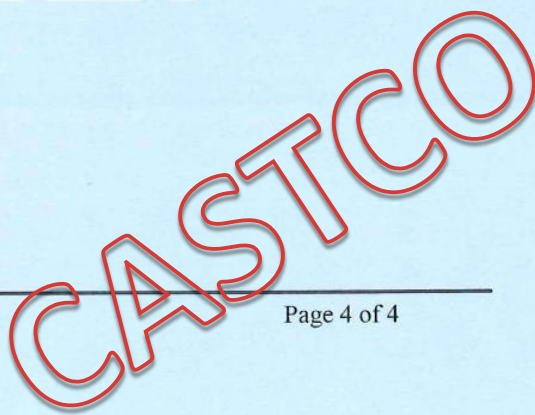




4.A计权特性(A-Weighting Characteristic)

频率 (Frequency) (Hz)	标准值 (Reference) (dB)	示值 (Indication) (dB)	误差 (Error) (dB)	允许误差 (Limit) (dB)	U (k=2) (dB)	结论 (Pass/Fail) (P/F)
31.5	-39.4	-39.5	-0.1	±3.5	0.2	P
63	-26.2	-26.2	0.0	±2.5	0.2	P
125	-16.1	-16.1	0.0	±2.0	0.2	P
250	-8.6	-8.7	-0.1	±1.9	0.2	P
500	-3.2	-3.4	-0.2	±1.9	0.2	P
1k	0.0	0.0	0.0	(Ref.)		
2k	1.2	1.1	-0.1	±2.6	0.2	P
4k	1.0	1.3	0.3	±3.6	0.2	P
8k	-1.1	0.7	1.8	±5.6	0.2	P
16k	-6.6	-4.2	2.4	+6-∞	0.2	P

以下空白/No data hereafter



校准证书

CALIBRATION CERTIFICATE

证书编号: 2HB17000084-0002
Certificate No.



委托单位: Castco Testing Centre Limited
Client

委托方地址: 29A, On Chuen Street, On Lok Tsuen, Fanling, N.T.
Address

仪器名称: Sound Level Calibrator
Description

型号规格: NC-73
Model/Type

制造商: RION
Manufacturer

机身号: 20652
Serial No.

管理号: AAST-SLC-01
Asset No.

校准日期: 2017年01月20日
Cal. Date

建议再校日期: 2018年01月20日
Next Cal. Date

结论: 所校准项目合格(Passed at Calibration Items)
Conclusion

校准: 罗志满
Calibrated by 罗志满

签发: 郑木力
Approved by 郑木力

核验: 杨西梅
Inspected by 杨西梅

印章:
Stamp

说 明

DIRECTIONS

证书编号(Certificate No.): 2HB17000084-0002

1. 本机构质量管理体系符合ISO/IEC 17025的要求, 获得中国合格评定国家认可委员会(CNAS)认证, 认可证书号为: CNAS L0462。

This laboratory quality management system meets the ISO/IEC 17025 and is accredited by the China National Accreditation Service for Conformity Assessment, No. CNAS L0462.

2. 本机构出具的数据均可溯源到国家计量基准和国际单位制(SI)。

The data issued by this laboratory is traceable to national primary standards and International system of Units (SI).

3. 本次校准的技术依据及CNAS认可范围(Reference documents and CNAS accredited scopes):

* JJG 176-2005 声校准器检定规程: 声压级: 94dB、104dB、114dB@(31.5Hz~63Hz); 94dB、104dB、114dB、124dB@(63Hz~8kHz); 94dB、104dB、114dB@(8~16)kHz; 频率:31.5Hz~16kHz; 谐波失真:0~10%@(20~20000)Hz

* 详细认可范围请查看CNAS网站中注册编号为L0462的证书附件(Please see the attachment of certificate No. L0462 at CNAS website for details)。

4. 本次校准所使用的主要测量标准(The main measurement standards used during the calibration):

名称 (Description)	技术指标 (Specification)	证书编号 (Certificate No.)	有效期至 (Due Date)
Preamplifier/Preamplifier	$U=0.3\text{dB}$ ($k=2$)	LSae2016-1077	2017-03-13
标准传声器/Condenser Microphone	$U=(0.05-0.12)\text{dB}$ ($k=2$)	LSae2016-1166	2017-03-15

5. 校准地点(The calibration place): 赛宝计量检测中心广州实验室

6. 环境条件(Environmental conditions): 温度(Temperature): 20℃ 相对湿度(Relative Humidity): 60%

7. 依据《JJF 1059.1-2012 测量不确定度评定与表示》进行测量结果不确定度评定。评定结果以包含因子为 k 的扩展不确定度 U 或相对扩展不确定度 U_{rel} 表示。

The evaluation was made according to JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement. The evaluation results were expressed by the extended uncertainty U or relative expanded uncertainty U_{rel} with a coverage factor k .

8. 证书中"P"、"合格"代表"测量结果在允许范围内", "F"、"不合格"代表"测量结果不在允许范围内", "N/A"代表"不适用"。

"P" and "Pass" in this certificate stand for "Low Limit \leq the measured value \leq High Limit". "F" and "Fail" stand for "the measured value $<$ Low Limit or the measured value $>$ High Limit", "N/A" stands for "Not Applicable".

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注: 1. 本证书未经本机构书面授权, 不得部分复制。(The certificate shall not be partly reproduced without written approval of the laboratory.)

2. 本次校准结果仅与被校物有关。(The results are only related to the items calibrated.)



1. Sound Pressure Level

Nominal Value (dB)	Reference Value (dB)	Error (dB)	Manufacturer Specification (dB)	U (k=2) (dB)	P/F
94	94.18	-0.18	±0.5	0.2	P

2. Frequency

Nominal Value (Hz)	Reference Value (Hz)	Error (Hz)	Manufacturer Specification (Hz)	U (k=2) (Hz)	P/F
1000	993.8	6.2	±20	1.0	P

3. Distortion

S. P. L. (dB)	Reference Value (%)	Error (%)	Manufacturer Specification (%)	U (k=2) (%)	P/F
94	1.31	--	<2	0.5	P

以下空白/No data hereafter



CASTCO

CASTCO



中国赛宝实验室
(工业和信息化部电子第五研究所)
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: Castco Testing Centre Limited
Client

委托方地址: 29A, On Chuen Street, On Lok Tsuen, Fanling, N.T.
Address

仪器名称: SOUND LEVEL CALIBRATOR
Description

型号规格: NC-74
Model/Type

制造商: RION
Manufacturer

机身号: 34546624
Serial No.

管理号: AAST-SLC-03
Asset No.

校准日期: 2016年08月18日
Cal. Date

建议再校日期: 2017年08月18日 (R)
Next Cal. Date

结论: 所校准项目合格(Passed at Calibration Items)
Conclusion

校准:
Calibrated by

罗志满
鄧木力

核验:
Inspected by

杨雨梅

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 Dongguan Zhuang 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

说明 DIRECTIONS

证书编号(Certificate No.): 2HB16001157-0001

1. 本机构质量管理体系符合ISO/IEC 17025的要求, 获得中国合格评定国家认可委员会(CNAS)认可, 认可证书号为: CNAS L0462。

This laboratory quality management system meets the ISO/IEC 17025 and is accredited by the China National Accreditation Service for Conformity Assessment, No. CNAS L0462.

2. 本机构出具的数据均可溯源到国家计量基准和国际单位制(SI)。

The data issued by this laboratory is traceable to national primary standards and International system of Units (SI).

3. 本次校准的技术依据及CNAS认可范围如下。详细认可范围请查看CNAS网站的NO.L0462证书附件。

Reference documents and CNAS accredited scopes. Please see the attachment of certificate No. L0462 at CNAS website for details.

- JJG 176-2005 声校准器检定规程 声压级: 94dB、104dB、114dB@(31.5Hz~63Hz); 94dB、104dB、114dB、124dB@(63Hz~8kHz); 94dB、104dB、114dB@(8~16)kHz; 频率:31.5Hz~16kHz; 谐波失真:0~10%@(20~20000)Hz

4. 本次校准所使用的主要测量标准 (The main measurement standards used during the calibration):

名称 (Description)	技术指标 (Specification)	证书编号 (Certificate No.)	有效期至 (Due Date)
标准传声器/Condenser Microphone	$U=(0.05\sim 0.12)\text{dB} (k=2)$	LSae2016-1166	2017-03-15
Preamplifier/Preamplifier	$U=0.3\text{dB} (k=2)$	LSae2016-1077	2017-03-13

5. 校准地点 (The calibration place): 赛宝计量检测中心广州实验室

6. 环境条件 (Environmental conditions): 温度(Temperature): 22℃ 相对湿度(Relative Humidity): 60%

7. 关于测量结果不确定度的说明 (Directions of measurement uncertainty):

- 7.1 依据(Reference Document)

JJF 1059.1-2012测量不确定度评定与表示

JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement.

- 7.2 本次测量结果扩展不确定度的包含因子 $k=2$ 。

The coverage factor k of the expanded uncertainties of the measurement results is equal 2.

8. 证书中"P"、"合格"代表"测量结果在允许范围内", "F"、"不合格"代表"测量结果不在允许范围内", "N/A"代表"不适用"。

"P" and "Pass" in this certificate stand for "Low Limit≤the Result ≤High Limit", "F" and "Fail" stand for "the Result < Low Limit or the Result > High Limit", "N/A" stands for "Not Applicable".

注: 1. 本证书未经本机构书面授权, 不得部分复制。(The certificate shall not be partly reproduced without written approval of the laboratory.)

2. 本次校准结果仅与被校物有关。(The results are only related to the items calibrated.)



1. 外观与工作正常性检查 (Appearance and Function Check)

结论
(Pass/Fail)
P

2. 声压级(Sound Pressure Level)

标称值 (Nominal)	标准值 (Reference)	误差 (Error)	允许误差 (Limit)	结论 (Pass/Fail)
(dB)	(dB)	(dB)	(dB)	(P/F)
94	94.0	0.0	±0.3	P

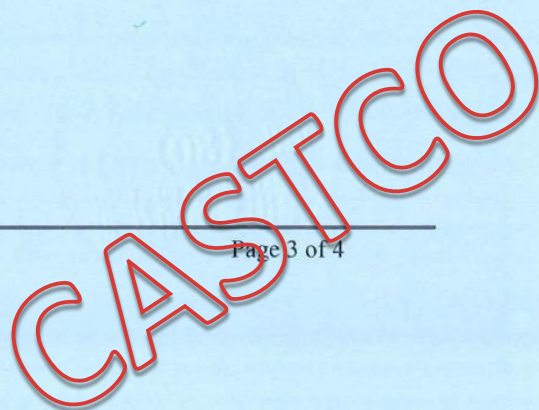
3. 频率(Frequency)

标称值 (Nominal)	标准值 (Reference)	误差 (Error)	允许误差 (Limit)	结论 (Pass/Fail)
(Hz)	(Hz)	(Hz)	(Hz)	(P/F)
1000	1001.7	-1.7	±20	P

4. 失真度(Distortion)

声压级 (SPL.)	失真度 (Distortion)	允许范围 (Limit)	结论 (Pass/Fail)
(dB)	(%)	(%)	(P/F)
94	1.12	≤3	P

CEPREI





附(Appendix):

关于测量结果不确定度的说明

(Directions of measurement uncertainty in the calibration)

1 依据 (Reference Document)

JJF 1059.1-2012 测量不确定度评定与表示

(JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement)

2 本次测量结果的扩展不确定度(The measurement expanded uncertainties of the calibration)($k=2$)

2.1 声压级(Sound Pressure Level) : 0.1dB

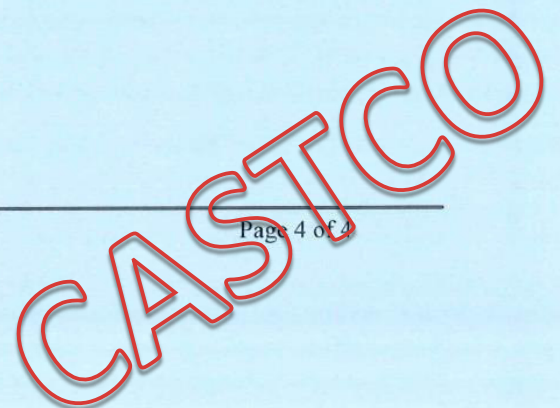
2.2 失真度(Distortion) : 5%

2.3 频率(Frequency) : 0.01%

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CEPREI



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 LC-20172600
Certificate No.

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Page of

委托方 佳力高試驗中心有限公司
Client CASTCO TESTING CENTRE LTD

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

计量器具名称 Davis Weather Station
Measuring instruments

规格型号 Vantage Pro2
Model/Type

制造者
Manufacturer

编号 A70604D29N/自編號:EN52-01
Serial No.

主管
Approved by 陈金明

审核
Inspected by 林少鑫

校准
Calibrated by 岑锦明

证书专用章
Issued by (Stamp)

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

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.gzjlj.net 业务邮箱: yowuban@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 共 3 页
Page 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	编号	证书号	技术特征
Equipment/Model	Serial No.	Certificate No.	Technique character
皮托管压管(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 tunnel)	08	LC-20167300/2017-06-28	均匀性≤1% 稳定性≤0.5% MPE: ±5'
数显倾角仪(Digital inclinometer)	N2955	CJ-20169223/2017-5-25	
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:
 $U=0.20 \text{ m/s}$; $k=2$
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	温度	相对湿度
Site	Temperature	RH
科学城实验室	19.4℃	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 (mmHg O)	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、未经本证书面批准, 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 April 2017	15.5 – 23.9	51 – 82	0.2
2 April 2017	17.0 – 24.2	42 – 85	0
3 April 2017	17.5 – 24.5	55 – 77	0
4 April 2017	19.3 – 26.0	62 – 85	0
5 April 2017	20.9 – 27.9	66 – 90	0
6 April 2017	22.5 – 25.0	79 – 92	0.3
7 April 2017	22.6 – 27.9	71 – 93	0
8 April 2017	23.0 – 27.5	73 – 93	0
9 April 2017	23.5 – 27.9	78 – 92	0
10 April 2017	26.3 – 28.1	78 – 87	Trace
11 April 2017	22.2 – 27.8	82 – 97	0.6
12 April 2017	18.2 – 22.8	81 – 97	21.5
13 April 2017	18.8 – 21.5	67 – 86	Trace
14 April 2017	19.9 – 24.7	69 – 87	0
15 April 2017	21.6 – 26.9	77 – 91	0
16 April 2017	23.0 – 30.2	63 – 95	Trace
17 April 2017	23.7 – 29.4	63 – 92	Trace
18 April 2017	23.9 – 30.7	58 – 94	0.3
19 April 2017	24.7 – 29.4	63 – 88	0

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
20 April 2017	25.1 – 27.5	78 – 93	3.1
21 April 2017	29.4 – 22.8	79 – 94	7.8
22 April 2017	18.5 – 24.5	64 – 94	6.6
23 April 2017	19.9 – 21.8	75 – 93	1.4
24 April 2017	20.9 – 22.8	79 – 87	Trace
25 April 2017	20.7 – 22.9	85 – 98	10.9
26 April 2017	22.4 – 26.8	87 – 97	2.9
27 April 2017	16.3 – 21.5	75 – 98	3.5
28 April 2017	20.2 – 24.8	65 – 81	0
29 April 2017	19.9 – 27.3	61 – 88	0
30 April 2017	21.4 – 28.2	60 – 85	0

* 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	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
1 April 2017	30	10.2
2 April 2017	100	13.8
3 April 2017	100	14.9
4 April 2017	80	12.6
5 April 2017	80	11
6 April 2017	140	9.5
7 April 2017	140	8.7
8 April 2017	130	9.3
9 April 2017	130	7.1
10 April 2017	230	8.2
11 April 2017	230	5.6
12 April 2017	40	10.3
13 April 2017	110	8
14 April 2017	110	12
15 April 2017	140	10
16 April 2017	140	10.3
17 April 2017	270	8.3
18 April 2017	300	9.6
19 April 2017	230	9.2
20 April 2017	120	8.7
21 April 2017	190	10.5
22 April 2017	40	7.2
23 April 2017	110	8.4
24 April 2017	110	15.3
25 April 2017	110	12.9
26 April 2017	140	9.9
27 April 2017	40	6.6
28 April 2017	130	8.7
29 April 2017	130	9.5
30 April 2017	130	10

**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 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 M9	Noise M3, M4		
9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr
	1 hr TSP X3 24 hr TSP Noise M9	Noise M3, M4		1 hr TSP X3 24 hr TSP		
16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr
		Noise M3, M4	1 hr TSP X3 24 hr TSP Noise M9			1 hr TSP X3 24 hr TSP
23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr
	Noise M3, M4			1 hr TSP X3 24 hr TSP Noise M9		
30-Apr						

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
Tentatively Impact Air and Noise Monitoring Schedule for May 2017

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

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

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

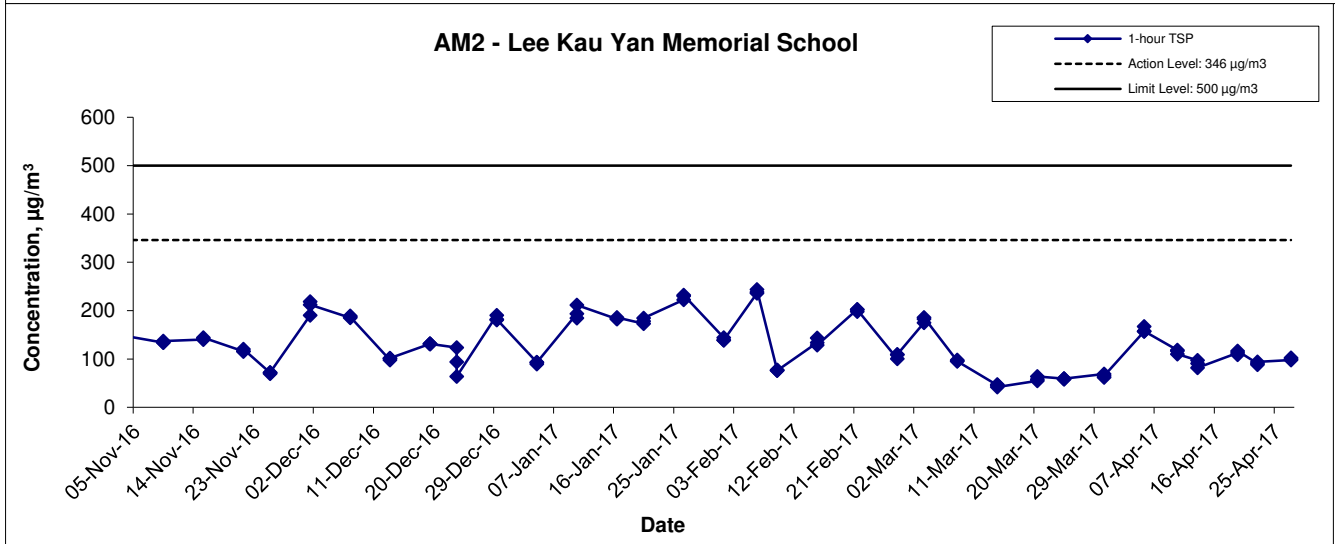
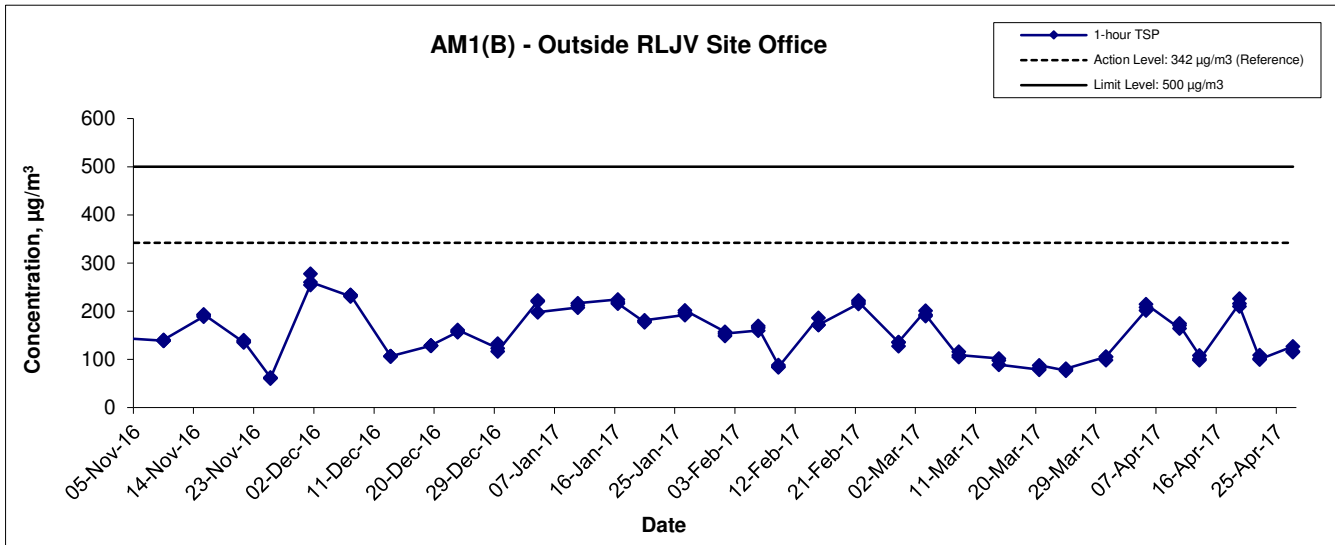
**APPENDIX E
1-HOUR TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATION**

Appendix E - 1-hour TSP Monitoring Results

Location AM1(B) - Outside RLJV Site Office			
Date	Time	Weather	Particulate Concentration (µg/m3)
5/4/2017	13:00	Sunny	202
5/4/2017	14:00	Sunny	208
5/4/2017	15:00	Sunny	215
10/4/2017	13:00	Cloudy	165
10/4/2017	14:00	Cloudy	175
10/4/2017	15:00	Cloudy	171
13/4/2017	13:00	Cloudy	108
13/4/2017	14:00	Cloudy	102
13/4/2017	15:00	Cloudy	99
19/4/2017	09:00	Cloudy	216
19/4/2017	10:00	Cloudy	227
19/4/2017	11:00	Cloudy	210
22/4/2017	09:00	Sunny	102
22/4/2017	10:00	Sunny	109
22/4/2017	11:00	Sunny	100
27/4/2017	09:00	Cloudy	127
27/4/2017	10:00	Cloudy	117
27/4/2017	11:00	Cloudy	115
		Average	154
		Maximum	227
		Minimum	99

Location AM2 - Lee Kau Yan Memorial School			
Date	Time	Weather	Particulate Concentration (µg/m3)
5/4/2017	9:00	Sunny	157
5/4/2017	10:00	Sunny	167
5/4/2017	11:00	Sunny	158
10/4/2017	13:00	Cloudy	118
10/4/2017	14:00	Cloudy	116
10/4/2017	15:00	Cloudy	110
13/4/2017	9:00	Cloudy	97
13/4/2017	10:00	Cloudy	91
13/4/2017	11:00	Cloudy	82
19/4/2017	13:00	Cloudy	112
19/4/2017	14:00	Cloudy	108
19/4/2017	15:00	Cloudy	116
22/4/2017	13:00	Sunny	91
22/4/2017	14:00	Sunny	88
22/4/2017	15:00	Sunny	94
27/4/2017	13:00	Cloudy	98
27/4/2017	14:00	Cloudy	102
27/4/2017	15:00	Cloudy	100
		Average	111
		Maximum	167
		Minimum	82

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	Project No. MA13043	
	Date Apr 17	Appendix E	

**APPENDIX F
24-HOUR TSP MONITORING RESULTS
AND GRAPHICAL PRESENTATION**

Appendix F - 24-hour TSP Monitoring Results

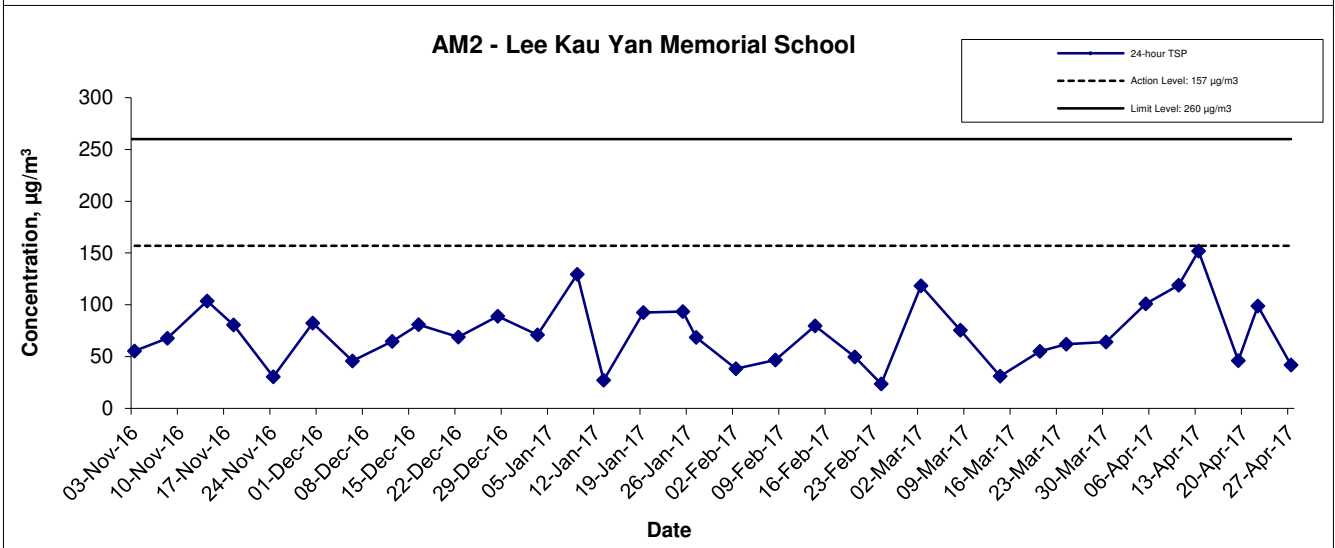
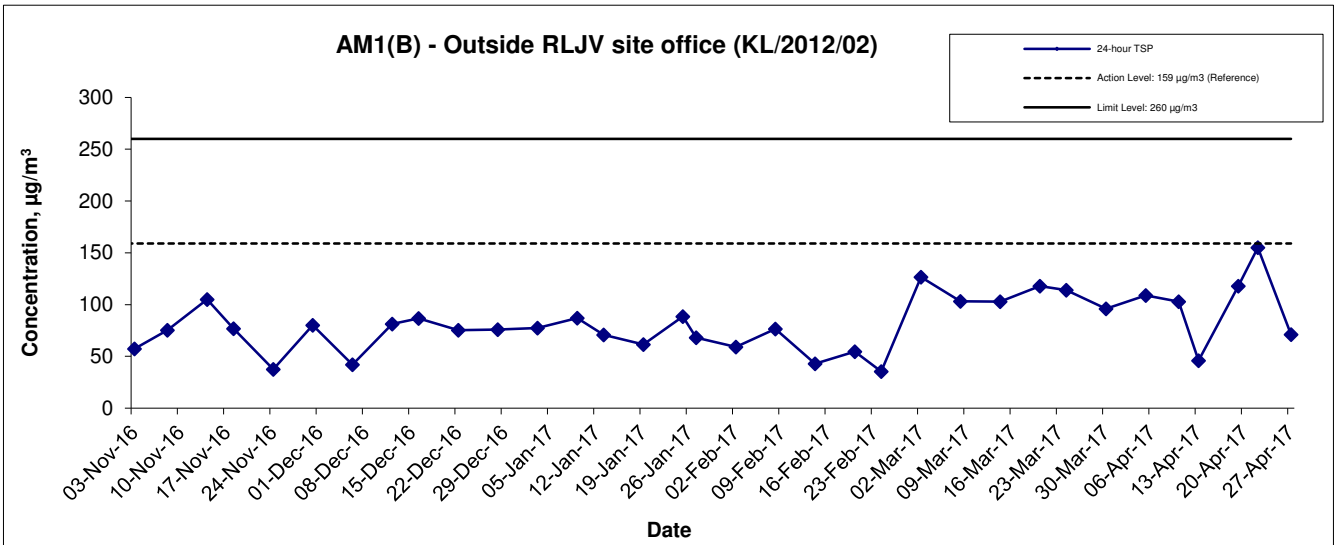
Location AM1(B) - Outside RLJV site office (KL/2012/02)

Start Date	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
5-Apr-17	Sunny	109
10-Apr-17	Cloudy	103
13-Apr-17	Cloudy	46
19-Apr-17	Cloudy	118
22-Apr-17	Sunny	155
27-Apr-17	Cloudy	71
	Average	100
	Maximum	155
	Minimum	46

Location AM2 - Lee Kau Yan Memorial School

Start Date	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
5-Apr-17	Sunny	101
10-Apr-17	Cloudy	119
13-Apr-17	Cloudy	152
19-Apr-17	Cloudy	46
22-Apr-17	Sunny	99
27-Apr-17	Cloudy	42
	Average	93
	Maximum	152
	Minimum	42

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	Project No. MA13043	
	Date Apr 17	Appendix F	

**APPENDIX G
NOISE MONITORING RESULTS AND
GRAPHICAL PRESENTATION**

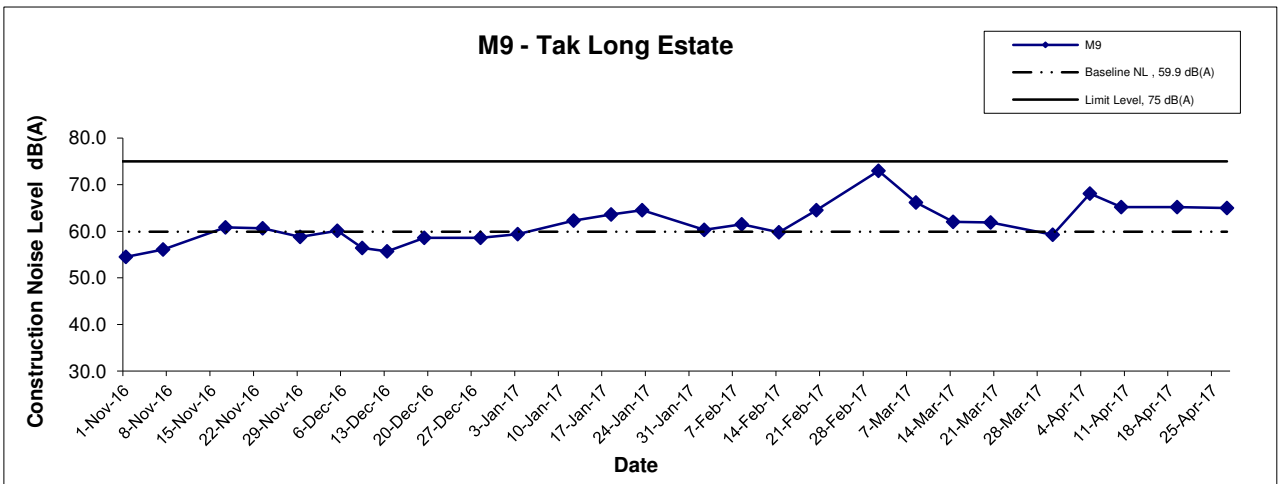
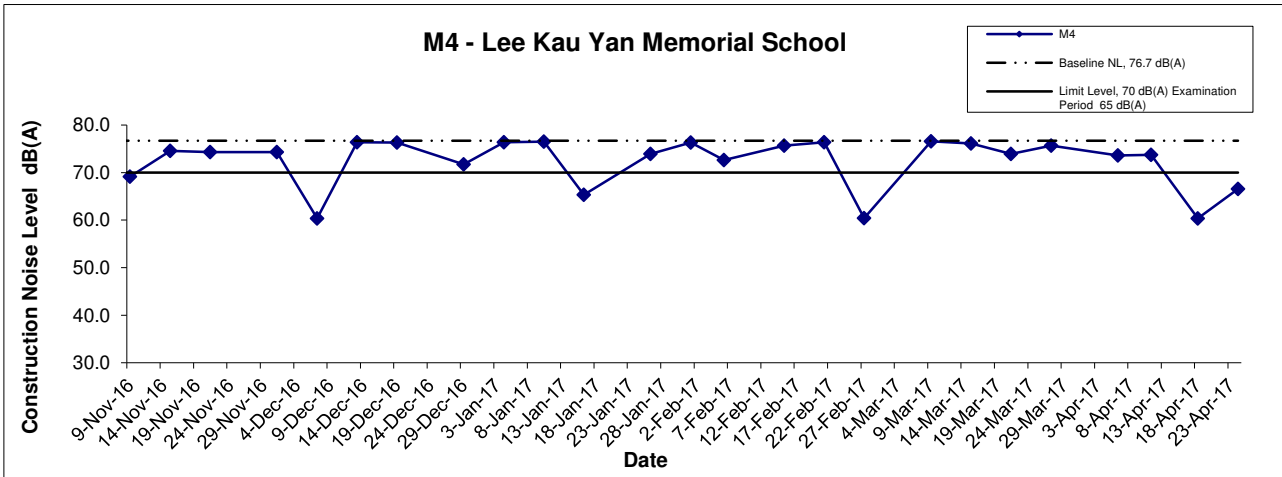
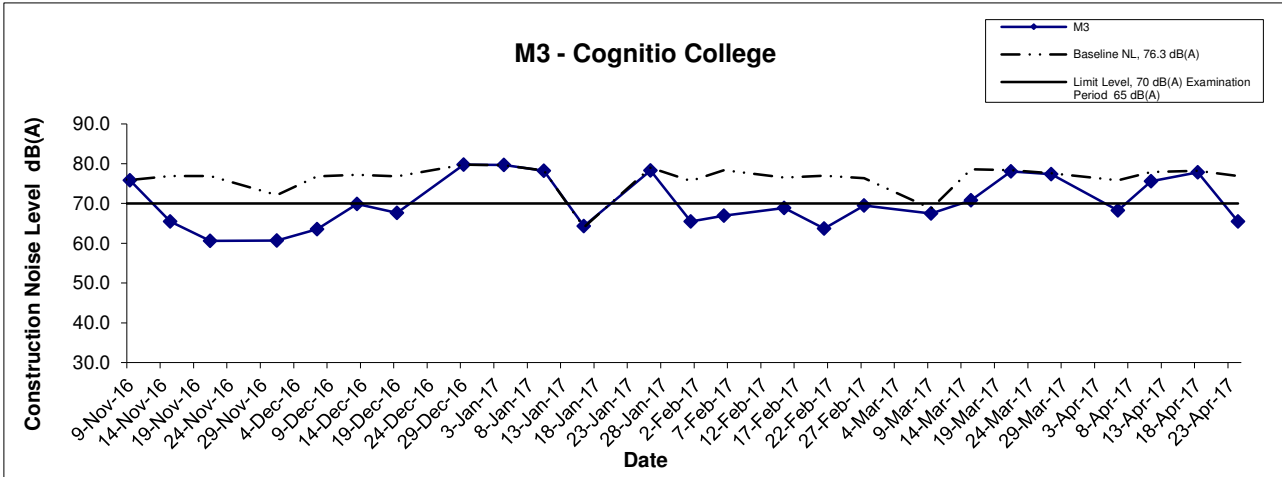
Appendix G - Noise Monitoring Results

Location M3 - Cognito 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}
6-Apr-17	10:00	Sunny	76.5	79.0	73.1	75.8	68.2
11-Apr-17	13:00	Cloudy	79.9	81.5	77.9	77.9	75.6
18-Apr-17	13:00	Cloudy	77.8	79.3	76.1	78.2	77.8 Measured ≤ Background
24-Apr-17	13:00	Cloudy	77.2	78.6	75.2	76.9	65.4

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}
6-Apr-17	10:45	Sunny	73.6	74.6	72.0	76.7	73.6 Measured ≤ Baseline
11-Apr-17	11:15	Cloudy	73.7	76.3	65.9		73.7 Measured ≤ Baseline
18-Apr-17	13:55	Cloudy	76.8	77.8	74.7		60.4
24-Apr-17	15:10	Cloudy	77.1	78.3	75.5		66.5

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}
5-Apr-17	09:35	Cloudy	68.7	70.1	66.5	59.9	68.1
10-Apr-17	13:00	Cloudy	66.3	68.1	63.8		65.2
19-Apr-17	10:00	Cloudy	66.3	68.9	63.6		65.2
27-Apr-17	13:30	Cloudy	66.2	68.2	61.3		65.0

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 Apr 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 M3 on 11 April 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
M3	11-Apr-17	79.9	77.9	75.6	70.0	Limit Level

According to the information provided by the Contractor, the major site activities undertaken on 11 April 2017 included:

- Railing construction at VT1 near Tsat Po Street
- Paving block laying at Pedestrian Street adjoining TI tower
- Erection of bamboo scaffolding for install SW2- LTA glass panel
- Erection of formwork for pillar box
- Carry out Sand Replacement Testing at Prince Edward Road East
- Rebar fixing for SW2B top slab
- General house keeping work
- Kerb laying at Concorde road
- Apply joint sealant to the M. J. of SW3
- Reinstate concrete footpath at Tai Yau Street

The noise impact arose from the above construction works were expected to be minimal as no noisy PME were involved. The major noise source received at M3 were likely to be the traffic noise from Prince Edward Road East or from other construction sites. Therefore, the exceedance was considered to be non-project related.

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

**APPENDIX I
SITE AUDIT SUMMARY**

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

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170407
Date	7 April 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	
170407-R02	• The dusty track on the haul road near the Sze Mei Street should be cleared.	C 3
	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	
170407-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.: 170331), follow up action was required for item 170331-O01 which was remarked as 170407-O01.	

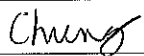

	Name	Signature	Date
Recorded by	KC Chung	<i>Chung</i>	7 April 2017
Checked by	Dr. Priscilla Choy	<i>PC</i>	7 April 2017

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

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170413
Date	13 April 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	
170413-R01	• Stockpile of dusty material placed at near Concorde Road should be properly covered.	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 section (Ref. No.: 170407), all environmental deficiencies were improved/rectified by the Contractor.	

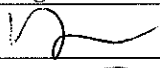

	Name	Signature	Date
Recorded by	KC Chung		13 April 2017
Checked by	Dr. Priscilla Choy		13 April 2017

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

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170418
Date	18 April 2017
Time	14:30 – 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	
170418-R01	• Clear the silty tyre marks near the site access of Tsat Po Street.	C 3
	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.: 170413), all environmental deficiencies were improved/rectified by the Contractor.	



	Name	Signature	Date
Recorded by	Johnny Fung		18 April 2017
Checked by	Dr. Priscilla Choy		18 April 2017

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

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170426
Date	26 April 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	
170426-R01	• Silty tyre marks near Sze Mei Street should be cleared.	C 3
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
170426-R02	• Accumulated general refuse near former KTOB should be cleared.	E 1 i
	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.: 170418), all environmental deficiencies were improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	KC Chung		26 April 2017
Checked by	Dr. Priscilla Choy		26 April 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	<ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Inform Contactor, IEC and ER; 3. Repeat measurement to confirm finding. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action Level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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

Appendix J - Event Action Plans

	<p>EPD, IEC and ER informed of the results.</p>	<p>4. Advise the ER on the effectiveness of the proposed remedial measures.</p>	<p>implemented; 4. Supervise implementation of remedial measures; 5. Conduct meeting with ET and IEC if exceedance continues.</p>	<p>working days of notification; 4. Implement the agreed proposals.</p>
<p>Limit Level being exceeded by two or more consecutive sampling</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>

Appendix J - Event Action Plans

Event/Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>
Limit Level being exceeded	<ol style="list-style-type: none"> 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; 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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;

Appendix J - Event Action Plans

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

Appendix J - Event Action Plans

	<p>ER</p> <p>2. Increase monitoring frequency</p> <p>3. Discuss remedial actions with IEC, ER and Contractor</p> <p>4. Monitor remedial actions until rectification has been completed</p> <p>5. If non-conformity stops, cease additional monitoring</p>	<p>2. Check Contractor's working method</p> <p>3. Discuss with ET and Contractor on possible remedial measures</p> <p>4. Advise ER on effectiveness of proposed remedial measures</p> <p>5. Supervise implementation of remedial measures.</p>	<p>implemented</p>	<p>undertake any necessary replacement</p>
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**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
<i>Construction Air Quality</i>		
S6.5	8 times daily watering of the work site with active dust emitting activities.	^
S6.8	<p>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.</p> <ul style="list-style-type: none"> • 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 extend 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. 	<p>*</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>*</p>

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

<p>S6.8</p>	<ul style="list-style-type: none"> • <u>DWFI compound for JVBC:</u> 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 desilting 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. • <u>Desilting compound for KTN:</u> 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 desilting 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. • <u>Decking or reconstruction of KTN within apron area:</u> 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. • <u>Localised maintenance dredging:</u> 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 	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>
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Appendix K – Summary of Implementation Schedule of Mitigation Measures for Construction Phase

	<p>impacts at the future ASRs during the maintenance dredging operation.</p> <ul style="list-style-type: none"> • <u>Improvement of water circulation in KTAC and KTTS:</u> 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. • <u>In-situ sediment treatment by bioremediation:</u> Bioremediation would be applied to the entire KTAC and KTTS. 	<p>N/A</p> <p>N/A</p>
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	<p>Good Site Practice:</p> <ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction 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. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
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	N/A
	(ii) Provision of structural fins	N/A
S7.8	(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

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 111; 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: <ul style="list-style-type: none"> • 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

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

	<ul style="list-style-type: none"> 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	<p>Construction Phase</p> <p><u>Marine-based Construction</u></p> <p><i>Capital and Maintenance Dredging for Cruise Terminal</i></p> <p>Mitigation measures for construction of the proposed cruise terminal should follow those recommended in the approved EIA for CT Dredging.</p>	N/A
S8.8	<p><i>Fireboat Berth, Runway Opening and Road T2</i></p> <p>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.</p>	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 2,000m ³ 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	<p><u>Land-based Construction</u></p> <p><i>Construction Runoff</i></p> <p>Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion.</p> <p>Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include:</p> <ul style="list-style-type: none"> • use of sediment traps • adequate maintenance of drainage systems to prevent flooding and overflow 	^ ^
S8.8	<p>Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September).</p> <p>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.</p>	^
S8.8	<p>Construction site should be provided with adequately designed perimeter channel and pre-treatment facilities and proper maintenance.</p> <p>The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection.</p> <p>Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond.</p> <p>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.</p>	^
S8.8	<p>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.</p>	^
S8.8	<p>Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50 m³ 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.</p>	^
S8.8	<p>Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.</p>	^
S8.8	<p>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</p>	^

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

	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	<i>Drainage</i> 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	<i>Sewage Effluent</i> 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.	^

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

S8.8	<p><i>Stormwater Discharges</i></p> <p>Minimum distances of 100 m should be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes</p>	^
S8.8	<p><i>Debris and Litter</i></p> <p>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</p>	^
S8.8	<p><i>Construction Works at or in Close Proximity of Storm Culvert or Seafront</i></p> <p>The proposed works should preferably be carried out within the dry season where the flow in the drainage channel /storm culvert/ nullah is low.</p>	^
S8.8	<p>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.</p>	^
S8.8	<p>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</p>	^
S8.8	<p>Stockpiling of construction materials and dusty materials should be covered and located away from any water courses.</p>	^
S8.8	<p>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.</p>	^
S8.8	<p>Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable.</p>	^
S8.8	<p>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.</p>	^
S8.8	<p>Construction effluent, site run-off and sewage should be properly collected and/or treated.</p>	^
S8.8	<p>Any works site inside the storm water courses should be temporarily isolated, such as by placing of sandbags or silt curtains with lead</p>	N/A

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

	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	<p>Good Site Practices</p> <p>It is not anticipated that adverse waste management related impacts would arise, provided that good site practices are adhered to.</p> <p>Recommendations for good site practices during the dredging activities include:</p> <ul style="list-style-type: none"> • 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). 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
S9.5	<p>Waste Reduction Measures</p> <p>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:</p> <ul style="list-style-type: none"> • 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 	<p>^</p> <p>^</p> <p>^</p>

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

	<ul style="list-style-type: none"> 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 	<p>^</p> <p>^</p>
S9.5	<p>Dredged Marine Sediment</p> <p>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)</p>	N/A
S9.5	<p>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</p>	N/A
S9.5	<p>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:</p> <ul style="list-style-type: none"> 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 	<p>N/A</p> <p>N/A</p> <p>N/A</p>

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

S9.5	<p>Construction and Demolition Material</p> <p>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:</p> <ul style="list-style-type: none"> • 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 <p>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.</p>	<p style="text-align: right;">^</p> <p style="text-align: right;">^</p> <p style="text-align: right;">^</p> <p style="text-align: right;">^</p> <p style="text-align: right;">^</p> <p style="text-align: right;">^</p> <p style="text-align: right;">^</p> <p style="text-align: right;">^</p> <p style="text-align: right;">^</p>
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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 <i>Waste Disposal (Chemical Waste) (General) Regulation</i>	^
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	*
<i>Construction Landscape and Visual</i>		
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: April 2017

Contract No. KL/2012/02

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**

Appendix B: 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	17.21112	0	0	0	0	0	0.42090
APR	0.44095	0	0	0	0	0	0	0	0	0	0.44095
MAY											
JUNE											
SUB-TOTAL	26.93841	0	0	0.15500	25.53806	0	0	0	0	0	1.24535
JULY											
AUG											
SEPT											
OCT											
NOV											
DEC											
TOTAL	26.93841	0	0	0.15500	25.53806	0	0	0	0	0	1.24535

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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Materialab

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

April 2017

(Version 1.0)

Approved By	 (Environmental Team Leader)
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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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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 (April 2017)
(Draft Mrpt1704 v1.0 revised 2)

By Email

Our ref: EB001399-320/THW17-33640
Your ref:
Date: 4 July 2017

Dear Dr. Choy,

We have no further comments on the revised captioned report, which was received via e-mail dated 4 July 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 41st 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 30 April 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(B) – Ma Tau Kok Road was shifted to AM4(C) – New Pumping Station in the reporting month.
6. 1-hour TSP monitoring at AM5(A) – Po Leung Kuk Ngan Po Ling College was shifted to AM5 – CCC Kei To Secondary School on 12 April 2017 due to no permission was granted from the premise.
7. All other 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
8. 24-hour TSP monitoring was resumed and conducted at AM4(C) – New Pumping Station in the reporting month.
9. 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. Alternative 24-hr TSP monitoring was conducted at AM5 – CCC Kei To Secondary School in the reporting month.
10. All other 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

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

Environmental Licenses and Permits

12. 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.
13. Registration of Chemical Waste Producer (Waste Producer Number: 5213-286-K2958-05).
14. Water Discharge License (WT00020971-2015).
15. Construction Noise Permit (GW-RE0149-17).

Key Information in the Reporting Month

16. 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

17. 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 41st Monthly EM&A report summarizing the EM&A works for the Project from 1 to 30 April 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	N/A^
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.
- ^AM5(A) – Po Leung Kuk Ngan Po Ling College was cancelled because no permission was granted from the premise. Air quality monitoring was carried out at AM5 – CCC Kei To Secondary School.

- 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, when the impact monitoring data under Schedule 3 of KTD were adopted for the Project.
- 1.15 Although Contract no. KLN/2013/16 under Schedule 3 of KTD has been superseded by KLN/2016/09 since early March 2017, the ET continued to adopt the impact monitoring data under Schedule 3 of KTD until appropriate new arrangement is agreed. The KLN/2016/09 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. 40 (March 2017)	16 May 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. 40 (March 2017)	16 May 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). **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(C)*	New Pumping Station	Rooftop (about 6/F) Area
AM5(A)^	Po Leung Kuk Ngan Po Ling College	Rooftop (about 10/F) Area
AM5	CCC Kei To Secondary School	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 and 24-hr TSP monitoring were conducted at AM4(C) – New Pumping Station under Contract No. KL/2012/03.

^24-hr TSP Monitoring at AM5(A) was cancelled because no permission was granted from the premise on. 24-hr TSP monitoring was conducted at AM5 – CCC Kei To Secondary School in the reporting month. 1-hr TSP monitoring at AM5(A) was shifted to AM5 starting from 12 April 2017.

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 AM510	3
HVS Sampler	HIVOL Sampler Model TE-5170X	7
Wind Anemometer	Davis Weather Station Model Vantage Pro2	1

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 m³/min. and 1.4 m³/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 0.3 μ m (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 $\pm 3^\circ\text{C}$; the relative humidity (RH) should be $< 50\%$ and not vary by more than $\pm 5\%$. A convenient working RH is 40%.

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(B) – Ma Tau Kok Road was shifted to AM4(C) – New Pumping Station in the reporting month.
- 2.20 1-hour TSP monitoring at AM5(A) – Po Leung Kuk Ngan Po Ling College was shifted to AM5 – CCC Kei To Secondary School on 12 April 2017 due to no permission was granted from the premise.
- 2.21 All other 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 2.22 24-hour TSP monitoring was resumed and conducted at AM4(C) – New Pumping Station in the reporting month.
- 2.23 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. Alternative 24-hr TSP monitoring was conducted at AM5 – CCC Kei To Secondary School in the reporting month.
- 2.24 All other 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 2.25 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**.

- 2.26 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices E and F** respectively.
- 2.27 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.
- 2.28 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(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
AM5 – CCC Kei To Secondary School	Road Traffic Dust

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	NL-52	2
Calibrator	NC-73/ NC-74	2

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}, L₉₀ and L₁₀ 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 (April 2017), µg/m3	
			Average	Range
AM2 – Lee Kau Yan Memorial School	290	312	111	82-167
AM3(A) - Holy Trinity Bradbury Centre (Alternative station for Sky Tower)	217	247	148	100-202
AM4(C) – New Pumping Station	N/A	N/A	111	59-187
AM5(A) – Po Leung Kuk Ngan Po Ling College (Alternative station for CCC Kei To Secondary School)	159	221	144	115-170
AM5 – CCC Kei To Secondary School	163	220	89	40-136

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 (April 2017), µg/m3	
			Average	Range
AM2 – Lee Kau Yan Memorial School	145	169	93	42-152
AM3(A) - Holy Trinity Bradbury Centre (Alternative station for Sky Tower)	106	138	88	47-148
AM4(C) – New Pumping Station	N/A	N/A	93	22-118
AM5 – CCC Kei To Secondary School	106	127	83	38-117

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 (April 2017), $L_{eq(30min)}$ dB(A)
M6(A) - Oblate Primary School ^	N/A	60.1 – 65.9
M7 - CCC Kei To Secondary School	45 – 68	60.4 – 69.4
M8 - Po Leung Kuk Ngan Po Ling College	44 – 70	54.3 – 66.1
M9 – Tak Long Estate	Not predicted in EIA Report	65.2 – 68.1

(^) 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.
- 4.4 The noise monitoring results in the reporting month at M7 was higher than predicted mitigated construction noise levels in the EIA report due to the traffic noise.

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 7th, 13th, 19th and 28th April 2017 in the reporting month. IEC site inspection was conducted on 19th April 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-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
<i>Water Quality</i>	--	--	--
<i>Air Quality</i>	--	--	--
<i>Noise</i>	--	--	--
<i>Waste/Chemical Management</i>	7 April 2017	<u>Observation:</u> Oil stain should be cleared.	Oil stain was cleared.
	7 April 2017	<u>Observation:</u> Chemical should be stored at area with drip tray.	Drip trays were provided.
	7 April 2017	<u>Reminder:</u> Construction waste should be removed regularly.	Construction waste was cleared.
	19 April 2017	<u>Reminder:</u> Oil container should be provided with drip tray. (near Contractor's site office)	Oil container was removed.
<i>Landscape and Visual</i>	--	--	--
<i>Permits /Licences</i>	--	--	--

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

Parameters	Date	Observations and Recommendations	Follow-up
<i>Water Quality</i>	--	--	--
<i>Air Quality</i>	--	--	--
<i>Noise</i>	--	--	--
<i>Waste/Chemical Management</i>	--	--	--
<i>Landscape and Visual</i>	--	--	--
<i>Permits /Licences</i>	--	--	--

Summary of Mitigation Measures Implemented

6.7 The monthly IEC audit was carried out on 19th April 2017, the observations were recorded and they are presented as follows:

Follow up of last monthly audit:

- NIL

Observation(s) in the reporting month:

- No adverse environmental impacts or deficiencies of the mitigation measures were observed. No corrective actions were 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. May and June 2017 are summarized as follows:

Table 7.1 Summary of the tentative program of major site activities, the impact prediction and control measures for May and June 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(B) – Ma Tau Kok Road was shifted to AM4(C) – New Pumping Station in the reporting month.
- 8.3 1-hour TSP monitoring at AM5(A) – Po Leung Kuk Ngan Po Ling College was shifted to AM5 – CCC Kei To Secondary School on 12 April 2017 due to no permission was granted from the premise.
- 8.4 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

- 8.5 24-hour TSP monitoring was resumed and conducted at AM4(C) – New Pumping Station in the reporting month.
- 8.6 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. Alternative 24-hr TSP monitoring was conducted at AM5 – CCC Kei To Secondary School in the reporting month.
- 8.7 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

- 8.8 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

- 8.9 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

- 8.10 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

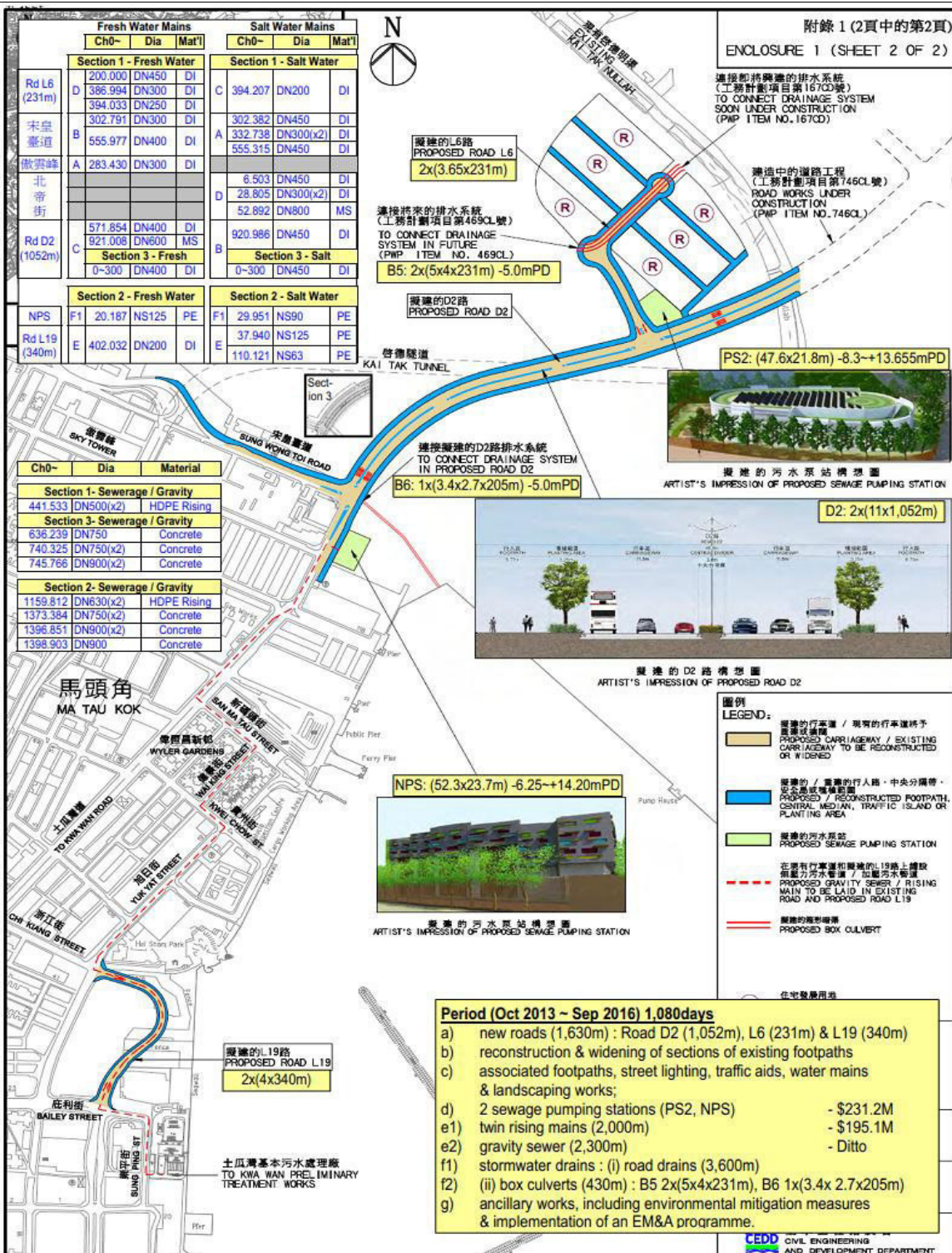
- 8.11 The above recommendations and the recommended mitigation measures in the EM&A Manual were carried out by the Contractor during construction. No non-compliance was recorded during the environmental site inspections as shown in **Appendix I**.
- 8.12 The effectiveness of environmental management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

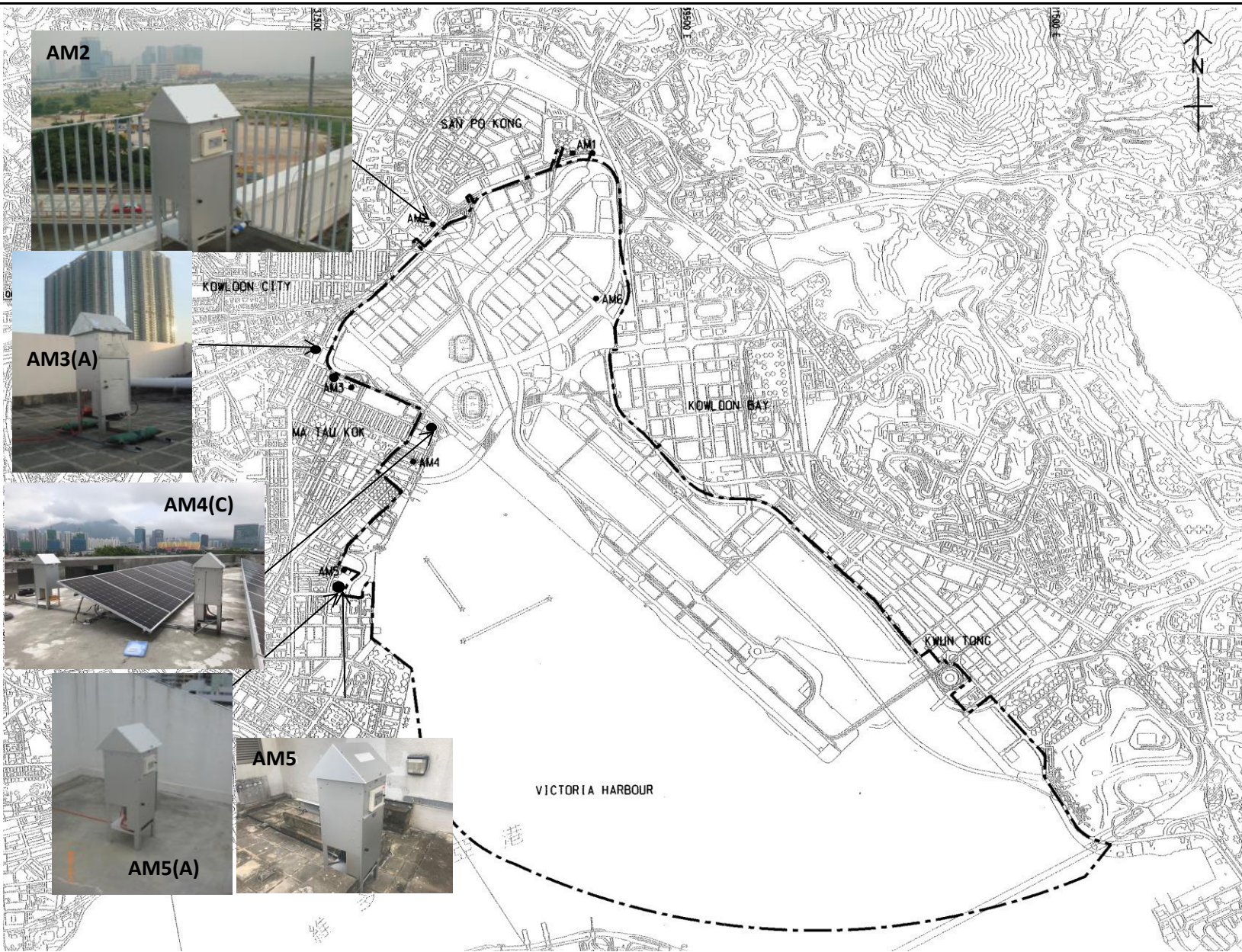
	
<p>To prevent any surface runoff discharge into any stream course.</p>	<p>Follow-up measure(s) after identification of wastewater discharges from site.</p>
	
<p>To avoid any discharge or accidental spillage of chemical waste or oil directly from the site</p>	<p>To avoid improper handling or storage of oil drum on site</p>
	 <p style="text-align: right; color: red;">19/4/2017</p>
<p>To protect the existing trees to be retained</p>	<p>To control of night-time lighting</p>

FIGURES



附錄 1 (2頁中的第2頁)
ENCLOSURE 1 (SHEET 2 OF 2)

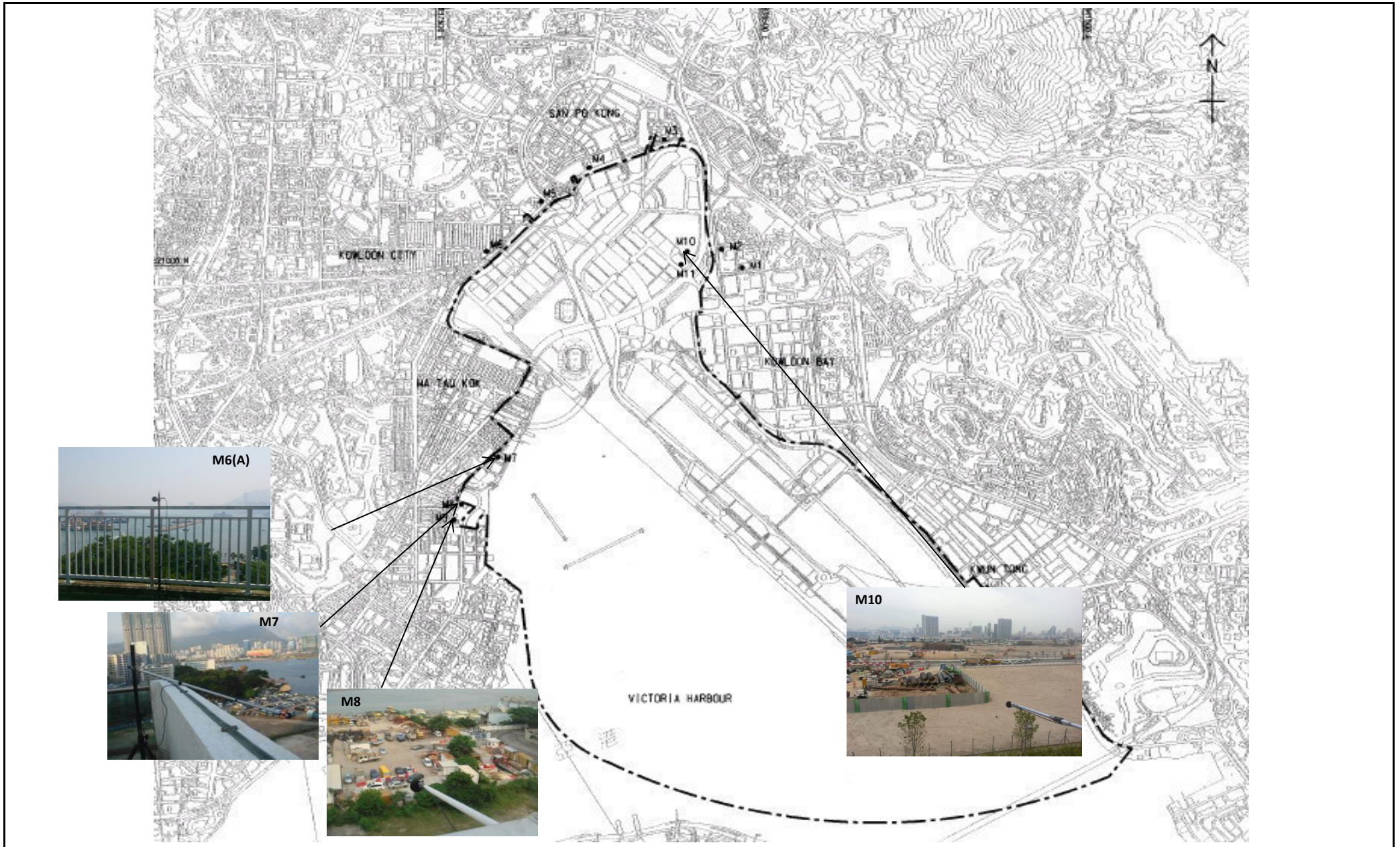
Title	KL/2012/03 - Kai Tak Development - Stage 4 Infrastructure at Former North Apron Area	Scale	N.T.S	Project No.	MA13056	CINOTECH
	Site Layout Plan		Date		Sep-13	



Title Contract No. KL/2012/03
 Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area
 Air Quality Monitoring Stations under this Project

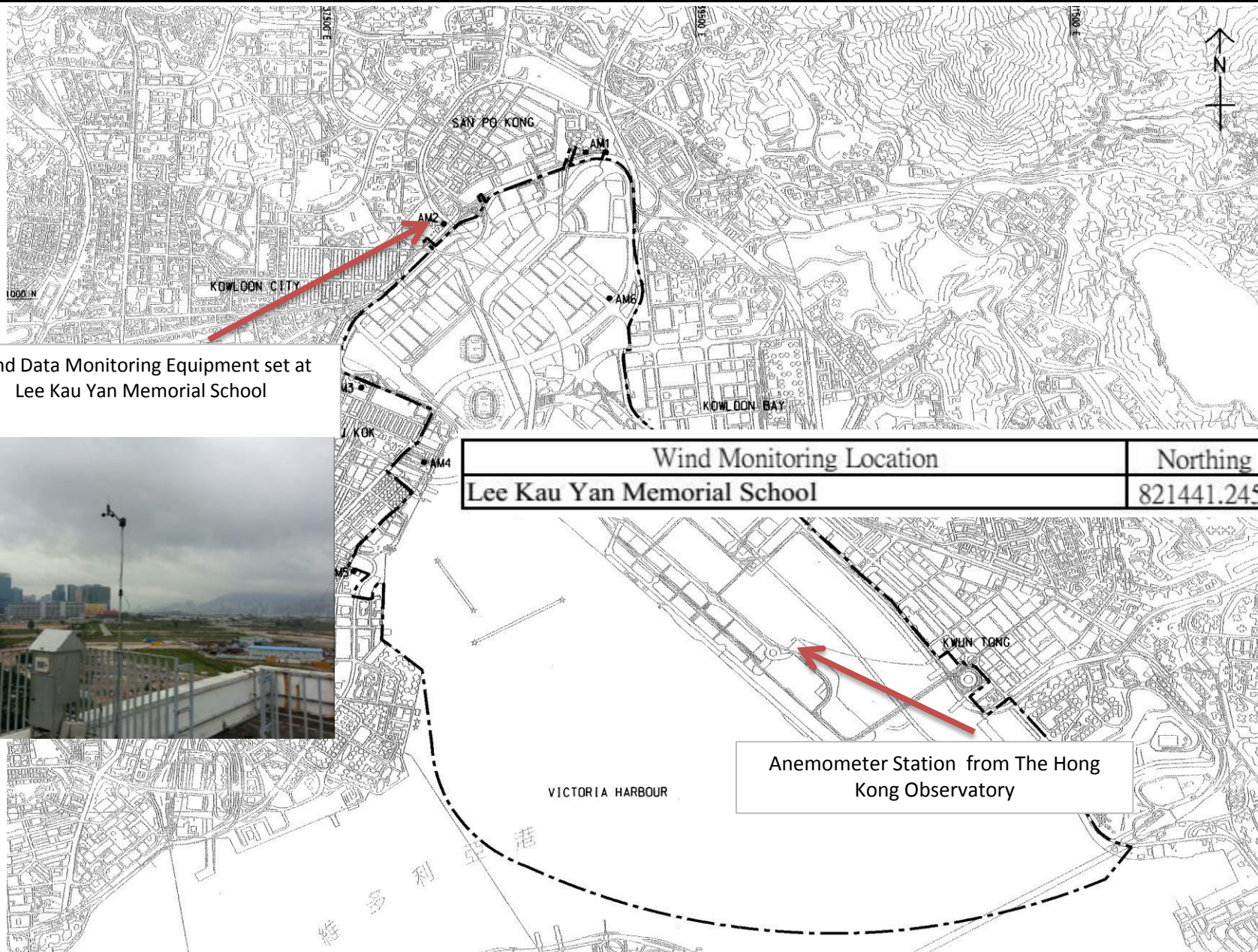
Scale	N.T.S	Project No.	MA13056
Date	Apr-17	Figure	2





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





Wind Data Monitoring Equipment set at Lee Kau Yan Memorial School



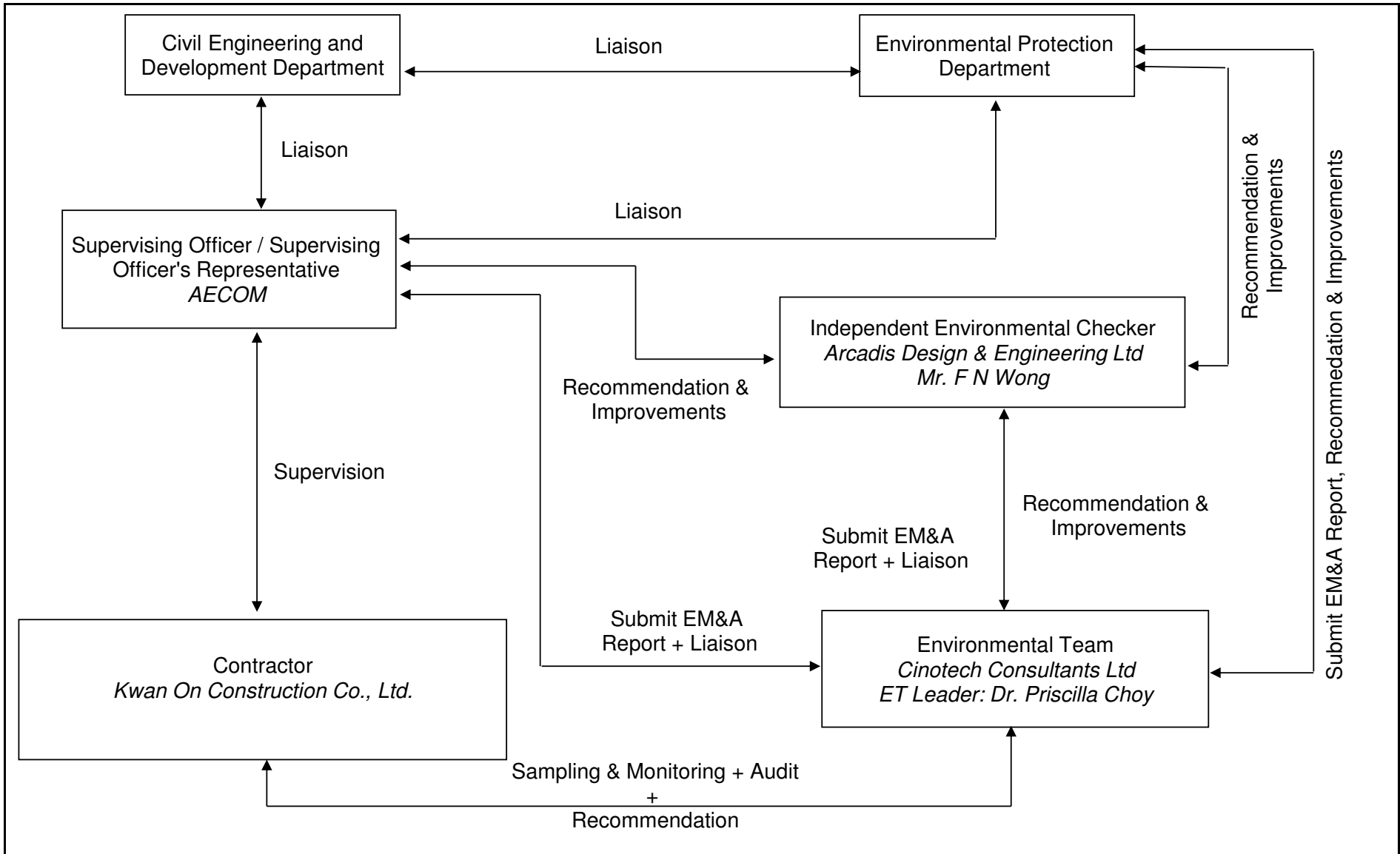
Wind Monitoring Location	Northing	Easting
Lee Kau Yan Memorial School	821441.245	838153.917

Anemometer Station from The Hong Kong Observatory

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	Project No.	MA13056
Date	Dec-13	Figure	4

CINOTECH



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

**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, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
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, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
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
CERTIFICATES**

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
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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-Axis (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 Calibration Relationship (Qa on x-axis, IC on y-axis)

$$m = \frac{32.2524}{\text{Sampler set point (SSP)}} \quad b = 4.6824 \quad \text{Corr. Coeff} = 0.9919$$

Calculations

$$Q_{std} = 1/m [\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$$

$$IC = I [\sqrt{P_a/P_{std}} (T_{std}/T_a)]$$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}} (P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2768	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2
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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-Axis (corrected)
1	6.10	1.208	42.0	42.06
2	5.40	1.138	40.0	40.06
3	4.60	1.053	38.0	38.06
4	3.20	0.884	33.0	33.05
5	2.00	0.705	30.0	30.05

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

m= 24.3862 b= 12.3264 Corr. Coeff= 0.9948
 Sampler set point(SSP) 42 CFM

Calculations

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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, H ₂ O (in)	Qa, X-Axis (m ³ /min)	I, CFM (chart)	IC, Y-Axis (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 Calibration Relationship (Qa on x-axis, IC on y-axis)

$$m = \frac{32.4948}{\text{Sampler set point (SSP)}} \quad b = -2.6780 \quad \text{Corr. Coeff} = 0.9945$$

Calculations

$$Q_{std} = 1/m [\sqrt{H_2O(Pa/P_{std})(T_{std}/Ta)} - b]$$

$$IC = I [\sqrt{Pa/P_{std}}(T_{std}/Ta)]$$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

- Q_{std} = standard flow rate
- IC = corrected chart response
- I = actual chart response
- m = calibrator Q_{std} slope
- b = calibrator Q_{std} intercept
- T_a = actual temperature during calibration (deg K)
- P_a = actual pressure during calibration (mm Hg)
- T_{std} = 298 deg K
- P_{std} = 760 mm Hg

For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 14, 2016 Rootmeter 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}



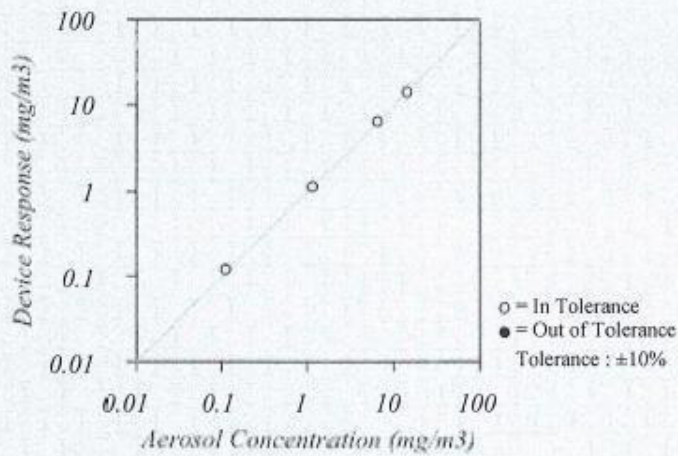
CERTIFICATE OF CALIBRATION AND TESTING

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			Model	AM510
Temperature	74.7 (23.7)	°F (°C)	Serial Number	11404005
Relative Humidity	33	%RH		
Barometric Pressure	28.55 (966.8)	inHg (hPa)		

- | | |
|---|--|
| <input checked="" type="checkbox"/> As Left | <input checked="" type="checkbox"/> In Tolerance |
| <input type="checkbox"/> As Found | <input type="checkbox"/> Out of Tolerance |

Concentration Linearity Plot



System ID: DT1101-02

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

Tass Young

Calibrated

Final Function
Check

February 22, 2017

Date

CASTCO

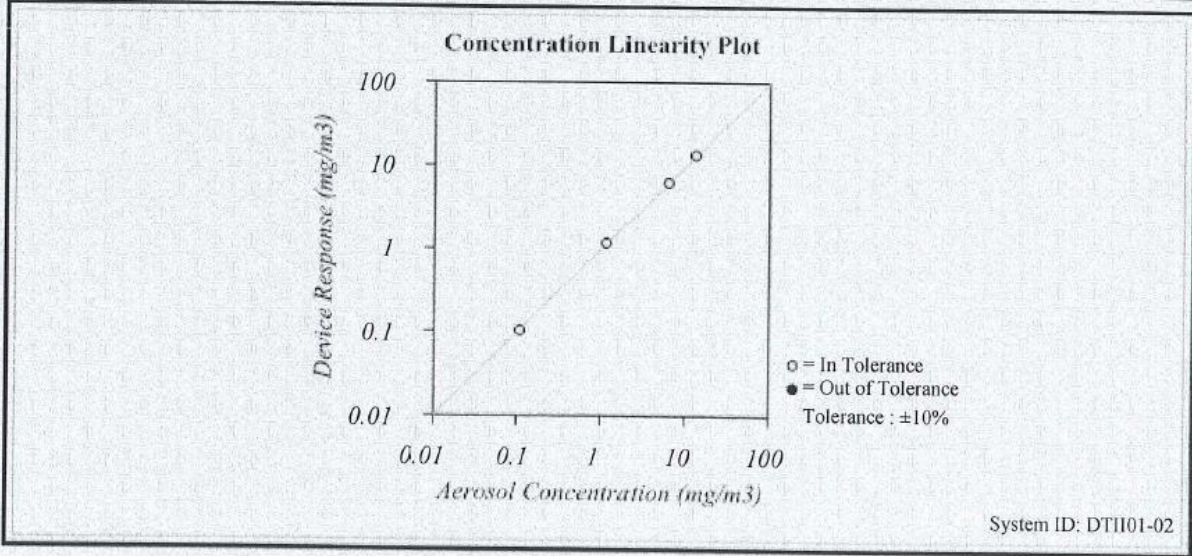


CERTIFICATE OF CALIBRATION AND TESTING

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>

Environment Conditions			Model	AM510
Temperature	75.7 (24.3)	°F (°C)		
Relative Humidity	26	%RH		
Barometric Pressure	28.93 (979.7)	inHg (hPa)	Serial Number	11108001

- | | |
|---|--|
| <input checked="" type="checkbox"/> As Left | <input checked="" type="checkbox"/> In Tolerance |
| <input type="checkbox"/> As Found | <input type="checkbox"/> Out of Tolerance |



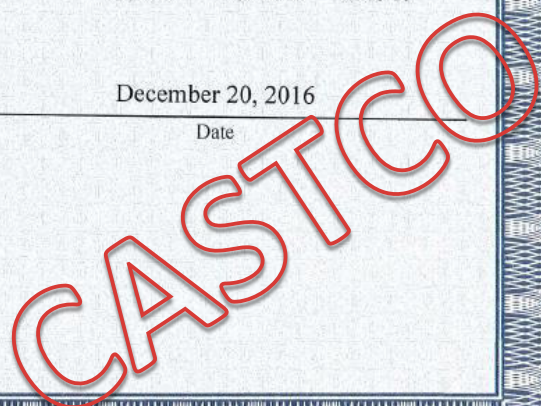
TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required 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

<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal.</u>	<u>Cal. Due</u>	<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal.</u>	<u>Cal. Due</u>
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

Tan Yang
Calibrated

Final Function Check

December 20, 2016
Date



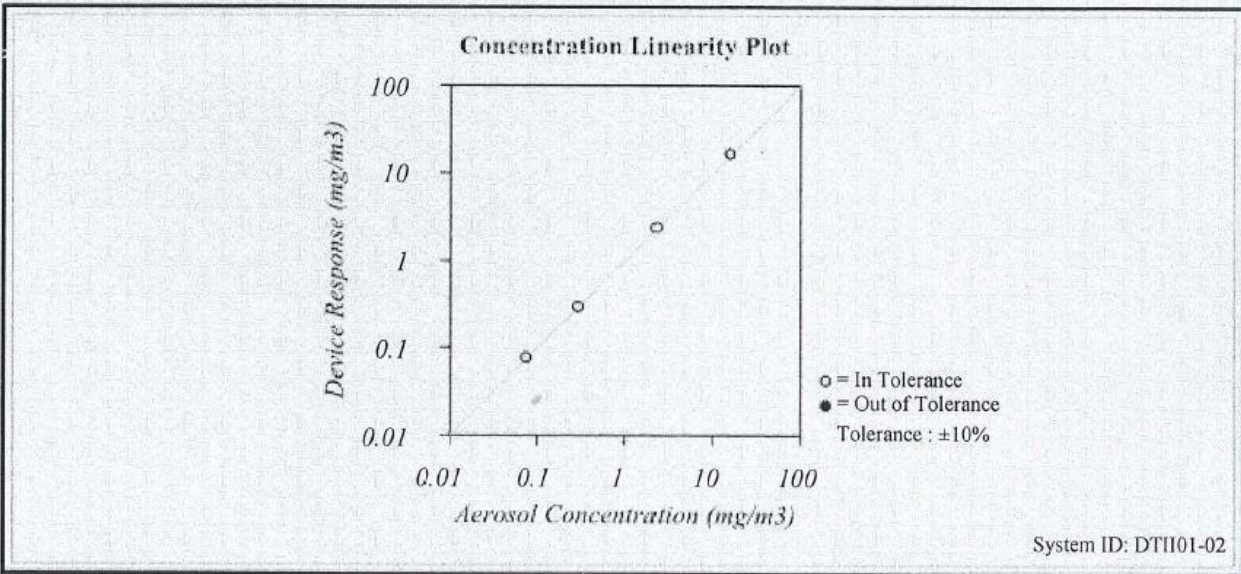


CERTIFICATE OF CALIBRATION AND TESTING

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			Model	AM510
Temperature	75.16 (24.0)	°F (°C)	Serial Number	11208032
Relative Humidity	23.8	%RH		
Barometric Pressure	29.36 (994.2)	inHg (hPa)		

- | | |
|---|--|
| <input checked="" type="checkbox"/> As Left | <input checked="" type="checkbox"/> In Tolerance |
| <input type="checkbox"/> As Found | <input type="checkbox"/> Out of Tolerance |



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

Tom Vang
Calibrated

Final Function
Check

November 8, 2016

Date





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

CASSTCO

校准证书

CALIBRATION CERTIFICATE

证书编号: 2HB17000013-0001
Certificate No.



委托单位: Castco Testing Centre Limited
Client

委托方地址: 29A, On Chuen Street, On Lok Tsuen, Fanling, N.T.
Address

仪器名称: Sound Level Meter
Description

型号规格: NL-52
Model/Type

制造商: RION
Manufacturer

机身号: 00921213
Serial No.

管理号: AAST-SLM-04
Asset No.

校准日期: 2017年01月05日
Cal. Date

建议再校日期: 2018年01月05日 (R)
Next Cal. Date

结论: 所校准项目合格(Passed at Calibration Items)
Conclusion

校准:
Calibrated by

罗志满
鄒木力

核验:
Inspected by

杨西梅

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 Dongguan Zhuang 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

CASSTCO



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: 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)

CEPREI

校准:
Calibrated by 杨雨梅

核验:
Inspected by

签发:
Approved by 郑木力

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 Dongguan Zhuang 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

CASTCO

说 明 DIRECTIONS

证书编号(Certificate No.): 2HB16001326-0003

1. 本机构质量管理体系符合ISO/IEC 17025的要求, 获得中国合格评定国家认可委员会(CNAS)认可, 认可证书号为: CNAS L0462。

This laboratory quality management system meets the ISO/IEC 17025 and is accredited by the China National Accreditation Service for Conformity Assessment, No. CNAS L0462.

2. 本机构出具的数据均可溯源到国家计量基准和国际单位制(SI)。

The data issued by this laboratory is traceable to national primary standards and International system of Units (SI).

3. 本次校准的技术依据及CNAS认可范围如下。详细认可范围请查看CNAS网站的NO.L0462证书附件。

Reference documents and CNAS accredited scopes. Please see the attachment of certificate No. L0462 at CNAS website for details.

▪ JJG 188-2002 声级计检定规程 声压级: (20~130)dB; 频率计权: (20~130)dB@ (10Hz~20kHz)

4. 本次校准所使用的主要测量标准 (The main measurement standards used during the calibration):

名称 (Description)	技术指标 (Specification)	证书编号 (Certificate No.)	有效期至 (Due Date)
Sound Calibrator	1级	2HB16000447-0004	2017-04-14
音频分析仪/Audio Analyzer	失真度测量: ±5%	2HB16000010-0019	2017-01-07

5. 校准地点 (The calibration place): 赛宝计量检测中心广州实验室

6. 环境条件 (Environmental conditions): 温度(Temperature): 21℃ 相对湿度(Relative Humidity): 54%

7. 依据《JJF 1059.1-2012 测量不确定度评定与表示》进行测量结果不确定度评定。

The evaluation was made according to JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement.

8. 证书中"P"、"合格"代表"测量结果在允许范围内", "F"、"不合格"代表"测量结果不在允许范围内", "N/A"代表"不适用"。

"P" and "Pass" in this certificate stand for "Low Limit≤the measured value ≤High Limit", "F" and "Fail" stand for "the measured value <Low Limit or the measured value >High Limit", "N/A" stands for "Not Applicable".

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注: 1. 本证书未经本机构书面授权, 不得部分复制。(The certificate shall not be partly reproduced without written approval of the laboratory.)

2. 本次校准结果仅与被校物有关。(The results are only related to the items calibrated.)

CASTCO



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赛宝计量检测中心

CEPREI CALIBRATION & TESTING CENTER

证书编号(Certificate No.): 2HB16001326-0003

1 外观与工作正常性检查 (Appearance and Function Check)

结论
(Pass/Fail)
P

2.内部校准值(Interior Calibration Value) :

A-Weighting

标准值 (Reference)	Cal值 (dB)	U (k=2) (dB)
114.0	114.1	0.2

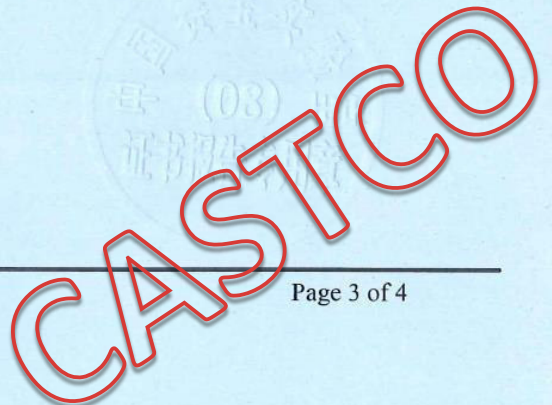
3. 声压级测量(SPL Measurement)

Frequency=1000Hz

A Weighting

标准值 (Reference)	示值 (Indication)	误差 (Error)	允许误差 (Limit)	U (k=2)	结论 (Pass/Fail)
(dB)	(dB)	(dB)	(dB)	(dB)	(P/F)
114.0	114.1	0.1	±1.0	0.2	P
104.0	104.1	0.1	±1.0	0.2	P
94.0	94.1	0.1	±1.0	0.2	P
84.0	84.2	0.2	±1.0	0.2	P
74.0	74.2	0.2	±1.0	0.2	P
64.0	64.4	0.4	±1.0	0.2	P
54.0	54.6	0.6	±1.0	0.2	P

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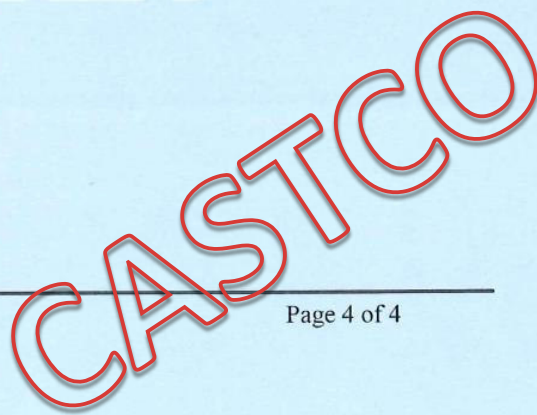




4.A计权特性(A-Weighting Characteristic)

频率 (Frequency) (Hz)	标准值 (Reference) (dB)	示值 (Indication) (dB)	误差 (Error) (dB)	允许误差 (Limit) (dB)	U (k=2) (dB)	结论 (Pass/Fail) (P/F)
31.5	-39.4	-39.5	-0.1	±3.5	0.2	P
63	-26.2	-26.2	0.0	±2.5	0.2	P
125	-16.1	-16.1	0.0	±2.0	0.2	P
250	-8.6	-8.7	-0.1	±1.9	0.2	P
500	-3.2	-3.4	-0.2	±1.9	0.2	P
1k	0.0	0.0	0.0	(Ref.)		
2k	1.2	1.1	-0.1	±2.6	0.2	P
4k	1.0	1.3	0.3	±3.6	0.2	P
8k	-1.1	0.7	1.8	±5.6	0.2	P
16k	-6.6	-4.2	2.4	+6-∞	0.2	P

以下空白/No data hereafter



校准证书

CALIBRATION CERTIFICATE

证书编号: 2HB17000084-0002
Certificate No.



委托单位: Castco Testing Centre Limited
Client

委托方地址: 29A, On Chuen Street, On Lok Tsuen, Fanling, N.T.
Address

仪器名称: Sound Level Calibrator
Description

型号规格: NC-73
Model/Type

制造商: RION
Manufacturer

机身号: 20652
Serial No.

管理号: AAST-SLC-01
Asset No.

校准日期: 2017年01月20日
Cal. Date

建议再校日期: 2018年01月20日
Next Cal. Date

结论: 所校准项目合格(Passed at Calibration Items)
Conclusion

校准: 罗志满
Calibrated by 罗志满

签发: 郑木力
Approved by 郑木力

核验: 杨西梅
Inspected by 杨西梅

印章:
Stamp

说 明

DIRECTIONS

证书编号(Certificate No.): 2HB17000084-0002

1. 本机构质量管理体系符合ISO/IEC 17025的要求, 获得中国合格评定国家认可委员会(CNAS)认证, 认可证书号为: CNAS L0462。

This laboratory quality management system meets the ISO/IEC 17025 and is accredited by the China National Accreditation Service for Conformity Assessment, No. CNAS L0462.

2. 本机构出具的数据均可溯源到国家计量基准和国际单位制(SI)。

The data issued by this laboratory is traceable to national primary standards and International system of Units (SI).

3. 本次校准的技术依据及CNAS认可范围(Reference documents and CNAS accredited scopes):

* JJG 176-2005 声校准器检定规程: 声压级: 94dB、104dB、114dB@(31.5Hz~63Hz); 94dB、104dB、114dB、124dB@(63Hz~8kHz); 94dB、104dB、114dB@(8~16)kHz; 频率:31.5Hz~16kHz; 谐波失真:0~10%@(20~20000)Hz

* 详细认可范围请查看CNAS网站中注册编号为L0462的证书附件(Please see the attachment of certificate No. L0462 at CNAS website for details)。

4. 本次校准所使用的主要测量标准(The main measurement standards used during the calibration):

名称 (Description)	技术指标 (Specification)	证书编号 (Certificate No.)	有效期至 (Due Date)
Preamplifier/Preamplifier	$U=0.3\text{dB}$ ($k=2$)	LSae2016-1077	2017-03-13
标准传声器/Condenser Microphone	$U=(0.05-0.12)\text{dB}$ ($k=2$)	LSae2016-1166	2017-03-15

5. 校准地点(The calibration place): 赛宝计量检测中心广州实验室

6. 环境条件(Environmental conditions): 温度(Temperature): 20℃ 相对湿度(Relative Humidity): 60%

7. 依据《JJF 1059.1-2012 测量不确定度评定与表示》进行测量结果不确定度评定。评定结果以包含因子为 k 的扩展不确定度 U 或相对扩展不确定度 U_{rel} 表示。

The evaluation was made according to JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement. The evaluation results were expressed by the extended uncertainty U or relative expanded uncertainty U_{rel} with a coverage factor k .

8. 证书中"P"、"合格"代表"测量结果在允许范围内", "F"、"不合格"代表"测量结果不在允许范围内", "N/A"代表"不适用"。

"P" and "Pass" in this certificate stand for "Low Limit \leq the measured value \leq High Limit". "F" and "Fail" stand for "the measured value < Low Limit or the measured value > High Limit", "N/A" stands for "Not Applicable".

CEPREI

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2. 本次校准结果仅与被校物有关。(The results are only related to the items calibrated.)



1. Sound Pressure Level

Nominal Value (dB)	Reference Value (dB)	Error (dB)	Manufacturer Specification (dB)	U (k=2) (dB)	P/F
94	94.18	-0.18	±0.5	0.2	P

2. Frequency

Nominal Value (Hz)	Reference Value (Hz)	Error (Hz)	Manufacturer Specification (Hz)	U (k=2) (Hz)	P/F
1000	993.8	6.2	±20	1.0	P

3. Distortion

S. P. L. (dB)	Reference Value (%)	Error (%)	Manufacturer Specification (%)	U (k=2) (%)	P/F
94	1.31	--	<2	0.5	P

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CASTCO

CASTCO



中国赛宝实验室
(工业和信息化部电子第五研究所)
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: Castco Testing Centre Limited
Client

委托方地址: 29A, On Chuen Street, On Lok Tsuen, Fanling, N.T.
Address

仪器名称: SOUND LEVEL CALIBRATOR
Description

型号规格: NC-74
Model/Type

制造商: RION
Manufacturer

机身号: 34546624
Serial No.

管理号: AAST-SLC-03
Asset No.

校准日期: 2016年08月18日
Cal. Date

建议再校日期: 2017年08月18日
Next Cal. Date

结论: 所校准项目合格(Passed at Calibration Items)
Conclusion

校准:
Calibrated by

罗志满
鄧木力

核验:
Inspected by

杨雨梅

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 Dongguan Zhuang Road Tianhe District, Guangzhou
CEPREI(H.K.) Addr.: G/F2 Cambridge Plaza Sheung Shui N.T. Hong Kong
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Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

说 明 DIRECTIONS

证书编号(Certificate No.): 2HB16001157-0001

1. 本机构质量管理体系符合ISO/IEC 17025的要求, 获得中国合格评定国家认可委员会(CNAS)认可, 认可证书号为: CNAS L0462。

This laboratory quality management system meets the ISO/IEC 17025 and is accredited by the China National Accreditation Service for Conformity Assessment, No. CNAS L0462.

2. 本机构出具的数据均可溯源到国家计量基准和国际单位制(SI)。

The data issued by this laboratory is traceable to national primary standards and International system of Units (SI).

3. 本次校准的技术依据及CNAS认可范围如下。详细认可范围请查看CNAS网站的NO.L0462证书附件。

Reference documents and CNAS accredited scopes. Please see the attachment of certificate No. L0462 at CNAS website for details.

- JJG 176-2005 声校准器检定规程 声压级: 94dB、104dB、114dB@(31.5Hz~63Hz); 94dB、104dB、114dB、124dB@(63Hz~8kHz); 94dB、104dB、114dB@(8~16)kHz; 频率:31.5Hz~16kHz; 谐波失真:0~10%@(20~20000)Hz

4. 本次校准所使用的主要测量标准 (The main measurement standards used during the calibration):

名称 (Description)	技术指标 (Specification)	证书编号 (Certificate No.)	有效期至 (Due Date)
标准传声器/Condenser Microphone	$U=(0.05\sim 0.12)\text{dB} (k=2)$	LSae2016-1166	2017-03-15
Preamplifier/Preamplifier	$U=0.3\text{dB} (k=2)$	LSae2016-1077	2017-03-13

5. 校准地点 (The calibration place): 赛宝计量检测中心广州实验室

6. 环境条件 (Environmental conditions): 温度(Temperature): 22℃ 相对湿度(Relative Humidity): 60%

7. 关于测量结果不确定度的说明 (Directions of measurement uncertainty):

- 7.1 依据(Reference Document)

JJF 1059.1-2012测量不确定度评定与表示

JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement.

- 7.2 本次测量结果扩展不确定度的包含因子 $k=2$ 。

The coverage factor k of the expanded uncertainties of the measurement results is equal 2.

8. 证书中"P"、"合格"代表"测量结果在允许范围内", "F"、"不合格"代表"测量结果不在允许范围内", "N/A"代表"不适用"。

"P" and "Pass" in this certificate stand for "Low Limit≤the Result ≤High Limit", "F" and "Fail" stand for "the Result < Low Limit or the Result > High Limit", "N/A" stands for "Not Applicable".

注: 1. 本证书未经本机构书面授权, 不得部分复制。(The certificate shall not be partly reproduced without written approval of the laboratory.)

2. 本次校准结果仅与被校物有关。(The results are only related to the items calibrated.)



1. 外观与工作正常性检查 (Appearance and Function Check)

结论
(Pass/Fail)
P

2. 声压级(Sound Pressure Level)

标称值 (Nominal)	标准值 (Reference)	误差 (Error)	允许误差 (Limit)	结论 (Pass/Fail)
(dB)	(dB)	(dB)	(dB)	(P/F)
94	94.0	0.0	±0.3	P

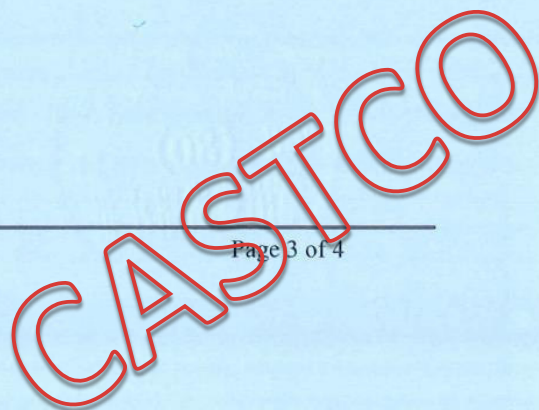
3. 频率(Frequency)

标称值 (Nominal)	标准值 (Reference)	误差 (Error)	允许误差 (Limit)	结论 (Pass/Fail)
(Hz)	(Hz)	(Hz)	(Hz)	(P/F)
1000	1001.7	-1.7	±20	P

4. 失真度(Distortion)

声压级 (SPL.)	失真度 (Distortion)	允许范围 (Limit)	结论 (Pass/Fail)
(dB)	(%)	(%)	(P/F)
94	1.12	≤3	P

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附(Appendix):

关于测量结果不确定度的说明

(Directions of measurement uncertainty in the calibration)

1 依据 (Reference Document)

JJF 1059.1-2012 测量不确定度评定与表示

(JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement)

2 本次测量结果的扩展不确定度(The measurement expanded uncertainties of the calibration)($k=2$)

2.1 声压级(Sound Pressure Level) : 0.1dB

2.2 失真度(Distortion) : 5%

2.3 频率(Frequency) : 0.01%

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CASTCO

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 LC-20172600
Certificate No.

第 1 页 共 3 页
Page of

委托方 佳力高試驗中心有限公司
Client CASTCO TESTING CENTRE LTD

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

计量器具名称 Davis Weather Station
Measuring instruments

规格型号 Vantage Pro2
Model/Type

制造者
Manufacturer

编号 A70604D29N/自編號:EN52-01
Serial No.

主管
Approved by 陈金明

审核
Inspected by 林少鑫

校准
Calibrated by 岑锦明

证书专用章
Issued by (Stamp)

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

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.gzjlj.net 业务邮箱: yowuban@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 共 3 页
Page 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	编号	证书号	技术特征
Equipment/Model	Serial No.	Certificate No.	Technique character
皮托管压管(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 08	LY-201619205/2017-07-01 LC-20167300/2017-06-28	MPE: ±2.5 hPa 均匀性≤1%;
数显倾角仪(Digital inclinometer)	N2955	CJ-20169223/2017-5-25	稳定性≤0.5% 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:
 $U=0.20 \text{ m/s}$; $k=2$
- 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 科学城实验室	温度 19.4℃	相对湿度 53%
Site	Temperature	RH

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

- 外观: 正常
Appearance: Pass
- 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;
- 风速仪示值校准:
Indication calibrated of anemometer:

微压计示值 Indication of micromanometer (mmHg O)	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

- 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、未经本证书面批准, 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 April 2017	15.5 – 23.9	51 – 82	0.2
2 April 2017	17.0 – 24.2	42 – 85	0
3 April 2017	17.5 – 24.5	55 – 77	0
4 April 2017	19.3 – 26.0	62 – 85	0
5 April 2017	20.9 – 27.9	66 – 90	0
6 April 2017	22.5 – 25.0	79 – 92	0.3
7 April 2017	22.6 – 27.9	71 – 93	0
8 April 2017	23.0 – 27.5	73 – 93	0
9 April 2017	23.5 – 27.9	78 – 92	0
10 April 2017	26.3 – 28.1	78 – 87	Trace
11 April 2017	22.2 – 27.8	82 – 97	0.6
12 April 2017	18.2 – 22.8	81 – 97	21.5
13 April 2017	18.8 – 21.5	67 – 86	Trace
14 April 2017	19.9 – 24.7	69 – 87	0
15 April 2017	21.6 – 26.9	77 – 91	0
16 April 2017	23.0 – 30.2	63 – 95	Trace
17 April 2017	23.7 – 29.4	63 – 92	Trace
18 April 2017	23.9 – 30.7	58 – 94	0.3
19 April 2017	24.7 – 29.4	63 – 88	0

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
20 April 2017	25.1 – 27.5	78 – 93	3.1
21 April 2017	29.4 – 22.8	79 – 94	7.8
22 April 2017	18.5 – 24.5	64 – 94	6.6
23 April 2017	19.9 – 21.8	75 – 93	1.4
24 April 2017	20.9 – 22.8	79 – 87	Trace
25 April 2017	20.7 – 22.9	85 – 98	10.9
26 April 2017	22.4 – 26.8	87 – 97	2.9
27 April 2017	16.3 – 21.5	75 – 98	3.5
28 April 2017	20.2 – 24.8	65 – 81	0
29 April 2017	19.9 – 27.3	61 – 88	0
30 April 2017	21.4 – 28.2	60 – 85	0

* 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	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
1 April 2017	30	10.2
2 April 2017	100	13.8
3 April 2017	100	14.9
4 April 2017	80	12.6
5 April 2017	80	11
6 April 2017	140	9.5
7 April 2017	140	8.7
8 April 2017	130	9.3
9 April 2017	130	7.1
10 April 2017	230	8.2
11 April 2017	230	5.6
12 April 2017	40	10.3
13 April 2017	110	8
14 April 2017	110	12
15 April 2017	140	10
16 April 2017	140	10.3
17 April 2017	270	8.3
18 April 2017	300	9.6
19 April 2017	230	9.2
20 April 2017	120	8.7
21 April 2017	190	10.5
22 April 2017	40	7.2
23 April 2017	110	8.4
24 April 2017	110	15.3
25 April 2017	110	12.9
26 April 2017	140	9.9
27 April 2017	40	6.6
28 April 2017	130	8.7
29 April 2017	130	9.5
30 April 2017	130	10

**APPENDIX D
ENVIRONMENTAL MONITORING
SCHEDULES**

Contract No. KL/2012/03
Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area
Impact Air and Noise Monitoring Schedule for April 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Apr
						1 hr TSP X3 AM5
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 24hr TSP	1 hr TSP X3 AM5 Noise (M6(A), M7, M8)		
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 24hr TSP	Noise (M6(A))	1 hr TSP X3 AM5 Noise (M7, M8)	1 hr TSP X3 AM2, AM3(A), AM4(C) 24hr TSP		
16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr
		1 hr TSP X3 AM5 Noise (M6(A), M7, M8)	1 hr TSP X3 AM2, AM3(A), AM4(C) Noise M9 24hr TSP			1 hr TSP X3 AM2, AM3(A), AM4(C)
23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr
	1 hr TSP X3 AM5 Noise (M6(A), M7, M8)			1 hr TSP X3 AM2, AM3(A), AM4(C) 24hr TSP AM2, AM3(A), AM4(C), AM5	1 hr TSP X3 AM5	
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
AM3(A) - Holy Trinity Bradbury Centre
AM4(C) - New Pumping Station
AM5(A) - Po Leung Kuk Ngan Po Ling College
AM5 - 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

Contract No. KL/2012/03
Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area
Tentative Impact Air and Noise Monitoring Schedule for May 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-May	2-May	3-May	4-May	5-May	6-May
		1 hr TSP X3 AM2, AM3(A), AM4(C) Noise M9 24hr TSP AM2, AM3(A), AM4(C)				1 hr TSP X3 AM5 Noise (M6(A), M7, M8) 24hr TSP AM5
7-May	8-May	9-May	10-May	11-May	12-May	13-May
	1 hr TSP X3 AM2, AM3(A), AM4(C) Noise M9 24hr TSP AM2, AM3(A), AM4(C)	1 hr TSP X3 AM5 Noise (M6(A), M7, M8) 24hr TSP AM5				1 hr TSP X3 AM2, AM3(A), AM4(C) 24hr TSP AM2, AM3(A), AM4(C)
14-May	15-May	16-May	17-May	18-May	19-May	20-May
	1 hr TSP X3 AM5 24hr TSP AM5			Noise (M6(A), M7, M8, M9)	1 hr TSP X3 AM2, AM3(A), AM4(C) 24hr TSP AM2, AM3(A), AM4(C)	1 hr TSP X3 AM5 24hr TSP AM5
21-May	22-May	23-May	24-May	25-May	26-May	27-May
		24-hr TSP AM4(C)	Noise M8, M9	1 hr TSP X3 AM2, AM3(A), AM4(C) Noise M6(A) 24hr TSP AM2, AM3(A)	1 hr TSP X3 AM5 Noise M7 24hr TSP AM5	
28-May	29-May	30-May	31-May			
	24-hr TSP AM4(C)		1 hr TSP X3 AM2, AM3(A), AM4(C) 24hr TSP AM2, AM3(A)			

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
AM3(A) - Holy Trinity Bradbury Centre
AM4(C) - New Pumping Station
AM5(A) - Po Leung Kuk Ngan Po Ling College
AM5 - 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 ($\mu\text{g}/\text{m}^3$)
5-Apr-17	9:00	Sunny	157.1
5-Apr-17	10:00	Sunny	167.2
5-Apr-17	11:00	Sunny	157.6
10-Apr-17	13:00	Cloudy	118.2
10-Apr-17	14:00	Cloudy	116.4
10-Apr-17	15:00	Cloudy	110.1
13-Apr-17	9:00	Cloudy	97.1
13-Apr-17	10:00	Cloudy	90.6
13-Apr-17	11:00	Cloudy	81.6
19-Apr-17	13:00	Cloudy	112.4
19-Apr-17	14:00	Cloudy	108.4
19-Apr-17	15:00	Cloudy	116.2
22-Apr-17	13:00	Sunny	91.0
22-Apr-17	14:00	Sunny	88.0
22-Apr-17	15:00	Sunny	94.0
27-Apr-17	13:00	Cloudy	97.8
27-Apr-17	14:00	Cloudy	102.3
27-Apr-17	15:00	Cloudy	100.0
Average			111.4
Maximum			167.2
Minimum			81.6

Location AM3(A) - Holy Trinity Bradbury Centre			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
5-Apr-17	9:00	Sunny	181.5
5-Apr-17	10:00	Sunny	196.5
5-Apr-17	11:00	Sunny	180.7
10-Apr-17	13:00	Cloudy	146.5
10-Apr-17	14:00	Cloudy	149.3
10-Apr-17	15:00	Cloudy	141.7
13-Apr-17	9:00	Cloudy	99.7
13-Apr-17	10:00	Cloudy	109.9
13-Apr-17	11:00	Cloudy	112.1
19-Apr-17	9:00	Cloudy	201.5
19-Apr-17	10:00	Cloudy	194.3
19-Apr-17	11:00	Cloudy	176.5
22-Apr-17	9:00	Sunny	144.0
22-Apr-17	10:00	Sunny	137.0
22-Apr-17	11:00	Sunny	144.0
27-Apr-17	9:00	Cloudy	124.6
27-Apr-17	10:00	Cloudy	120.9
27-Apr-17	11:00	Cloudy	107.3
Average			148.2
Maximum			201.5
Minimum			99.7

Appendix E - 1-hour TSP Monitoring Results

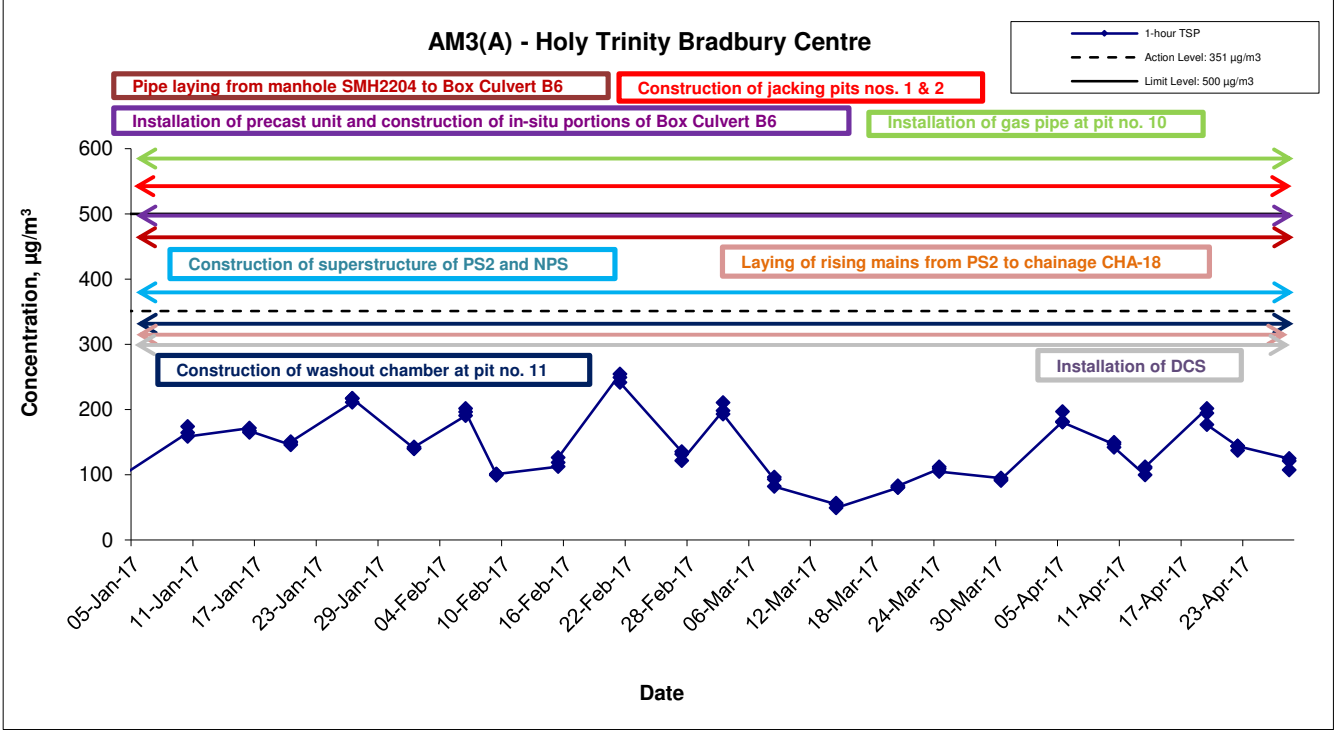
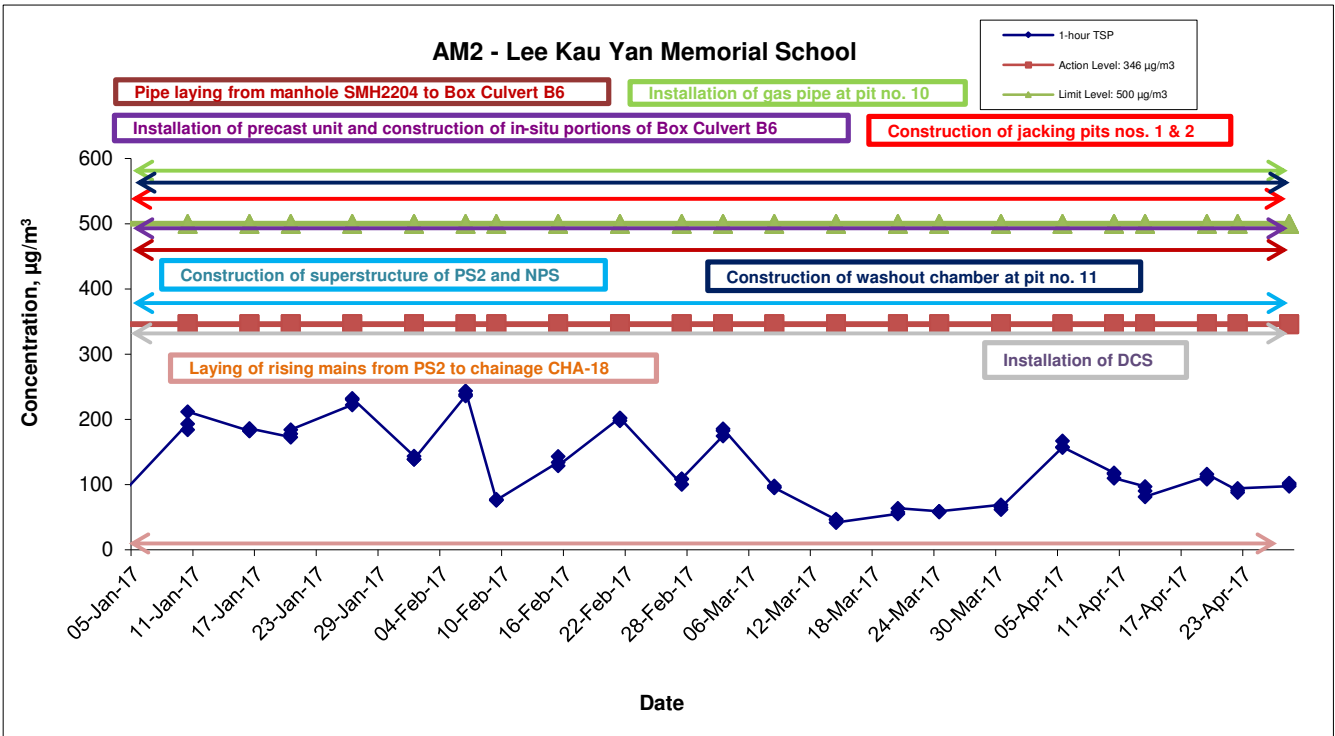
Location AM4(C) - New Pumping Station			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
5-Apr-17	13:00	Sunny	187.1
5-Apr-17	14:00	Sunny	179.6
5-Apr-17	15:00	Sunny	175.4
10-Apr-17	9:00	Cloudy	129.9
10-Apr-17	10:00	Cloudy	121.7
10-Apr-17	11:00	Cloudy	107.2
13-Apr-17	13:00	Cloudy	124.6
13-Apr-17	14:00	Cloudy	111.4
13-Apr-17	15:00	Cloudy	119.6
19-Apr-17	13:00	Cloudy	79.4
19-Apr-17	14:00	Cloudy	80.9
19-Apr-17	15:00	Cloudy	91.5
22-Apr-17	13:00	Sunny	102.0
22-Apr-17	14:00	Sunny	102.0
22-Apr-17	15:00	Sunny	100.0
27-Apr-17	13:00	Cloudy	67.2
27-Apr-17	14:00	Cloudy	58.9
27-Apr-17	15:00	Cloudy	60.1
Average			111.0
Maximum			187.1
Minimum			58.9

Location AM5(A) - Po Leung Kuk Ngan Po Ling College			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
1-Apr-17	8:45	Sunny	156.4
1-Apr-17	9:45	Sunny	170.1
1-Apr-17	10:45	Sunny	167.6
6-Apr-17	9:00	Cloudy	121.5
6-Apr-17	10:00	Cloudy	130.1
6-Apr-17	11:00	Cloudy	115.3
Average			143.5
Maximum			170.1
Minimum			115.3

Appendix E - 1-hour TSP Monitoring Results

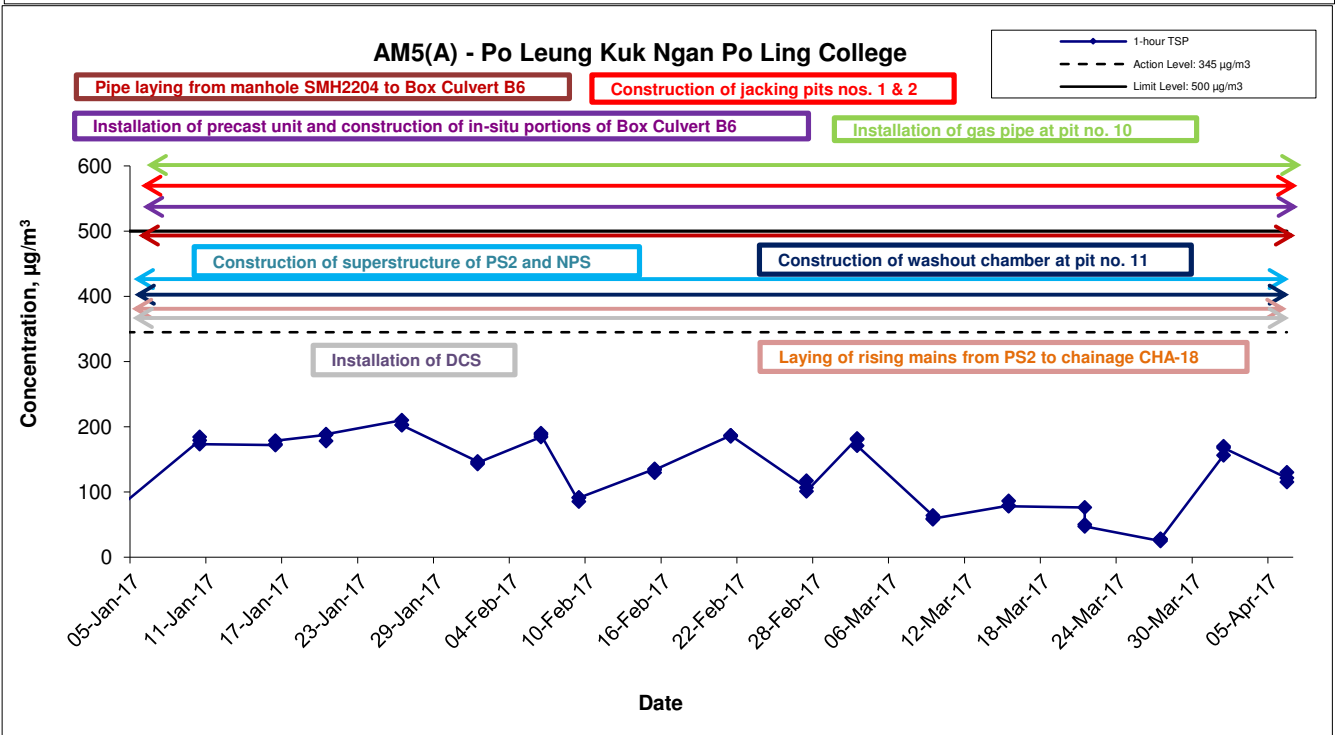
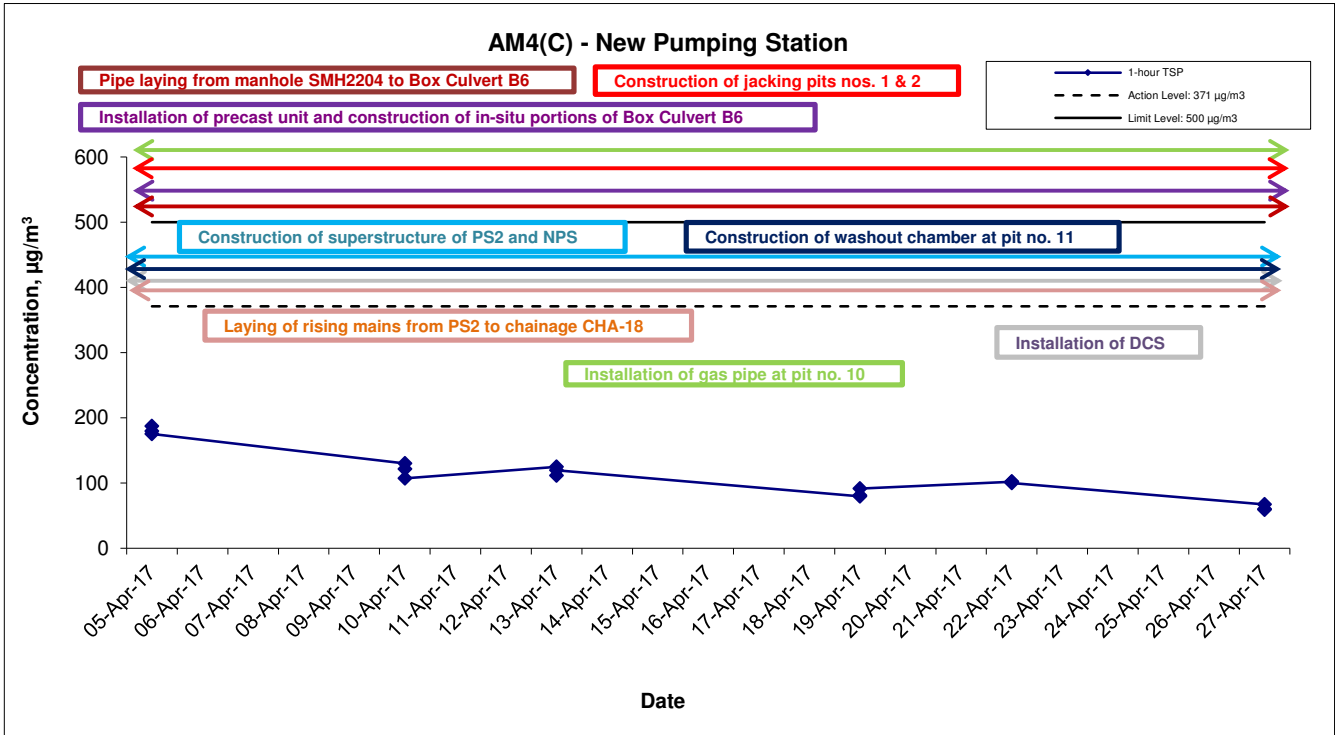
Location AM5 - CCC Kei To Secondary School			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
12-Apr-17	13:00	Cloudy	45.1
12-Apr-17	14:00	Cloudy	42.9
12-Apr-17	15:00	Cloudy	39.5
18-Apr-17	10:00	Cloudy	98.9
18-Apr-17	11:00	Cloudy	97.6
18-Apr-17	12:00	Cloudy	90.9
24-Apr-17	9:00	Sunny	127.6
24-Apr-17	10:00	Sunny	136.4
24-Apr-17	11:00	Sunny	129.1
28-Apr-17	9:00	Cloudy	95.0
28-Apr-17	10:00	Cloudy	84.0
28-Apr-17	11:00	Cloudy	81.0
		Average	89.0
		Maximum	136.4
		Minimum	39.5

1-hr TSP Concentration Levels



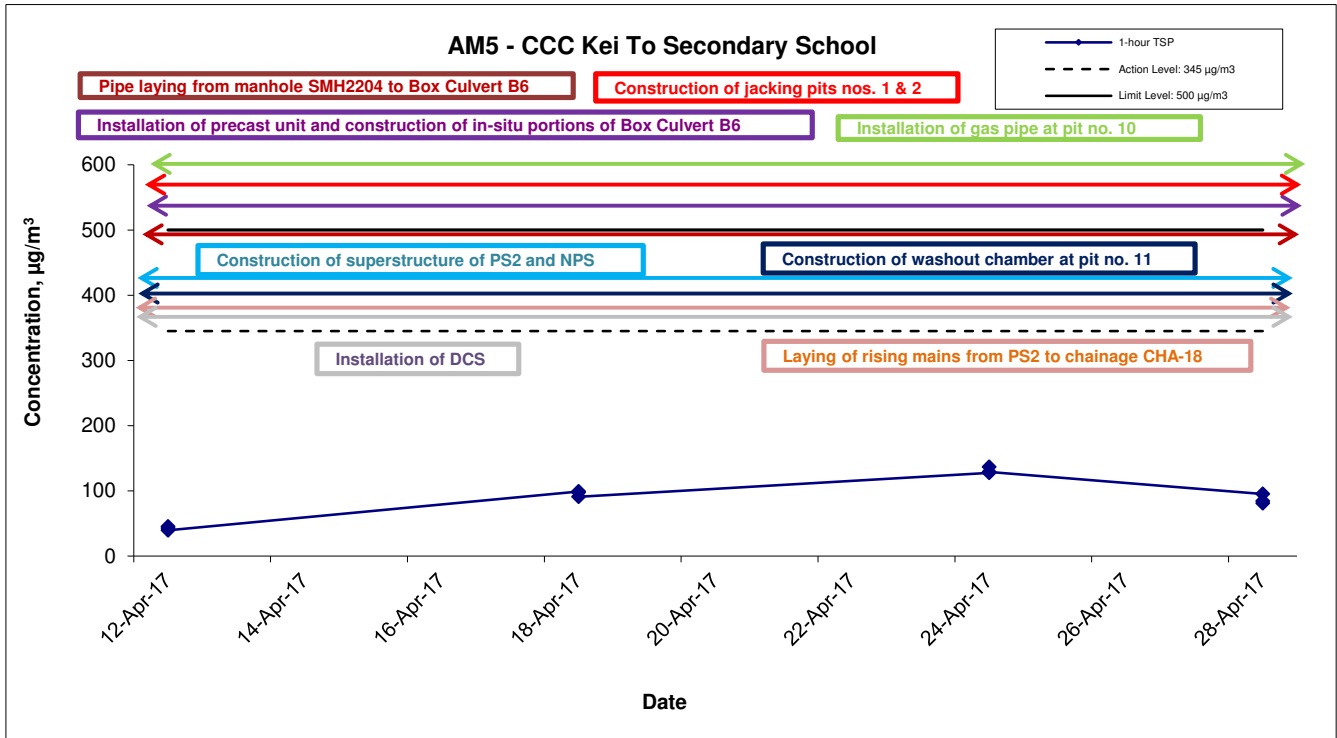
Title Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area Graphical Presentation of 1-hour TSP Monitoring Results	Contract No. KL/2012/03	Scale N.T.S	Project No. MA13056	CINOTECH
		Date Apr 17	Appendix E	

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	Project No. MA13056	CINOTECH
	Date Apr 17	Appendix E	

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	Project No. MA13056	CINOTECH
	Date Apr 16	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. ($\mu\text{g}/\text{m}^3$)
5-Apr-17	Sunny	101
10-Apr-17	Cloudy	119
13-Apr-17	Cloudy	152
19-Apr-17	Cloudy	46
22-Apr-17	Sunny	99
27-Apr-17	Cloudy	42
	Min	42.0
	Max	152.0
	Average	93.2

Location AM3(A) - Holy Trinity Bradbury Centre

Start Date	Weather Condition	Conc. ($\mu\text{g}/\text{m}^3$)
5-Apr-17	Sunny	141
10-Apr-17	Cloudy	148
13-Apr-17	Cloudy	47
19-Apr-17	Cloudy	76
22-Apr-17	Sunny	57
27-Apr-17	Cloudy	61
	Min	47.0
	Max	148.0
	Average	88.3

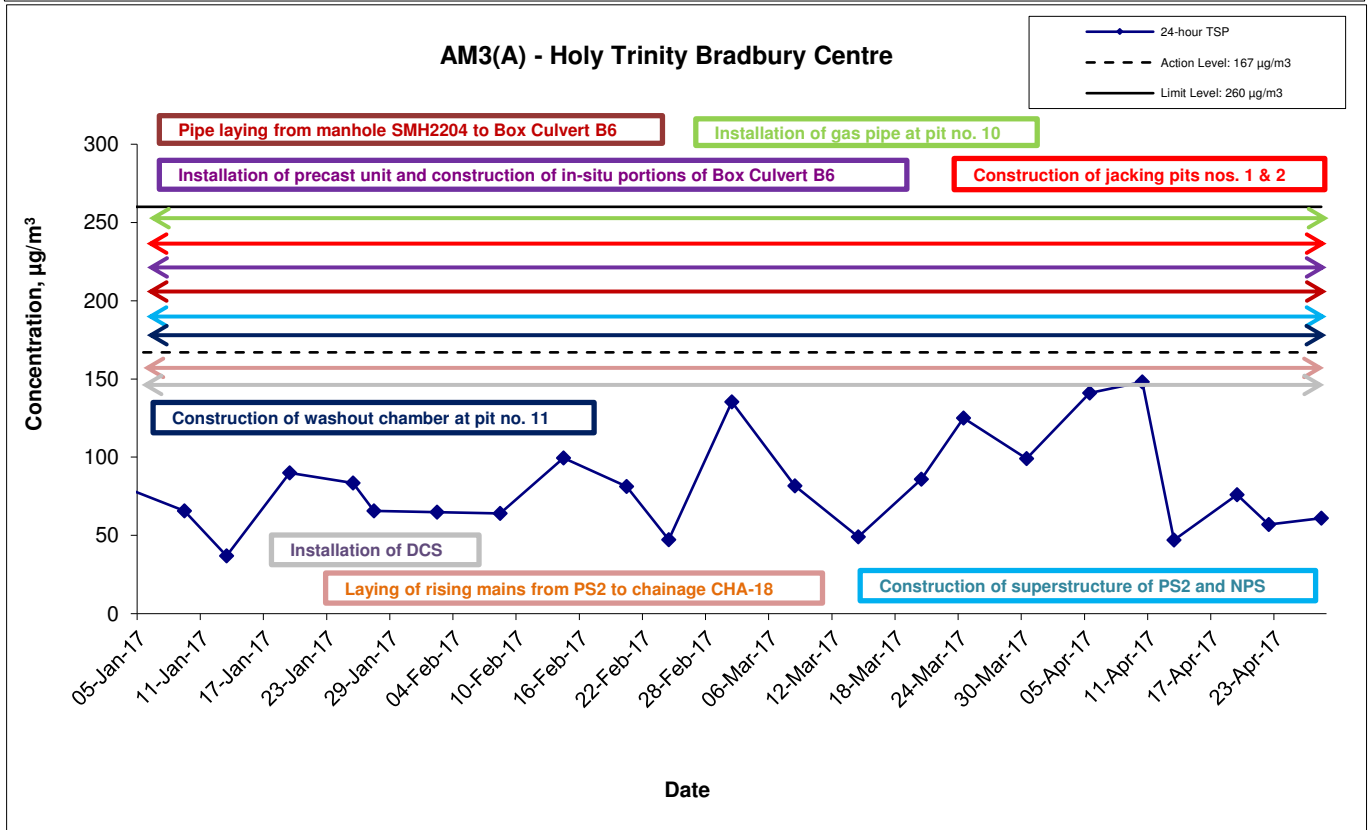
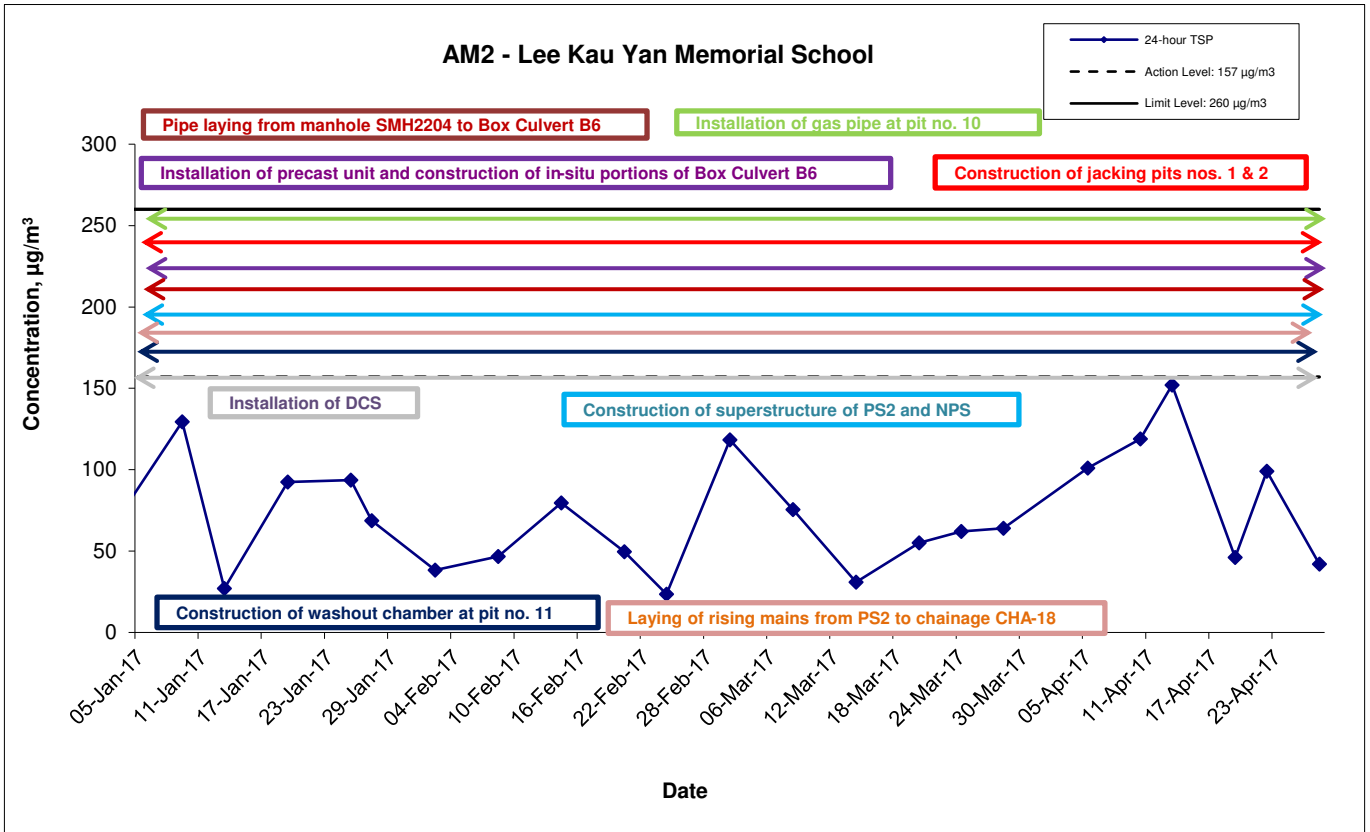
Location AM4(C) - New Pumping Station

Start Date	Weather Condition	Total vol. (m^3)
5-Apr-17	Sunny	118
10-Apr-17	Cloudy	117
13-Apr-17	Cloudy	22
19-Apr-17	Cloudy	118
22-Apr-17	Sunny	117
27-Apr-17	Cloudy	66
	Min	22.0
	Max	118.0
	Average	93.0

Location AM5 - CCC Kei To Secondary School

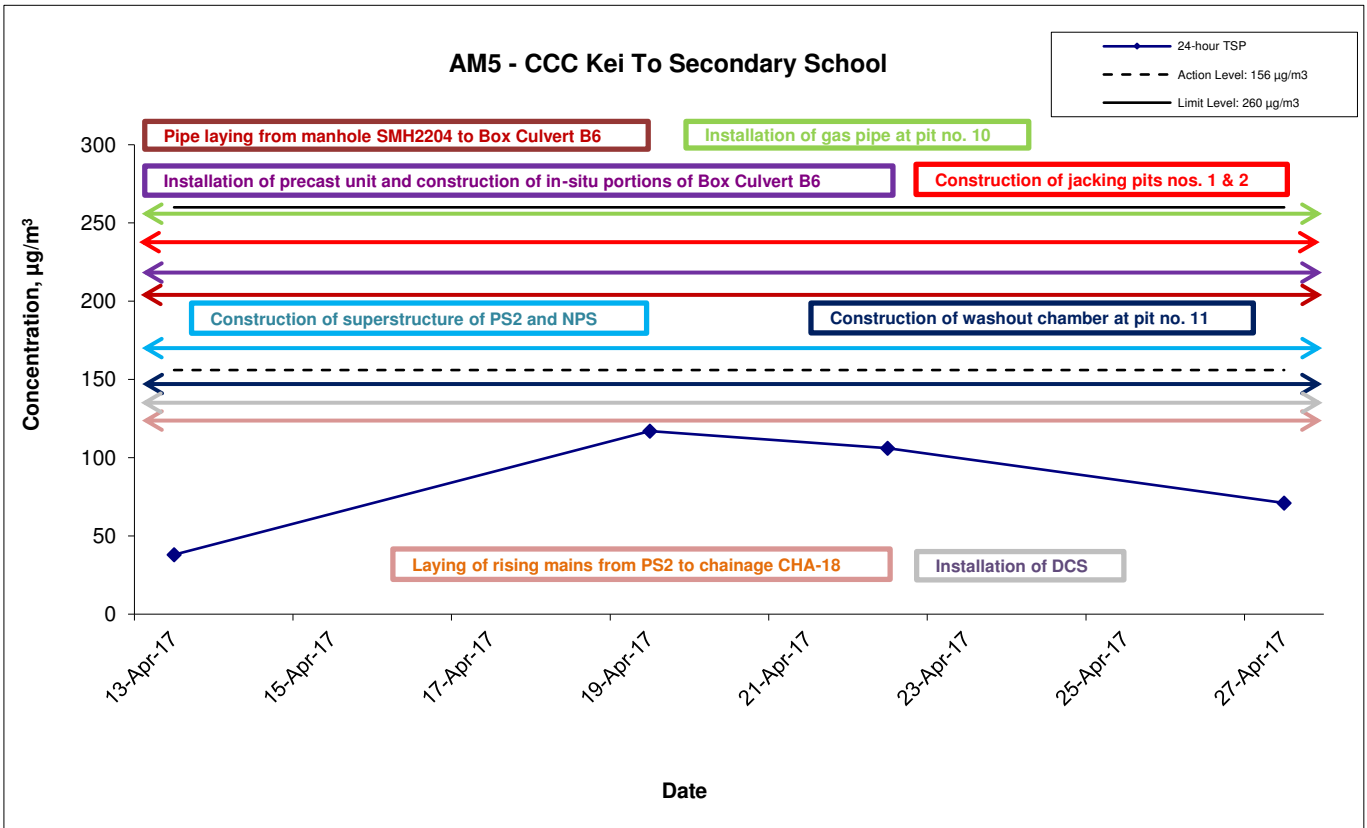
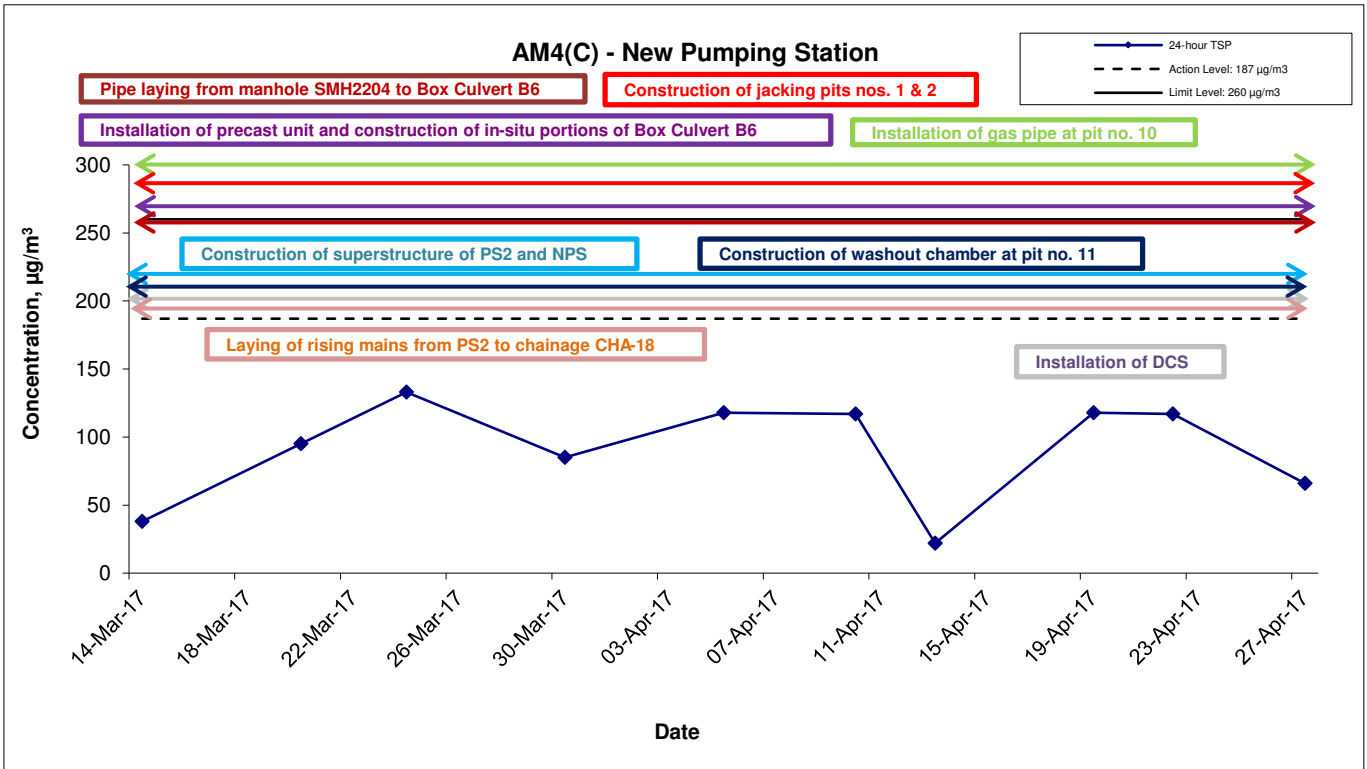
Start Date	Weather Condition	Conc. ($\mu\text{g}/\text{m}^3$)
13-Apr-17	Cloudy	38
19-Apr-17	Cloudy	117
22-Apr-17	Sunny	106
27-Apr-17	Cloudy	71
	Min	38.0
	Max	117.0
	Average	83.0

24-hr TSP Concentration Levels



Title	Contract No. KL/2012/03	Scale	Project	CINOTECH
	Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area	N.T.S	No. MA13056	
Graphical Presentation of 24-hour TSP Monitoring Results	Date	Apr 17	Appendix F	

24-hr TSP Concentration Levels



Title	Contract No. KL/2012/03	Scale	Project	CINOTECH
	Kai Tak Development –Stage 4 Infrastructure at Former North Apron Area	N.T.S	No. MA13056	
Graphical Presentation of 24-hour TSP Monitoring Results	Date	Apr 17	Appendix F	

**APPENDIX G
NOISE MONITORING RESULTS AND
GRAPHICAL PRESENTATION**

Appendix G - Noise Monitoring Results

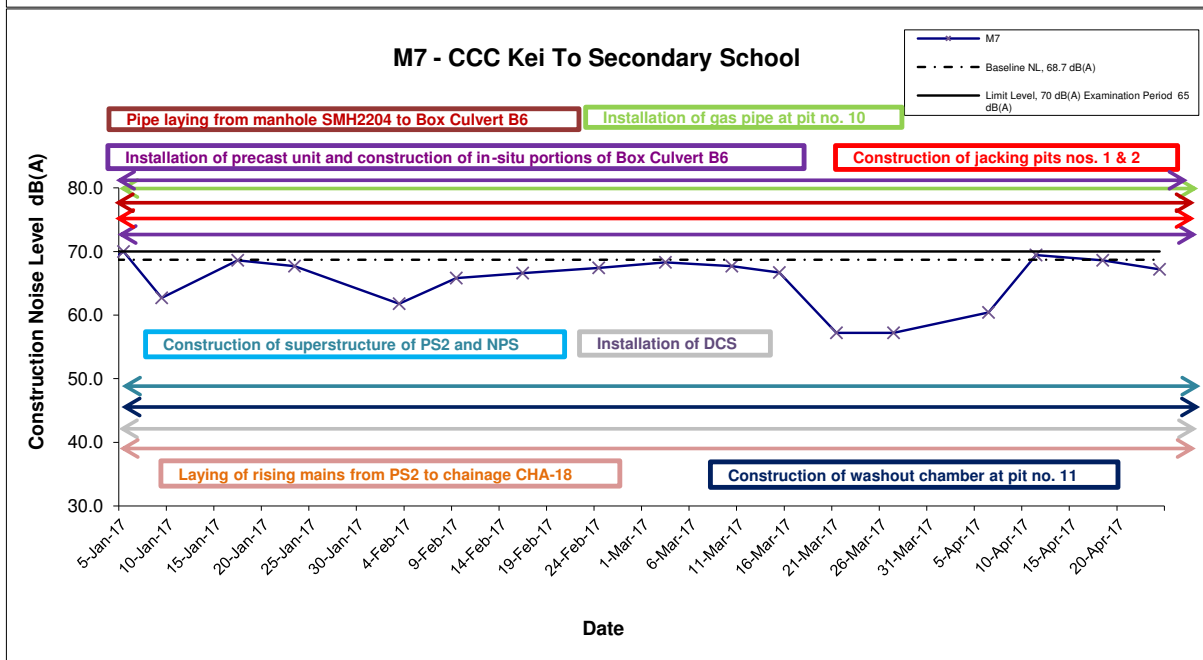
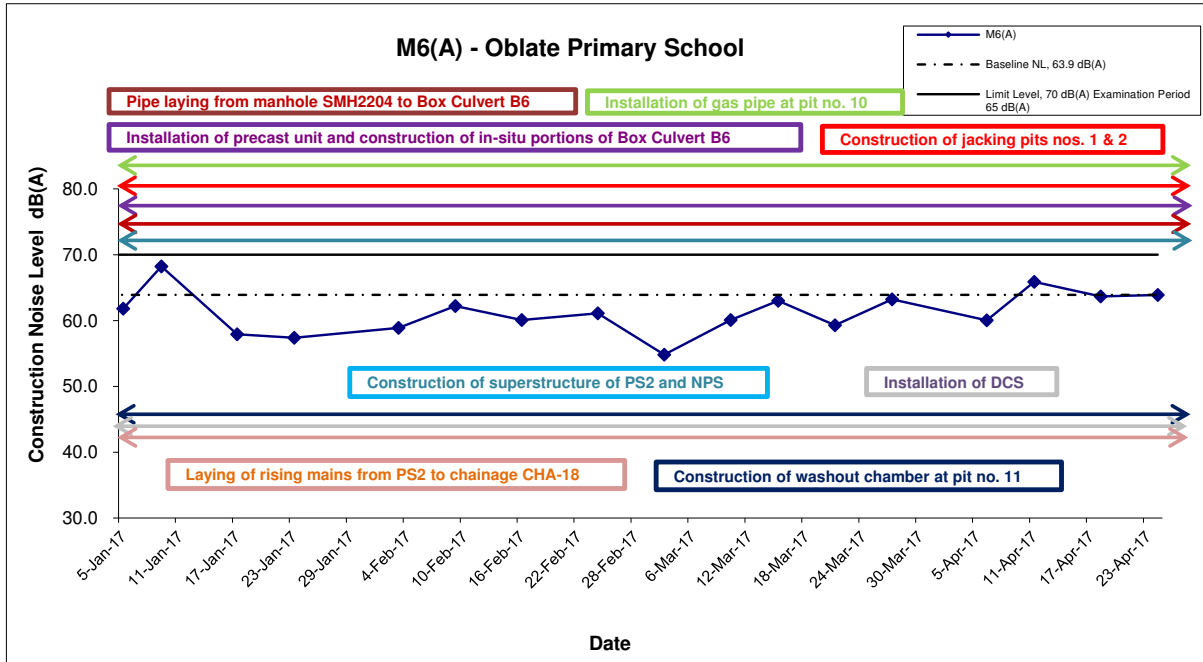
Location M6(A) - Oblate Primary School							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
6-Apr-17	13:45	Sunny	65.4	65.7	59.3	63.9	60.1
11-Apr-17	9:45	Cloudy	68.0	67.0	59.6		65.9
18-Apr-17	13:00	Cloudy	66.8	65.1	60.4		63.7
24-Apr-17	13:45	Cloudy	63.9	62.6	58.7		63.9 Measured \leq Baseline

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}
6-Apr-17	13:00	Sunny	69.3	71.5	63.4	68.7	60.4
11-Apr-17	9:00	Cloudy	72.1	74.5	65.4		69.4
18-Apr-17	9:45	Cloudy	68.6	71.8	64.5		68.6 Measured \leq Baseline
24-Apr-17	13:00	Cloudy	67.2	69.3	63.8		67.2 Measured \leq Baseline

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}
6-Apr-17	10:00	Sunny	65.8	67.3	61.4	61.9	63.5
12-Apr-17	9:00	Cloudy	66.4	68.3	62.5		64.5
18-Apr-17	9:00	Cloudy	67.5	69.3	63.1		66.1
24-Apr-17	11:30	Cloudy	62.6	64.4	59.7		54.3

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}
5-Apr-17	9:35	Sunny	68.7	70.1	66.5	59.9	68.1
10-Apr-17	13:00	Cloudy	66.3	68.1	63.8		65.2
19-Apr-17	10:00	Sunny	66.3	68.9	63.6		65.2
27-Apr-17	13:30	Sunny	66.2	68.2	61.3		65.0

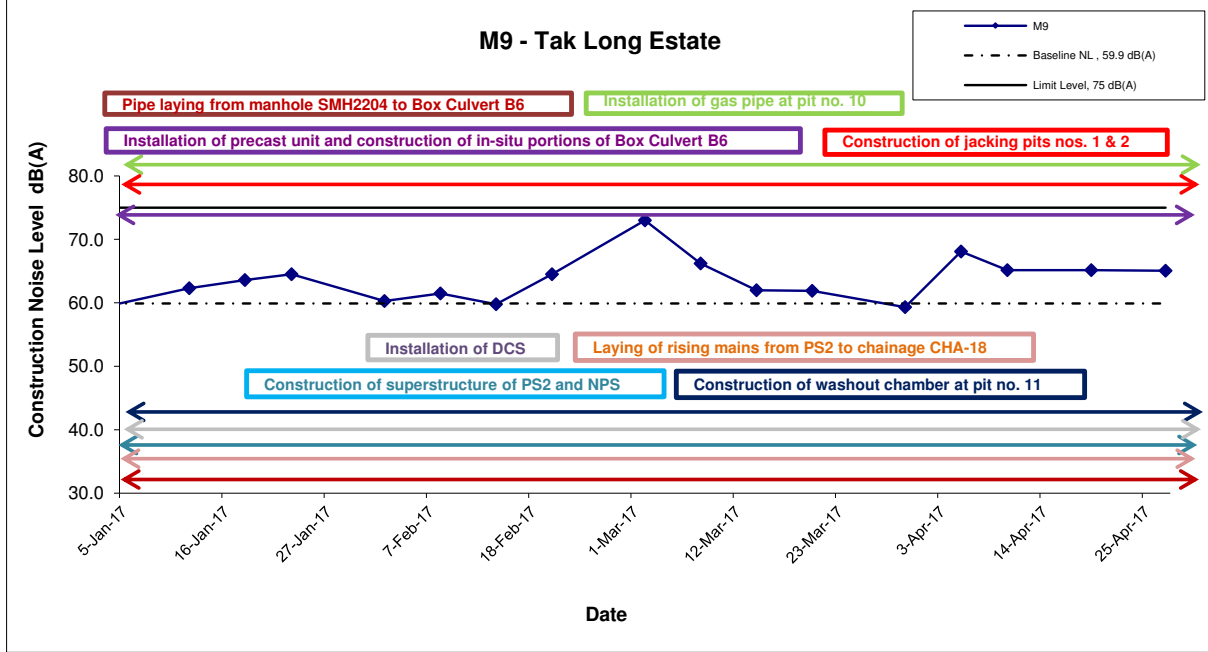
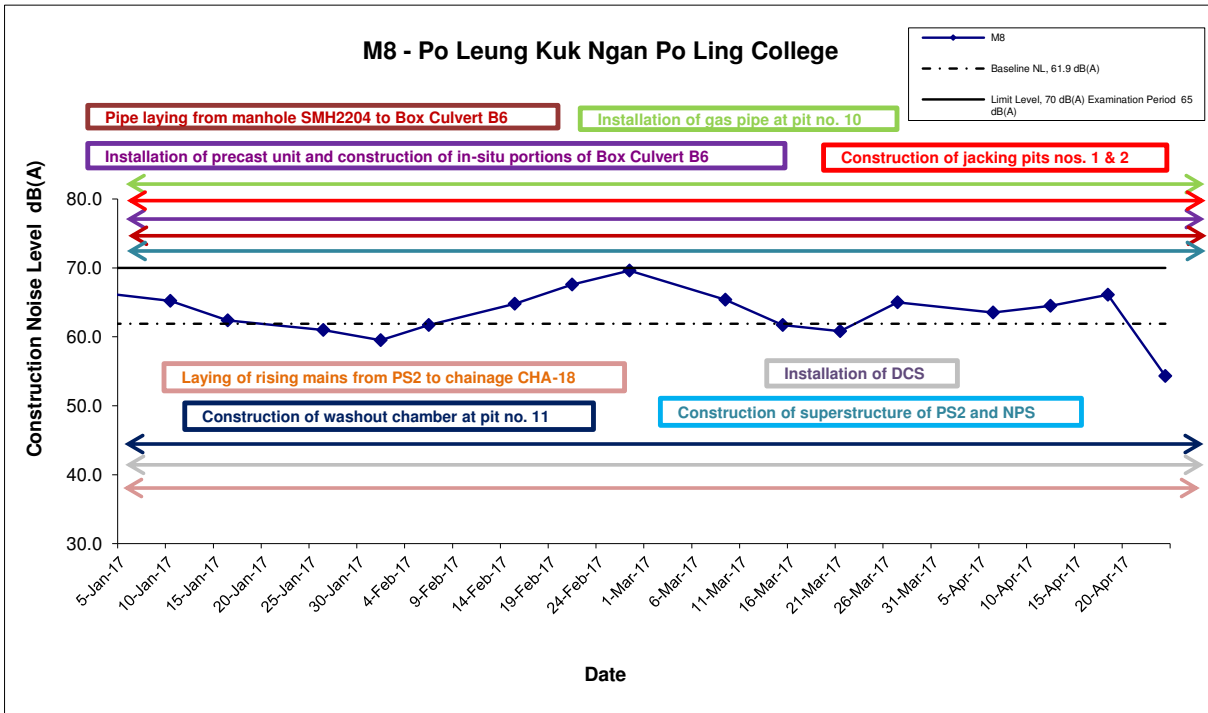
Noise Levels



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	Scale N.T.S	Project No. MA13056	CINOTECH
Graphical Presentation of Construction Noise Monitoring Results	Date Apr-17	Appendix G	

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 Date Apr 17	Project No. MA13056 Appendix G	
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**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**

Contract No. KL/2012/03

Kai Tak Development - Stage 4 Infrastructure at Former North Apron Area



EP-337/2009 - New Distributor Roads serving the Planned Kai Tak Development

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	170407
Date	7 April 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	
170407-O01	• Oil stain should be cleared	E 8
170407-O02	• Chemical waste should be stored at area with drip trays.	E 2i
170407-R01	• Construction waste should be removed regularly.	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.: 170331), all environmental deficiencies were improved/rectified during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		7 April 2017
Checked by	Dr. Priscilla Choy		7 April 2017

Contract No. KL/2012/03

Kai Tak Development - Stage 4 Infrastructure at Former North Apron Area

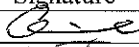

EP-337/2009 - New Distributor Roads serving the Planned Kai Tak Development

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	170413
Date	13 April 2017
Time	14:00-15:00

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.: 170407), all environmental deficiencies were improved/rectified during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		13 April 2017
Checked by	Dr. Priscilla Choy		13 April 2017

Contract No. KL/2012/03

Kai Tak Development - Stage 4 Infrastructure at Former North Apron Area

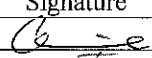

EP-337/2009 - New Distributor Roads serving the Planned Kai Tak Development

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	170419
Date	19 April 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	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	D. Noise	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
170419-R01	<ul style="list-style-type: none">Oil container should be provided with drip tray. (near Contractor's site office)	E 9
	F. Visual and Landscape	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	H. Others	
	<ul style="list-style-type: none">Follow-up on previous audit section (Ref. No.: 170413), no environmental deficiencies was observed during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		19 April 2017
Checked by	Dr. Priscilla Choy		19 April 2017

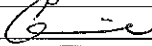

Contract No. KL/2012/03

**Kai Tak Development - Stage 4 Infrastructure at Former North Apron Area
EP-344/2009 - New Sewage Pumping Stations serving Kai Tak Development**

**Weekly Site Inspection Record Summary
Inspection Information**

Checklist Reference Number	170407
Date	7 April 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	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	D. Noise	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	G. Permits /Licences	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	H. Others	
	<ul style="list-style-type: none">Follow-up on previous audit section (Ref. No.: 170331), all environmental deficiencies were rectified/improved by the Contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		7 April 2017
Checked by	Dr. Priscilla Choy		7 April 2017

Contract No. KL/2012/03

Kai Tak Development - Stage 4 Infrastructure at Former North Apron Area

EP-337/2009 - New Distributor Roads serving the Planned Kai Tak Development

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	170428
Date	28 April 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	
170428-R01	• Stockpile of dusty material should be covered. (near Contractor's site office)	C 7
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
170428-O01	• Mitigation measures should be provided to avoid chemical leakage.	E 8
170428-R02	• Accumulated waste should be removed. (near Contractor's site office)	E 1i
	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.: 170419), all environmental deficiencies were improved/rectified during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		28 April 2017
Checked by	Dr. Priscilla Choy		28 April 2017

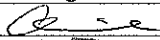

Contract No. KL/2012/03

**Kai Tak Development - Stage 4 Infrastructure at Former North Apron Area
EP-344/2009 - New Sewage Pumping Stations serving Kai Tak Development**

**Weekly Site Inspection Record Summary
Inspection Information**

Checklist Reference Number	170413
Date	13 April 2017
Time	14:00-15:00

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.: 170407), no environmental deficiencies was observed during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		13 April 2017
Checked by	Dr. Priscilla Choy		13 April 2017

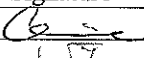

Contract No. KL/2012/03

**Kai Tak Development - Stage 4 Infrastructure at Former North Apron Area
EP-344/2009 - New Sewage Pumping Stations serving Kai Tak Development**

**Weekly Site Inspection Record Summary
Inspection Information**

Checklist Reference Number	170419
Date	19 April 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.: 170413), no environmental deficiencies was observed during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		19 April 2017
Checked by	Dr. Priscilla Choy		19 April 2017

Contract No. KL/2012/03

**Kai Tak Development - Stage 4 Infrastructure at Former North Apron Area
EP-344/2009 - New Sewage Pumping Stations serving Kai Tak Development**

**Weekly Site Inspection Record Summary
Inspection Information**

Checklist Reference Number	170428
Date	28 April 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.: 170419), no environmental deficiencies was observed during the site inspection.	

	Name	Signature	Date
Recorded by	Carrie Leung		28 April 2017
Checked by	Dr. Priscilla Choy		28 April 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	<ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Inform Contactor, IEC and ER; 3. Repeat measurement to confirm finding. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action Level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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

Appendix J - Event Action Plans

	<p>EPD, IEC and ER informed of the results.</p>	<p>4. Advise the ER on the effectiveness of the proposed remedial measures.</p>	<p>implemented; 4. Supervise implementation of remedial measures; 5. Conduct meeting with ET and IEC if exceedance continues.</p>	<p>working days of notification; 4. Implement the agreed proposals.</p>
<p>Limit Level being exceeded by two or more consecutive sampling</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>

Appendix J - Event Action Plans

Event/Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>
Limit Level being exceeded	<ol style="list-style-type: none"> 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; 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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;

Appendix J - Event Action Plans

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

Appendix J - Event Action Plans

	<p>ER</p> <p>2. Increase monitoring frequency</p> <p>3. Discuss remedial actions with IEC, ER and Contractor</p> <p>4. Monitor remedial actions until rectification has been completed</p> <p>5. If non-conformity stops, cease additional monitoring</p>	<p>2. Check Contractor's working method</p> <p>3. Discuss with ET and Contractor on possible remedial measures</p> <p>4. Advise ER on effectiveness of proposed remedial measures</p> <p>5. Supervise implementation of remedial measures.</p>	<p>implemented</p>	<p>undertake any necessary replacement</p>
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**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
<p align="center">Construction Dust</p>	<p>8 times daily watering of the work site with active dust emitting activities.</p>	<p align="center">^</p>
	<p>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.</p>	
	<ul style="list-style-type: none"> • Stockpiling site(s) should be lined with impermeable sheeting and bunded. Stockpiles should be fully covered by impermeable sheeting to reduce dust emission. 	<p align="center">^</p>
	<ul style="list-style-type: none"> • Misting for the dusty material should be carried out before being loaded into the vehicle. 	<p align="center">^</p>
	<ul style="list-style-type: none"> • Any vehicle with an open load carrying area should have properly fitted side and tail boards. 	<p align="center">^</p>
	<ul style="list-style-type: none"> • 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. 	<p align="center">^</p>
	<ul style="list-style-type: none"> • The tarpaulin should be properly secured and should extend at least 300 mm over the edges of the sides and tailboards. The material should also be dampened if necessary before transportation. 	<p align="center">^</p>
	<ul style="list-style-type: none"> • 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. 	<p align="center">^</p>
	<ul style="list-style-type: none"> • Vehicle washing facilities should be provided at every vehicle exit point. 	<p align="center">*</p>
	<ul style="list-style-type: none"> • 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. 	<p align="center">^</p>
<ul style="list-style-type: none"> • 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. 	<p align="center">^</p>	
<ul style="list-style-type: none"> • 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. 	<p align="center">^</p>	
<ul style="list-style-type: none"> • Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites. 	<p align="center">^</p>	

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.	N/A(1)
	• 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.	^
	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 111; 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	

	<p>(i) avoid any sensitive facades with openable window facing the existing To Kwa Wan Road or 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.</p> <p>(ii) 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</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p>
	<p>All the ventilation fans installed in the below will be provided with silencers or acoustics treatment.</p> <p>(i) SPS (ii) ESS (iii) Tunnel Ventilation Shaft (iv) EFTS depot</p> <p>Installation of retractable roof or other equivalent measures</p>	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>
<p>Construction Water Quality</p>	<p>The following mitigation measures are proposed to be incorporated in the design of the SPS at KTD, including:</p> <ul style="list-style-type: none"> • 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. <p><u>Land-based Construction</u></p> <p><i>Construction Runoff</i></p> <p>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:</p> <ul style="list-style-type: none"> • use of sediment traps • adequate maintenance of drainage systems to prevent flooding and overflow 	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>^</p> <p>^</p> <p>^</p>

	<p>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.</p> <p>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.</p> <p>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.</p> <p>Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50 m³ 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.</p> <p>Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.</p> <p>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.</p> <p>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.</p>	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
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	<p>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.</p> <p><i>Drainage</i></p> <p>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.</p> <p>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.</p> <p>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.</p> <p><i>Sewage Effluent</i></p> <p>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.</p> <p><i>Stormwater Discharges</i></p> <p>Minimum distances of 100 m should be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes</p>	<p>*</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>N/A</p>
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	<p><i>Debris and Litter</i></p> <p>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</p> <p><i>Construction Works at or in Close Proximity of Storm Culvert or Seafront</i></p> <p>The proposed works should preferably be carried out within the dry season where the flow in the drainage channel /storm culvert/ nullah is low.</p> <p>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.</p> <p>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.</p> <p>Stockpiling of construction materials and dusty materials should be covered and located away from any water courses.</p> <p>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.</p> <hr/> <p>Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable.</p> <hr/> <p>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.</p> <p>Construction effluent, site run-off and sewage should be properly collected and/or treated.</p> <p>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.</p> <p>Silt curtain may be installed around the construction activities at the seafront to minimize the potential impacts due to accidental spillage of construction materials.</p> <p>Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert/drainage channel/sea.</p>	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
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	<p>Supervisory staff should be assigned to station on site to closely supervise and monitor the works</p> <p>Marine water quality monitoring and audit programme shall be implemented for the proposed sediment treatment operation.</p> <p>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:</p> <ul style="list-style-type: none"> • 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) <p>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:</p> <ul style="list-style-type: none"> • 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 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
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	<p>Construction and Demolition Material</p> <p>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:</p> <ul style="list-style-type: none"> • 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 <p>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.</p> <p>Chemical Waste</p> <p>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 <i>Waste Disposal (Chemical Waste) (General) Regulation</i></p>	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
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	<p>General Refuse</p> <p>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</p>	^
Landscape and Visual	<p>CM1 All existing trees should be carefully protected during construction.</p>	^
	<p>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.</p>	N/A
	<p>CM3 Control of night-time lighting.</p>	^
	<p>CM4 Erection of decorative screen hoarding.</p>	^

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: April 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 - 10 th 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)

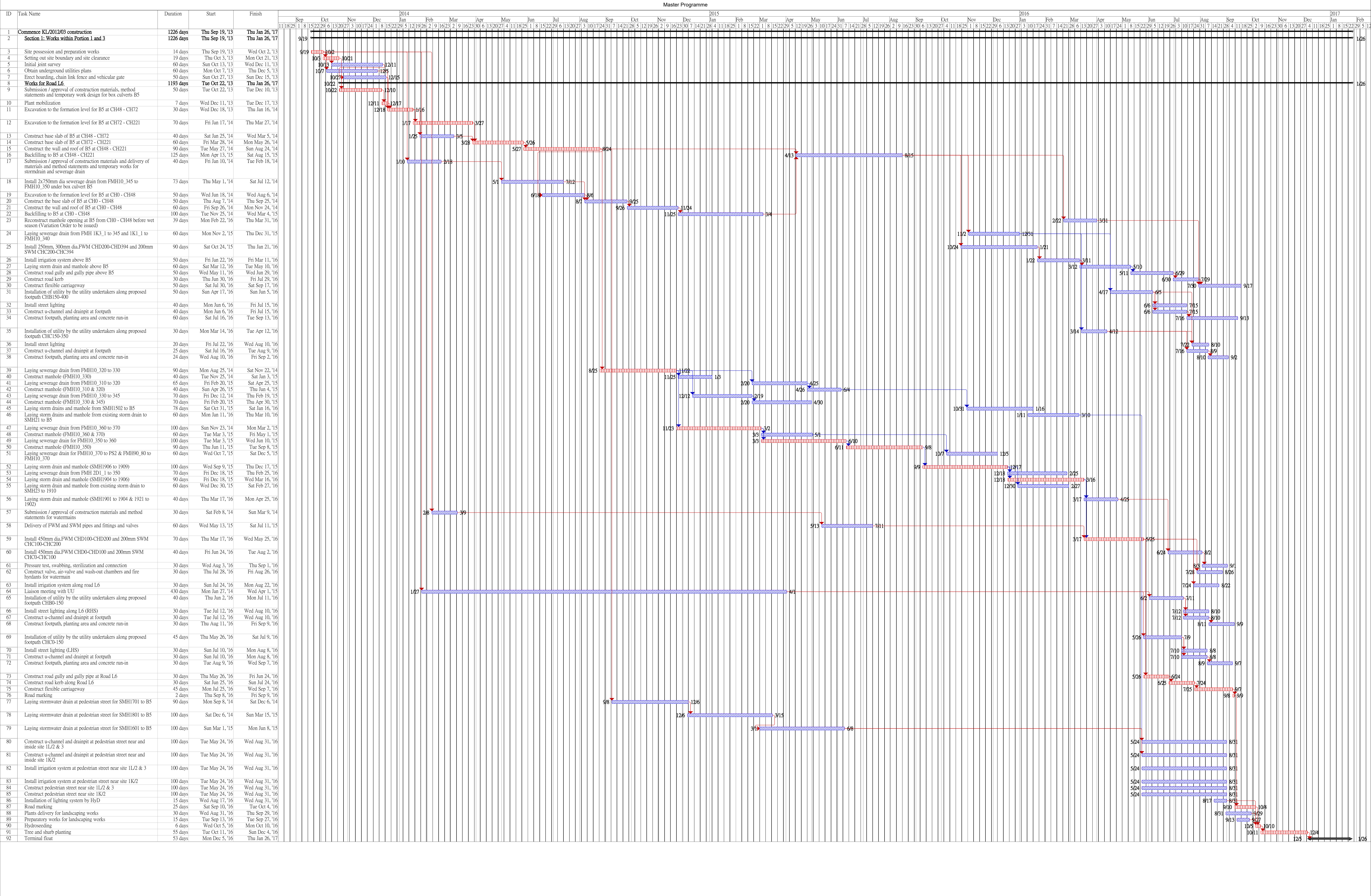
Name of Department: CEDD

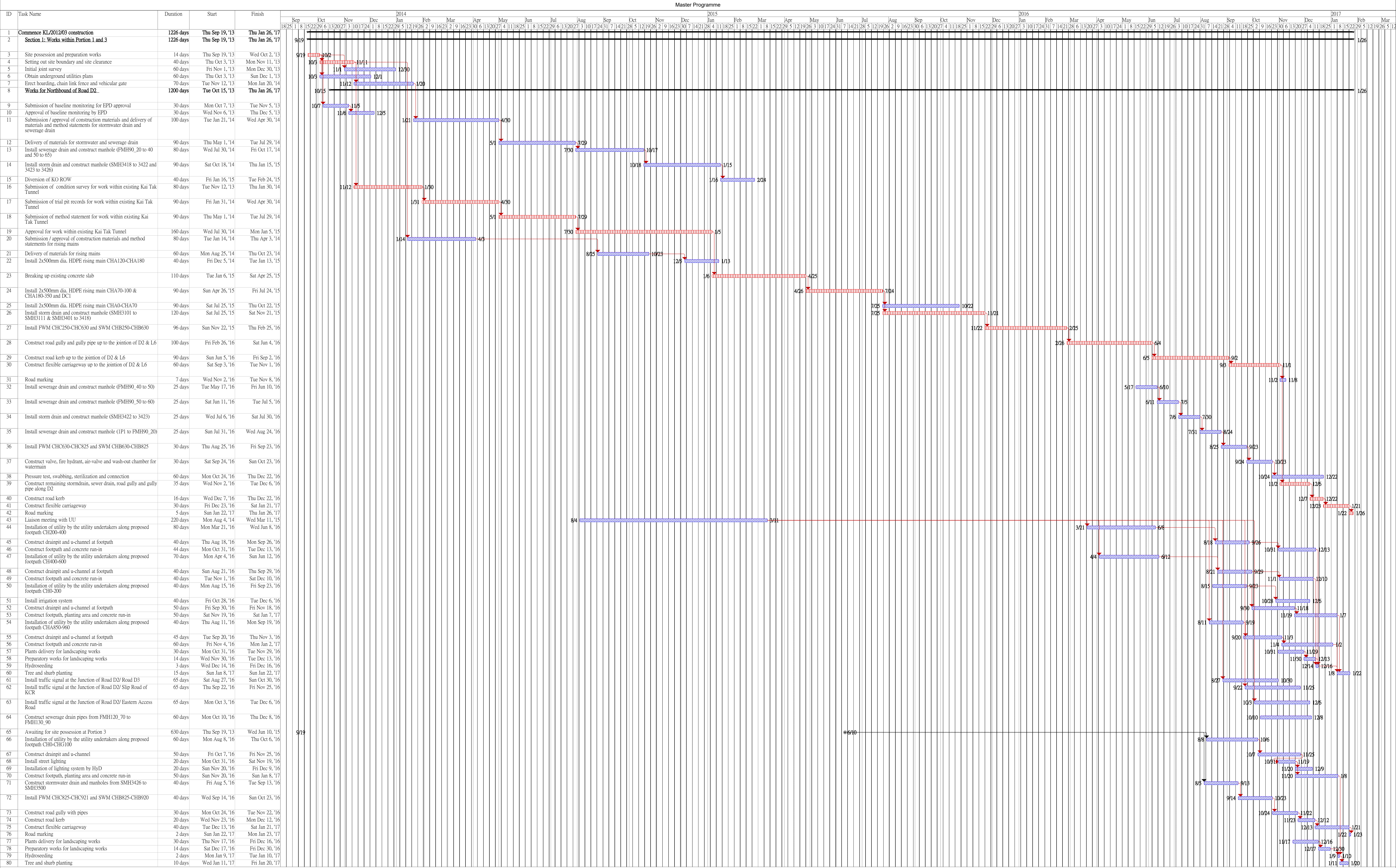
Contract No. : KL/2012/03

Monthly Summary Waste Flow Table for April 2017 (year) (in tons)

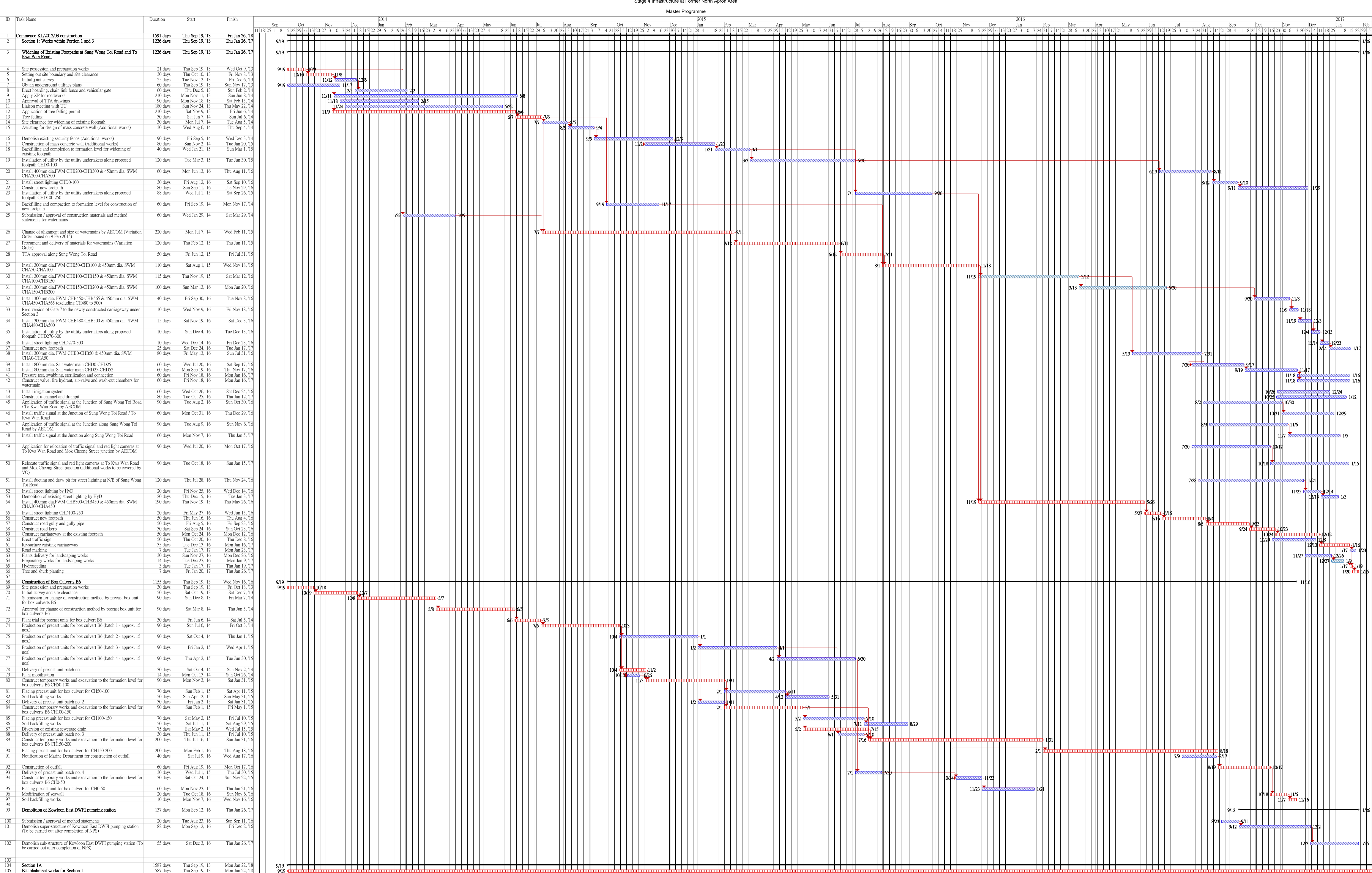
Month	Total Disposal Loads	Total Quantity Generated	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Wastes Generated Monthly				
	(No.s)	(in tons)	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
			(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	124	1741.5	0	0	0	1703.61	0	0	0	0	0	37.89
May-17												
Jun-17												
Jul-17												
Aug-17												
Sep-17												
Oct-17												
Nov-17												
Dec-17												
Total	5466	175236.4	0	0	55090.84	118474.96	25744.27	0	0	0	0	1970.37

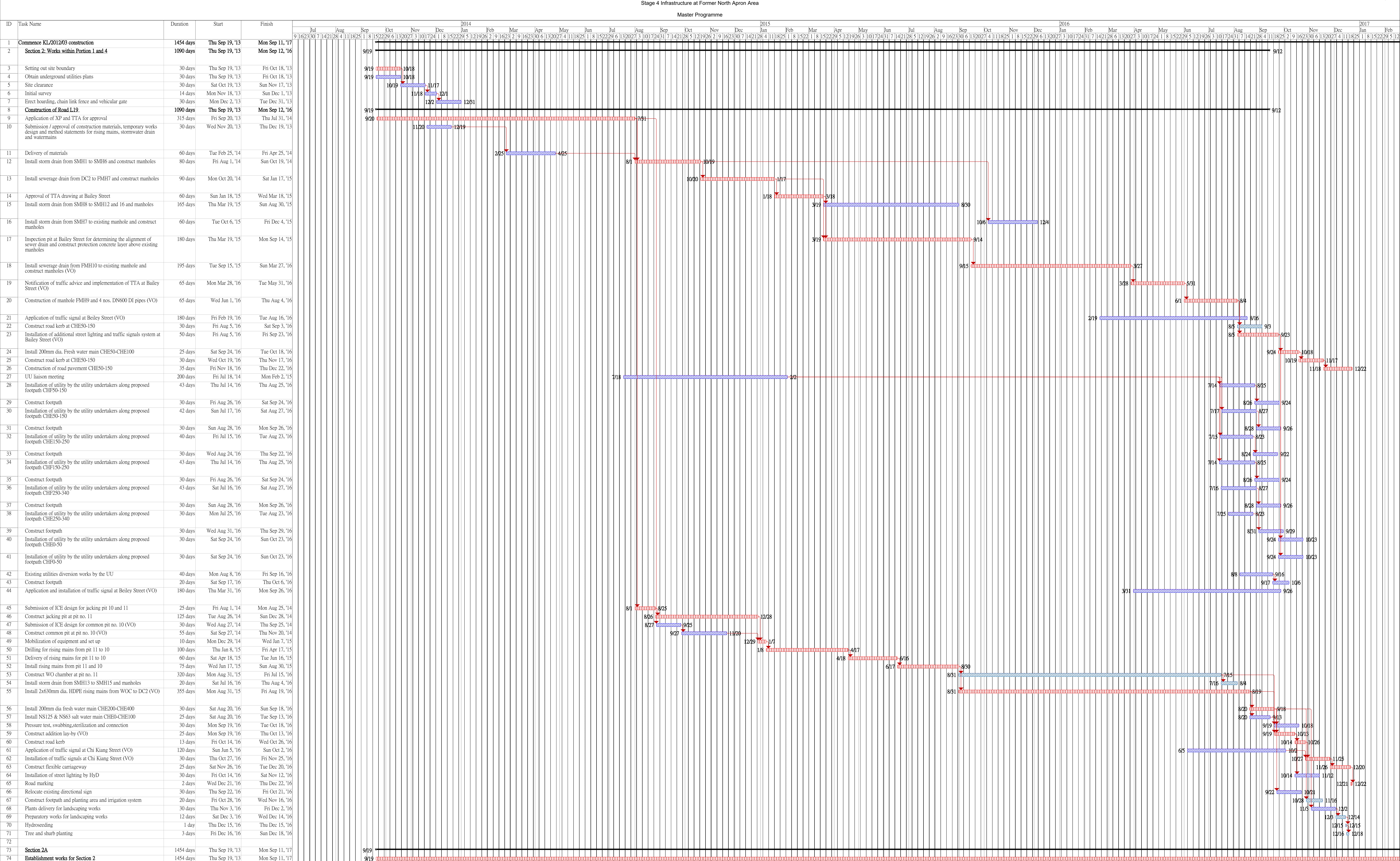
APPENDIX N
CONSTRUCTION PROGRAMME



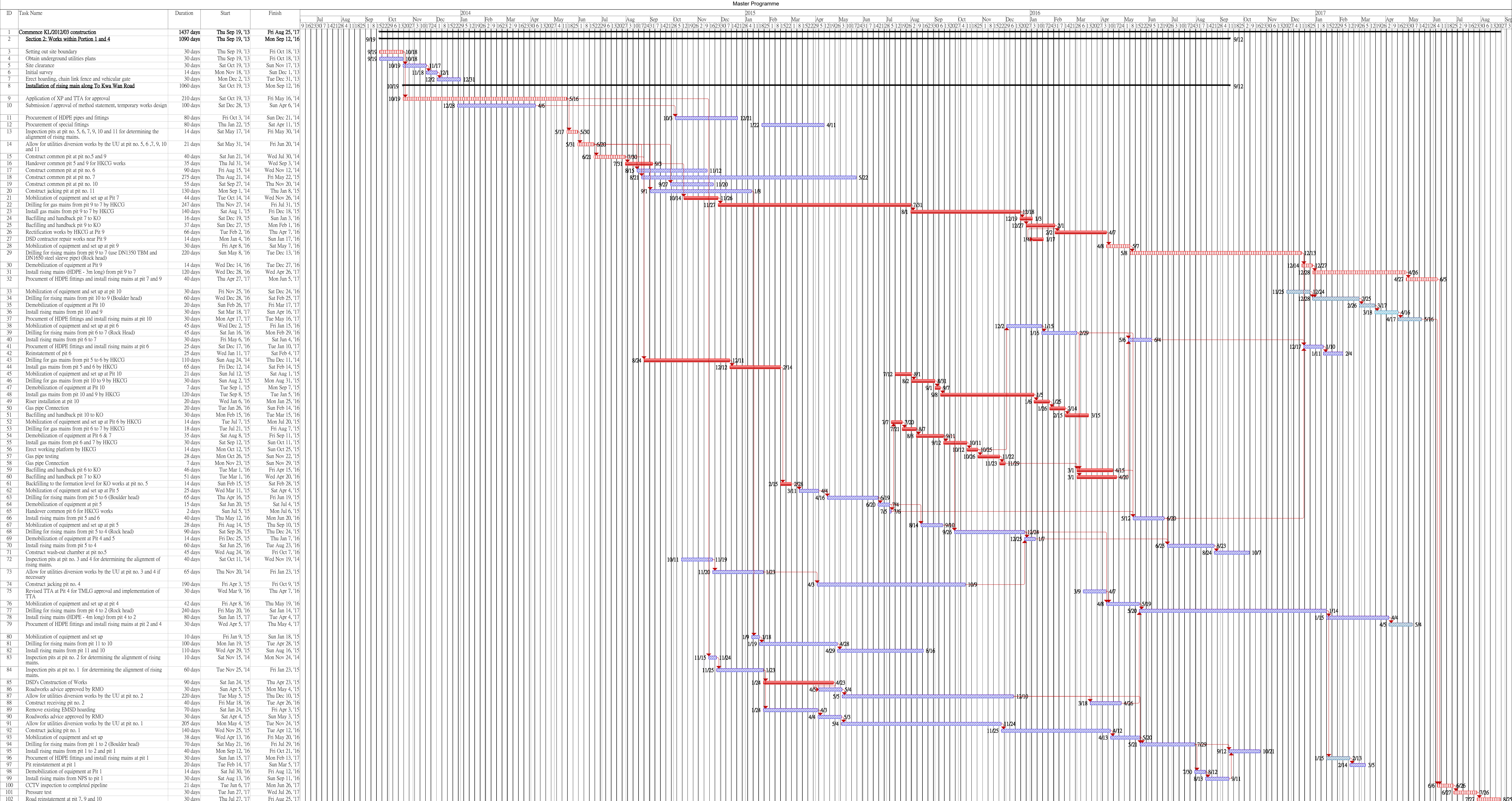


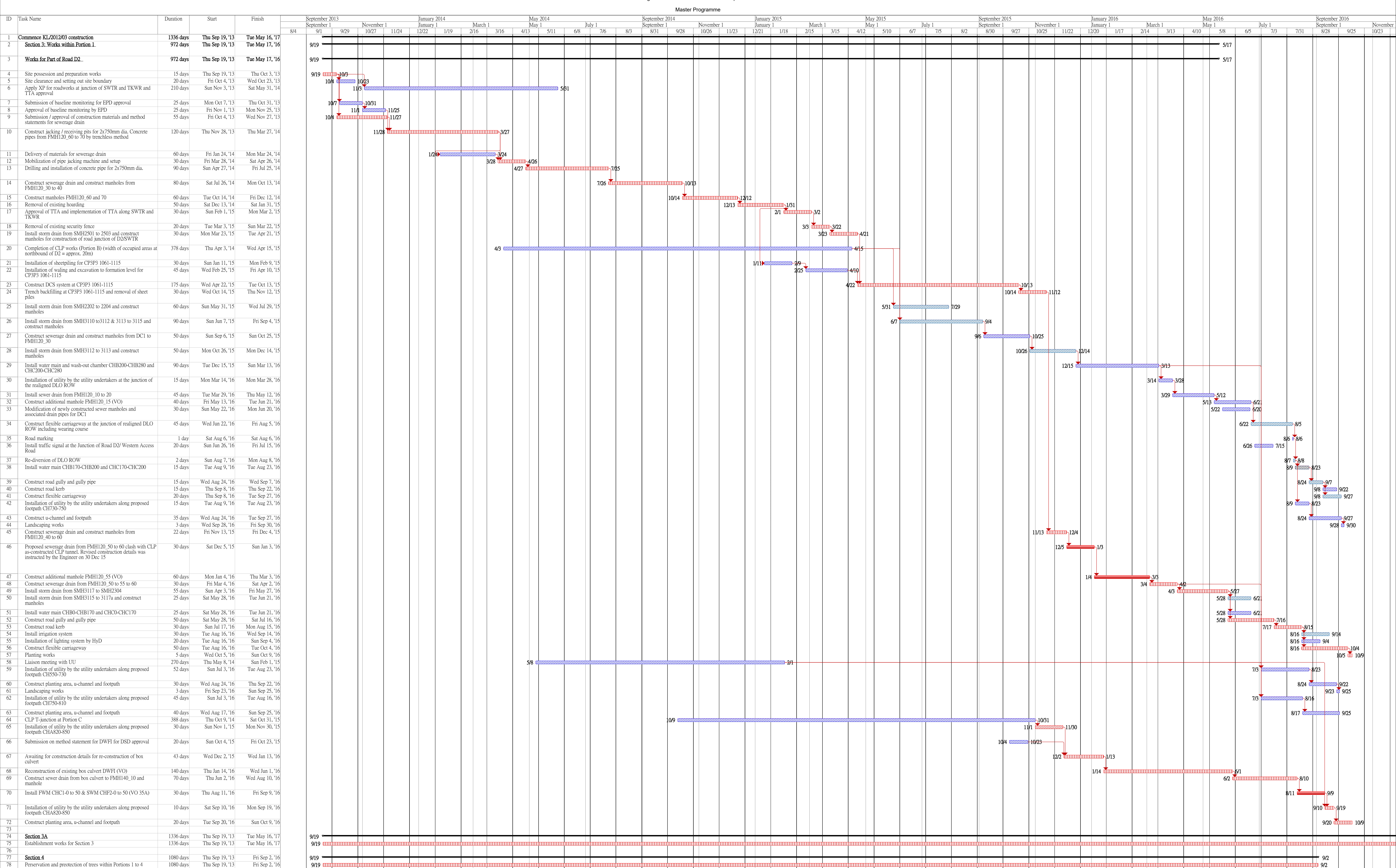
Task Name	Duration	Start	Finish
1 Commence KL/2012/03 construction	1226 days	Thu Sep 19, '13	Thu Jun 26, '17
2 Section 1: Works within Portion 1 and 3	1226 days	Thu Sep 19, '13	Thu Jun 26, '17
3 Site possession and preparation works	14 days	Thu Sep 19, '13	Wed Oct 2, '13
4 Setting out site boundary and site clearance	40 days	Thu Oct 3, '13	Mon Nov 11, '13
5 Initial joint survey	60 days	Fri Nov 1, '13	Mon Dec 30, '13
6 Obtain underground utilities plans	60 days	Thu Oct 3, '13	Sun Dec 1, '13
7 Erect hoarding, chain link fence and vehicular gate	70 days	Tue Nov 12, '13	Mon Jan 20, '14
8 Works for Northbound of Road D2	1200 days	Tue Oct 15, '13	Thu Jun 26, '17
9 Submission of baseline monitoring for EPD approval	30 days	Mon Oct 7, '13	Tue Nov 5, '13
10 Approval of baseline monitoring by EPD	30 days	Thu Dec 5, '13	Wed Dec 5, '13
11 Submission / approval of construction materials and delivery of materials and method statements for stormwater drain and sewerage drain	100 days	Tue Jan 21, '14	Wed Apr 30, '14
12 Delivery of materials for stormwater and sewerage drain	90 days	Thu May 1, '14	Tue Jul 29, '14
13 Install sewerage drain and construct manhole (FMH90_20 to 40 and 50 to 65)	80 days	Fri Oct 17, '14	Wed Oct 17, '14
14 Install storm drain and construct manhole (SMH3418 to 3422 and 3423 to 3426)	90 days	Sat Oct 18, '14	Thu Jan 15, '15
15 Diversion of KO ROW	40 days	Fri Jan 16, '15	Tue Feb 24, '15
16 Submission of condition survey for work within existing Kai Tak Tunnel	80 days	Tue Nov 12, '13	Thu Jan 30, '14
17 Submission of trial pit records for work within existing Kai Tak Tunnel	90 days	Fri Jan 31, '14	Wed Apr 30, '14
18 Submission of method statement for work within existing Kai Tak Tunnel	90 days	Thu May 1, '14	Tue Jul 29, '14
19 Approval for work within existing Kai Tak Tunnel	80 days	Tue Jul 30, '14	Mon Jan 5, '15
20 Submission / approval of construction materials and method statements for rising mains	160 days	Tue Jan 14, '14	Thu Apr 3, '14
21 Delivery of materials for rising mains	60 days	Mon Aug 25, '14	Thu Oct 23, '14
22 Install 2x500mm dia. HDPE rising main CHA120-CHA180	40 days	Fri Dec 5, '14	Tue Jan 13, '15
23 Breaking up existing concrete slab	110 days	Tue Jan 6, '15	Sat Apr 25, '15
24 Install 2x500mm dia. HDPE rising main CHA70-100 & CHA180-350 and DC1	90 days	Sun Apr 26, '15	Fri Jul 24, '15
25 Install 2x500mm dia. HDPE rising main CHA0-CHA70	90 days	Sat Jul 25, '15	Thu Oct 22, '15
26 Install storm drain and construct manhole (SMH3101 to SMH3111 & SMH3401 to 3418)	120 days	Sat Jul 25, '15	Sat Nov 21, '15
27 Install FWM CHC250-CHC630 and SWM CHB250-CHB630	96 days	Sun Nov 22, '15	Thu Feb 25, '16
28 Construct road gully and gully pipe up to the jointion of D2 & L6	100 days	Fri Feb 26, '16	Sat Jun 4, '16
29 Construct road kerb up to the jointion of D2 & L6	90 days	Sun Jun 5, '16	Fri Sep 2, '16
30 Construct flexible carriageway up to the jointion of D2 & L6	60 days	Sat Sep 3, '16	Tue Nov 1, '16
31 Road marking	7 days	Wed Nov 2, '16	Tue Nov 8, '16
32 Install sewerage drain and construct manhole (FMH90_40 to 50)	25 days	Tue May 17, '16	Fri Jun 10, '16
33 Install sewerage drain and construct manhole (FMH90_50 to 60)	25 days	Sat Jun 11, '16	Tue Jul 5, '16
34 Install storm drain and construct manhole (SMH3422 to 3423)	25 days	Wed Jul 6, '16	Sat Jul 30, '16
35 Install sewerage drain and construct manhole (IP1 to FMH90_20)	25 days	Sun Jul 31, '16	Wed Aug 24, '16
36 Install FWM CHC630-CHC825 and SWM CHB630-CHB825	30 days	Thu Aug 25, '16	Fri Sep 23, '16
37 Construct valve, fire hydrant, air-valve and wash-out chamber for watermain	30 days	Sat Sep 24, '16	Sun Oct 23, '16
38 Pressure test, swabbing, sterilization and connection	60 days	Mon Oct 24, '16	Thu Dec 22, '16
39 Construct remaining stormdrain, sewer drain, road gully and gully pipe along D2	35 days	Wed Nov 2, '16	Tue Dec 6, '16
40 Construct road kerb	16 days	Wed Dec 7, '16	Thu Dec 22, '16
41 Construct flexible carriageway	30 days	Fri Dec 23, '16	Sat Jan 21, '17
42 Road marking	5 days	Sun Jan 22, '17	Thu Jan 26, '17
43 Liaison meeting with UU	220 days	Mon Aug 4, '14	Wed Mar 11, '15
44 Installation of utility by the utility undertakers along proposed footpath CH200-400	80 days	Mon Mar 21, '16	Wed Jun 8, '16
45 Construct draipit and u-channel at footpath	40 days	Thu Aug 18, '16	Mon Sep 26, '16
46 Construct footpath and concrete run-in	44 days	Mon Oct 31, '16	Tue Dec 13, '16
47 Installation of utility by the utility undertakers along proposed footpath CH400-600	70 days	Mon Apr 4, '16	Sun Jun 12, '16
48 Construct draipit and u-channel at footpath	40 days	Sun Aug 21, '16	Thu Sep 29, '16
49 Construct footpath and concrete run-in	40 days	Tue Nov 1, '16	Sat Dec 10, '16
50 Installation of utility by the utility undertakers along proposed footpath CH0-200	40 days	Mon Aug 15, '16	Fri Sep 23, '16
51 Install irrigation system	40 days	Fri Oct 28, '16	Tue Dec 6, '16
52 Construct draipit and u-channel at footpath	50 days	Fri Sep 30, '16	Fri Nov 18, '16
53 Construct footpath, planting area and concrete run-in	50 days	Sat Nov 19, '16	Sat Jan 7, '17
54 Installation of utility by the utility undertakers along proposed footpath CHA850-960	40 days	Thu Aug 11, '16	Mon Sep 19, '16
55 Construct draipit and u-channel at footpath	45 days	Tue Sep 20, '16	Thu Nov 3, '16
56 Construct footpath and concrete run-in	60 days	Fri Nov 4, '16	Mon Jan 2, '17
57 Plants delivery for landscaping works	30 days	Mon Oct 31, '16	Tue Nov 29, '16
58 Preparatory works for landscaping works	14 days	Wed Nov 30, '16	Tue Dec 13, '16
59 Hydroseeding	3 days	Wed Dec 14, '16	Fri Dec 16, '16
60 Tree and shrub planting	15 days	Sun Jan 8, '17	Sun Jan 22, '17
61 Install traffic signal at the Junction of Road D2/ Road D3	65 days	Sat Aug 27, '16	Sun Oct 30, '16
62 Install traffic signal at the Junction of Road D2/ Slip Road of KCR	65 days	Thu Sep 22, '16	Fri Nov 25, '16
63 Install traffic signal at the Junction of Road D2/ Eastern Access Road	65 days	Mon Oct 3, '16	Tue Dec 6, '16
64 Construct sewerage drain pipes from FMH120_70 to FMH130_90	60 days	Mon Oct 10, '16	Thu Dec 8, '16
65 Awaiting for site possession at Portion 3	630 days	Thu Sep 19, '13	Wed Jun 10, '15
66 Installation of utility by the utility undertakers along proposed footpath CH0-CHG100	60 days	Mon Aug 8, '16	Thu Oct 6, '16
67 Construct draipit and u-channel	50 days	Fri Oct 7, '16	Fri Nov 25, '16
68 Install street lighting	20 days	Mon Oct 31, '16	Sat Nov 19, '16
69 Installation of lighting system by HyD	20 days	Sun Nov 20, '16	Fri Dec 9, '16
70 Construct footpath, planting area and concrete run-in	50 days	Sun Nov 20, '16	Sun Jan 8, '17
71 Construct stormwater drain and manholes from SMH3426 to SMH3500	40 days	Fri Aug 5, '16	Tue Sep 13, '16
72 Install FWM CHC825-CHC921 and SWM CHB825-CHB920	40 days	Wed Sep 14, '16	Sun Oct 23, '16
73 Construct road gully with pipes	30 days	Mon Oct 24, '16	Tue Nov 22, '16
74 Construct road kerb	20 days	Wed Nov 23, '16	Mon Dec 12, '16
75 Construct flexible carriageway	40 days	Tue Dec 13, '16	Sat Jan 21, '17
76 Road marking	2 days	Sun Jan 22, '17	Mon Jan 23, '17
77 Plants delivery for landscaping works	30 days	Thu Nov 17, '16	Fri Dec 16, '16
78 Preparatory works for landscaping works	14 days	Sat Dec 17, '16	Fri Dec 30, '16
79 Hydroseeding	2 days	Mon Jan 9, '17	Tue Jan 10, '17
80 Tree and shrub planting	10 days	Wed Jan 11, '17	Fri Jan 20, '17





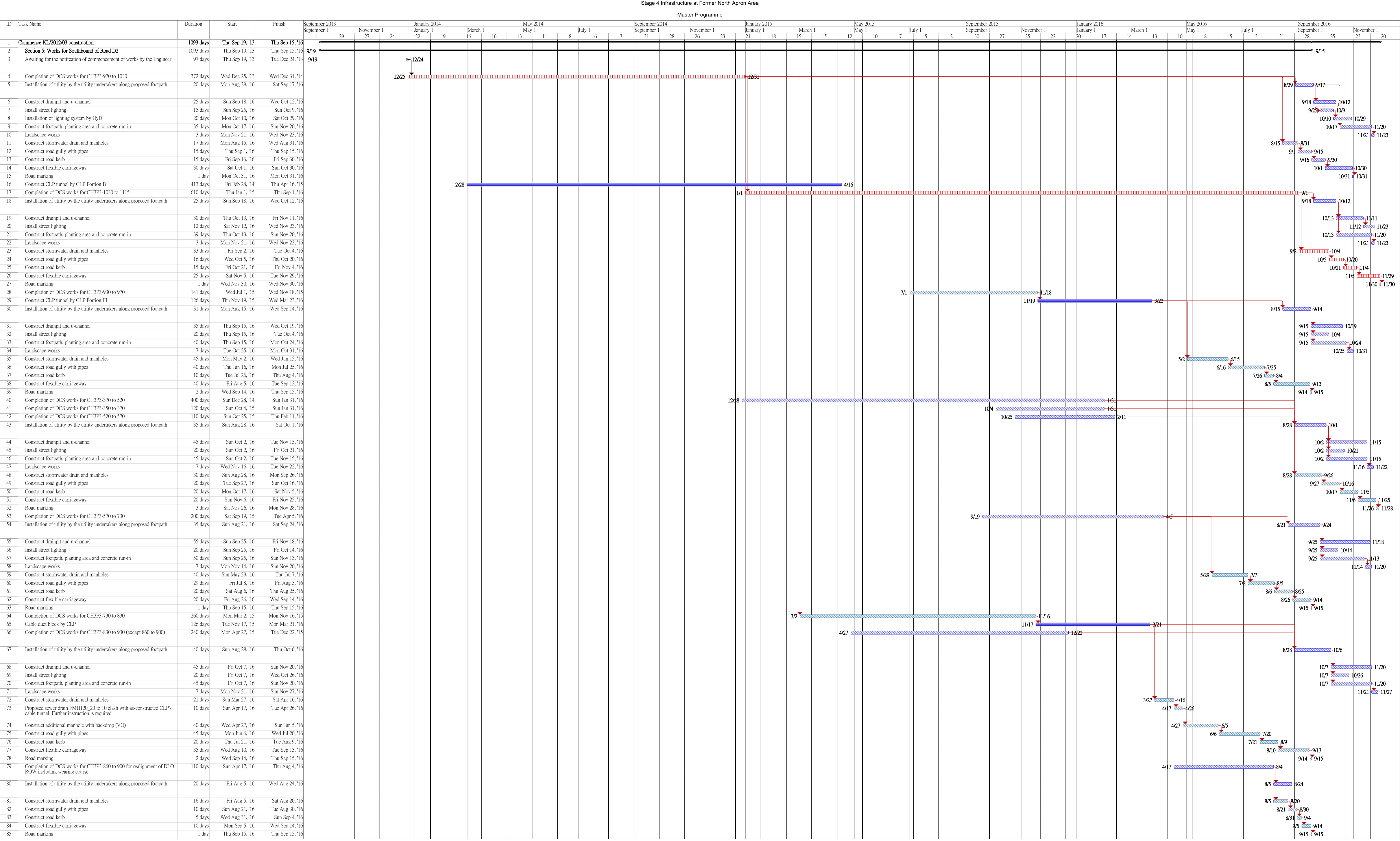
ID	Task Name	Duration	Start	Finish
1	Commence KL/2012/03 construction	1454 days	Thu Sep 19, '13	Mon Sep 11, '17
2	Section 2: Works within Portion 1 and 4	1090 days	Thu Sep 19, '13	Mon Sep 12, '16
3	Setting out site boundary	30 days	Thu Sep 19, '13	Fri Oct 18, '13
4	Obtain underground utilities plans	30 days	Thu Sep 19, '13	Fri Oct 18, '13
5	Site clearance	30 days	Sat Oct 19, '13	Sun Oct 17, '13
6	Initial survey	14 days	Mon Nov 18, '13	Sun Dec 1, '13
7	Erect hoarding, chain link fence and vehicular gate	30 days	Mon Nov 18, '13	Tue Dec 31, '13
8	Construction of Road L19	1090 days	Thu Sep 19, '13	Mon Sep 12, '16
9	Application of XP and TTA for approval	315 days	Fri Sep 20, '13	Thu Jul 31, '14
10	Submission / approval of construction materials, temporary works design and method statements for rising mains, stormwater drain and watermains	30 days	Wed Nov 20, '13	Thu Dec 19, '13
11	Delivery of materials	60 days	Tue Feb 25, '14	Fri Apr 25, '14
12	Install storm drain from SMH1 to SMH6 and construct manholes	80 days	Fri Aug 1, '14	Sun Apr 19, '14
13	Install sewerage drain from DC2 to FMH7 and construct manholes	90 days	Mon Oct 20, '14	Sat Jan 17, '15
14	Approval of TTA drawing at Bailey Street	60 days	Sun Jan 18, '15	Wed Mar 18, '15
15	Install storm drain from SMH8 to SMH12 and 16 and manholes	165 days	Thu Mar 19, '15	Sun Aug 30, '15
16	Install storm drain from SMH7 to existing manhole and construct manholes	60 days	Tue Oct 6, '15	Fri Dec 4, '15
17	Inspection pit at Bailey Street for determining the alignment of sewer drain and construct protection concrete layer above existing manholes	180 days	Thu Mar 19, '15	Mon Sep 14, '15
18	Install sewerage drain from FMH10 to existing manhole and construct manholes (VO)	195 days	Tue Sep 15, '15	Sun Mar 27, '16
19	Notification of traffic advice and implementation of TTA at Bailey Street (VO)	65 days	Mon Mar 28, '16	Tue May 31, '16
20	Construction of manhole FMH9 and 4 nos. DN600 DI pipes (VO)	65 days	Wed Jun 1, '16	Thu Aug 4, '16
21	Application of traffic signal at Bailey Street (VO)	180 days	Fri Feb 19, '16	Tue Aug 16, '16
22	Construct road kerb at CHE50-150	30 days	Fri Aug 5, '16	Sat Sep 3, '16
23	Installation of additional street lighting and traffic signals system at Bailey Street (VO)	50 days	Fri Aug 5, '16	Fri Sep 23, '16
24	Install 200mm dia. Fresh water main CHE50-CHE100	25 days	Sat Sep 24, '16	Tue Oct 18, '16
25	Construct road kerb at CHE50-150	30 days	Wed Oct 19, '16	Thu Nov 17, '16
26	Construction of road pavement CHE50-150	35 days	Fri Nov 18, '16	Thu Dec 22, '16
27	UU liaison meeting	200 days	Thu Jul 18, '14	Mon Feb 2, '15
28	Installation of utility by the utility undertakers along proposed footpath CHF50-150	43 days	Thu Jul 14, '16	Thu Aug 25, '16
29	Construct footpath	30 days	Fri Aug 26, '16	Sat Sep 24, '16
30	Installation of utility by the utility undertakers along proposed footpath CHE50-150	42 days	Sun Jul 17, '16	Sat Aug 27, '16
31	Construct footpath	30 days	Sun Aug 28, '16	Mon Sep 26, '16
32	Installation of utility by the utility undertakers along proposed footpath CHE150-250	40 days	Fri Jul 15, '16	Tue Aug 23, '16
33	Construct footpath	30 days	Wed Aug 24, '16	Thu Sep 22, '16
34	Installation of utility by the utility undertakers along proposed footpath CHF150-250	43 days	Thu Jul 14, '16	Thu Aug 25, '16
35	Construct footpath	30 days	Fri Aug 26, '16	Sat Sep 24, '16
36	Installation of utility by the utility undertakers along proposed footpath CHF250-340	43 days	Sat Jul 16, '16	Sat Aug 27, '16
37	Construct footpath	30 days	Sun Aug 28, '16	Mon Sep 26, '16
38	Installation of utility by the utility undertakers along proposed footpath CHE250-340	30 days	Mon Jul 25, '16	Tue Aug 23, '16
39	Construct footpath	30 days	Wed Aug 31, '16	Thu Sep 29, '16
40	Installation of utility by the utility undertakers along proposed footpath CHD-50	30 days	Sat Sep 24, '16	Sun Oct 23, '16
41	Installation of utility by the utility undertakers along proposed footpath CHPD-50	30 days	Sat Sep 24, '16	Sun Oct 23, '16
42	Existing utilities diversion works by the UU	40 days	Mon Aug 8, '16	Fri Sep 16, '16
43	Construct footpath	20 days	Sat Sep 17, '16	Thu Oct 6, '16
44	Application and installation of traffic signal at Bailey Street (VO)	180 days	Thu Mar 31, '16	Mon Sep 26, '16
45	Submission of ICE design for jacking pit 10 and 11	25 days	Fri Aug 1, '14	Mon Aug 25, '14
46	Construct jacking pit at pit no. 11	125 days	Tue Aug 26, '14	Sun Dec 28, '14
47	Submission of ICE design for common pit no. 10 (VO)	30 days	Wed Aug 27, '14	Thu Sep 25, '14
48	Construct common pit at pit no. 10 (VO)	55 days	Sat Sep 27, '14	Thu Nov 20, '14
49	Mobilization of equipment and set up	10 days	Mon Dec 29, '14	Wed Jan 7, '15
50	Drilling for rising mains from pit 11 to 10	100 days	Thu Jan 8, '15	Fri Apr 17, '15
51	Delivery of rising mains for pit 11 to 10	60 days	Sat Apr 18, '15	Tue Jun 16, '15
52	Install rising mains from pit 11 and 10	75 days	Wed Jun 17, '15	Sun Aug 30, '15
53	Construct WO chamber at pit no. 11	320 days	Mon Aug 31, '15	Fri Jul 15, '16
54	Install storm drain from SMH13 to SMH15 and manholes	20 days	Sat Jul 16, '16	Thu Aug 4, '16
55	Install 2x630mm dia. HDPE rising mains from WOC to DC2 (VO)	355 days	Mon Aug 31, '15	Fri Aug 19, '16
56	Install 200mm dia fresh water main CHE200-CHE400	30 days	Sat Aug 20, '16	Sun Sep 18, '16
57	Install NS125 & NS63 salt water main CHE0-CHE100	25 days	Sat Aug 20, '16	Tue Sep 13, '16
58	Pressure test, swabbing,sterilization and connection	30 days	Mon Sep 19, '16	Tue Oct 18, '16
59	Construct addition lay-by (VO)	25 days	Mon Sep 19, '16	Thu Oct 13, '16
60	Construct road kerb	13 days	Fri Oct 14, '16	Wed Oct 26, '16
61	Application of traffic signal at Chi Kiang Street (VO)	120 days	Sun Jun 5, '16	Sun Oct 2, '16
62	Installation of traffic signals at Chi Kiang Street (VO)	30 days	Thu Oct 27, '16	Fri Nov 25, '16
63	Construct flexible carriageway	25 days	Sat Nov 26, '16	Tue Dec 20, '16
64	Installation of street lighting by HyD	30 days	Fri Oct 14, '16	Sat Nov 12, '16
65	Road marking	2 days	Wed Dec 21, '16	Thu Dec 22, '16
66	Relocate existing directional sign	30 days	Thu Dec 22, '16	Fri Oct 21, '16
67	Construct footpath and planting area and irrigation system	20 days	Fri Oct 28, '16	Wed Nov 16, '16
68	Plants delivery for landscaping works	30 days	Thu Nov 3, '16	Fri Dec 2, '16
69	Preparatory works for landscaping works	12 days	Sat Dec 3, '16	Wed Dec 14, '16
70	Hydroseeding	1 day	Thu Dec 15, '16	Thu Dec 15, '16
71	Tree and shrub planting	3 days	Fri Dec 16, '16	Sun Dec 18, '16
72				
73	Section 2A	1454 days	Thu Sep 19, '13	Mon Sep 11, '17
74	Establishment works for Section 2	1454 days	Thu Sep 19, '13	Mon Sep 11, '17





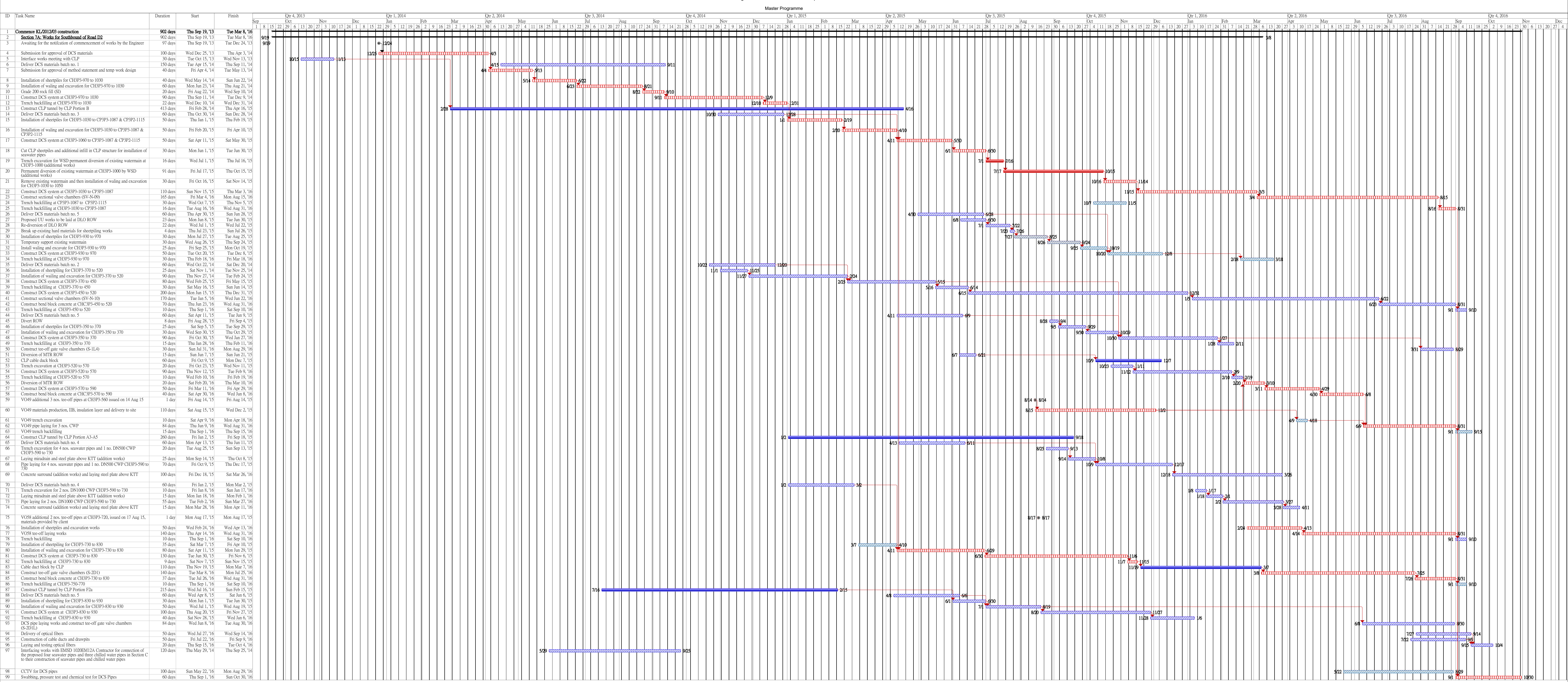
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Non-critical tasks: Inactive Milestone: Manual Task: Manual Summary Rollup: Manual Summary: Start-only: External Tasks:

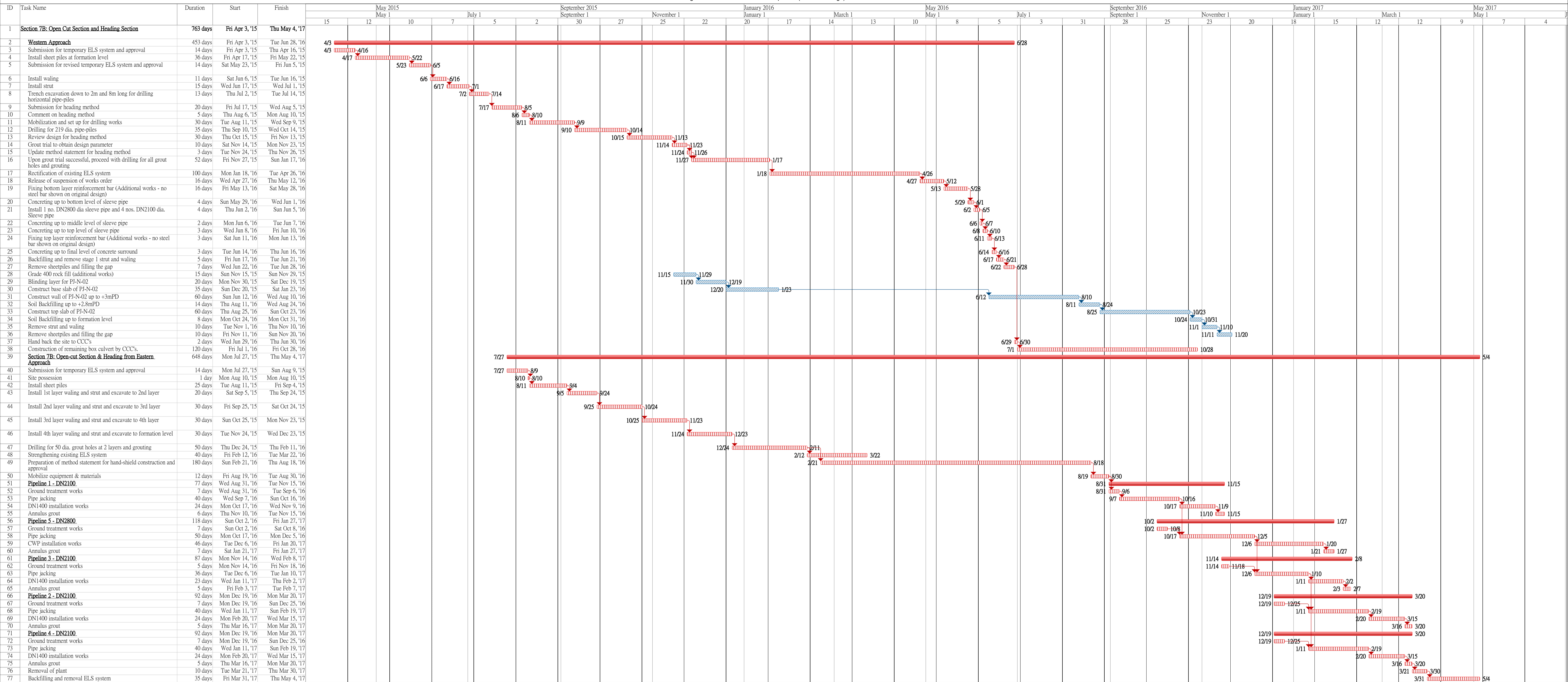


Critical tasks: Working days: Inactive Summary: Duration-only: Manual Summary: Manual Summary Rollup: Start-only: Finish-only: External Tasks: External Milestone:

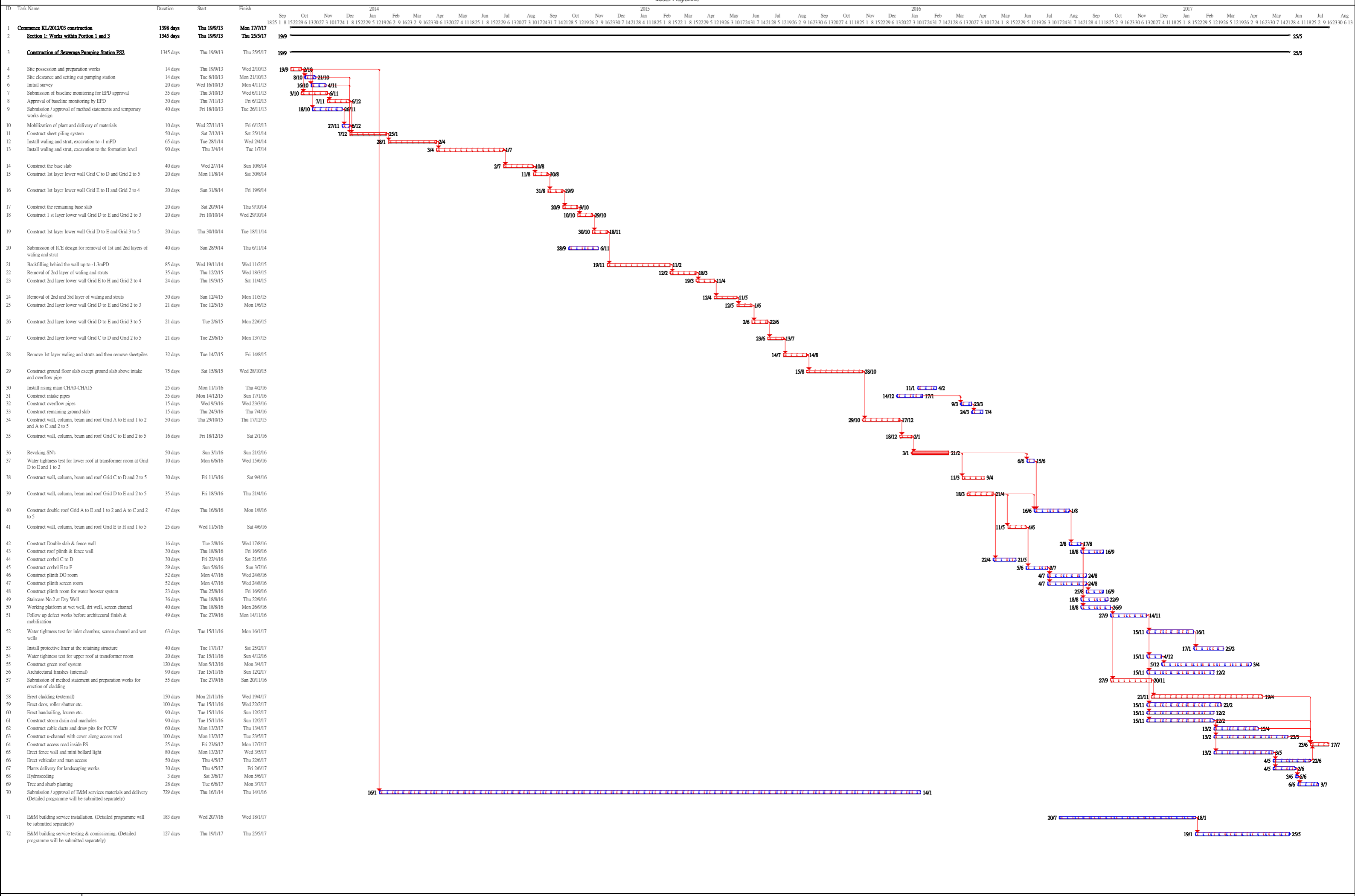
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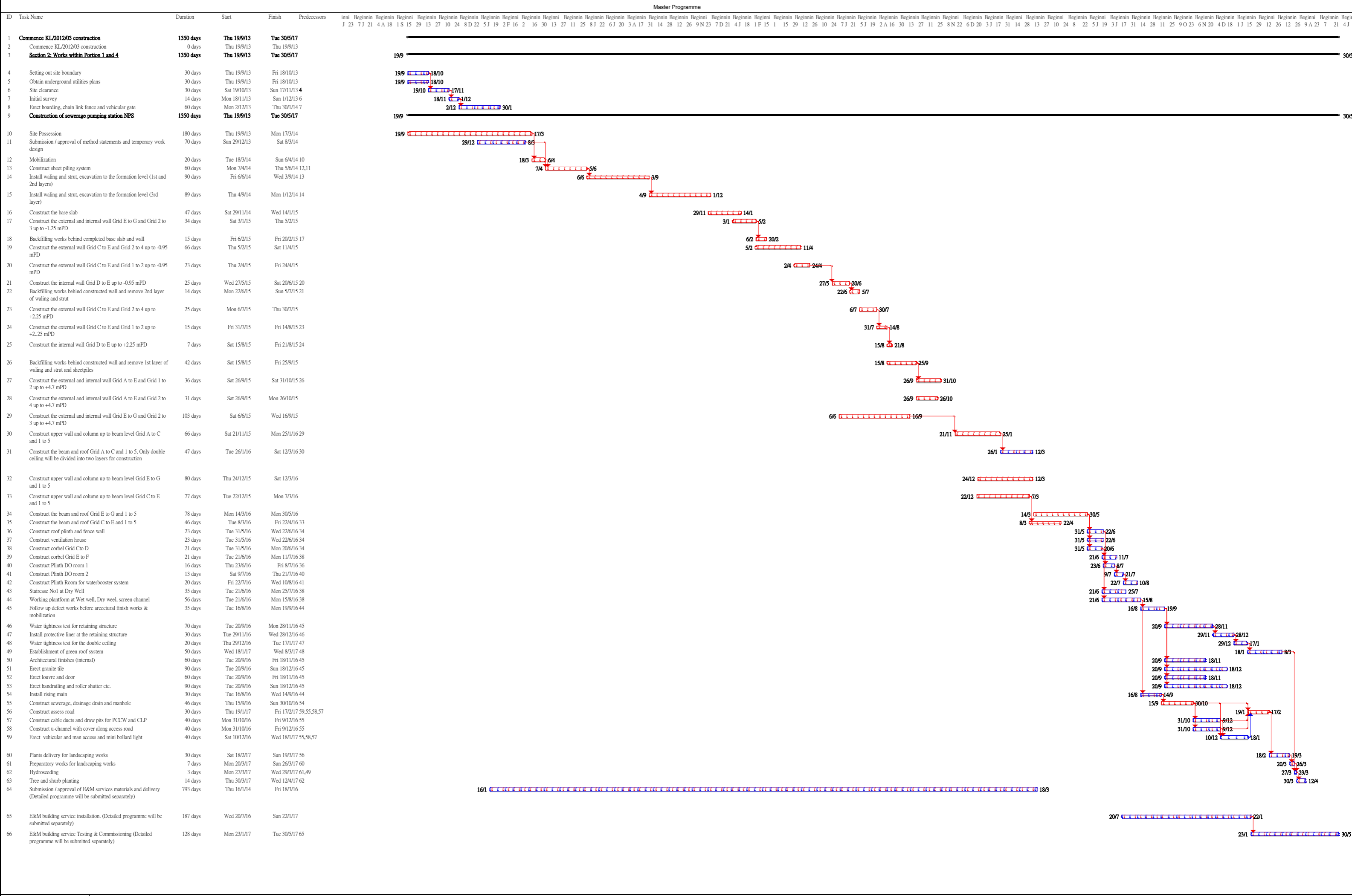


Programme for Installation of DCS Pipelines (Revised Design) within Portion 3



Site Activity [Red Hatched Pattern]





Critical tasks Non-critical tasks Working days

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MaterialLab

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

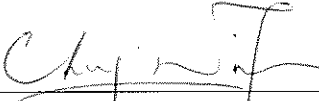
EP-337/2009 & EP-445/2013/A

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
April 2017**

(Version 1.0)

Approved By	 (Environmental Team Leader)
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REMARKS:

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

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

CINOTECH CONSULTANTS LTD

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嘉誠管理顧問有限公司

Ka Shing management consultant Limited



Our ref: 9-5-2017

9 th May 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 April 2017

Reference is made to the Environmental Team's submission of the draft Monthly EM&A Report (version 1.0) for April 2017 provided to Independent Environmental Checker (IEC) via email dated on 5 th May 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 13th 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 – 30 April 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 footpath at EPD recycling centre;
 - 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, columns, underpass, noise barrier footings, 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 Permits (Permits: GW-RE1092-16, GW-RE1251-16 and GW-RE0294-17)

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 13th Monthly EM&A report summarizing the EM&A works for the Project from 1 – 30 April 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 footpath at EPD recycling centre;
 - 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, columns, underpass, noise barrier footings, 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 5, 12, 19 and 26 April 2017 in the reporting month. IEC joint site inspection was conducted on 26 April 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 piling and performing prescribed construction work.	Valid
GW-RE1251-16	10/01/17	08/07/17		Valid
GW-RE0294-17	20/04/17	12/10/17		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
<i>Water Quality</i>	--	--	--
<i>Air Quality</i>	5 Apr 2017	Stockpiles were found uncovered at the site area Section 1, the Contractor was reminded to cover stockpiles with impervious materials for dust suppression.	Rectification/improvement was observed during the follow-up audit session.
	19 Apr 2017	The haul roads and unpaved areas at Section 1 was found dry and dusty, the contractor was reminded to enhance dust suppression measures.	Rectification/improvement was observed during the follow-up audit session.
	26 Apr 2017	Stockpiles in Section 1 should be covered with impervious sheets for dust suppression.	Follow up actions will be reported in the next reporting month.
<i>Noise</i>	--	--	--
<i>Waste/ Chemical Management</i>	--	--	--
<i>Landscape and Visual</i>	--	--	--
<i>Permits/ Licences</i>	--	--	--

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 footpath at EPD recycling centre;
- 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, columns, underpass, noise barrier footings, 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. May and June 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 30 April 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.

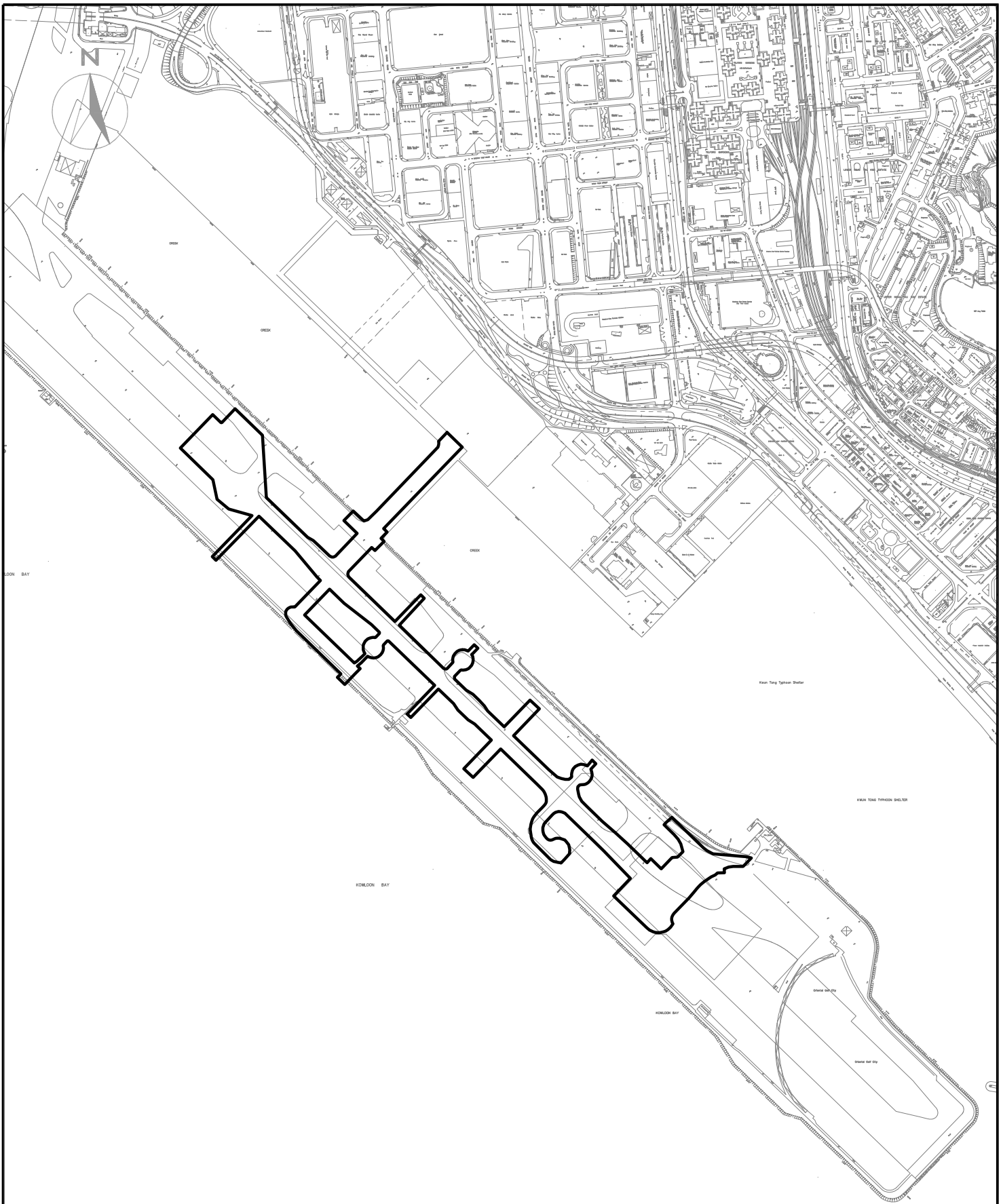
Recommendations

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

Air Quality Impact

- To maintain unpaved area and haul roads wet as far as practicable to minimize dust generation.
- To properly cover dusty materials with impervious materials for dust suppression.

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: April 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

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	170405
Date	5 April 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	
170405-001	• Stockpiles were found uncovered at the site area Section 1, the Contractor was reminded to cover stockpiles with impervious materials 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.:170329), all identified environmental deficiency was observed improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kelvin Koo		5 April 2017
Checked by	Dr. Priscilla Choy		5 April 2017

Contract No. KL/2014/01


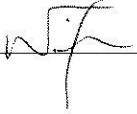
Kai Tak Development - Stage 2 Infrastructure Works for Developments at the Southern Part of the Former Runway

EP-337/2009 & EP-445/2013/A

**Weekly Site Inspection Record Summary
Inspection Information**

Checklist Reference Number	170412
Date	12 April 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.:170405), all identified environmental deficiency was observed improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kelvin Koo		12 April 2017
Checked by	Dr. Priscilla Choy		12 April 2017

Contract No. KL/2014/01

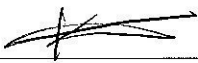
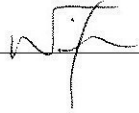
Kai Tak Development - Stage 2 Infrastructure Works for Developments at the Southern Part of the Former Runway

EP-337/2009 & EP-445/2013/A

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170419
Date	19 April 2017 (Wednesday)
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	
170419-R01	• The haul roads and unpaved area at Section 1 was found dry and dusty, the contractor was reminded to enhance dust suppression measures.	C5 & C6
	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.:170412), all identified environmental deficiency was observed improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kelvin Koo		19 April 2017
Checked by	Dr. Priscilla Choy		19 April 2017

Contract No. KL/2014/01

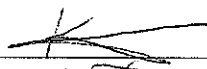

Kai Tak Development - Stage 2 Infrastructure Works for Developments at the Southern Part of the Former Runway

EP-337/2009 & EP-445/2013/A

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170426
Date	26 April 2017 (Wednesday)
Time	14:30 – 18:00

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	
170419-R01	• Stockpiles in Section 1 should be covered with 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.:170419), all identified environmental deficiency was observed improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kelvin Koo		26 April 2017
Checked by	Dr. Priscilla Choy		26 April 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	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>
Limit Level being exceeded	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>

Appendix D - Event Action Plans

Event/Action Plan for Landscape and Visual

EVENT ACTION LEVEL	ACTION			
	ET	IEC	ER	CONTRACTOR
Design Check	<ul style="list-style-type: none"> Check final design conforms to the requirements of EP and prepare report. 	<ul style="list-style-type: none"> Check report. Recommend remedial design if necessary 	<ul style="list-style-type: none"> Undertake remedial design if necessary 	
Non-conformity on one occasion	<ul style="list-style-type: none"> Identify Source Inform IEC and ER Discuss remedial actions with IEC, ER and Contractor Monitor remedial actions until rectification has been completed 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Notify Contractor Ensure remedial measures are properly implemented 	<ul style="list-style-type: none"> Amend working methods Rectify damage and undertake any necessary replacement
Repeated Non-conformity	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Notify Contractor Ensure remedial measures are properly implemented 	<ul style="list-style-type: none"> 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)	<p>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.</p> <ul style="list-style-type: none"> ● 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. 	<p>*</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

EIA Ref.	Mitigation Measures	Status
	<ul style="list-style-type: none"> ● 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. 	<p style="text-align: center;">^</p> <p style="text-align: center;">*</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>
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)	<p>Good Site Practice:</p> <ul style="list-style-type: none"> ● Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction 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 	<p style="text-align: center;">^</p> <p style="text-align: center;">N/A(1)</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

EIA Ref.	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)	<ul style="list-style-type: none"> ● 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 <p>It should be noted that the exact length of the mitigation measures would be subject to minor refinement during the detailed design stage.</p>	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)	<p><u>Construction Runoff</u></p> <p>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:</p> <ul style="list-style-type: none"> ● 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)	<p><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.</p>	^
	<p><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</p>	^
S3.4 (AEIAR-130/2009)	<p><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.</p>	^
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
	<p>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:</p> <ul style="list-style-type: none"> ● 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. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p>
Construction Waste Management		
<p>S6.7 (AEIAR-170/2013)</p>	<p>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.</p>	<p>^</p>
<p>S3.5 (AEIAR-130/2009) and S6.7 (AEIAR-170/2013)</p>	<p>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:</p> <ul style="list-style-type: none"> ● 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 	<p>^</p> <p>^</p>

EIA Ref.	Mitigation Measures	Status
	<ul style="list-style-type: none"> ● 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 	<p>^</p> <p>^</p> <p>^</p> <p>^</p>
	<p>Waste Reduction Measures</p> <p>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:</p> <ul style="list-style-type: none"> ● 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. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

EIA Ref.	Mitigation Measures	Status
<p>S3.5 (AEIAR-130/2009)</p>	<p>Construction and Demolition Materials</p> <p>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:</p> <ul style="list-style-type: none"> ● 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. <p>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</p>	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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)	<p>General Refuse</p> <p>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</p>	^
Construction Landscape and Visual		
S3.8.12 (AEIAR-130/2009) and S7.9 (AEIAR-170/2013)	<ul style="list-style-type: none"> ● 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. 	<p>^</p> <p>^</p> <p>^</p> <p>N/A(1)</p> <p>^</p> <p>^</p> <p>^</p> <p>N/A</p>

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: April 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	69.65
Apr	5637.28	0	0	0	5637.28	0	0	0	0	0	23.62
May											
June											
Sub-total	71520.73	0	0	0	71520.73	0	0	0.301	0.019	0	155.77
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	71520.73	0	0	0	71520.73	0	0	0.301	0.019	0	155.77

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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

April 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/0780A


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
MaterialLab Consultants Limited

Ref.: CEDKTDS3EM00_0_0195L.17

9 May 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,

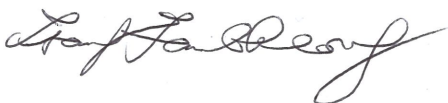
**Re: Contract No. KL/2014/03 – Kai Tak Development – Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway
Monthly EM&A Report for April 2017**

Reference is made to the Environmental Team's submission of the Monthly EM&A Report for April 2017 (Report No. 0405/15/ED/0780A) we received by e-mail on 9 May 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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Appendix K	Weather and Meteorological Conditions during Reporting Month
Appendix L	Cumulative statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions
Appendix M	Summary of Site Audit in the Reporting Month
Appendix N	Outstanding Issues and Deficiencies

EXECUTIVE SUMMARY

- i. The Civil Engineering and Development Department HKSAR has appointed MaterialLab 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 April 2017 and 30 April 2017. As informed by the Contractor, major activities in the reporting month were:
 - Temporary utility diversion;
 - Implementation of Temporary Traffic Arrangement (TTA);
 - Construction of Tunnel structure;
 - Construction of Socket H-piles;
 - Construction of drainage works;
 - Construction of guide walls and D-walls;
 - Construction of District Cooling System Works; and
 - Installation of temporary cut-off wall.

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 fourteenth monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project within the period between 1 April 2017 and 30 April 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 Arrangement (TTA);
- Construction of Tunnel structure;
- Construction of Socket H-piles;
- Construction of drainage works;
- Construction of guide walls and D-walls;
- Construction of District Cooling System Works; and
- Installation of temporary cut-off wall.

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	4 December 2015	Not Applicable
Billing Account for Waste Disposal	A/C No.: 7023814	22 December 2015	Not Applicable
Construction Noise Permit	GW-RE1008-16	19 October 2016	9 April 2017
Construction Noise Permit	GW-RE0270-17	3 April 2017	8 October 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	24 November 2015	Not Applicable

Note:

CNP GW-RE1008-16 was replaced by CNP GW-RE0270-17 from 3 April 2017.

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 0438320 / 2154
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 $\pm 3^\circ\text{C}$; the relative humidity (RH) is < 50% and not variable by more than $\pm 5\%$. 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 $\pm 3^\circ\text{C}$; the relative humidity (RH) should be < 50% and not vary by more than $\pm 5\%$. A convenient working RH is 40%. Weighing results 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 ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
24-hr TSP in $\mu\text{g}/\text{m}^3$	KTD1a	64	33 – 108	177	260
	KTD2a	52	31 – 78	157	
	KER1b	73	52 – 123	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 ($\mu\text{g}/\text{m}^3$)	24-hour TSP concentration in April 2017 ($\mu\text{g}/\text{m}^3$)	Average 24-hour TSP concentration in April 2017 ($\mu\text{g}/\text{m}^3$)
KTD1a	KTD3	126	33 – 108	64
KTD2a	-	-	31 – 78	52
KER1b	KTD6	169	52 – 123	73

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 KTD1a and KER1b were 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.

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
LAeq (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	62 - 71	61 - 69	61 - 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 April 2017
KTD1a	KTD1	74	62 - 71
KTD2a	KTD2	75	61 - 69
KER1b	KER1	75	61 - 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, four weekly Landscape and Visual Site audits were carried out on 6, 13, 19 and 27 April 2017 and two of them, 13 and 27 April 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 27 April 2017, it was observed that the excavated materials at Zone 2 were not fully covered by impervious sheeting. The item was rectified by the Contractor and inspected on 4 May 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, four site inspections were carried out on 6, 13, 19 and 27 April 2017. Two of them, held on 19 and 27 April 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
<u>EP-337/2009</u>		
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 (March 2017)	13/04/2017
<u>EP-339/2009/A</u>		
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 (March 2017)	13/04/2017
<u>EP-451/2013</u>		
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 (March 2017)	13/04/2017

9. FUTURE KEY ISSUES

9.1 Construction Programme for the Next Two Months

- Temporary utility diversion;
- Implementation of Temporary Traffic Arrangement (TTA);
- Construction of Socked H-piles;
- Construction of drainage works;
- Pumping test;
- Construction of Tunnel structure;
- Construction of guide walls and D-walls;
- Construction of District Cooling System Works; and
- Installation of temporary cut-off wall.

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 Four environmental site inspections were carried out in the reporting month. 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 Four weekly Landscape and Visual Site audits were carried out on 6, 13, 19 and 27 April 2017 and two of them, 13 and 27 April 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

- Site surface shall be kept clear of dusty materials.
- Open stockpile shall be covered with impermeable sheeting to prevent dust emission.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- Water leakage was observed at the sedimentation tank. Maintenance of the sedimentation tank shall be provided.
- Excess surface water was found in the channel that entering the Wetsep due to pump failure. Water pump shall be repaired to prevent surface runoff.
- The muddy water in the entrance gate of Zone 2 shall be banded to prevent leakage of muddy water to the public haul road. Bunding shall be provided.

Chemical and Waste Management

- Chemicals containers shall be stored on drip tray.

Land Contamination

- Breaker tips shall be placed on drip tray to avoid land contamination.

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

- Stagnant water shall be removed.

Permit / Licenses

- No specific observation was identified in the reporting month.

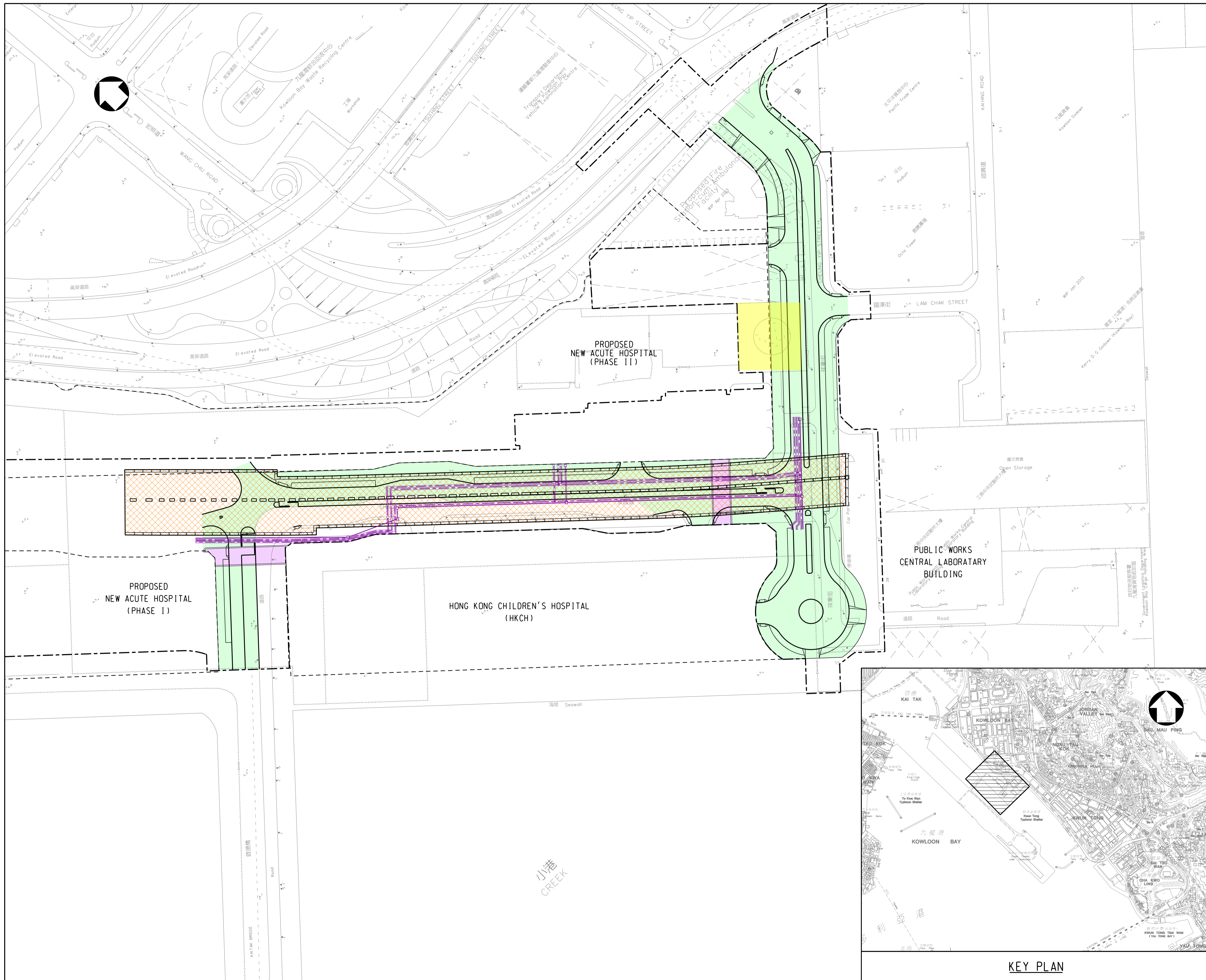
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Figure 1
Project General Layout



- 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



CLIENT



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

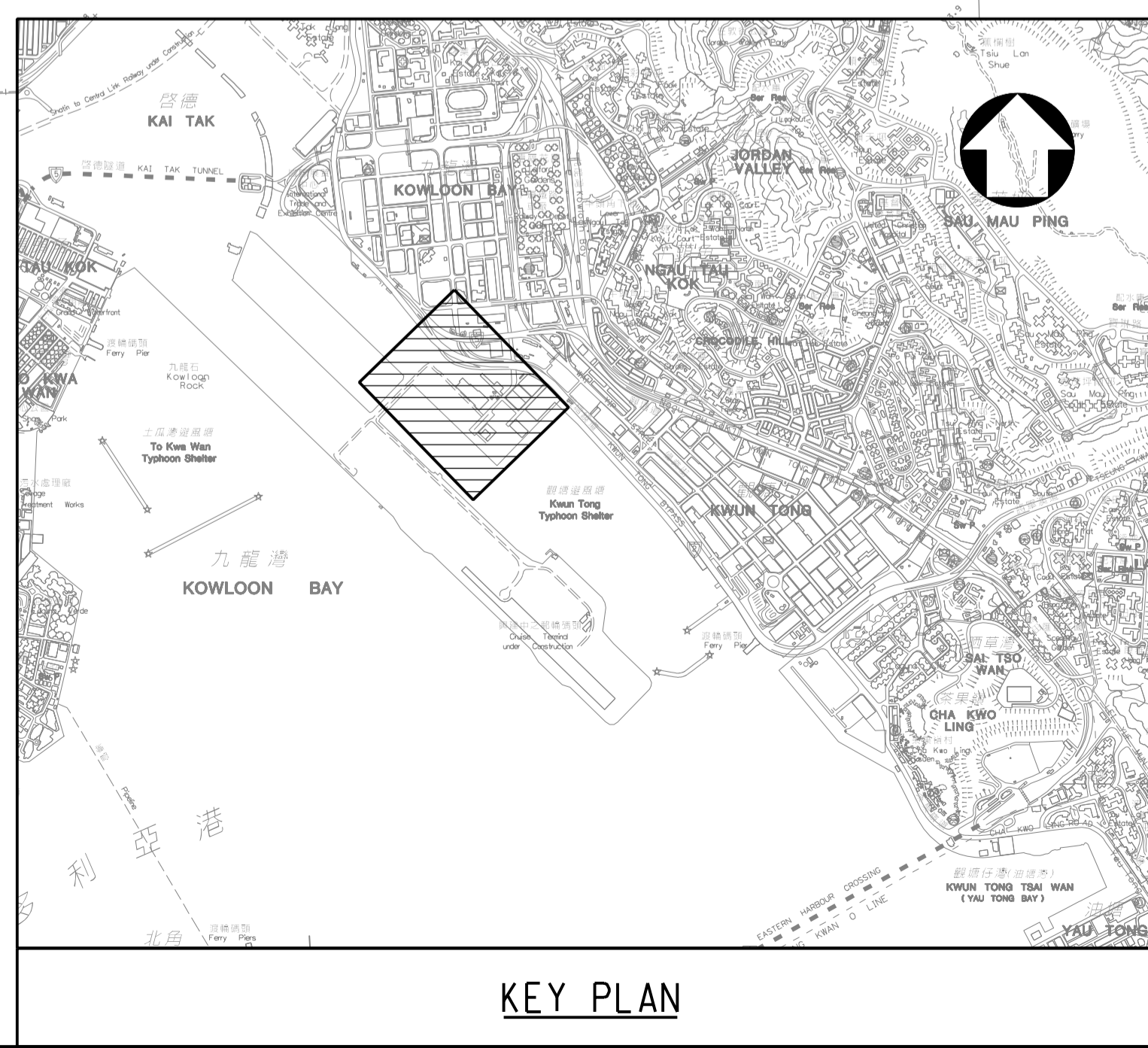
TITLE

GENERAL LAYOUT PLAN

DESIGNED		ENG. CHECK	
DRAWN		COORDINATION	
DWG. CHECK		APPROVED	
SCALE AT A1	STATUS	REV	
1 : 1000		A	

Drawing No. **FIGURE 1.0**

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KEY PLAN

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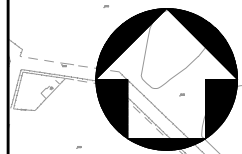
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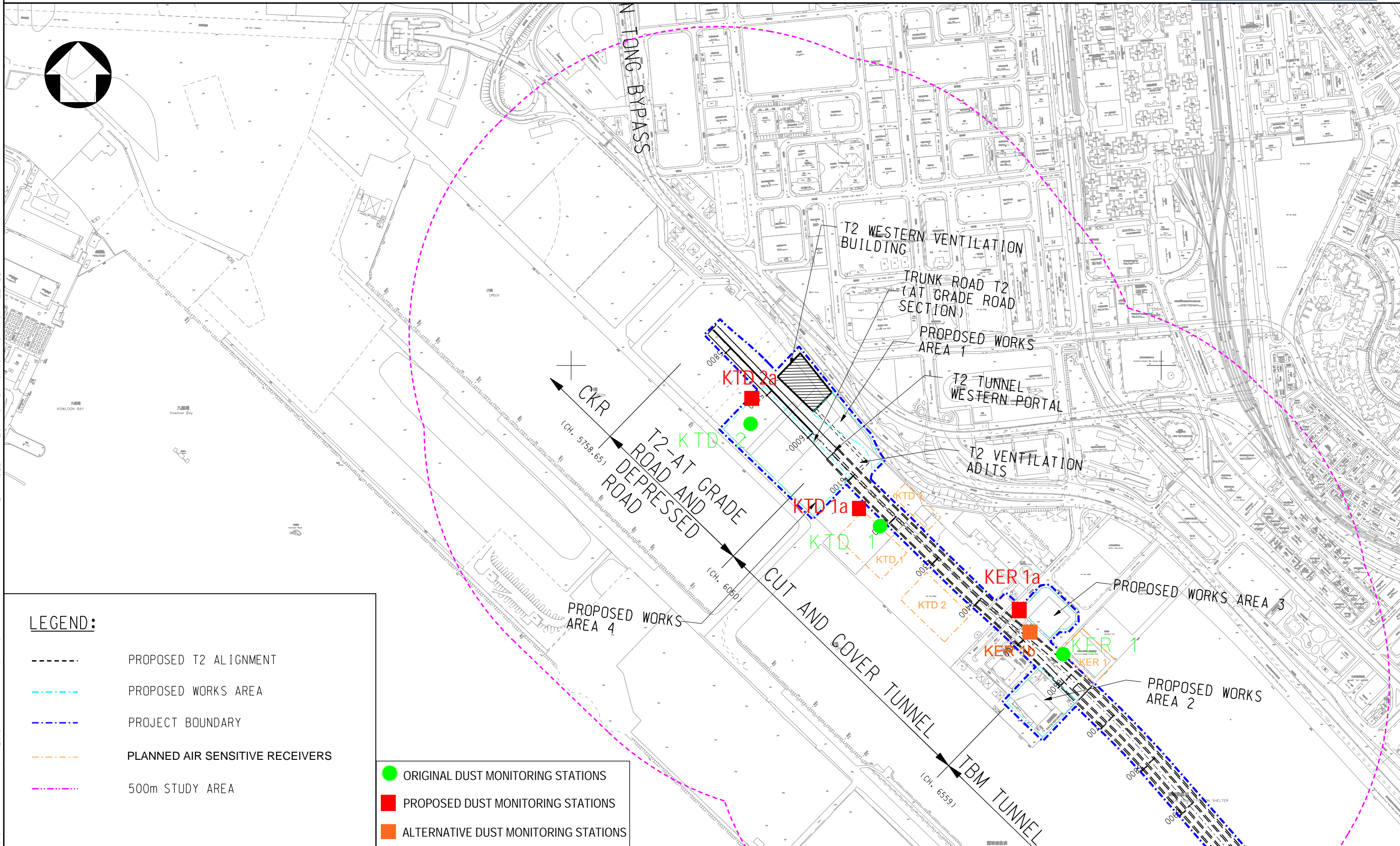
Figure 2

Air and Noise Monitoring Locations



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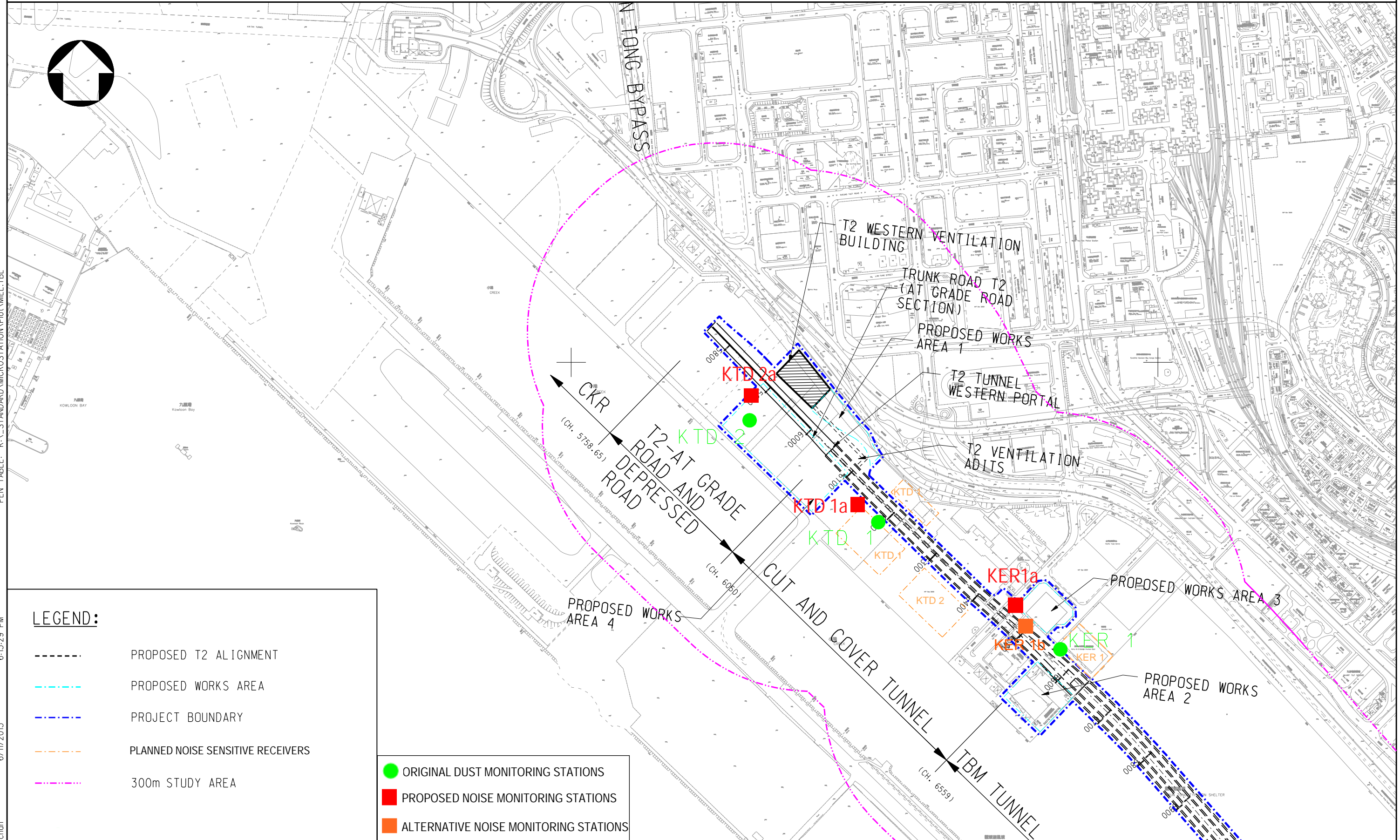
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LEGEND:

	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	Original Size	A3	Scale	1 : 6000	Date	30/01/2012
			IDENTIFIED DUST MONITORING STATIONS AT SOUTH APRON OF FORMER KAI TAK AIRPORT	© Copyright reserved	Drawing No.	FIGURE 2.1a(revised)		Rev.	--



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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

	Drawing title	Original Size	A3	Scale	Date
	IDENTIFIED NOISE MONITORING STATIONS AT SOUTH APRON OF FORMER KAI TAK AIRPORT			1 : 6000	30/01/2012
Rev.	Description	© Copyright reserved		Drawing No.	Rev.
				FIGURE 3.1a (revised)	--

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Appendix A

Construction Programme

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	March				April				May				June			
						1	8	15	22	1	8	15	22	1	8	15	22	1	8	15	22
KL/2014/03-Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway		1200	810	04-Jan-16 A	18-Jun-19																
Project Key Dates		1190	805	01-Feb-16 A	13-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		418	142	31-Jul-16 A	19-Aug-17																
Condition Survey & Construction Impact Assessment		21	21	12-Apr-17	03-May-17																
K-DR-PRE-1190	Condition survey at HKCH	7	7	12-Apr-17	19-Apr-17																
K-DR-PRE-1195	Submit condition survey report at HKCH	14	14	19-Apr-17	03-May-17																
Alternative Design Submission and Approval		388	112	12-Aug-16 A	20-Jul-17																
<i>Package B05 : SUS D-wall from (CH6+291 to CH6+568)</i>		291	15	15-Feb-17 A	14-Apr-17																
K-PA-ADS-1600	Submission of DDA drawing (SUS D-Wall Panels at Westbound CH6+220 to CH6+291 in Zone 2)	28	0	15-Feb-17 A	17-Mar-17 A																
K-PA-ADS-1610	Engineer's review and approval	28	15	18-Mar-17 A	14-Apr-17																
<i>Package B06 : SUS Top & base slab and intermediate wall from (CH6+220 to CH6+568)</i>		343	112	12-Aug-16 A	20-Jul-17																
K-PA-ADS-1420	Revise & resubmit DDA drawing (SUS Top & Base slab and Intermediate wall from CH6+220 to CH6+568)	28	56	12-Aug-16 A	25-May-17																
K-PA-ADS-1430	Engineer's review and approval	56	56	26-May-17	20-Jul-17																
Major Temporary Works Design		142	142	22-Mar-17 A	19-Aug-17																
K-PA-GSP-6820	ELS design for construction of SUS from CH6+220 to CH6+291 in Zone 2 - horizontal members	56	56	03-Jun-17	28-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	14-May-17	08-Jul-17																
K-PA-GSP-6860	ELS design for construction of subway B (Bay 3&4)	56	56	25-Jun-17	19-Aug-17																
K-PA-GSP-8860	Pumping Test for SUS Cofferdam in Zone 4	50	40	22-Mar-17 A	09-May-17																
K-PA-GSP-8870	Pumping Test for SUS Cofferdam in Zone 2	50	50	10-May-17	28-Jun-17																
Major Construction Works Method Statement		286	94	06-Sep-16 A	02-Jul-17																
K-PA-GSP-7145	Engineer's comments and approval for Method statement of Excavation and ELS for SUS Construction for Zone 1	28	5	06-Sep-16 A	04-Apr-17																
K-PA-GSP-7150	Method statement of Excavation and ELS for SUS Construction for Zone 3	28	28	31-Mar-17	27-Apr-17																
K-PA-GSP-7155	Engineer's comments and approval	28	28	28-Apr-17	25-May-17																
K-PA-GSP-7160	Method statement of Excavation and ELS for SUS Construction for Zone 4	28	28	16-Apr-17	13-May-17																
K-PA-GSP-7165	Engineer's comments and approval	28	28	14-May-17	10-Jun-17																
K-PA-GSP-7170	Method statement of Excavation and ELS for SUS Construction for Zone 2	28	28	05-Jun-17	02-Jul-17																
K-PA-GSP-7405	Engineer's comments and approval	28	12	29-Oct-16 A	11-Apr-17																

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	Gantt Chart															
						March				April				May				June			
						19	26	02	09	16	23	30	07	14	21	28	04	11	18	25	
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-Apr-17	Method statement for Erection and Removal of the temporary vehicular and pedestrian access for HKCH															
K-PA-GSP-7495	Engineer's comments and approval	28	28	15-Apr-17	12-May-17	Engineer's comments and approval															
K-PA-GSP-7500	Method statement for Erection of the temporary support for the utilities	28	0	26-Nov-16 A	17-Feb-17 A	Temporary support for the utilities															
K-PA-GSP-7505	Engineer's comments and approval	28	20	20-Feb-17 A	19-Apr-17	Engineer's comments and approval															
Temporary Utility Diversion Works		262	105	05-Sep-16 A	08-Aug-17																
<i>Temporary Diversion for Watermain Works</i>		0	0	06-Apr-17	06-Apr-17																
Laying Proposed (Fresh) Watermain		0	0	06-Apr-17	06-Apr-17																
K-PA-TUD-1150	DN450 DI connected (X1 and X4)	0	0		06-Apr-17	◆ DN450 DI connected (X1 and X4)															
K-PA-TUD-1170	DN600 DI connected (X7 and X8)	0	0		06-Apr-17	◆ DN600 DI connected (X7 and X8)															
K-PA-TUD-2050	DN600 DI connected (X2 and X3)	0	0		06-Apr-17	◆ DN600 DI connected (X2 and X3)															
Laying Proposed (Salt) Watermain		0	0	06-Apr-17	06-Apr-17																
K-PA-TUD-1250	Connection to DN300 DI (Y1)	0	0		06-Apr-17	◆ Connection to DN300 DI (Y1)															
K-PA-TUD-2250	Connection to DN300 DI (Y2 and Y3)	0	0		06-Apr-17	◆ Connection to DN300 DI (Y2 and Y3)															
<i>Temporary Diversion for Drainage Works</i>		262	105	05-Sep-16 A	08-Aug-17																
K-PA-TUD-2400	Diversion of 2100 storm drain at zone 4	60	15	05-Sep-16 A	21-Apr-17	Diversion of 2100 storm drain at zone 4															
K-PA-TUD-2500	Excavation and laying of DN600 MS pipe and manhole (N-CP-1) at zone 4 for HKCH connection	25	25	18-Apr-17	18-May-17	Excavation and laying of DN600 MS pipe and manhole (N-CP-1) at zone 4 for HKCH connection															
K-PA-TUD-2600	Excavation and laying of DN300 MS pipe and manhole (FMH23-15D) at zone 4	70	70	27-Mar-17 A	27-Jun-17	Excavation and laying of DN300 MS pipe and manhole (FMH23-15D) at zone 4															
K-PA-TUD-2700	Construction of 300 to 375UC (W/B) at zone 3 & 4	50	50	10-Jun-17	08-Aug-17	Construction of 300 to 375UC (W/B) at zone 3 & 4															
<i>Temporary Diversion for CLP Cable at CH6+560</i>		58	58	05-Apr-17	16-Jun-17																
K-PA-TUD-3560	Handover area 4b to CLP cable diversion at zone 4	0	0		05-Apr-17	◆ Handover area 4b to CLP cable diversion at zone 4															
K-PA-TUD-3700	Trench excavation area 4b for cable diversion and CLP cable slewing works by CLP	28	28	06-Apr-17	13-May-17	Trench excavation area 4b for cable diversion and CLP cable slewing works by CLP															
K-PA-TUD-3750	Fabrication and Erection temporary support to utilities at zone 4	14	14	05-Apr-17	24-Apr-17	Fabrication and Erection temporary support to utilities at zone 4															
K-PA-TUD-4060	Diversion of 11kV CLP cable and Backfilling Works across SUS at CH6+560 by CLP	29	29	15-May-17	16-Jun-17	Diversion of 11kV CLP cable and Backfilling Works across SUS at CH6+560 by CLP															
<i>Temporary Diversion for Sewage Rising Main</i>		92	65	20-Feb-17 A	21-Jun-17																
K-PA-TUD-1500	Construction of 3xDN350 sewage rising main and manhole	28	18	20-Feb-17 A	22-May-17	Construction of 3xDN350 sewage rising main and manhole															
K-PA-TUD-1600	Construction of DN750 sewage pipe and manhole - stage 1	20	20	13-Apr-17	11-May-17	Construction of DN750 sewage pipe and manhole - stage 1															
K-PA-TUD-1700	Construction of DN750 sewage pipe - stage 2 (crossing tunnel box structure)	10	10	06-May-17	17-May-17	Construction of DN750 sewage pipe - stage 2 (crossing tunnel box structure)															
K-PA-TUD-1800	Connection to existing rising main	0	0		29-May-17	◆ Connection to existing rising main															
K-PA-TUD-2750	Construction of DN450 sewerage pipe at zone 2 - stage 1	40	39	23-Feb-17 A	22-May-17	Construction of DN450 sewerage pipe at zone 2 - stage 1															
K-PA-TUD-2800	Construction of DN450 sewerage pipe at zone 2 - stage 2	16	16	03-Jun-17	21-Jun-17	Construction of DN450 sewerage pipe at zone 2 - stage 2															
<i>Temporary Diversion for Telecommunication Cable</i>		21	18	24-Feb-17 A	25-Apr-17																

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	Gantt Chart											
						1	19	26	02	09	16	23	30	07	14	21	28
K-PA-TUD-4000	Diversion of Fibre cable (PCCW)	18	18	24-Feb-17 A	25-Apr-17	Diversions of Fibre cable (PCCW)											
K-PA-TUD-4050	Diversion of Fibre optical cable (HGC)	18	18	24-Feb-17 A	25-Apr-17	Diversions of Fibre optical cable (HGC)											
Temporary Traffic Management		305	62	31-Jul-16 A	31-May-17												
<i>Temp Traffic Arrangement Schemes</i>		<i>302</i>	<i>40</i>	<i>31-Jul-16 A</i>	<i>09-May-17</i>												
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-Apr-17	Submission and approval of TTA schemes-TTA stage 2 for D-wall W/B at Zone 2											
K-PA-TTA-8900	Submission and approval of TTA schemes-TTA stage 3 for re-construction of Cheung Yip Street	90	40	11-Feb-17 A	09-May-17	Submission and approval of TTA schemes-TTA stage 3 for re-construction of Cheung Yip Street											
Implementation of Temporary Traffic Arrangement		18	18	10-May-17	31-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	31-May-17		◆ TTA stage 2 - Road diversion at Shing Cheong Road											
K-PA-TTA-4000	TTA stage 3 - Road diversion at Cheung Yip Street phase 1	0	0	10-May-17		◆ TTA stage 3 - Road diversion at Cheung Yip Street phase 1											
Construction of Temporary Diversion Road for Shing Cheong Road (TTA stage 2)		21	21	08-May-17	31-May-17												
K-PA-TTA-5950	Construction of temporary decking at CH6+220 to CH6+230	5	5	24-May-17	29-May-17	Construction of temporary decking at CH6+220 to CH6+230											
K-PA-TTA-6000	Construction of concrete pavement (CH0 to CH100)	20	20	08-May-17	30-May-17	Construction of concrete pavement (CH0 to CH100)											
K-PA-TTA-6050	Construction of footpath and U-channel (CH0 to CH100)	8	8	23-May-17	31-May-17	Construction of footpath and U-channel (CH0 to CH100)											
K-PA-TTA-6100	Installation of street lighting and setup the TTA	5	5	26-May-17	31-May-17	Installation of street lighting and setup the TTA											
K-PA-TTA-6150	Road marking	1	1	31-May-17	31-May-17	Road marking											
Interfacing Works		141	92	10-Feb-17 A	30-Jun-17												
K-PA-INT-1000	Joint inspection and handover for connecting watermain (HKCH)	4	4	27-Jun-17	30-Jun-17*												
K-PA-INT-2000	Joint inspection and handover for connecting drainage (HKCH)	4	4	27-Jun-17	30-Jun-17*												
K-PA-INT-3000	Joint inspection and handover for connecting sewerage (HKCH)	4	4	27-Jun-17	30-Jun-17*												
K-PA-INT-6030	Handover Area B1 to HKCH's Construction (CSSOJV) for Telecom Lead-in Works	15	8	10-Feb-17 A	07-Apr-17	Handover Area B1 to HKCH's Construction (CSSOJV) for Telecom Lead-in Works											
Materials Procurement (Major Materials)		901	490	01-Feb-16 A	02-Aug-18												
ELS struct / waling		360	230	10-Jun-16 A	15-Nov-17												
K-PA-MP-1150	Manufacturing & delivery to site	360	230	10-Jun-16 A	15-Nov-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	08-Jul-17												
K-PA-MP-1250	Manufacturing & delivery to site	420	100	01-Feb-16 A	08-Jul-17												
Chilled Water Pipes - DCS		550	490	06-Feb-17 A	02-Aug-18												
K-PA-MP-1350	Manufacturing & delivery to site	550	490	06-Feb-17 A	02-Aug-18												
Prelimiaries		1190	805	11-Mar-16 A	13-Jun-19												
K-DR-PRE-1800	Submission of time-lapsed photographs and video	1190	805	11-Mar-16 A	13-Jun-19												

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	March				April				May				June							
						1	8	15	22	29	5	12	19	26	2	9	16	23	30	6	13	20	27	3	10
Barge Loading Facilities						458	458	15-May-17	23-Nov-18																
K-DR-PRE-1450	Setup of temporary barging point	21	21	15-May-17	07-Jun-17																				
K-DR-PRE-1480	Operation of temporary barging point	437	437	08-Jun-17	23-Nov-18																				
Instrumentation and Monitoring						367	150	19-Jul-16 A	27-Aug-17																
Eastbound Instrumentation and Monitoring						10	10	27-Mar-17 A	12-Apr-17																
<i>Inclinometer (INC)</i>						10	10	27-Mar-17 A	12-Apr-17																
K-IM-INC-1330	Installation of INC at Zone 3	10	10	27-Mar-17 A	12-Apr-17	Installation of INC at Zone 3																			
Westbound Instrumentation and Monitoring						247	25	19-Jul-16 A	05-May-17																
<i>Piezometer/Standpipe (PZR)</i>						126	20	19-Jul-16 A	27-Apr-17																
K-IM-PZR-1370	Installation of PZR at Zone 3	40	15	05-Aug-16 A	21-Apr-17	Installation of PZR at Zone 3																			
K-IM-PZR-1380	Installation of PZR at Zone 4	40	20	19-Jul-16 A	27-Apr-17	Installation of PZR at Zone 4																			
<i>Inclinometer (INC)</i>						15	15	13-Apr-17	05-May-17																
K-IM-INC-1370	Installation of INC at Zone 3	15	15	13-Apr-17	05-May-17	Installation of INC at Zone 3																			
Crack Meters						10	10	19-Apr-17	29-Apr-17																
K-IM-CRM-1010	Installation of Crack Meters at HKCH	10	10	19-Apr-17	29-Apr-17	Installation of Crack Meters at HKCH																			
Tilt Monitoring Tile Plates						310	150	03-Aug-16 A	27-Aug-17																
K-IM-TMT-1000	Tilt Monitoring near PWCL	310	150	03-Aug-16 A	27-Aug-17																				
Section 1 of the Works-Remainder of the Works						82	85	25-Mar-17 A	15-Jul-17																
Roadwork and Drainage Works						82	85	25-Mar-17 A	15-Jul-17																
Road D4-4 (Cheung Yip Street)						82	85	25-Mar-17 A	15-Jul-17																
<i>Drainage Works (CH100 to CH240)</i>						82	85	25-Mar-17 A	15-Jul-17																
K-01-RWS-9302	Laying Drainage Pipe and Construction Manhole (M101a to M101c)	12	10	28-Mar-17 A	12-Apr-17	Laying Drainage Pipe and Construction Manhole (M101a to M101c)																			
K-01-RWS-9303	Backfilling of Drainage Pipe and Manhole (M101a to M101c)	12	12	13-Apr-17	29-Apr-17	Backfilling of Drainage Pipe and Manhole (M101a to M101c)																			
K-01-RWS-9310	Excavation of Drainage Pipe and Manhole (M101 to M102)	8	3	25-Mar-17 A	03-Apr-17	Excavation of Drainage Pipe and Manhole (M101 to M102)																			
K-01-RWS-9312	Laying Drainage Pipe and Construction Manhole (M101 to M102)	25	25	05-Apr-17	09-May-17	Laying Drainage Pipe and Construction Manhole (M101 to M102)																			
K-01-RWS-9313	Excavation of Drainage Pipe and Manhole (M102 to M102a)	5	5	18-Apr-17	22-Apr-17	Excavation of Drainage Pipe and Manhole (M102 to M102a)																			
K-01-RWS-9314	Laying Drainage Pipe and Construction Manhole (M102 to M102a)	12	12	24-Apr-17	09-May-17	Laying Drainage Pipe and Construction Manhole (M102 to M102a)																			
K-01-RWS-9315	Backfilling of Drainage Pipe and Manhole (M101 to M102)	12	12	10-May-17	23-May-17	Backfilling of Drainage Pipe and Manhole (M101 to M102)																			
K-01-RWS-9319	Installation of Sheet Pile for Drainage Works (M101 to outfall)	12	12	24-May-17	06-Jun-17	Installation of Sheet Pile for Drainage Works (M101 to outfall)																			
K-01-RWS-9320	Excavation of Drainage Pipe and Manhole (M101 to outfall)	8	8	07-Jun-17	15-Jun-17	Excavation of Drainage Pipe and Manhole (M101 to outfall)																			
K-01-RWS-9322	Laying Drainage Pipe and Construction Manhole (M101 to outfall)	25	25	16-Jun-17	15-Jul-17	Laying Drainage Pipe and Construction Manhole (M101 to outfall)																			

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	March		April			May			June						
						19	26	02	09	16	23	30	07	14	21	28	04	11	18	25
CH240 - CH400 Eastbound		66	66	19-Apr-17	07-Jul-17															
Laying of Drainage Pipe and Construction of Manhole (M206 to M208)		50	50	19-Apr-17	17-Jun-17															
K-01-RWS-9300	Excavation of Drainage Pipe and Manhole (M206 to M208)	8	8	19-Apr-17	27-Apr-17															
K-01-RWS-9420	Laying Drainage Pipe and Construction Manhole (M206 to M208)	30	30	28-Apr-17	03-Jun-17															
K-01-RWS-9430	Backfilling Drainage Pipe and Manhole (M206 to M208)	12	12	05-Jun-17	17-Jun-17															
Laying of Drainage Pipe and Construction of Manhole (M208 to M213)		50	50	10-May-17	07-Jul-17															
K-01-RWS-9335	Implementation of TTA stage 3 - phase 1	0	0	10-May-17																
K-01-RWS-9340	Excavation of Drainage Pipe and Manhole (M208 to M213)	8	8	10-May-17	18-May-17															
K-01-RWS-9350	Laying Drainage Pipe and Construction Manhole (M208 to M213)	30	30	19-May-17	22-Jun-17															
K-01-RWS-9410	Backfilling Drainage Pipe and Manhole (M218 to M213)	12	12	23-Jun-17	07-Jul-17															
Temporary Traffic Arrangement		0	0	10-May-17	10-May-17															
K-01-RWS-9400	Implementation of TTA stage 3 - phase 1	0	0	10-May-17																
Section 1A of the Works -Construction of Supporting Underground Structure (Alter		191	111	22-Sep-16 A	15-Aug-17															
SUS and Ventilation Adits from CH6+150 to CH6+220 in Zone 1		149	76	19-Dec-16 A	05-Jul-17															
Construction of Socketed H-Pile		40	0	19-Dec-16 A	31-Mar-17															
K-1A-SV1-3400	Trimming Pilehead at Cut-off Level	40	0	19-Dec-16 A	31-Mar-17															
Construction of Tunnel Box Structure		95	76	24-Feb-17 A	05-Jul-17															
SUS Bay 1 (Ch6150-Ch6167.5)		95	76	24-Feb-17 A	05-Jul-17															
K-1A-SV1-8100	Removal of Strut SV1A	2	2	31-Mar-17	01-Apr-17															
K-1A-SV1-8140	Construction of Base Slab VA1 and VA3 (-13.9 mPD)	20	14	24-Feb-17 A	20-Apr-17															
K-1A-SV1-8170	Removal of Strut S5	5	5	21-Apr-17	26-Apr-17															
K-1A-SV1-8190	Construction of Wall Struct for VA1 and VA3	10	10	27-Apr-17	10-May-17															
K-1A-SV1-8210	Backfilling with Sand to Formation Level of Service Adit	3	3	11-May-17	13-May-17															
K-1A-SV1-8240	Construction of VA1 and VA3 Side Wall and base slab of SA	10	10	15-May-17	25-May-17															
K-1A-SV1-8250	Installation of Re-porp Struct inside VA1, VA2, VA3 and SA	4	4	26-May-17	30-May-17															
K-1A-SV1-8260	Backfilling with Sand and Casting Mass Concrete between VA1, VA2 and SA	5	5	26-May-17	31-May-17															
K-1A-SV1-8270	Removal of Strut S4	4	4	01-Jun-17	05-Jun-17															
K-1A-SV1-8290	Erection of Scaffold and Formwork for Base Slab Construction (inside VA1 and VA3)	7	7	06-Jun-17	13-Jun-17															
K-1A-SV1-8300	Backfilling with Sand to Formation Level	6	6	14-Jun-17	20-Jun-17															
K-1A-SV1-8320	Construction of Base Slab	12	12	21-Jun-17	05-Jul-17															
SUS Bay 4 (Ch6202.5-Ch6220)		37	35	07-Mar-17 A	20-May-17															

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	Gantt Chart											
						19	26	02	09	16	23	30	07	14	21	28	04
K-1A-SV1-8580	Construction of Side Wall Structure	18	2	07-Mar-17 A	06-Apr-17	■ Construction of Side Wall Structure											
K-1A-SV1-8590	Installation of Re-prop Struct inside W/B and E/B	3	3	07-Apr-17	10-Apr-17	■ Installation of Re-prop Struct inside W/B and E/B											
K-1A-SV1-8600	Removal of Strut S2	4	4	11-Apr-17	18-Apr-17	■ Removal of Strut S2											
K-1A-SV1-8605	Erection of Scaffold for Base Slab	6	6	13-Apr-17	22-Apr-17	■ Erection of Scaffold for Base Slab											
K-1A-SV1-8610	Construction of Top Slab	10	10	20-Apr-17	02-May-17	■ Construction of Top Slab											
K-1A-SV1-8625	Waterproofing Works	5	5	04-May-17	09-May-17	■ Waterproofing Works											
K-1A-SV1-8640	Removal of Strut S1	5	5	04-May-17	09-May-17	■ Removal of Strut S1											
K-1A-SV1-8650	Breaking and Removal of D-wall to +2.5mPD	10	10	10-May-17	20-May-17	■ Breaking and Removal of D-wall to +2.5mPD											
SUS Bay 3 (Ch6185-Ch6202.5)		35	34	07-Mar-17 A	19-May-17												
K-1A-SV1-8740	Construction of Side Wall Structure	18	2	07-Mar-17 A	06-Apr-17	■ Construction of Side Wall Structure											
K-1A-SV1-8750	Installation of Re-prop Struct inside W/B and E/B	3	3	07-Apr-17	10-Apr-17	■ Installation of Re-prop Struct inside W/B and E/B											
K-1A-SV1-8755	Removal of Strut S2	4	4	11-Apr-17	18-Apr-17	■ Removal of Strut S2											
K-1A-SV1-8765	Erection of Scaffold	6	6	13-Apr-17	22-Apr-17	■ Erection of Scaffold											
K-1A-SV1-8770	Construction of Top Slab	10	10	20-Apr-17	02-May-17	■ Construction of Top Slab											
K-1A-SV1-8785	Waterproofing Works	5	5	04-May-17	09-May-17	■ Waterproofing Works											
K-1A-SV1-8800	Removal of Strut S1	4	4	04-May-17	08-May-17	■ Removal of Strut S1											
K-1A-SV1-8810	Breaking and Removal of D-wall to +2.5mPD	10	10	09-May-17	19-May-17	■ Breaking and Removal of D-wall to +2.5mPD											
SUS Bay 2 (Ch6167.5-Ch6185)		60	60	21-Apr-17	03-Jul-17												
K-1A-SV1-8840	Construction of Base Slab for VA2	12	12	21-Apr-17	06-May-17	■ Construction of Base Slab for VA2											
K-1A-SV1-8860	Removal of Strut SV2	4	4	08-May-17	11-May-17	■ Removal of Strut SV2											
K-1A-SV1-8870	Construction of VA2 Wall Structure	8	8	15-May-17	23-May-17	■ Construction of VA2 Wall Structure											
K-1A-SV1-8880	Strip Formwork and Remedial Works for Waterproofing	3	3	24-May-17	26-May-17	■ Strip Formwork and Remedial Works for Waterpro											
K-1A-SV1-8890	Backfilling with Sand and Removal part of SV1	4	4	29-May-17	01-Jun-17	■ Backfilling with Sand and Removal part o											
K-1A-SV1-8900	Installation of Precast Concrete Slab for Base Slab Construction	2	2	02-Jun-17	03-Jun-17	■ Installation of Precast Concrete Slab fo											
K-1A-SV1-8910	Casting Blinding Layer (No-Fine) and Laying Waterproofing Works	4	4	05-Jun-17	08-Jun-17	■ Casting Blinding Layer (No-Fin											
K-1A-SV1-8920	Construction of Base Slab	6	6	09-Jun-17	15-Jun-17	■ Construction of Base											
K-1A-SV1-8930	Removal of Strut S3	4	4	16-Jun-17	20-Jun-17	■ Removal of S											
K-1A-SV1-8950	Construction of Side Wall Construction	10	10	21-Jun-17	03-Jul-17	■ Construction of Side Wall Construction											
Backfilling Works		16	16	10-May-17	27-May-17												
K-1A-SV1-6800	Backfilling (bay 3 to bay 4) (to +3.7m)	16	16	10-May-17	27-May-17	■ Backfilling (bay 3 to bay 4) (to +3.7m)											
SUS and Ventilation Adits from CH6+220 to CH6+291 in Zone 2		74	74	07-Apr-17	08-Jul-17												

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	Arch	April					May			June					
							1	19	26	02	09	16	23	30	07	14	21	28	04	11
E/B Construction of D-Wall																				
K-1A-SV2-2400	Construction of D-wall Eastbound (CH6+220 to CH6+232) EH57	9	9	07-Apr-17	20-Apr-17															
K-1A-SV2-2500	Construction of D-wall Eastbound (CH6+220 to CH6+232) EM56	5	5	21-Apr-17	26-Apr-17															
K-1A-SV2-2700	Construction of D-wall Eastbound (CH6+241 to CH6+247) EH54A	10	10	31-May-17	10-Jun-17															
K-1A-SV2-2750	Testing of D-wall (Sonic test and IC)	20	20	12-Jun-17	05-Jul-17															
K-1A-SV2-2800	Toe Grouting Works	20	20	06-Jun-17	28-Jun-17															
Construction of Socketed H-Pile																				
K-1A-SV2-3290	Installation of Socketed H-piles (CH6+220 to CH6+230)	16	16	27-Apr-17	17-May-17															
W/B Construction of D-Wall in TTA Stage 1A																				
K-1A-SV2-5500	Construction of D-wall Westbound (CH6+241 to CH6+291) WH48	12	12	25-Apr-17	10-May-17															
K-1A-SV2-5501	Construction of D-wall Westbound (CH6+241 to CH6+291) WM51	10	10	29-Apr-17	12-May-17															
K-1A-SV2-5502	Construction of D-wall Westbound (CH6+241 to CH6+291) WH53	12	12	06-May-17	19-May-17															
K-1A-SV2-5503	Construction of D-wall Westbound (CH6+241 to CH6+291) WM56	10	10	11-May-17	22-May-17															
K-1A-SV2-5504	Construction of D-wall Westbound (CH6+241 to CH6+291) WM49	10	10	16-May-17	26-May-17															
K-1A-SV2-5505	Construction of D-wall Westbound (CH6+241 to CH6+291) WH51A	7	7	22-May-17	29-May-17															
K-1A-SV2-5506	Construction of D-wall Westbound (CH6+241 to CH6+291) WM54	10	10	25-May-17	05-Jun-17															
K-1A-SV2-5507	Construction of D-wall Westbound (CH6+241 to CH6+291) WH50	12	12	30-May-17	12-Jun-17															
K-1A-SV2-5508	Construction of D-wall Westbound (CH6+241 to CH6+291) WM52	10	10	02-Jun-17	13-Jun-17															
K-1A-SV2-5509	Construction of D-wall Westbound (CH6+241 to CH6+291) WH55	12	12	06-Jun-17	19-Jun-17															
W/B Construction of D-Wall in TTA Stage 2																				
K-1A-SV2-4300	Implementation of TTA stage 2	0	0	31-May-17																
K-1A-SV2-4400	Construction of Guide Wall	15	15	31-May-17	16-Jun-17															
K-1A-SV2-4500	Construction of D-wall Westbound (CH6+220 to CH6+241)	25	25	09-Jun-17	08-Jul-17															
Excavation and ELS Construction																				
K-1A-SV2-6190	Excavation and Lateral Support for Temporary Decking at CH6+220 to CH6+230	5	5	18-May-17	23-May-17															
SUS Structure from CH6+291 to 6+467 in Zone 3																				
E/B Construction of D-Wall																				
K-1A-SV3-2400	Testing of D-wall (Sonic test and IC)	30	20	22-Sep-16 A	27-Apr-17															
Construction of Socketed H-Pile																				
K-1A-SV3-3008	Installation of Socketed H-piles (CH6+380 to CH6+348) HPC99-HPC84	45	6	14-Feb-17 A	07-Apr-17															
K-1A-SV3-3012	Structure Installation of Socketed H-piles (CH6+348 to CH6+342) HPC83 - 81	7	7	31-Mar-17	08-Apr-17															

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	March					April					May					June				
						1	8	15	22	29	5	12	19	26	1	8	15	22	29	5	12	19	26	1	8
K-1A-SV3-3015	Close Gate No. 1	0	0		03-Apr-17*						◆ Close Gate No. 1														
K-1A-SV3-3017	Structural Steel Installation of Socketted H-piles (CH6+342 to CH6+328) HPC80 - HPC74	14	14	05-Apr-17	24-Apr-17						Structural Steel Installation of Socketted H-piles (CH6+342 to CH6+328) HPC80 - HPC74														
K-1A-SV3-3019	Structural Steel Installation of Socketted H-piles (CH6+328 to CH6+316) HPC73 - HPC68 for Temporary Bridge No.1	12	12	06-May-17	19-May-17						Structural Steel Installation of Socketted H-piles (CH6+328 to CH6+316) HPC73 - HPC68 for Temporary Bridge No.1														
K-1A-SV3-3020	Grouting Works for Socketted H-piles (CH6+348 to CH6+316)	30	30	18-Apr-17	24-May-17						Grouting Works for Socketted H-piles (CH6+348 to CH6+316)														
K-1A-SV3-3025	Loading test for Socketted H-piles	10	10	18-May-17	29-May-17						Loading test for Socketted H-piles														
W/B Construction of D-Wall in TTA Stage 1A		115	35	27-Dec-16 A	17-May-17																				
K-1A-SV3-4270	Testing of D-wall (Sonic test and IC)	30	15	10-Jan-17 A	21-Apr-17	Testing of D-wall (Sonic test and IC)																			
K-1A-SV3-4290	Construction of temporary cut-off wall at CH6+291	55	32	27-Dec-16 A	13-May-17	Construction of temporary cut-off wall at CH6+291																			
K-1A-SV3-4300	Construction of temporary cut-off wall at CH6+467	35	35	29-Mar-17 A	17-May-17	Construction of temporary cut-off wall at CH6+467																			
Toe Grouting Works		29	27	29-Mar-17 A	08-May-17																				
<i>Prilling for Toe Grouting Works</i>		10	10	05-Apr-17	19-Apr-17																				
Eastbound Prilling Works for Toe Grouting Works		10	10	05-Apr-17	19-Apr-17																				
K-1A-SV3-4340	CH6+298 - CH6+330 (Panel 39A to 43_EB)	10	10	05-Apr-17	19-Apr-17	CH6+298 - CH6+330 (Panel 39A to 43_EB)																			
Westbound Prilling Works for Toe Grouting Works		10	10	05-Apr-17	19-Apr-17																				
K-1A-SV3-4370	CH6+298 - CH6+330 (Panel 41 to 45_WB)	10	10	05-Apr-17	19-Apr-17	CH6+298 - CH6+330 (Panel 41 to 45_WB)																			
<i>Toe Grouting</i>		29	27	29-Mar-17 A	08-May-17																				
Eastbound Toe Grouting Works		19	19	07-Apr-17	04-May-17																				
Stage 1 Bentonite Cement Grout		15	15	07-Apr-17	27-Apr-17																				
K-1A-SV3-4390	CH6+291 - CH6+298 (Panel 45_EB)	2	2	26-Apr-17	27-Apr-17	CH6+291 - CH6+298 (Panel 45_EB)																			
K-1A-SV3-4400	CH6+298 - CH6+330 (Panel 39A to 43_EB)	8	8	13-Apr-17	25-Apr-17	CH6+298 - CH6+330 (Panel 39A to 43_EB)																			
K-1A-SV3-4410	CH6+330 - CH6+467 (Panel 32 to 38_EB)	8	8	07-Apr-17	19-Apr-17	CH6+330 - CH6+467 (Panel 32 to 38_EB)																			
Stage 2 Chemical Grout		11	11	20-Apr-17	04-May-17																				
K-1A-SV3-4420	CH6+291 - CH6+298 (Panel 45_EB)	2	2	28-Apr-17	29-Apr-17	CH6+291 - CH6+298 (Panel 45_EB)																			
K-1A-SV3-4430	CH6+298 - CH6+330 (Panel 39A to 43_EB)	8	8	24-Apr-17	04-May-17	CH6+298 - CH6+330 (Panel 39A to 43_EB)																			
K-1A-SV3-4440	CH6+330 - CH6+467 (Panel 32 to 38_EB)	8	8	20-Apr-17	28-Apr-17	CH6+330 - CH6+467 (Panel 32 to 38_EB)																			
Westbound Toe Grouting Works		29	27	29-Mar-17 A	08-May-17																				
Stage 1 Bentonite Cement Grout		8	8	20-Apr-17	28-Apr-17																				
K-1A-SV3-4450	CH6+291 - CH6+298 (Panel 47_WB)	2	2	27-Apr-17	28-Apr-17	CH6+291 - CH6+298 (Panel 47_WB)																			
K-1A-SV3-4460	CH6+298 - CH6+344 (Panel 39A to 45_WB)	6	6	20-Apr-17	26-Apr-17	CH6+298 - CH6+344 (Panel 39A to 45_WB)																			
Stage 2 Chemical Grout		29	27	29-Mar-17 A	08-May-17																				
K-1A-SV3-4480	CH6+291 - CH6+298 (Panel 47_WB)	2	2	06-May-17	08-May-17	CH6+291 - CH6+298 (Panel 47_WB)																			

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	March				April				May				June			
						1	8	15	22	19	26	02	09	16	23	30	07	14	21	28	04
K-1A-SV3-4490	CH6+298 - CH6+344 (Panel 39A to 45_WB)	8	8	25-Apr-17	05-May-17																
K-1A-SV3-4500	CH6+344 - CH6+390 and CH6+405 to CH6+467 (Panel 20 to 28_WB)	5	5	29-Mar-17 A	06-Apr-17																
Pumping Test for Zone 3		72	72	07-Apr-17	06-Jul-17																
<i>Dewatering Well</i>		<i>56</i>	<i>56</i>	<i>07-Apr-17</i>	<i>16-Jun-17</i>																
K-1A-SV3-4510	CH6+291 - CH6+310 (DW01 to DW02)	6	6	01-Jun-17	07-Jun-17																
K-1A-SV3-4530	CH6+310 - CH6+344 (DW03 to DW06)	8	8	23-May-17	31-May-17																
K-1A-SV3-4540	CH6+344 - CH6+390 (DW07 to DW10)	10	10	04-May-17	15-May-17																
K-1A-SV3-4560	CH6+405 - CH6+460 (DW15 to DW20)	18	18	07-Apr-17	02-May-17																
K-1A-SV3-4570	CH6+460 - CH6+467 (DW21 to DW22)	8	8	08-Jun-17	16-Jun-17																
<i>Observation Well</i>		<i>68</i>	<i>68</i>	<i>07-Apr-17</i>	<i>30-Jun-17</i>																
K-1A-SV3-4630	CH6+291 - CH6+310 (OW10 to OW11, 29, 31)	8	8	13-Jun-17	21-Jun-17																
K-1A-SV3-4640	CH6+310 - CH6+344 (OW01 to OW02, 09, 12 to 16)	16	16	25-May-17	12-Jun-17																
K-1A-SV3-4650	CH6+344 - CH6+390 (OW03, 08, 17 to OW19)	12	12	04-May-17	17-May-17																
K-1A-SV3-4670	CH6+405 - CH6+460 (OW04, 05, 22 to 27)	18	18	07-Apr-17	02-May-17																
K-1A-SV3-7430	CH6+460 - CH6+467 (OW6, 28, 30, 32)	8	8	22-Jun-17	30-Jun-17																
<i>Recharging Well</i>		<i>16</i>	<i>16</i>	<i>17-Jun-17</i>	<i>06-Jul-17</i>																
K-1A-SV3-4520	Installation of RW1 to RW8	16	16	17-Jun-17	06-Jul-17																
Excavation and ELS Construction		18	18	12-Jun-17	03-Jul-17																
K-1A-SV3-5500	Excavation and Trimming Dwall to +2.0mPD for Temporary Bridge at CH6+325	6	6	12-Jun-17	17-Jun-17																
K-1A-SV3-5510	Breaking Bulging for Temporary Vehicular Access at CH6+325	3	3	19-Jun-17	21-Jun-17																
K-1A-SV3-5520	Installation of Lateral Support for Temporary Vehicular Access at CH6+325	9	9	22-Jun-17	03-Jul-17																
SUS Structure from CH6+467 to 6+568 in Zone 4		161	111	14-Jan-17 A	15-Aug-17																
E/B Construction of D-Wall		118	68	14-Jan-17 A	24-Jun-17																
K-1A-SV4-2120	Construction of Guide Wall (CH6+510 to CH6+555)	24	20	21-Jan-17 A	27-Apr-17																
K-1A-SV4-2172	Construction of D-wall Eastbound (CH6+480 to CH6+510)	25	20	11-Mar-17 A	27-Apr-17																
K-1A-SV4-2175	Construction of D-wall Eastbound (CH6+510 to CH6+555)	55	45	14-Jan-17 A	29-May-17																
K-1A-SV4-2420	Toe Grouting Works (CH6+467 to CH6+510)	14	14	15-May-17	30-May-17																
K-1A-SV4-2440	Testing of D-wall (Sonic test and IC) (CH6+467 to CH6+510)	12	12	28-Apr-17	13-May-17																
K-1A-SV4-2450	Testing of D-wall (Sonic test and IC) (CH6+510 to CH6+560)	18	18	05-Jun-17	24-Jun-17																
W/B and End Construction of D-Wall in TTA Stage 1A		138	111	06-Feb-17 A	15-Aug-17																
K-1A-SV4-4040	Diversion of 11kV CLP cable and Backfilling Works across SUS at CH6+560 by CLP	0	0		16-Jun-17																

Activity ID	Activity Name	Orig Dur	Rem Dur	Start	Finish	Schedule															
						19	26	April 22			May 23			June 24							
K-1A-SV4-4050	Construction of Guide Wall (End Wall)	28	28	09-Jun-17	12-Jul-17																
K-1A-SV4-4400	Construction of D-wall Westbound (CH6+480 to CH6+510)	35	35	06-Feb-17 A	17-May-17	Construction of D-wall Westbound (CH6+480 to CH6+510)															
K-1A-SV4-4500	Construction of D-wall Westbound (CH6+510 to CH6+555)	35	60	27-Feb-17 A	15-Jun-17	Construction of D-w															
K-1A-SV4-4600	Construction of D-wall Westbound (CH6+555 to CH6+560)	12	3	17-Mar-17 A	03-Apr-17	Construction of D-wall Westbound (CH6+555 to CH6+560)															
K-1A-SV4-4700	Construction of D-wall (CH6+560 to CH6+568) & end wall at CH6+568	50	50	17-Jun-17	15-Aug-17																
K-1A-SV4-4730	Toe Grouting Works (CH6+467 to CH6+510)	14	14	01-Jun-17	16-Jun-17	Toe Grouting Work															
K-1A-SV4-4745	Testing of D-wall (Sonic test and IC) (CH6+467 to CH6+510)	12	12	18-May-17	31-May-17	Testing of D-wall (Sonic test and IC) (CH6-															
Pumping Test		22	22	18-May-17	12-Jun-17																
K-1A-SV4-5000	Installation of Dewatering Well, Observation Well and Recharging Well at CH6+467 to CH6+510	22	22	18-May-17	12-Jun-17	Installation of Dewatering															
Excavation and ELS Construction		18	18	17-Jun-17	08-Jul-17																
K-1A-SV4-5500	Excavation and Trimming Dwall to +2.0mPD for Temporary Bridge at CH6+482	6	6	17-Jun-17	23-Jun-17	Excavati															
K-1A-SV4-5510	Breaking Bulging for Temporary Vehicular Access at CH6+325	3	3	24-Jun-17	27-Jun-17	Bi															
K-1A-SV4-5520	Installation of Lateral Support for Temporary Vehicular Access at CH6+325	9	9	28-Jun-17	08-Jul-17																
Section 3 of the Works- Construction of District Cooling System (Subject to Excision)		32	35	09-Mar-17 A	17-May-17																
Construction of District Cooling System		32	35	09-Mar-17 A	17-May-17																
Construction of DCS Works at Zone 1		32	35	09-Mar-17 A	17-May-17																
K-03-DCS-1200	Laying chilled water pipes from CHR5-000 to CHR5-024	14	8	09-Mar-17 A	10-Apr-17	Laying chilled water pipes from CHR5-000 to CHR5-024															
K-03-DCS-1300	Backfilling at Zone 1 (CHR5-000 to CHR5-024)	27	27	11-Apr-17	17-May-17	Backfilling at Zone 1 (CHR5-000 to CHR5-024)															
Section 4B of the Works- Construction of Subway B (Subject to Excision)		32	32	28-Apr-17	31-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*	◆ Handover of Portion B															
Bay 3 & 4		0	0	31-May-17	31-May-17																
K-4B-BAY-2480	Interface Connection Details for HKCN of subway B	0	0	31-May-17		◆ Interface Connection Details for HKCN of s															
Section 5 of the Works-Completion of All Landscape Softworks		90	90	31-Mar-17	28-Jun-17																
K-05-LCS-1000	Procurement of plant species	90	90	31-Mar-17	28-Jun-17																
Section 7 of the Works-Preservation and Protection of Existing Trees		1200	810	04-Jan-16 A	18-Jun-19																
K-07-001-1000	Section 7 of the Works-Preservation and Protection of Existing Trees	1200	810	04-Jan-16 A	18-Jun-19																
Sections Completion Date		0	0	31-Mar-17	31-Mar-17																
K-PK-SCC-2100	Completion of Section 2-Demolition of Radar Tower and Guard House	0	0		31-Mar-17	◆ Completion of Section 2-Demolition of Radar Tower and Guard House															

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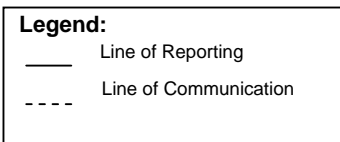
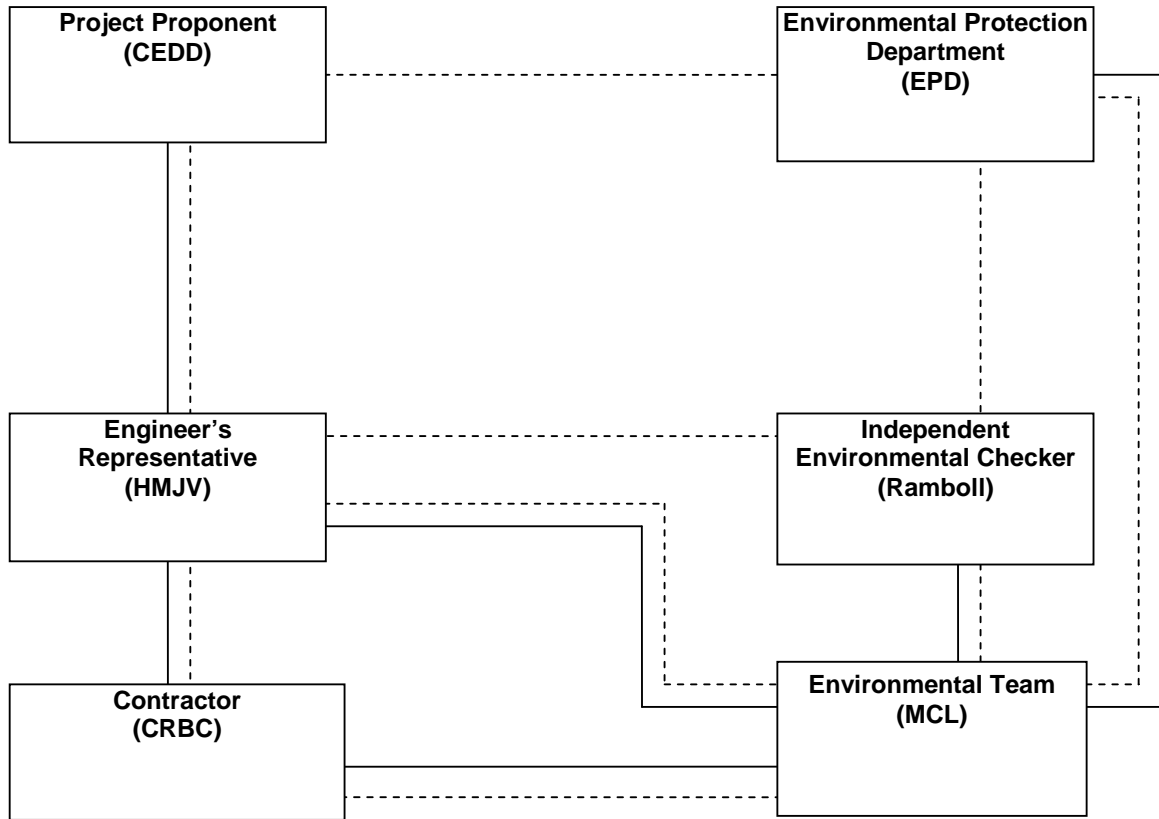
Appendix B

Project Organization Chart

MATERIALAB CONSULTANTS LIMITED

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Appendix C

Action and Limit Levels for Air Quality and Noise

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MaterialLab**Action and Limit Levels for 24-hr TSP and 1-hr TSP**

Parameter	Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
24-hr TSP ($\mu\text{g}/\text{m}^3$)	KTD1a	177	260
	KTD2a	157	
	KER1b	172	
*1-hr TSP ($\mu\text{g}/\text{m}^3$)	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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MaterialLab

Appendix D

Calibration Certificates of Monitoring Equipment



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE
 VILLAGE OF CLEVELS, 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	ORFICE
					DIFF Hg (mm)	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

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

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

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

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

For subsequent flow rate calculations:

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

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



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 877.263.7610 TOLL FREE
 513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Jan 18, 2017 Rootmeter S/N 0438320 Ta (K) - 294
 Operator Tisch Orifice I.D. - 2154 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	1.4530	3.2	2.00
2	NA	NA	1.00	1.0420	6.4	4.00
3	NA	NA	1.00	0.9290	7.9	5.00
4	NA	NA	1.00	0.8840	8.8	5.50
5	NA	NA	1.00	0.7300	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0035	0.6906	1.4197	0.9957	0.6853	0.8821
0.9993	0.9590	2.0078	0.9915	0.9516	1.2475
0.9972	1.0734	2.2448	0.9894	1.0651	1.3948
0.9960	1.1268	2.3543	0.9883	1.1180	1.4628
0.9907	1.3571	2.8394	0.9830	1.3466	1.7642
Qstd slope (m) = 2.12779			Qa slope (m) = 1.33238		
intercept (b) = -0.04273			intercept (b) = -0.02655		
coefficient (r) = 0.99982			coefficient (r) = 0.99982		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Environmental Monitoring Works For Contract No. KLN/2015/07			Date of Calibration: 10-Jan-17
Location : KER1b			Next Calibration Date: 7-Apr-17
Brand:	Tisch		Technician: Jimmy Lui
Model:	TE-5170	S/N: 3482	

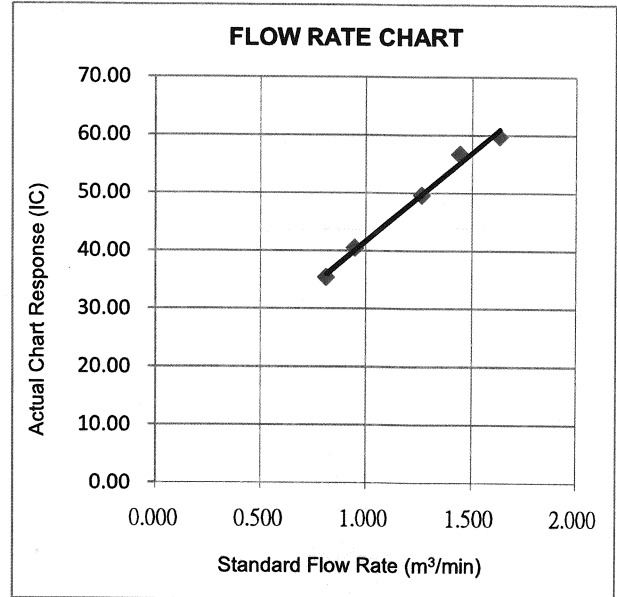
CONDITIONS			
Sea Level Pressure (hPa):	1018.1	Corrected Pressure (mm Hg):	764
Temperature (°C):	19	Temperature (K):	292

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 (m³/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	-0.60	-11.60	11.000	1.630	59.00	59.76	Slope = 30.4307 Intercept = 11.3049 Corr. coeff.: 0.9952
13	-1.80	-10.40	8.600	1.442	56.00	56.72	
10	-2.80	-9.40	6.600	1.265	49.00	49.63	
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

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Environmental Monitoring Works For Contract No. KLN/2015/07			Date of Calibration: 7-Apr-17		
Location : KER1b			Next Calibration Date: 6-Jul-17		
Brand:	Tisch		Technician: Jimmy Lui		
Model:	TE-5170	S/N:	3482		

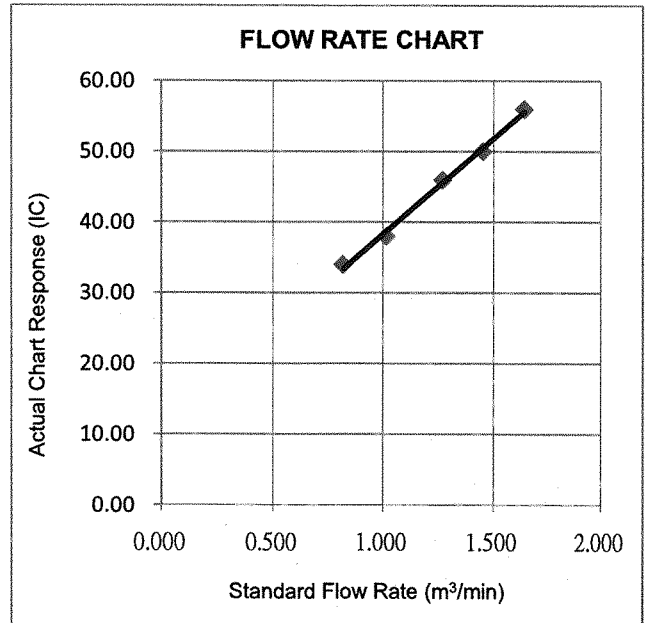
CONDITIONS					
Sea Level Pressure (hPa):	1012.4	Corrected Pressure (mm Hg):	759		
Temperature (°C):	25	Temperature (K):	298		

CALIBRATION ORIFICE					
Make:	Tisch	Qstd Slope:	2.12779		
Model:	TE-5025A	Qstd Intercept:	-0.04273		
Calibration Date:	18-Jan-17	Expiry Date:	18-Jan-18		
S/N:	2154				

CALIBRATIONS							
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m ³ /min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.60	-6.30	11.900	1.640	56.00	55.96	Slope = 26.9764 Intercept = 11.3176 Corr. coeff.: 0.9977
13	4.30	-5.00	9.300	1.452	50.00	49.97	
10	3.20	-3.90	7.100	1.272	46.00	45.97	
7	1.90	-2.60	4.500	1.016	38.00	37.97	
5	1.10	-1.80	2.900	0.820	34.00	33.98	

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
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Report Date: 7th April, 2017

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TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

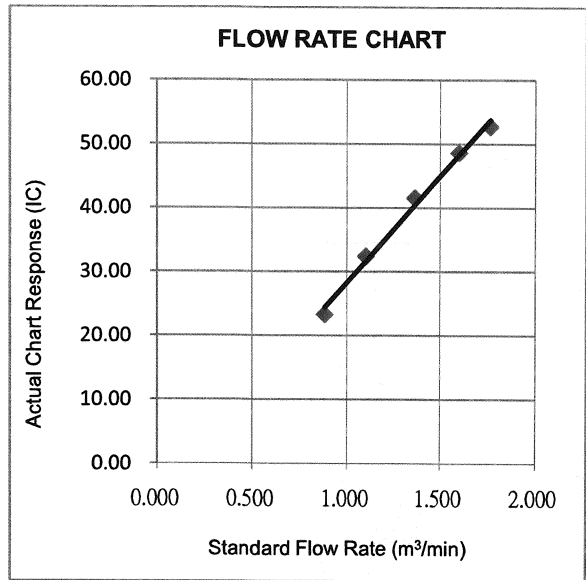
Project : Environmental Monitoring Works For Contract No. KLN/2015/07			Date of Calibration: 10-Jan-17
Location : KTD1a			Next Calibration Date: 7-Apr-17
Brand:	Tisch		Technician: Jimmy Lui
Model:	TE-5170	S/N: 4037	

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 Intercept = -4.9783 Corr. coeff.: 0.9963
13	-0.80	-11.40	10.600	1.600	48.00	48.62	
10	-2.20	-9.90	7.700	1.365	41.00	41.53	
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



Signature
CHOI KAM HO
 Project Consultant

Report Date: 10th January, 2017

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

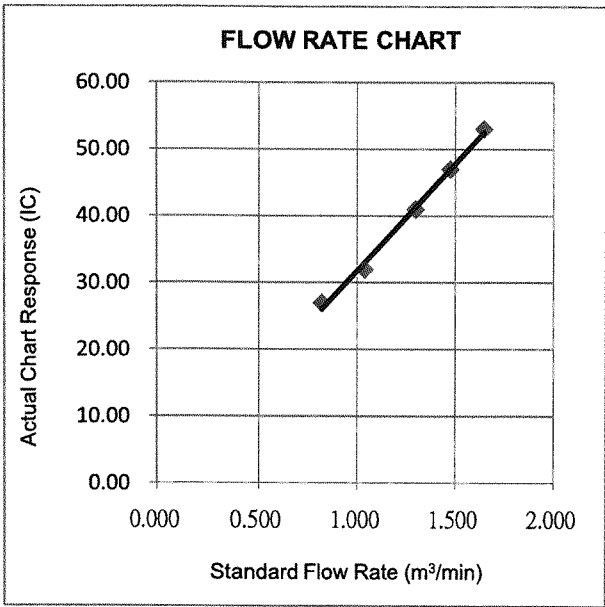
Project : Environmental Monitoring Works For Contract No. KLN/2015/07				Date of Calibration: 7-Apr-17	
Location : KTD1a				Next Calibration Date: 6-Jul-17	
Brand:	Tisch			Technician: Jimmy Lui	
Model:	TE-5170	S/N:	4037		

CONDITIONS					
Sea Level Pressure (hPa):	1012.4	Corrected Pressure (mm Hg):	759		
Temperature (°C):	25	Temperature (K):	298		

CALIBRATION ORIFICE					
Make:	Tisch	Qstd Slope:	2.12779		
Model:	TE-5025A	Qstd Intercept:	-0.04273		
Calibration Date:	18-Jan-17	Expiry Date:	18-Jan-18		
S/N:	2154				

CALIBRATIONS							
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m ³ /min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.70	-6.30	12.000	1.647	53.00	52.97	Slope = 31.9356 Intercept = -0.1259 Corr. coeff.: 0.9974
13	4.50	-5.10	9.600	1.475	47.00	46.97	
10	3.40	-4.00	7.400	1.298	41.00	40.97	
7	2.00	-2.70	4.700	1.038	32.00	31.98	
5	1.10	-1.80	2.900	0.820	27.00	26.98	

Calculations:
 $Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$
 $IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$
 Qstd = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pa = actual pressure during calibration (mm Hg)
 Tstd = 298 deg K
 Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
 $1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$
 m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure




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Report Date: 7th April, 2017

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TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Environmental Monitoring Works For Contract No. KLN/2015/07			Date of Calibration: 10-Jan-17
Location : KTD2a			Next Calibration Date: 7-Apr-17
Brand:	Tisch		Technician: Jimmy Lui
Model:	TE-5170	S/N: 3838	

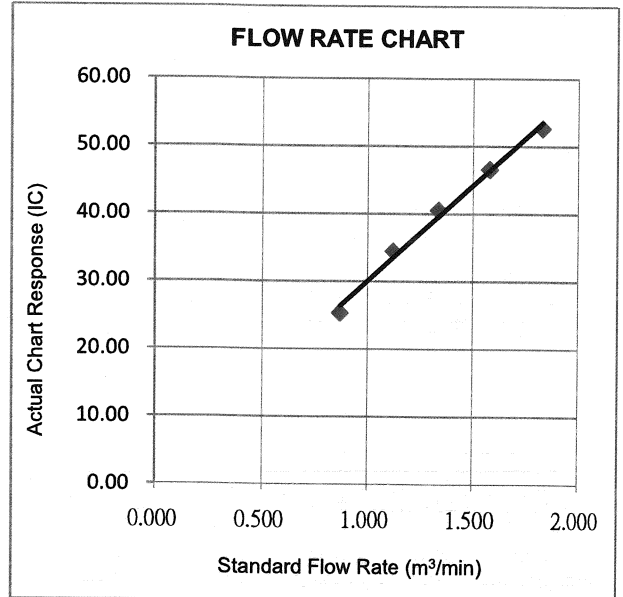
CONDITIONS			
Sea Level Pressure (hPa):	1018.1	Corrected Pressure (mm Hg):	764
Temperature (°C):	19	Temperature (K):	292

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 Intercept = 1.8309 Corr. coeff.: 0.9964
13	-0.80	-11.10	10.300	1.578	46.00	46.59	
10	-2.30	-9.70	7.400	1.338	40.00	40.52	
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:

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$
 Qstd = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
For subsequent calculation of sampler flow:
 $1/m(I[\sqrt{298/T_{av}}(P_{av}/760)] - b)$
 m = sampler slope
 b = sampler intercept
 I = chart response
 T_{av} = daily average temperature
 P_{av} = daily average pressure



CHOI KAM HO
Project Consultant

Report Date: 10th January, 2017

MATERIALAB CONSULTANTS LIMITED

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TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Environmental Monitoring Works For Contract No. KLN/2015/07			Date of Calibration: 7-Apr-17		
Location : KTD2a			Next Calibration Date: 6-Jul-17		
Brand:	Tisch		Technician: Jimmy Lui		
Model:	TE-5170	S/N:	3838		

CONDITIONS					
Sea Level Pressure (hPa):	1012.4	Corrected Pressure (mm Hg):	759		
Temperature (°C):	25	Temperature (K):	298		

CALIBRATION ORIFICE					
Make:	Tisch	Qstd Slope:	2.12779		
Model:	TE-5025A	Qstd Intercept:	-0.04273		
Calibration Date:	18-Jan-17	Expiry Date:	18-Jan-18		
S/N:	2154				

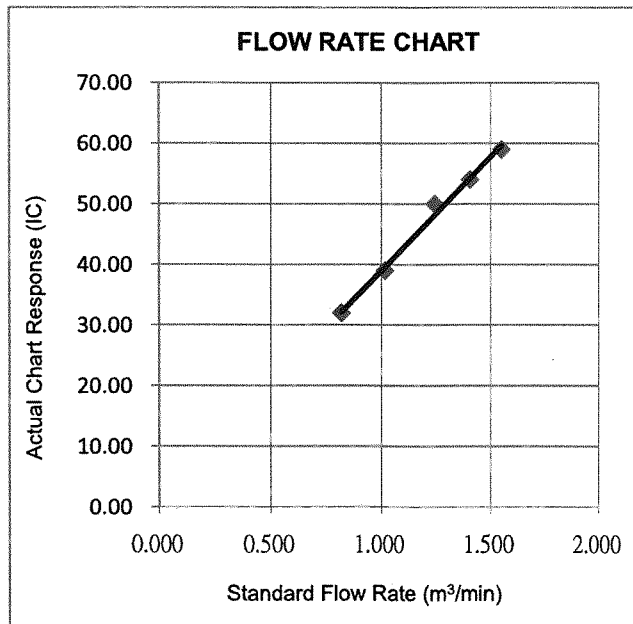
CALIBRATIONS							
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m ³ /min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	4.90	-5.70	10.600	1.549	59.00	58.96	Slope = 37.5842 Intercept = 1.4001 Corr. coeff.: 0.9958
13	4.00	-4.70	8.700	1.405	54.00	53.96	
10	3.00	-3.80	6.800	1.245	50.00	49.97	
7	1.90	-2.60	4.500	1.016	39.00	38.97	
5	1.10	-1.80	2.900	0.820	32.00	31.98	

Calculations:

$Qstd = 1/m[\text{sqrt}(H2O(Pa/Pstd)(Tstd/Ta)) - b]$
 $IC = I[\text{sqrt}(Pa/Pstd)(Tstd/Ta)]$
 Qstd = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Qstd slope
 b = calibrator Qstd intercept
 Ta = actual temperature during calibration (deg K)
 Pa = actual pressure during calibration (mm Hg)
 Tstd = 298 deg K
 Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

$1/m((I)[\text{sqrt}(298/Tav)(Pav/760)] - b)$
 m = sampler slope
 b = sampler intercept
 I = chart response
 Tav = daily average temperature
 Pav = daily average pressure



CHOI KAM HO
 Project Consultant

Report Date: 7th April, 2017

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Materialab

Report No. : 161966CA161195

Page 1 of 1

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

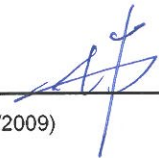
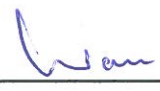
Method Used : By direct Comparison

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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Report no.: 161966CA161737

Page 1 of 1

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

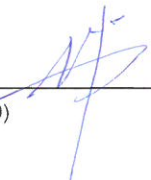
Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)
Equipment ID. : R-108-1
Date of Calibration : 24-Aug-2016 Ambient Temperature : 21 °C
Calibration Location : Calibration Laboratory of Materialab
Method Used : By direct comparison

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weighting 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 : 
CA-R-297 (22/07/2009)

Date : 24.8.2016

Certified by : 

Date : 26.8.2016

Chan Chun Wai (Manager) /

Kwok Chi Wa (Assistant Manager)

** End of Report **

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MaterialLab

Report no.: 161966CA162338

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : MaterialLab 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 MaterialLab


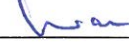
Method Used : By direct comparison

Calibration Results :

Parameters	Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	2.6 to -0.6
	2000Hz	0.8 to -0.4
	1000Hz	-1.0 to -1.1
	500Hz	-4.5 to -4.6
	250Hz	-9.9 to -10.0
	125Hz	-17.3 to -17.6
	63Hz	-27.3 to -27.7
	31.5Hz	-39.5 to -41.4
Differential level linearity	94dB-104dB	± 0.6
	104dB-114dB	± 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 : 2016/11/17 Certified by :  Date : 2016/11/17
CA-R-297 (22/07/2009) Chan Chun Wai (Manager)

** End of Report **

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:-

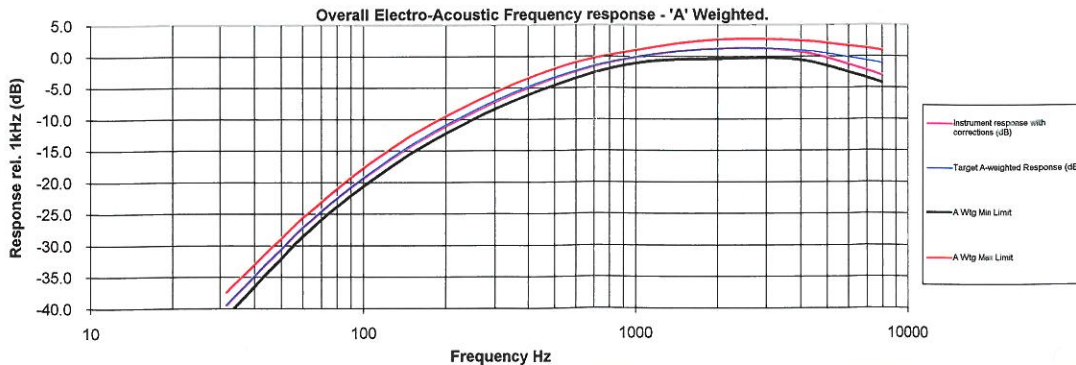
Self Generated Noise Test
 Electrical Signal Test Of Frequency Weightings
 Frequency & Time Weightings At 1 kHz
 Level Linearity On The Reference Level Range
 Toneburst Response Test
 C-peak Sound Levels
 Overload Indication
 Acoustic Tests

All Tests Pass
All Tests Pass
All Tests Pass
All Tests Pass
All Tests Pass
All Tests Pass
All Tests Pass
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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MaterialLab

Report no.: 161966CA161645

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : MaterialLab 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 : ± 0.5 dB

Laboratory Information

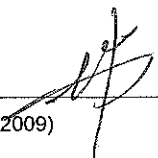
Description : 1. Reference sound level meter 2. Multifunction acoustic calibrator
Equipment ID. : 1. R-119-1 2. R-108-1
Date of Calibration : 10-Aug-2016 Ambient Temperature : 21 °C
Calibration Location : Calibration Laboratory of MaterialLab
Method Used : By direct comparison

Calibration Results :

Parameters (Setting of UUT)	Mean of measured value	Specification limit
94dB	93.8 dB	± 0.5 dB
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 : 
CA-R-297 (22/07/2009)

Date : 12-8-2016

Certified by :


Kwok Chi Wa (Assistant Manager)

Date :

16 AUG 2016

** End of Report **

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	<u>113.99</u> dB
SPL @ 94.0dB Setting (CEL-120/1 only)	<u>93.93</u> dB/N.A

Engineer :- M. Duncanson 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.

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Web: www.casellameasurement.com

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Materialab

Report no.: 161966CA162202(1)

Page 1 of 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 : ± 0.5 dB

Laboratory Information

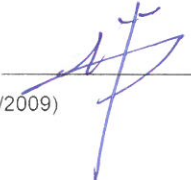
Description : Reference Sound level meter
Equipment ID. : R-119-1
Date of Calibration : 01-Nov-2016 Ambient Temperature : 22 °C
Calibration Location : Calibration Laboratory of Materialab
Method Used : By direct comparison

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.3 dB	± 0.5 dB
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 : 
CA-R-297 (22/07/2009)

Date : 3-11-2016

Certified by :



Date : 4/11/2016

Chan Chun Wai (Manager)

** End of Report **

MATERIALAB CONSULTANTS LIMITED

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The logo for MaterialLab, featuring the word "MaterialLab" in a bold, sans-serif font. The text is white and is set against a black rectangular background that has horizontal bars extending from the top and bottom edges.

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 (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. 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 (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

- Actual monitoring may be subjected to change due to any safety concern or adverse weather condition
- 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
- 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)
- 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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Project: KL/2014/03 - Kai Tak Development – Stage 3 Infrastructure Works for Developments at the Southern Part of the Former Runway

Impact Monitoring Schedule (July 2017)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1
2	3 TSP Monitoring Noise Monitoring	4	5	6	7	8 TSP Monitoring Noise Monitoring
9	10	11	12	13	14 TSP Monitoring Noise Monitoring	15
16	17	18	19	20 TSP Monitoring Noise Monitoring	21	22
23	24	25	26 TSP Monitoring Noise Monitoring	27	28	29
30	31					

Remarks

- Actual monitoring may be subjected to change due to any safety concern or adverse weather condition
- 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
- 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)
- 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 (ug/m ³)	Limit Level (ug/m ³)
				Initial	Final			Initial	Final					
1-Apr-17	Fine	291.7	765.0	2.7803	2.9014	0.1211	24	1.59	1.57	1.58	2278.9	53	177	260
7-Apr-17	Fine	297.5	759.3	2.8250	3.0805	0.2555	24	1.64	1.64	1.64	2355.4	108		
13-Apr-17	Cloudy	293.0	763.1	2.7995	3.0230	0.2235	24	1.52	1.51	1.51	2181.2	102		
19-Apr-17	Fine	299.7	756.9	2.8074	2.8768	0.0694	24	1.24	1.25	1.24	2090.8	33		
25-Apr-17	Cloudy	294.9	759.4	2.7650	2.8718	0.1068	24	1.51	1.51	1.51	2265.1	47		
29-Apr-17	Cloudy	296.0	760.9	2.8386	2.9291	0.0905	24	1.58	1.60	1.59	2290.0	40		
												Min		
												Max	108	
												Average	64	

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 (ug/m ³)	Limit Level (ug/m ³)
				Initial	Final			Initial	Final					
1-Apr-17	Fine	291.7	765.0	2.8296	2.9085	0.0789	24	1.45	1.49	1.47	2116.6	37	157	260
7-Apr-17	Fine	297.5	759.3	2.7988	2.9278	0.1290	24	1.42	1.42	1.42	2047.1	63		
13-Apr-17	Cloudy	293.0	763.1	2.8176	2.9220	0.1044	24	1.59	1.57	1.58	2272.1	46		
19-Apr-17	Fine	299.7	756.9	2.8164	2.8858	0.0694	24	1.56	1.57	1.56	2251.7	31		
25-Apr-17	Cloudy	294.9	759.4	2.7723	2.9327	0.1604	24	1.43	1.42	1.43	2052.6	78		
29-Apr-17	Cloudy	296.0	760.9	2.8392	2.9768	0.1376	24	1.69	1.68	1.68	2422.2	57		
												Min		
												Max	78	
												Average	52	

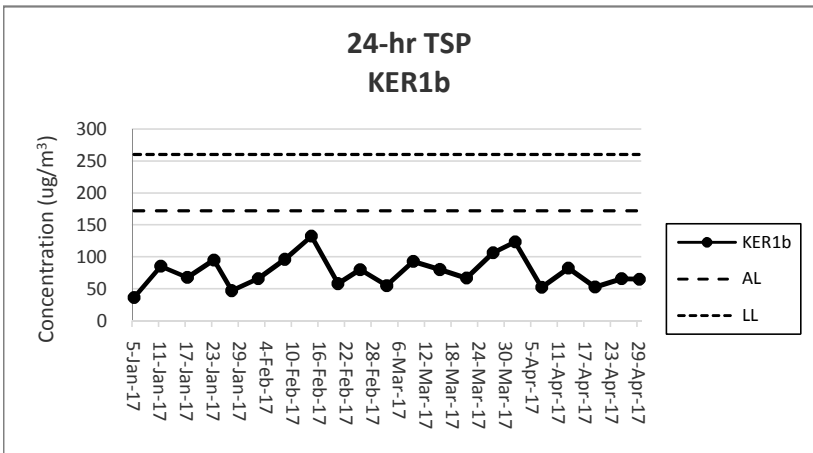
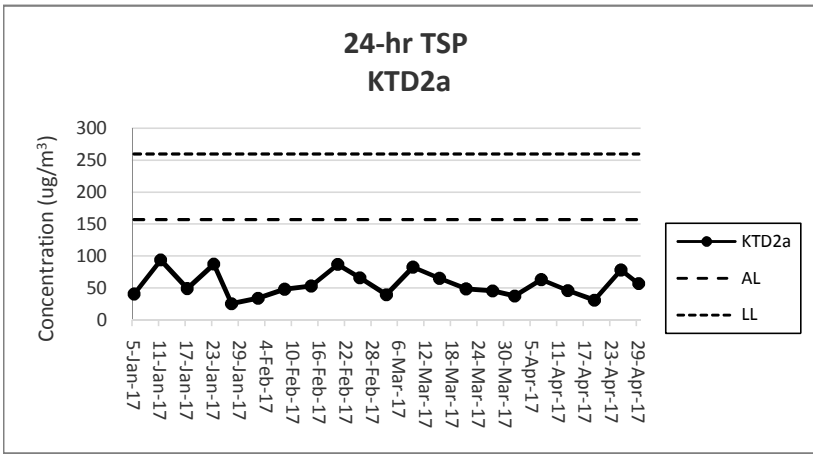
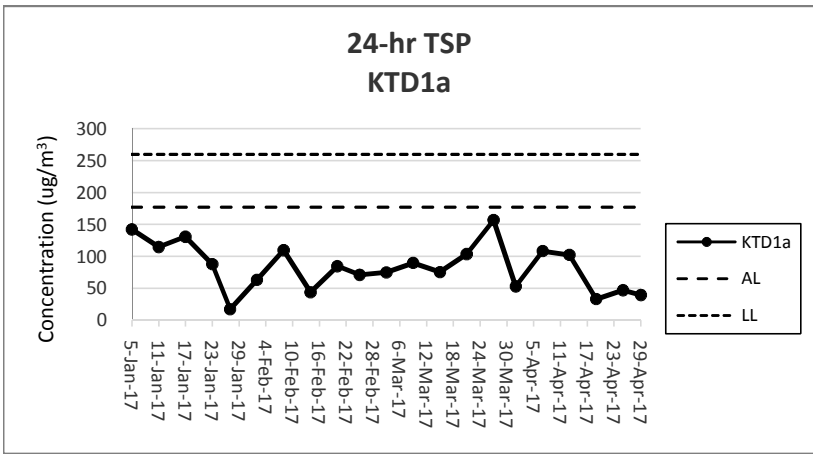
KER1b - Site Boundary at Cheung Yip Street

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 (ug/m ³)	Limit Level (ug/m ³)
				Initial	Final			Initial	Final					
1-Apr-17	Fine	291.7	765.0	2.8013	3.0988	0.2975	24	1.62	1.60	1.61	2414.0	123	172	260
7-Apr-17	Fine	297.5	759.3	2.8135	2.9195	0.1060	24	1.41	1.41	1.41	2032.1	52		
13-Apr-17	Cloudy	293.0	763.1	2.8179	2.9934	0.1755	24	1.49	1.47	1.48	2133.8	82		
19-Apr-17	Fine	299.7	756.9	2.8150	2.9170	0.1020	24	1.34	1.35	1.35	1937.0	53		
25-Apr-17	Cloudy	294.9	759.4	2.7709	2.9017	0.1308	24	1.39	1.38	1.38	1992.9	66		
29-Apr-17	Cloudy	296.0	760.9	2.8332	2.9652	0.1320	24	1.42	1.41	1.41	2036.4	65		
												Min		
												Max	123	
												Average	73	

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 monitoring 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
1-Apr-17	10:30	69	71	65	0.0	Fine
7-Apr-17	10:40	62	64	58	0.6	Fine
13-Apr-17	11:14	70	73	67	0.6	Cloudy
19-Apr-17	11:35	68	70	64	0.0	Fine
25-Apr-17	10:25	69	73	65	0.8	Cloudy
29-Apr-17	10:51	71	73	68	0.0	Cloudy
Max		71				
Min		62				
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
1-Apr-17	9:52	61	62	59	0.2	Fine
7-Apr-17	10:00	64	65	59	0.4	Fine
13-Apr-17	10:00	63	66	61	0.2	Cloudy
19-Apr-17	10:06	61	63	58	0.3	Fine
25-Apr-17	11:15	64	65	63	0.3	Cloudy
29-Apr-17	10:17	69	73	62	0.3	Cloudy
Max		69				
Min		61				
Limit Level		75				

KER 1b: Site Boundary at Cheung Yip Street

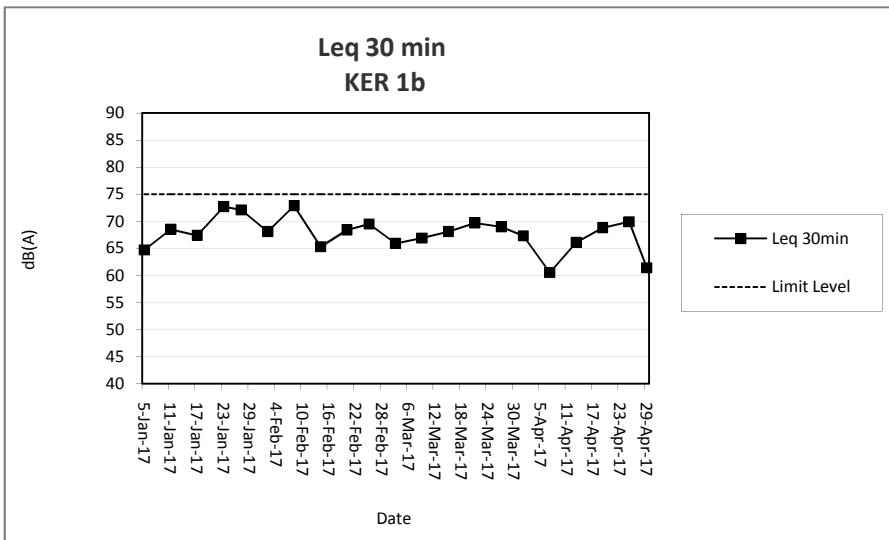
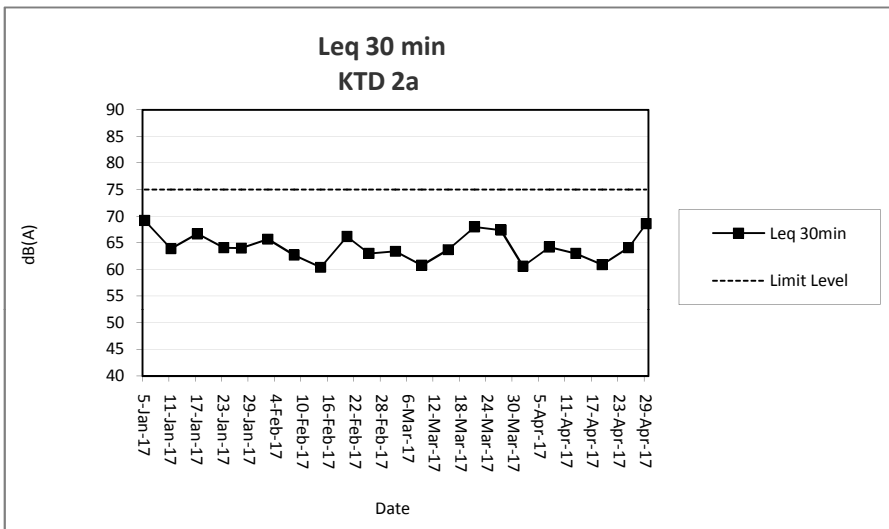
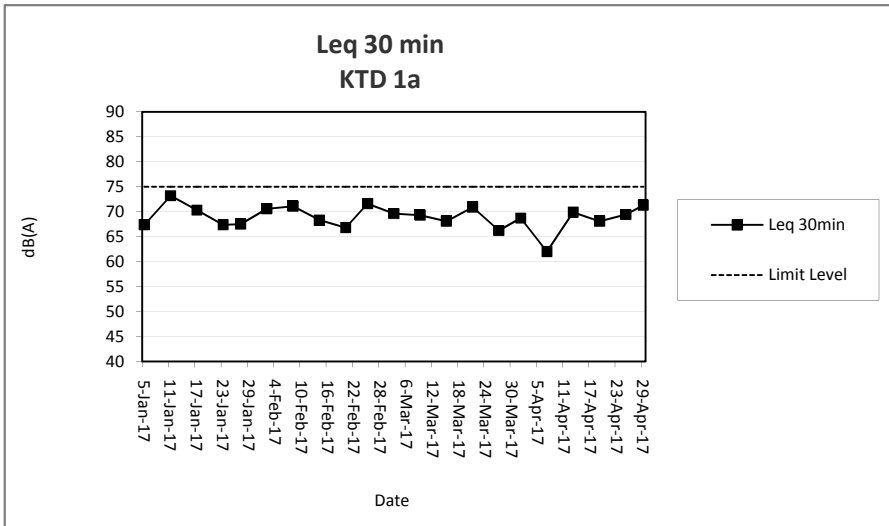
Date	Start Time	Leq 30min dB(A)	L10 dB(A)	L90 dB(A)	Wind Speed (m/s)	Weather
1-Apr-17	11:10	67	69	64	0.2	Fine
7-Apr-17	11:25	61	62	57	0.3	Fine
13-Apr-17	11:53	66	67	64	0.3	Cloudy
19-Apr-17	10:54	69	71	67	0.0	Fine
25-Apr-17	11:00	70	72	67	0.5	Cloudy
29-Apr-17	11:48	61	63	58	0.5	Cloudy
Max		70				
Min		61				
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 monitoring 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.	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET. 2. Check the Contractor's working methods. 	<ol style="list-style-type: none"> 1. Notify the Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practices. 2. Amend working methods agreed with the ER as appropriate.
Exceedance for two or more consecutive samples.	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Notify the Contractor. 2. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of the notification of exceedance in writing. 2. Notify the Contractor. 3. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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

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EVENT	ACTION			
	ET	IEC	ER	Contractor
	<p>discuss the remedial action to be taken.</p> <p>7. Assess the effectiveness of the Contractor's remedial action and keep the IEC, EPD and ER informed of the results.</p> <p>8. If exceedance stops, cease additional monitoring</p>		<p>continues, consider what portion of works is responsible and instruct the Contractor to stop that portion of works until the exceedance is abated.</p>	<p>determined by the ER until the exceedance is abated.</p>

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Event and Action Plan for Noise Impact

EVENT	ACTION			
	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Review the monitoring data submitted by the ET. 2. Review the construction methods and proposed remedial measures by the Contractor, and advise the ET and ER if the proposed remedial measures would be sufficient 	<ol style="list-style-type: none"> 1. Notify the Contractor. 2. Require the Contractor to propose remedial measures for implementation if required. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to the ER and copy to the IEC and ET. 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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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MaterialLab**Event and Action Plan for Landscape and Visual Impact**

EVENT	ACTION			
	ET	IEC	ER	Contractor
Non-conformity on one occasion	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Notify Contractor 2. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Notify the Contractor 2. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 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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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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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
2017 Apr	4.8827	Nil	Nil	Nil	4.8827	Nil	0.016	0.023	Nil	Nil	0.0062
Total	21.8014	Nil	Nil	Nil	21.8014	Nil	0.080	0.092	Nil	Nil	0.0429

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
<u>Air Quality Measures</u>					
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/m ² 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
<u>Good Site Practices</u>					
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	Partially 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.	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.			
		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	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	Implemented
		Plant and equipment should be well maintained to prevent dark smoke emission.	Contractor	All relevant worksites	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: <ul style="list-style-type: none"> • 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

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		<ul style="list-style-type: none"> • 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 vehicles with proper labels are allowed to be used in specified activities on-site.	Contractor	All relevant worksites	Implemented
Water Quality Measures					
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

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		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 with 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 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.	Contractor	All relevant worksites	Partially 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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		<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

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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
		properly to avoid entering into the adjacent harbour waters. Stockpiles of cement and other construction materials should be kept covered when not being used.			
		<u>Accidental Spillage</u>			
		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
<u>Waste Management Measures</u>					
		<u>Waste Management Plan</u>			
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
		<u>Good Site Practices</u>			
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	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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		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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					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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		<u>General Refuse</u>			
		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
<u>Land Contamination Measures</u>					
		<u>For any excavation works conducted at Radar Station</u>			
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
<u>Landscape and Visual Impact</u>					
New Distributor Roads Serving the Planned KTD					
		<u>Construction Phase</u>			
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

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		Erection of decorative screen hoarding.	Contractor	All relevant worksites	Implemented
Trunk Road T2					
		<u>Construction Phase</u>			
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)		
April 2017						
01	1019.9	23.9	18.7	15.5	70	0.2
02	1021.5	24.2	19.9	17.0	64	0.0
03	1020.8	24.5	20.7	17.5	68	0.0
04	1018.4	26.0	21.9	19.3	77	0.0
05	1014.8	27.9	23.4	20.9	81	0.0
06	1012.5	25.0	23.5	22.5	87	0.3
07	1012.4	27.9	24.5	22.6	84	0.0
08	1012.2	27.5	25.0	23.0	85	0.0
09	1009.4	27.9	25.8	23.5	84	0.0
10	1006.6	28.1	27.0	26.3	83	Trace
11	1007.7	27.8	26.1	22.2	90	0.6
12	1013.2	22.8	20.6	18.2	89	21.5
13	1017.4	21.5	20.0	18.8	80	Trace
14	1015.2	24.7	21.9	19.9	78	0.0
15	1013.5	26.9	23.6	21.6	86	0.0
16	1013.3	30.2	25.7	23.0	82	Trace
17	1010.9	29.4	26.0	23.7	79	Trace
18	1008.9	30.7	26.7	23.9	79	0.0
19	1009.1	29.4	26.7	24.7	78	0.0
20	1009.8	27.5	26.1	25.1	86	3.1
21	1008.1	29.4	26.2	22.8	88	7.8
22	1012.9	24.5	20.6	18.5	79	6.6
23	1014.8	21.8	20.8	19.9	83	1.4
24	1014.3	22.8	21.5	20.9	83	Trace
25	1012.4	22.9	21.9	20.7	92	10.9
26	1010.9	26.8	23.7	22.4	95	2.9
27	1012.5	24.0	22.3	20.6	88	3.5
28	1015.2	24.8	21.8	20.2	74	0.0
29	1014.4	27.3	23.0	19.9	75	0.0
30	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	6 April 2017	Site surface shall be kept clear of dusty materials. (Portion I)	The item was rectified by the Contractor and inspected on 13 April 2017.
	27 April 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 4 May 2017.
Noise	NA		
Water Quality	6 April 2017	Water leakage was observed at the sedimentation tank. Maintenance of the sedimentation tank shall be provided. (Zone 4)	The item was rectified by the Contractor and inspected on 13 April 2017.
	13 April 2017	Excess surface water was found in the channel that entering the Wetsep due to pump failure. Water pump shall be repaired to prevent surface runoff. (Zone 1)	The item was rectified by the Contractor and inspected on 19 April 2017.
	13 April 2017	The muddy water in the entrance gate of Zone 2 shall be banded to prevent leakage of muddy water to the public haul road. Bunding shall be provided. (Zone 2)	The item was rectified by the Contractor and inspected on 19 April 2017.
Chemical and Waste Management	6 April 2017	Chemicals containers shall be stored on drip tray. (Zone 1)	The item was rectified by the Contractor and inspected on 13 April 2017.
Land Contamination	19 April 2017	Breaker tips shall be placed on drip tray to avoid land contamination. (Zone 1 and Zone 4)	The item was rectified by the Contractor and inspected on 27 April 2017.
Landscape and Visual Impact	27 April 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 2)	The item was rectified by the Contractor and inspected on 4 May 2017.
General Condition	27 April 2017	Stagnant water shall be removed. (Portion I)	The item was rectified by the Contractor and inspected on 4 May 2017.

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Appendix N

Outstanding Issues and Deficiencies

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MaterialLab**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

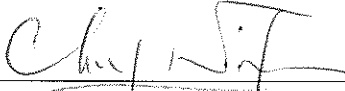
**EP-337/2009 – New Distributor Roads Serving the
Planned KTD**

**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

April 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 20 June 2017
Our Ref. MCL/ED/0354/2017/C

Cinotech Consultants Limited
Rm 1710, Technology Park,
18 On Lai Street, Shatin,
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 April 2017

We refer to your emails dated 11 May 2017, 16 and 20 June 2017 regarding the Monthly EM&A Report for April 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 –
AECOM –

Attn.: Ms. K. Pong
Attn.: Mr. Keith Chu
Attn.: Mr. John Yam
Attn.: Mr. Jacky Pun

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EXECUTIVE SUMMARY

Introduction

1. This is the 4th 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 – 30 April 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. The major site activities undertaken in the reporting month included:
- Bored piling works at abutment A02;
 - Driving sheet piles at Subway SW6 between Staircases ST2 and ST3;
 - Carry out protection works to CLP's cables for sheet piling works
 - Construction of Box Culvert B3 (Top slab)
 - Excavation and Construction Works for Box Culvert B4
 - ELS Installation and Excavation Works at Box Culvert B5
 - Excavation and Construction Works for Box Culvert B2
 - ELS Construction for Sewerage Works near SCL Tunnel; and
 - Installation of DCS Pipe in Road L7.

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 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

6. 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

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

Environmental Licenses and Permits

8. Licenses/Permits granted to the Project include the Environmental Permit (EP) for the Project, EP-337/2009 issued on 23 April 2009.
9. Construction Noise Permit (License No.: GW-RE0033-17 & GW-RE1236-16).
10. Billing Account for Construction Waste Disposal (A/C# 7026164).
11. Registration of Chemical Waste Producer (WPN5213-229-P3239-01).

12. Effluent Discharge License (WT00027495-2017).

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	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

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 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 4th Monthly EM&A report summarizing the EM&A works for the Project from 1 – 30 April 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;
- Driving sheet piles at Subway SW6 between Staircases ST2 and ST3;
- Carry out protection works to CLP's cables for sheet piling works
- Construction of Box Culvert B3 (Top slab)
- Excavation and Construction Works for Box Culvert B4
- ELS Installation and Excavation Works at Box Culvert B5
- Excavation and Construction Works for Box Culvert B2
- ELS Construction for Sewerage Works near SCL Tunnel; and
- Installation of DCS Pipe in Road L7.

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 – 30 April 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	1
1-hour TSP Dust Meter	TSI Model AM510 SidePak Personal Aerosol Monitor	3
HVS Sampler	GMWS 2310 c/w of TSP sampling inlet	7
Wind Anemometer	Davis Weather Monitor II, Model no. 7440	1

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 m³/min. and 1.4 m³/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 ($\mu\text{g}/\text{m}^3$)	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AM2 – Lee Kau Yan Memorial School				
1-hr TSP	5/4/2017	157	346	500
	5/4/2017	167		
	5/4/2017	158		
	10/4/2017	118		
	10/4/2017	116		
	10/4/2017	110		
	13/4/2017	97		
	13/4/2017	91		
	13/4/2017	82		
	19/4/2017	112		
	19/4/2017	108		
	19/4/2017	116		
	22/4/2017	91		
	22/4/2017	88		
	22/4/2017	94		
	27/4/2017	98		
	27/4/2017	102		
27/4/2017	100			
24-hr TSP	5/4/2017	101	157	260
	10/4/2017	119		
	13/4/2017	152		
	19/4/2017	46		
	22/4/2017	99		
	27/4/2017	42		

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	RION NL-52	2
Calibrator	RION NC-73 & NC-74	2

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}, L₉₀ and L₁₀ 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 of 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) 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⁾	--
6/4/2017	76.5	75.8	68.2
11/4/2017	79.9	77.9	75.6
18/4/2017	77.8	78.2	77.8 Measured ≤ Background
24/4/2017	77.2	76.9	65.4
M4 – Lee Kau Yan Memorial School			
6/4/2017	73.6	76.7	73.6 Measured ≤ Baseline
11/4/2017	73.7		73.7 Measured ≤ Baseline
18/4/2017	76.8		60.4
24/4/2017	77.1		66.5
M5(C) – Mercy Grace's Home			
--	--	Background Noise ⁽²⁾	--
6/4/2017	76.7	76.4	64.9
11/4/2017	73.4	75.8	73.4 Measured ≤ Background
18/4/2017	78.2	77.1	71.7
24/4/2017	77.4	76.9	67.8

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), $\mu\text{g}/\text{m}^3$	Scenario2 (Mid 2013 to Late 2016), $\mu\text{g}/\text{m}^3$	Reporting Month (Apr 17), $\mu\text{g}/\text{m}^3$
AM 2 – Lee Kau Yan Memorial School	290	312	111

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

Station	Predicted 24-hr TSP conc.		
	Scenario1 (Mid 2009 to Mid 2013), $\mu\text{g}/\text{m}^3$	Scenario2 (Mid 2013 to Late 2016), $\mu\text{g}/\text{m}^3$	Reporting Month (Apr 17), $\mu\text{g}/\text{m}^3$
AM2 – Lee Kau Yan Memorial School	145	169	93

Table 4.3 Comparison of Noise Monitoring Data with EIA predictions

Stations	Predicted Mitigated Construction Noise Levels during Normal Working Hour ($L_{\text{eq}}(30\text{min})$ dB(A))	Reporting Month (Apr 17), $L_{\text{eq}}(30\text{min})$ dB(A)
M3 – Cognitio College	47 – 75	65.4 – 77.8 ⁽¹⁾⁽³⁾
M4 – Lee Kau Yan Memorial School	47 – 74	60.4 – 73.7 ⁽²⁾
M5(C) – Mercy Grace's Home	Not Predicted in EIA Report	64.9 – 73.4

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.

(3) The exceedance recorded on 11 April 2017 at monitoring station M3 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 The noise monitoring results in the reporting month at M3 were not within the range of predicted mitigated construction noise levels, Noise Limit Level exceedance was recorded at M3 on 11 April 2017. According to the investigation, the exceedance was considered as non-project related as the major noise sources were the traffic noise from Prince Edward Road East or construction sites near M3.

- 4.5 The noise data at M4 were 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 7, 12, 21 & 28 April 2017 in the reporting month. A joint site audit with the representative of IEC, ER, the Contractor and the ET was carried out on 12 April 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
<i>Water Quality</i>	--	--	--
<i>Air Quality</i>	--	--	--
<i>Noise</i>	--	--	--
<i>Waste/ Chemical Management</i>	31 March 2017	<u>Reminder:</u> To clear the general refuse at the box culvert at Portion 2.	Rectification/improvement was observed during the follow-up audit session.
<i>Landscape and Visual</i>	31 March 2017	<u>Observation:</u> To properly maintain the hoarding at the site boundary of Portion 1.	Rectification/improvement was observed during the follow-up audit session.
	21 April 2017	<u>Observation:</u> Fencing should be provided to the tree protection zone at Portion 2.	Rectification/improvement was observed during the follow-up audit session.
<i>Permits/ Licenses</i>	--	--	--

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 One non-project related 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:
- Bored piling works at Abutment A02 and Pier S15;
 - Demolition of part of existing Pier S15;
 - Construction of temporary slip road and decking for TTA at PERE;
 - Hoarding erection along PERE;
 - Carry out trial pits for subway at footpath of PRER E/B;
 - Tree felling works inside Shek Ku Lung Road Playground;
 - Excavation and Construction Works for Box Culvert B2;
 - Construction of Wall and Top Slab of Box Culvert B3;
 - Excavation and Construction Works for Box Culvert B4;
 - ELS and Excavation Works at Box Culvert B5;
 - Sewerage Works near SCL Tunnels;
 - Installation of DCS Pipes in Road L7;
 - Installation of Drainage Pipes in Road L7 ;
 - Trench excavation for DCS in Road D1 (Portion 6); and
 - Trench excavation for Sewerage in Portion 2.

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. May and June 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 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:

Landscape and Visual

- To properly provide and maintain the tree protection zone to avoid damage to the tree.

FIGURES

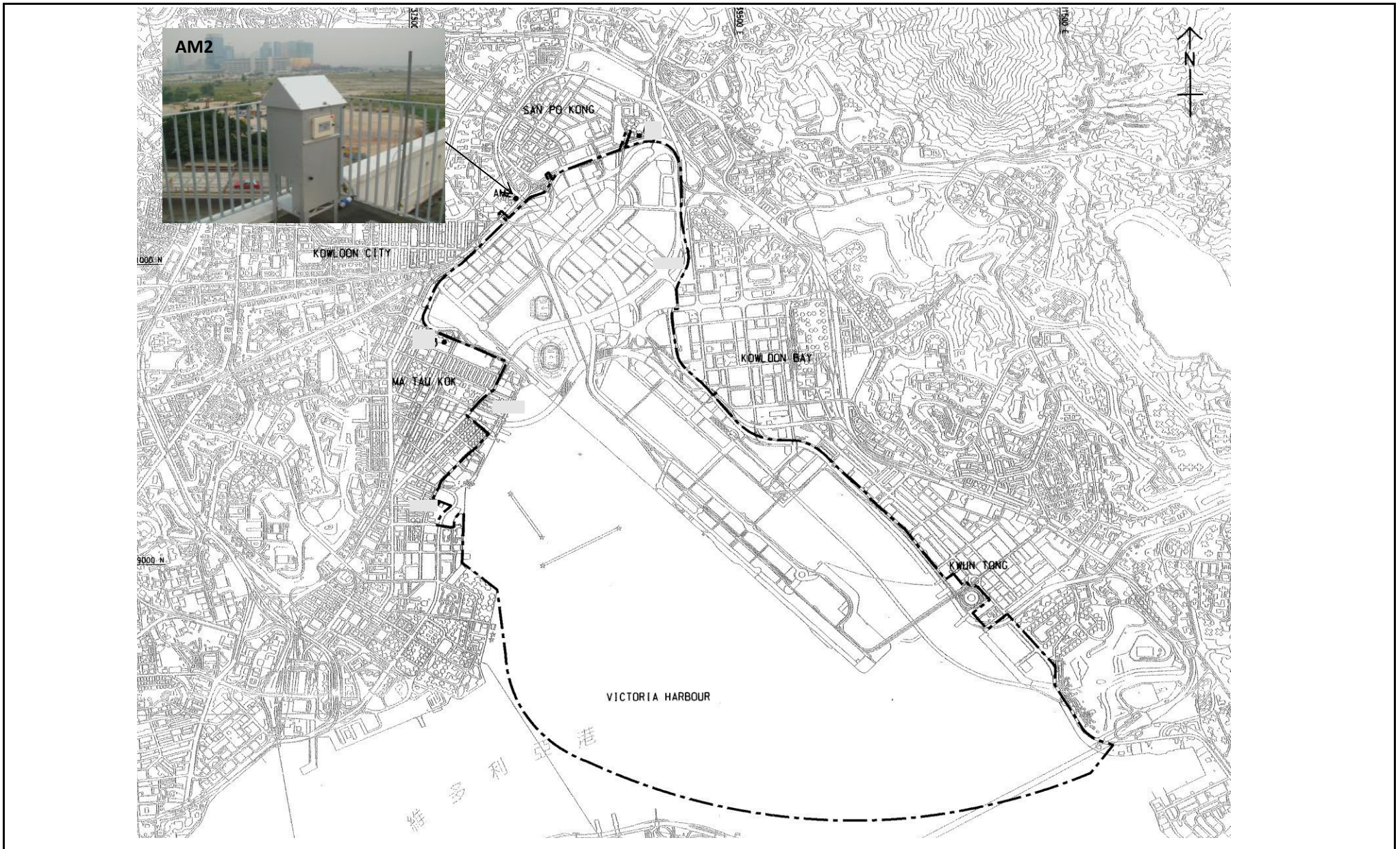


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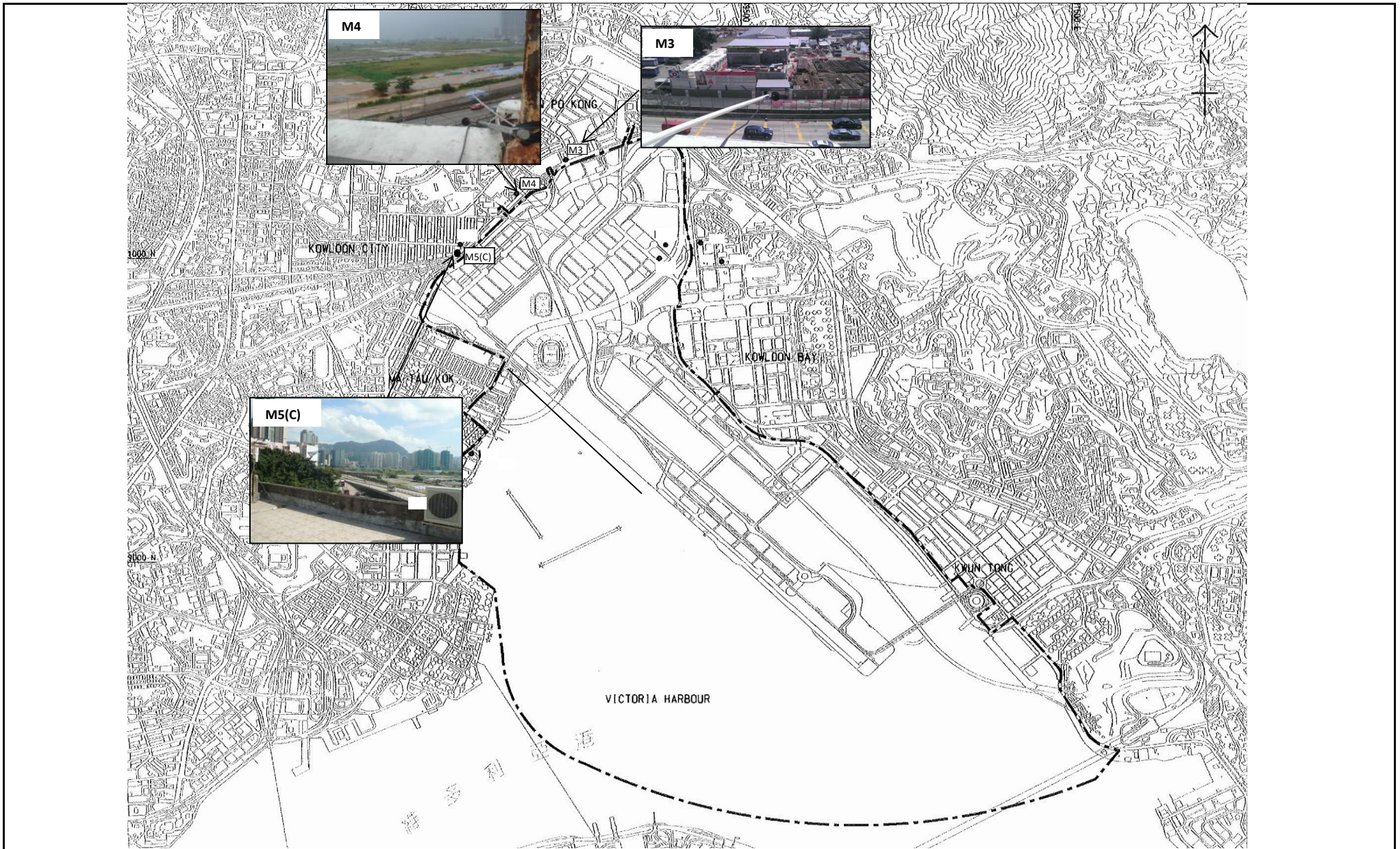
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 ROAD D1

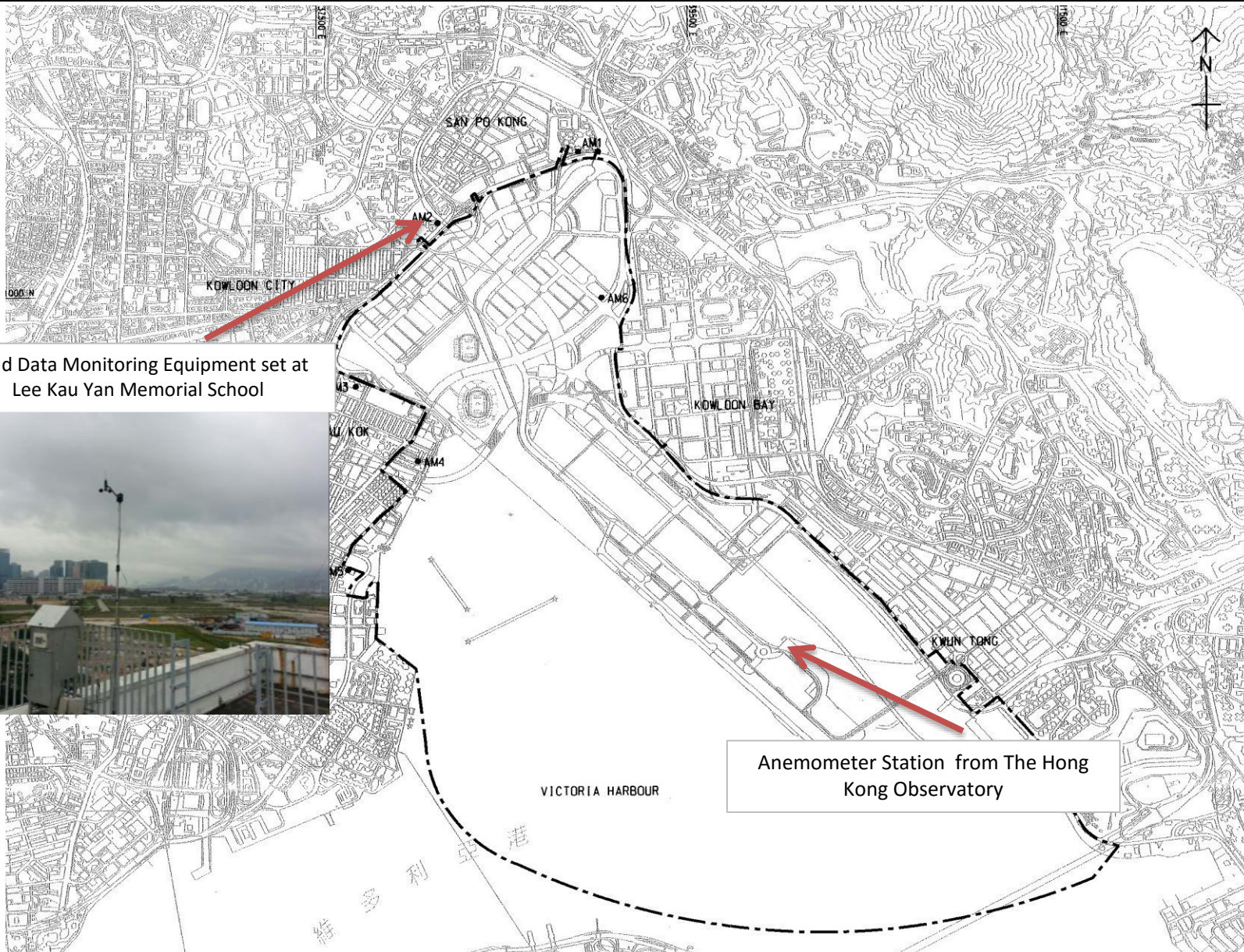
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JOB No.	MA16043	FIGURE NO.	1
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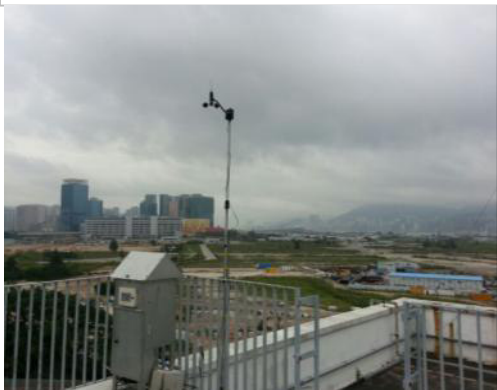
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	Environmental Monitoring Works for Contract No. KL/2015/02		N.T.S	No. MA16043	
	Kai Tak Development –Stage 5A Infrastructure at Former North Apron Area		Date	Figure	
	Locatoin of Air Quality Monitoring Stations		Apr-17	2	



Title	Contract No. KLN/2016/04		Scale	Project	CINOTECH
	Environmental Monitoring Works for Contract No. KL/2015/02		N.T.S	No. MA16043	
Kai Tak Development –Stage 5A Infrastructure at Former North Apron Area			Date	Figure	
Location of Noise Monitoring Stations			Apr-17	3	



Wind Data Monitoring Equipment set at Lee Kau Yan Memorial School



Anemometer Station from The Hong Kong Observatory

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	Project No.	MA16043
Date	Jan-17	Figure	4



**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, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AM2	346	500

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

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
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
CERTIFICATES**

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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Castco's Office	Site ID:	NA	Date:	09-Mar-2017
Serial No:	2768	Model:	TE-5170X	Operator:	Yam

Ambient Condition

Corrected Pressure (mm Hg):	757.6	Temperature (deg K):	296.2
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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-Axis (corrected)
1	6.10	1.208	42.0	42.06
2	5.40	1.138	40.0	40.06
3	4.60	1.053	38.0	38.06
4	3.20	0.884	33.0	33.05
5	2.00	0.705	30.0	30.05

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

m= 24.3862 b= 12.3264 Corr. Coeff= 0.9948
 Sampler set point(SSP) 42 CFM

Calculations

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

Q_{std} = standard flow rate
 IC = corrected chart response
 I = actual chart response
 m = calibrator Q_{std} slope
 b = calibrator Q_{std} intercept
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration Relationship (Qa on x-axis, IC on y-axis)

$$m = \frac{32.4948}{\text{Sampler set point (SSP)}} \quad b = -2.6780 \quad \text{Corr. Coeff} = 0.9945$$

Calculations

$$Q_{std} = 1/m [\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$$

$$IC = I [\sqrt{P_a/P_{std}}(T_{std}/T_a)]$$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

- Q_{std} = standard flow rate
- IC = corrected chart response
- I = actual chart response
- m = calibrator Q_{std} slope
- b = calibrator Q_{std} intercept
- T_a = actual temperature during calibration (deg K)
- P_a = actual pressure during calibration (mm Hg)
- T_{std} = 298 deg K
- P_{std} = 760 mm Hg
- For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17

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
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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-Axis (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 Calibration 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

$Q_{std} = 1/m[\sqrt{H_2O(P_a/P_{std})(T_{std}/T_a)} - b]$
 $IC = I[\sqrt{P_a/P_{std}}(T_{std}/T_a)]$

- m = sampler slope
- b = sampler intercept
- I = chart response
- T_{av} = average temperature
- P_{av} = average pressure

- Q_{std} = standard flow rate
- IC = corrected chart response
- I = actual chart response
- m = calibrator Q_{std} slope
- b = calibrator Q_{std} intercept
- T_a = actual temperature during calibration (deg K)
- P_a = actual pressure during calibration (mm Hg)
- T_{std} = 298 deg K
- P_{std} = 760 mm Hg

For subsequent calculation of sampler flow:
 $(1.21 * m + b) / [\sqrt{298/T_{av}}(P_{av}/760)]$

Checked by: Matthew

Date: 13-Mar-17



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 14, 2016 Rootmeter 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}



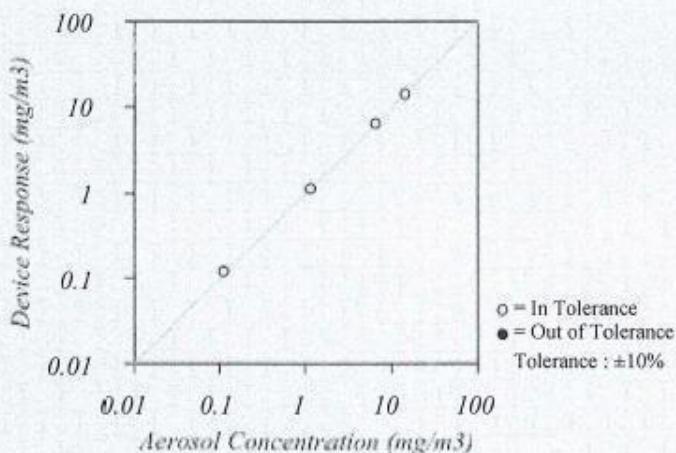
CERTIFICATE OF CALIBRATION AND TESTING

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			Model	AM510
Temperature	74.7 (23.7)	°F (°C)	Serial Number	11404005
Relative Humidity	33	%RH		
Barometric Pressure	28.55 (966.8)	inHg (hPa)		

- | | |
|---|--|
| <input checked="" type="checkbox"/> As Left | <input checked="" type="checkbox"/> In Tolerance |
| <input type="checkbox"/> As Found | <input type="checkbox"/> Out of Tolerance |

Concentration Linearity Plot



System ID: DT1101-02

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

Tass Young

Calibrated

Final Function
Check

February 22, 2017

Date

CASTCO

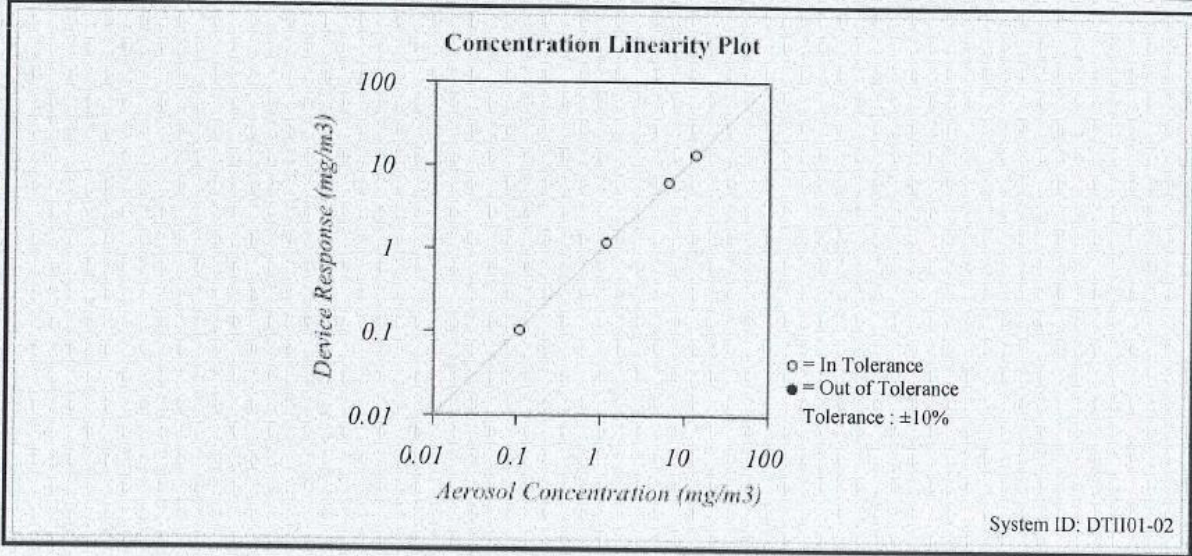


CERTIFICATE OF CALIBRATION AND TESTING

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>

Environment Conditions			Model	AM510
Temperature	75.7 (24.3)	°F (°C)		
Relative Humidity	26	%RH		
Barometric Pressure	28.93 (979.7)	inHg (hPa)	Serial Number	11108001

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| <input checked="" type="checkbox"/> As Left | <input checked="" type="checkbox"/> In Tolerance |
| <input type="checkbox"/> As Found | <input type="checkbox"/> Out of Tolerance |



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<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal.</u>	<u>Cal. Due</u>	<u>Measurement Variable</u>	<u>System ID</u>	<u>Last Cal.</u>	<u>Cal. Due</u>
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

Tan Yang
Calibrated

Final Function Check

December 20, 2016
Date

CASTCO

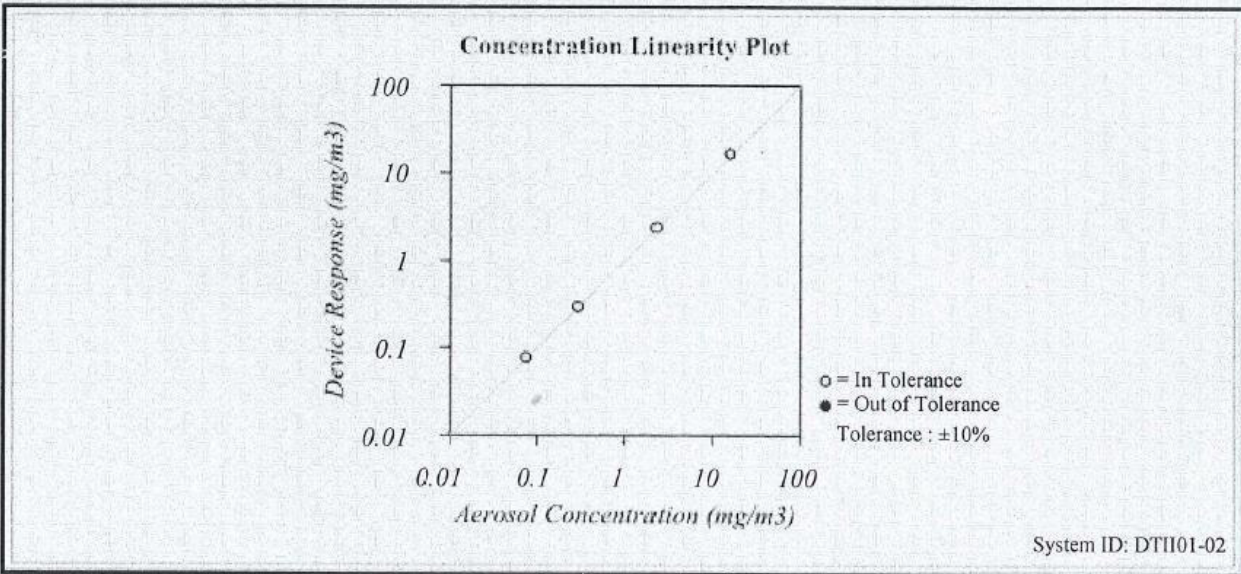


CERTIFICATE OF CALIBRATION AND TESTING

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>

Environment Conditions			Model	AM510
Temperature	75.16 (24.0)	°F (°C)	Serial Number	11208032
Relative Humidity	23.8	%RH		
Barometric Pressure	29.36 (994.2)	inHg (hPa)		

- | | |
|---|--|
| <input checked="" type="checkbox"/> As Left | <input checked="" type="checkbox"/> In Tolerance |
| <input type="checkbox"/> As Found | <input type="checkbox"/> Out of Tolerance |



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

Tom Vang
Calibrated

Final Function
Check

November 8, 2016

Date





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

CASSTCO

校准证书

CALIBRATION CERTIFICATE

证书编号: 2HB17000013-0001
Certificate No.



委托单位: Castco Testing Centre Limited
Client

委托方地址: 29A, On Chuen Street, On Lok Tsuen, Fanling, N.T.
Address

仪器名称: Sound Level Meter
Description

型号规格: NL-52
Model/Type

制造商: RION
Manufacturer

机身号: 00921213
Serial No.

管理号: AAST-SLM-04
Asset No.

校准日期: 2017年01月05日
Cal. Date

建议再校日期: 2018年01月05日 (R)
Next Cal. Date

结论: 所校准项目合格(Passed at Calibration Items)
Conclusion

校准:
Calibrated by

罗志满
鄒木力

核验:
Inspected by

杨西梅

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 Dongguan Zhuang 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

CASSTCO



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: 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)

CEPREI

校准:
Calibrated by

签发:
Approved by

核验:
Inspected 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
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Complaint phone: 852-26680936 020-87236789
Email: cal@ceprei.com.hk
Website: www.ceprei-cal.com

CASTCO

说 明 DIRECTIONS

证书编号(Certificate No.): 2HB16001326-0003

1. 本机构质量管理体系符合ISO/IEC 17025的要求, 获得中国合格评定国家认可委员会(CNAS)认可, 认可证书号为: CNAS L0462。

This laboratory quality management system meets the ISO/IEC 17025 and is accredited by the China National Accreditation Service for Conformity Assessment, No. CNAS L0462.

2. 本机构出具的数据均可溯源到国家计量基准和国际单位制(SI)。

The data issued by this laboratory is traceable to national primary standards and International system of Units (SI).

3. 本次校准的技术依据及CNAS认可范围如下。详细认可范围请查看CNAS网站的NO.L0462证书附件。

Reference documents and CNAS accredited scopes. Please see the attachment of certificate No. L0462 at CNAS website for details.

▪ JJG 188-2002 声级计检定规程 声压级: (20~130)dB; 频率计权: (20~130)dB@ (10Hz~20kHz)

4. 本次校准所使用的主要测量标准 (The main measurement standards used during the calibration):

名称 (Description)	技术指标 (Specification)	证书编号 (Certificate No.)	有效期至 (Due Date)
Sound Calibrator	1级	2HB16000447-0004	2017-04-14
音频分析仪/Audio Analyzer	失真度测量: ±5%	2HB16000010-0019	2017-01-07

5. 校准地点 (The calibration place): 赛宝计量检测中心广州实验室

6. 环境条件 (Environmental conditions): 温度(Temperature): 21℃ 相对湿度(Relative Humidity): 54%

7. 依据《JJF 1059.1-2012 测量不确定度评定与表示》进行测量结果不确定度评定。

The evaluation was made according to JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement.

8. 证书中"P"、"合格"代表"测量结果在允许范围内", "F"、"不合格"代表"测量结果不在允许范围内", "N/A"代表"不适用"。

"P" and "Pass" in this certificate stand for "Low Limit≤the measured value ≤High Limit", "F" and "Fail" stand for "the measured value <Low Limit or the measured value >High Limit", "N/A" stands for "Not Applicable".

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注: 1. 本证书未经本机构书面授权, 不得部分复制。(The certificate shall not be partly reproduced without written approval of the laboratory.)

2. 本次校准结果仅与被校物有关。(The results are only related to the items calibrated.)

CASTCO



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赛宝计量检测中心

CEPREI CALIBRATION & TESTING CENTER

证书编号(Certificate No.): 2HB16001326-0003

1 外观与工作正常性检查 (Appearance and Function Check)

结论
(Pass/Fail)
P

2.内部校准值(Interior Calibration Value) :

A-Weighting

标准值 (Reference)	Cal值 (dB)	U (k=2) (dB)
114.0	114.1	0.2

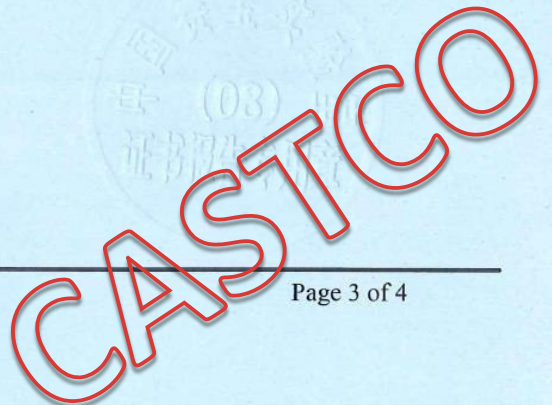
3. 声压级测量(SPL Measurement)

Frequency=1000Hz

A Weighting

标准值 (Reference)	示值 (Indication)	误差 (Error)	允许误差 (Limit)	U (k=2)	结论 (Pass/Fail)
(dB)	(dB)	(dB)	(dB)	(dB)	(P/F)
114.0	114.1	0.1	±1.0	0.2	P
104.0	104.1	0.1	±1.0	0.2	P
94.0	94.1	0.1	±1.0	0.2	P
84.0	84.2	0.2	±1.0	0.2	P
74.0	74.2	0.2	±1.0	0.2	P
64.0	64.4	0.4	±1.0	0.2	P
54.0	54.6	0.6	±1.0	0.2	P

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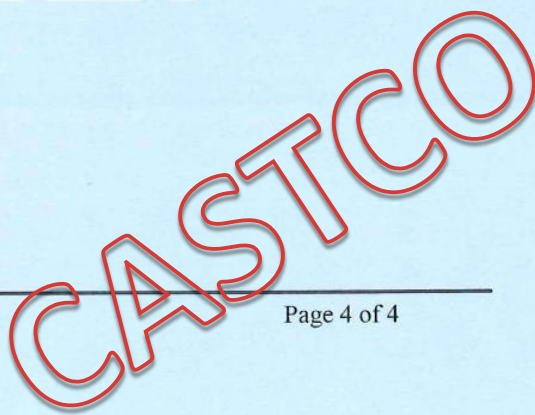




4.A计权特性(A-Weighting Characteristic)

频率 (Frequency) (Hz)	标准值 (Reference) (dB)	示值 (Indication) (dB)	误差 (Error) (dB)	允许误差 (Limit) (dB)	U (k=2) (dB)	结论 (Pass/Fail) (P/F)
31.5	-39.4	-39.5	-0.1	±3.5	0.2	P
63	-26.2	-26.2	0.0	±2.5	0.2	P
125	-16.1	-16.1	0.0	±2.0	0.2	P
250	-8.6	-8.7	-0.1	±1.9	0.2	P
500	-3.2	-3.4	-0.2	±1.9	0.2	P
1k	0.0	0.0	0.0	(Ref.)		
2k	1.2	1.1	-0.1	±2.6	0.2	P
4k	1.0	1.3	0.3	±3.6	0.2	P
8k	-1.1	0.7	1.8	±5.6	0.2	P
16k	-6.6	-4.2	2.4	+6-∞	0.2	P

以下空白/No data hereafter



校准证书

CALIBRATION CERTIFICATE

证书编号: 2HB17000084-0002
Certificate No.



委托单位: Castco Testing Centre Limited
Client

委托方地址: 29A, On Chuen Street, On Lok Tsuen, Fanling, N.T.
Address

仪器名称: Sound Level Calibrator
Description

型号规格: NC-73
Model/Type

制造商: RION
Manufacturer

机身号: 20652
Serial No.

管理号: AAST-SLC-01
Asset No.

校准日期: 2017年01月20日
Cal. Date

建议再校日期: 2018年01月20日
Next Cal. Date

结论: 所校准项目合格(Passed at Calibration Items)
Conclusion

校准: 罗志满
Calibrated by 罗志满

签发: 郑木力
Approved by 郑木力

核验: 杨西梅
Inspected by 杨西梅

印章:
Stamp

说 明

DIRECTIONS

证书编号(Certificate No.): 2HB17000084-0002

1. 本机构质量管理体系符合ISO/IEC 17025的要求, 获得中国合格评定国家认可委员会(CNAS)认证, 认可证书号为: CNAS L0462。

This laboratory quality management system meets the ISO/IEC 17025 and is accredited by the China National Accreditation Service for Conformity Assessment, No. CNAS L0462.

2. 本机构出具的数据均可溯源到国家计量基准和国际单位制(SI)。

The data issued by this laboratory is traceable to national primary standards and International system of Units (SI).

3. 本次校准的技术依据及CNAS认可范围(Reference documents and CNAS accredited scopes):

* JJG 176-2005 声校准器检定规程: 声压级: 94dB、104dB、114dB@(31.5Hz~63Hz); 94dB、104dB、114dB、124dB@(63Hz~8kHz); 94dB、104dB、114dB@(8~16)kHz; 频率:31.5Hz~16kHz; 谐波失真:0~10%@(20~20000)Hz

* 详细认可范围请查看CNAS网站中注册编号为L0462的证书附件(Please see the attachment of certificate No. L0462 at CNAS website for details).

4. 本次校准所使用的主要测量标准(The main measurement standards used during the calibration):

名称 (Description)	技术指标 (Specification)	证书编号 (Certificate No.)	有效期至 (Due Date)
Preamplifier/Preamplifier	$U=0.3\text{dB}$ ($k=2$)	LSae2016-1077	2017-03-13
标准传声器/Condenser Microphone	$U=(0.05-0.12)\text{dB}$ ($k=2$)	LSae2016-1166	2017-03-15

5. 校准地点(The calibration place): 赛宝计量检测中心广州实验室

6. 环境条件(Environmental conditions): 温度(Temperature): 20℃ 相对湿度(Relative Humidity): 60%

7. 依据《JJF 1059.1-2012 测量不确定度评定与表示》进行测量结果不确定度评定。评定结果以包含因子为 k 的扩展不确定度 U 或相对扩展不确定度 U_{rel} 表示。

The evaluation was made according to JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement. The evaluation results were expressed by the extended uncertainty U or relative expanded uncertainty U_{rel} with a coverage factor k .

8. 证书中"P"、"合格"代表"测量结果在允许范围内", "F"、"不合格"代表"测量结果不在允许范围内", "N/A"代表"不适用"。

"P" and "Pass" in this certificate stand for "Low Limit \leq the measured value \leq High Limit". "F" and "Fail" stand for "the measured value $<$ Low Limit or the measured value $>$ High Limit", "N/A" stands for "Not Applicable".

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注: 1. 本证书未经本机构书面授权, 不得部分复制。(The certificate shall not be partly reproduced without written approval of the laboratory.)

2. 本次校准结果仅与被校物有关。(The results are only related to the items calibrated.)



1. Sound Pressure Level

Nominal Value (dB)	Reference Value (dB)	Error (dB)	Manufacturer Specification (dB)	U (k=2) (dB)	P/F
94	94.18	-0.18	±0.5	0.2	P

2. Frequency

Nominal Value (Hz)	Reference Value (Hz)	Error (Hz)	Manufacturer Specification (Hz)	U (k=2) (Hz)	P/F
1000	993.8	6.2	±20	1.0	P

3. Distortion

S. P. L. (dB)	Reference Value (%)	Error (%)	Manufacturer Specification (%)	U (k=2) (%)	P/F
94	1.31	--	<2	0.5	P

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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)
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: Castco Testing Centre Limited
Client

委托方地址: 29A, On Chuen Street, On Lok Tsuen, Fanling, N.T.
Address

仪器名称: SOUND LEVEL CALIBRATOR
Description

型号规格: NC-74
Model/Type

制造商: RION
Manufacturer

机身号: 34546624
Serial No.

管理号: AAST-SLC-03
Asset No.

校准日期: 2016年08月18日
Cal. Date

建议再校日期: 2017年08月18日 (R)
Next Cal. Date

结论: 所校准项目合格(Passed at Calibration Items)
Conclusion

校准:
Calibrated by

罗志满
鄧木力

核验:
Inspected by

杨雨梅

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 Dongguan Zhuang 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

说明 DIRECTIONS

证书编号(Certificate No.): 2HB16001157-0001

1. 本机构质量管理体系符合ISO/IEC 17025的要求, 获得中国合格评定国家认可委员会(CNAS)认可, 认可证书号为: CNAS L0462。

This laboratory quality management system meets the ISO/IEC 17025 and is accredited by the China National Accreditation Service for Conformity Assessment, No. CNAS L0462.

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3. 本次校准的技术依据及CNAS认可范围如下。详细认可范围请查看CNAS网站的NO.L0462证书附件。

Reference documents and CNAS accredited scopes. Please see the attachment of certificate No. L0462 at CNAS website for details.

- JJG 176-2005 声校准器检定规程 声压级: 94dB、104dB、114dB@(31.5Hz~63Hz); 94dB、104dB、114dB、124dB@(63Hz~8kHz); 94dB、104dB、114dB@(8~16)kHz; 频率:31.5Hz~16kHz; 谐波失真:0~10%@(20~20000)Hz

4. 本次校准所使用的主要测量标准 (The main measurement standards used during the calibration):

名称 (Description)	技术指标 (Specification)	证书编号 (Certificate No.)	有效期至 (Due Date)
标准传声器/Condenser Microphone	$U=(0.05\sim0.12)\text{dB} (k=2)$	LSae2016-1166	2017-03-15
Preamplifier/Preamplifier	$U=0.3\text{dB} (k=2)$	LSae2016-1077	2017-03-13

5. 校准地点 (The calibration place): 赛宝计量检测中心广州实验室

6. 环境条件 (Environmental conditions): 温度(Temperature): 22℃ 相对湿度(Relative Humidity): 60%

7. 关于测量结果不确定度的说明 (Directions of measurement uncertainty):

- 7.1 依据(Reference Document)

JJF 1059.1-2012测量不确定度评定与表示

JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement.

- 7.2 本次测量结果扩展不确定度的包含因子 $k=2$ 。

The coverage factor k of the expanded uncertainties of the measurement results is equal 2.

8. 证书中"P"、"合格"代表"测量结果在允许范围内", "F"、"不合格"代表"测量结果不在允许范围内", "N/A"代表"不适用"。

"P" and "Pass" in this certificate stand for "Low Limit≤the Result ≤High Limit", "F" and "Fail" stand for "the Result < Low Limit or the Result > High Limit", "N/A" stands for "Not Applicable".

注: 1. 本证书未经本机构书面授权, 不得部分复制。(The certificate shall not be partly reproduced without written approval of the laboratory.)

2. 本次校准结果仅与被校物有关。(The results are only related to the items calibrated.)



1. 外观与工作正常性检查 (Appearance and Function Check)

结论
(Pass/Fail)
P

2. 声压级(Sound Pressure Level)

标称值 (Nominal)	标准值 (Reference)	误差 (Error)	允许误差 (Limit)	结论 (Pass/Fail)
(dB)	(dB)	(dB)	(dB)	(P/F)
94	94.0	0.0	±0.3	P

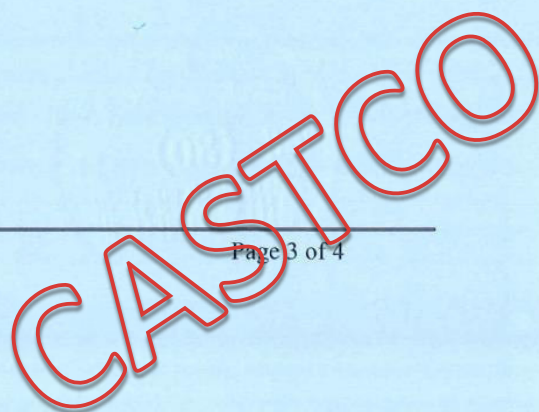
3. 频率(Frequency)

标称值 (Nominal)	标准值 (Reference)	误差 (Error)	允许误差 (Limit)	结论 (Pass/Fail)
(Hz)	(Hz)	(Hz)	(Hz)	(P/F)
1000	1001.7	-1.7	±20	P

4. 失真度(Distortion)

声压级 (SPL.)	失真度 (Distortion)	允许范围 (Limit)	结论 (Pass/Fail)
(dB)	(%)	(%)	(P/F)
94	1.12	≤3	P

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附(Appendix):

关于测量结果不确定度的说明

(Directions of measurement uncertainty in the calibration)

1 依据 (Reference Document)

JJF 1059.1-2012 测量不确定度评定与表示

(JJF 1059.1-2012 Evaluation and Expression of Uncertainty in Measurement)

2 本次测量结果的扩展不确定度(The measurement expanded uncertainties of the calibration)($k=2$)

2.1 声压级(Sound Pressure Level) : 0.1dB

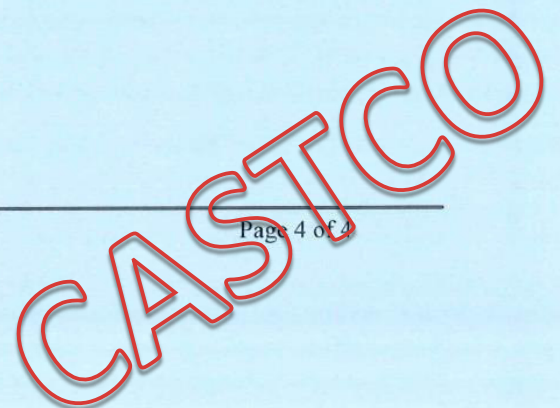
2.2 失真度(Distortion) : 5%

2.3 频率(Frequency) : 0.01%

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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 LC-20172600
Certificate No.

第 1 页 共 3 页
Page of

委托方 佳力高試驗中心有限公司
Client CASTCO TESTING CENTRE LTD

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

计量器具名称 Davis Weather Station
Measuring instruments

规格型号 Vantage Pro2
Model/Type

制造者
Manufacturer

编号 A70604D29N/自編號:EN52-01
Serial No.

主管
Approved by 陈金明

审核
Inspected by 林少鑫

校准
Calibrated by 岑锦明

证书专用章
Issued by (Stamp)

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

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.gzjlj.net 业务邮箱: yowuban@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 共 3 页
Page 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	编号	证书号	技术特征
Equipment/Model	Serial No.	Certificate No.	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
空盒气压力表(Aneroid barometer)	06-0008 08	LY-201619205/2017-07-01 LC-20167300/2017-06-28	MPE: ±2.5 hPa 均匀性≤1%;
数显倾角仪(Digital inclinometer)	N2955	CJ-20169223/2017-5-25	稳定性≤0.5%; 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:
 $U=0.20 \text{ m/s}$; $k=2$
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 科学城实验室	温度 19.4℃	相对湿度 53%
Site	Temperature	RH

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 (mmHg O)	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、未经本证书面批准, 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 April 2017	15.5 – 23.9	51 – 82	0.2
2 April 2017	17.0 – 24.2	42 – 85	0
3 April 2017	17.5 – 24.5	55 – 77	0
4 April 2017	19.3 – 26.0	62 – 85	0
5 April 2017	20.9 – 27.9	66 – 90	0
6 April 2017	22.5 – 25.0	79 – 92	0.3
7 April 2017	22.6 – 27.9	71 – 93	0
8 April 2017	23.0 – 27.5	73 – 93	0
9 April 2017	23.5 – 27.9	78 – 92	0
10 April 2017	26.3 – 28.1	78 – 87	Trace
11 April 2017	22.2 – 27.8	82 – 97	0.6
12 April 2017	18.2 – 22.8	81 – 97	21.5
13 April 2017	18.8 – 21.5	67 – 86	Trace
14 April 2017	19.9 – 24.7	69 – 87	0
15 April 2017	21.6 – 26.9	77 – 91	0
16 April 2017	23.0 – 30.2	63 – 95	Trace
17 April 2017	23.7 – 29.4	63 – 92	Trace
18 April 2017	23.9 – 30.7	58 – 94	0.3
19 April 2017	24.7 – 29.4	63 – 88	0

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
20 April 2017	25.1 – 27.5	78 – 93	3.1
21 April 2017	29.4 – 22.8	79 – 94	7.8
22 April 2017	18.5 – 24.5	64 – 94	6.6
23 April 2017	19.9 – 21.8	75 – 93	1.4
24 April 2017	20.9 – 22.8	79 – 87	Trace
25 April 2017	20.7 – 22.9	85 – 98	10.9
26 April 2017	22.4 – 26.8	87 – 97	2.9
27 April 2017	16.3 – 21.5	75 – 98	3.5
28 April 2017	20.2 – 24.8	65 – 81	0
29 April 2017	19.9 – 27.3	61 – 88	0
30 April 2017	21.4 – 28.2	60 – 85	0

* 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	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
1 April 2017	30	10.2
2 April 2017	100	13.8
3 April 2017	100	14.9
4 April 2017	80	12.6
5 April 2017	80	11
6 April 2017	140	9.5
7 April 2017	140	8.7
8 April 2017	130	9.3
9 April 2017	130	7.1
10 April 2017	230	8.2
11 April 2017	230	5.6
12 April 2017	40	10.3
13 April 2017	110	8
14 April 2017	110	12
15 April 2017	140	10
16 April 2017	140	10.3
17 April 2017	270	8.3
18 April 2017	300	9.6
19 April 2017	230	9.2
20 April 2017	120	8.7
21 April 2017	190	10.5
22 April 2017	40	7.2
23 April 2017	110	8.4
24 April 2017	110	15.3
25 April 2017	110	12.9
26 April 2017	140	9.9
27 April 2017	40	6.6
28 April 2017	130	8.7
29 April 2017	130	9.5
30 April 2017	130	10

**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
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 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						

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 May 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-May	2-May	3-May	4-May	5-May	6-May
		1 hr TSP X3 24 hr TSP				Noise M3, M4, M5(C)
7-May	8-May	9-May	10-May	11-May	12-May	13-May
	1 hr TSP X3 24 hr TSP	Noise M3, M4, M5(C)				1 hr TSP X3 24 hr TSP
14-May	15-May	16-May	17-May	18-May	19-May	20-May
				Noise M3, M4, M5(C)	1 hr TSP X3 24 hr TSP	
21-May	22-May	23-May	24-May	25-May	26-May	27-May
				1 hr TSP X3 24 hr TSP	Noise M3, M4, M5(C)	
28-May	29-May	30-May	31-May			
			1 hr TSP X3 24 hr TSP			

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Air Quality Monitoring Station

AM2 - Lee Kau Yan Memorial School

Noise Monitoring Station

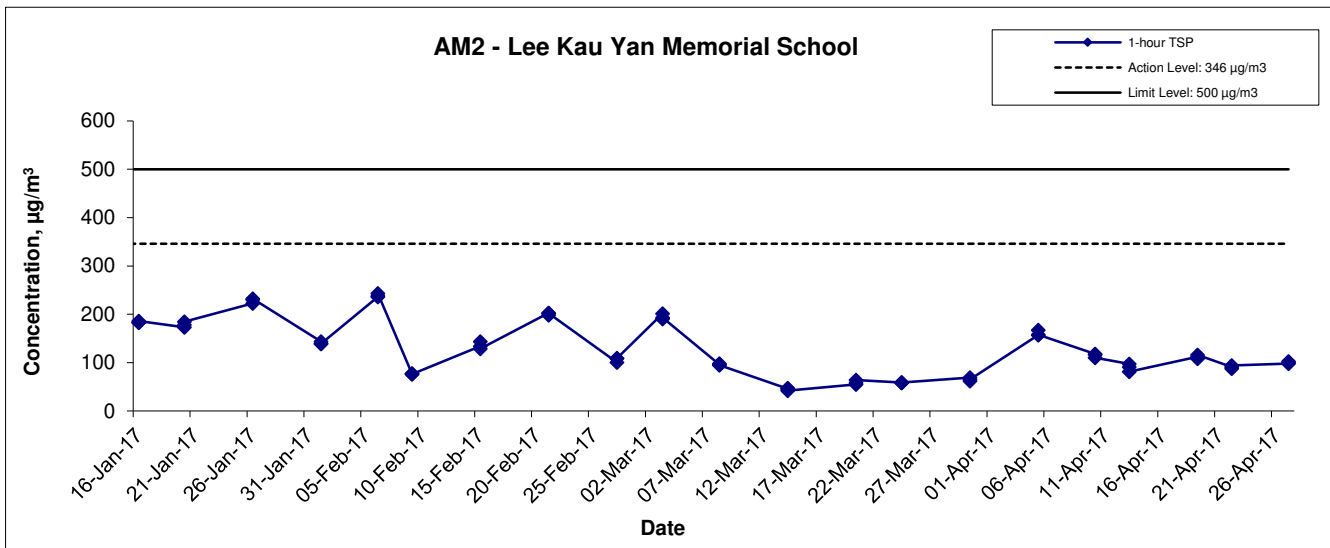
M3 - Cognitio College
M4 - Lee Kau Yan Memorial School
M5(C) - Mercy Grace's Home

**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 ($\mu\text{g}/\text{m}^3$)
5/4/2017	9:00	Sunny	157
5/4/2017	10:00	Sunny	167
5/4/2017	11:00	Sunny	158
10/4/2017	13:00	Cloudy	118
10/4/2017	14:00	Cloudy	116
10/4/2017	15:00	Cloudy	110
13/4/2017	9:00	Cloudy	97
13/4/2017	10:00	Cloudy	91
13/4/2017	11:00	Cloudy	82
19/4/2017	13:00	Cloudy	112
19/4/2017	14:00	Cloudy	108
19/4/2017	15:00	Cloudy	116
22/4/2017	13:00	Sunny	91
22/4/2017	14:00	Sunny	88
22/4/2017	15:00	Sunny	94
27/4/2017	13:00	Cloudy	98
27/4/2017	14:00	Cloudy	102
27/4/2017	15:00	Cloudy	100
		Average	111
		Maximum	167
		Minimum	82

1-hr TSP Concentration Levels



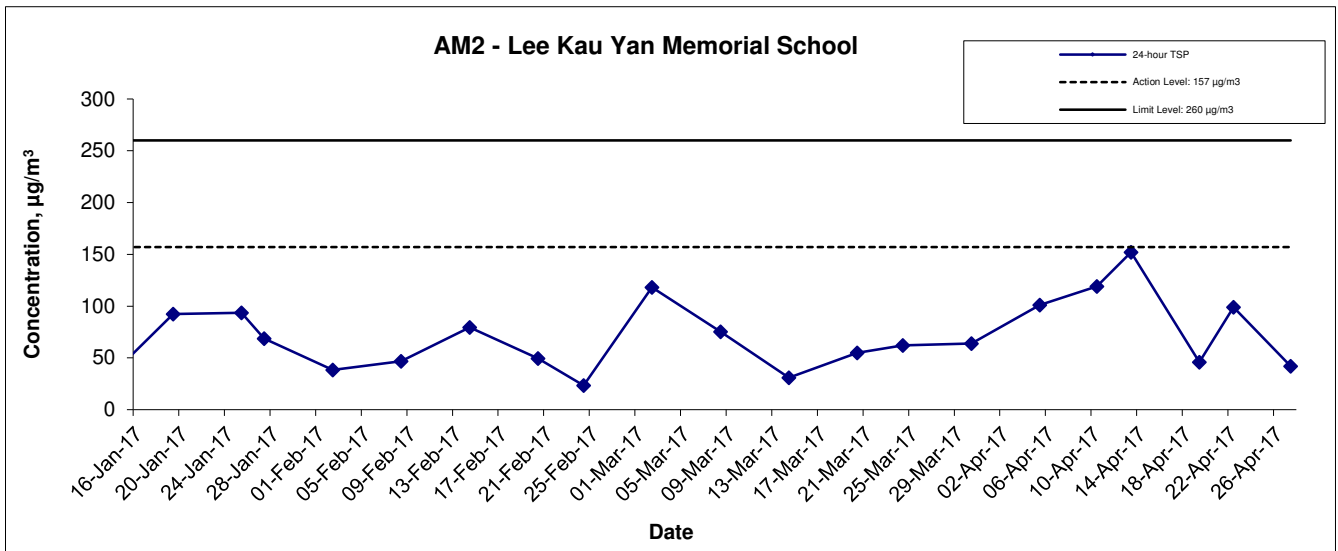
Title Contract No. KLN/2016/04 Environmental Monitoring Works for Contract No. KL/2015/02 Kai Tak Development –Stage 5A Infrastructure at Former North Apron Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S	Project No. MA16043	
	Date Apr 17	Appendix E	

**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	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
5-Apr-17	Sunny	101
10-Apr-17	Cloudy	119
13-Apr-17	Cloudy	152
19-Apr-17	Cloudy	46
22-Apr-17	Sunny	99
27-Apr-17	Cloudy	42
	Average	93
	Maximum	152
	Minimum	42

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	Project No. MA16043	
	Date Apr 17	Appendix F	

**APPENDIX G
NOISE MONITORING RESULTS AND
GRAPHICAL PRESENTATION**

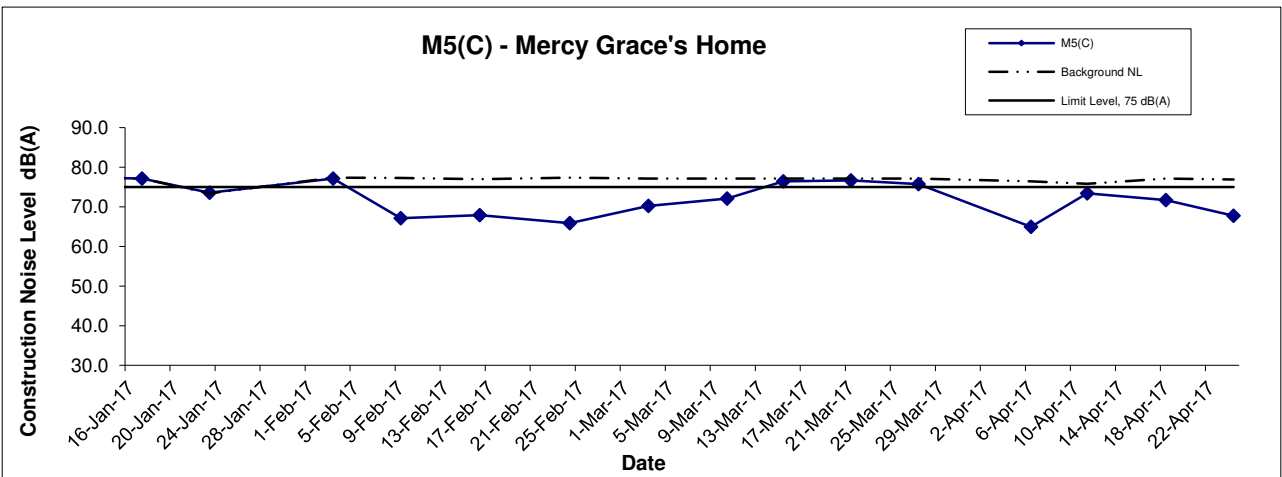
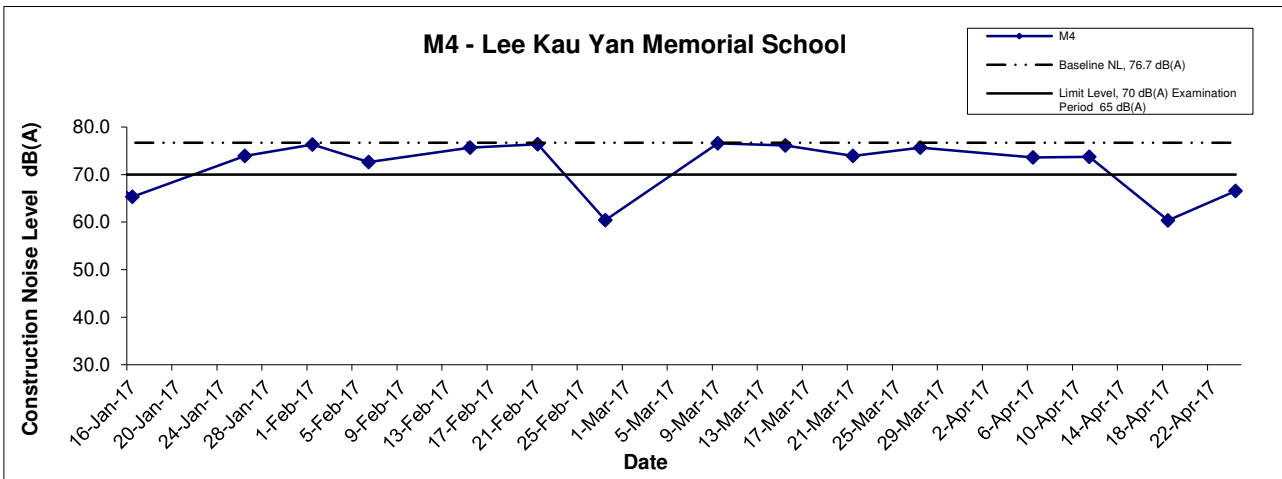
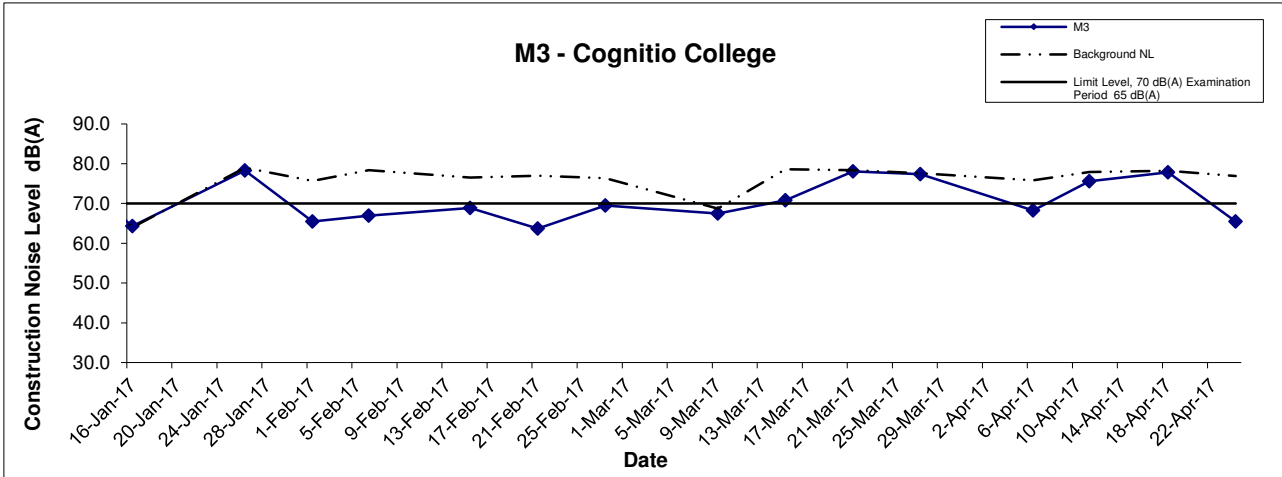
Appendix G - Noise Monitoring Results

Location M3 - Cognito 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}
6-Apr-17	10:00	Sunny	76.5	79.0	73.1	75.8	68.2
11-Apr-17	13:00	Cloudy	79.9	81.5	77.9	77.9	75.6
18-Apr-17	13:00	Cloudy	77.8	79.3	76.1	78.2	77.8 Measured ≤ Background
24-Apr-17	13:00	Cloudy	77.2	78.6	75.2	76.9	65.4

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}
6-Apr-17	10:45	Sunny	73.6	74.6	72.0	76.7	73.6 Measured ≤ Baseline
11-Apr-17	11:15	Cloudy	73.7	76.3	65.9		73.7 Measured ≤ Baseline
18-Apr-17	13:55	Cloudy	76.8	77.8	74.7		60.4
24-Apr-17	15:10	Cloudy	77.1	78.3	75.5		66.5

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}
6-Apr-17	13:30	Sunny	76.7	78.6	74.0	76.4	64.9
11-Apr-17	10:30	Cloudy	73.4	75.2	71.1	75.8	73.4 Measured ≤ Background
18-Apr-17	11:00	Cloudy	78.2	79.6	76.3	77.1	71.7
24-Apr-17	14:30	Cloudy	77.4	79.4	74.8	76.9	67.8

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	Project No.	MA16043	CINOTECH
	Date	Apr 17	Appendix	G	

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
(One non-project related Limit Level exceedance was rerecord at M3 on 11 April 2017)

Station	Date	Measured Noise Level, Leq(30min) dB (A)	Background Noise Level dB (A)	Construction Noise Level: Leq(30min) dB (A)	Limit Level	Level exceeded
M3 Cognitio College	11-Apr-17	79.9	77.9	75.6	70.0	Limit Level

According to the information provided by the Contractor, the major site activities undertaken on 11 April 2017 included:

- Bored piling works at Abutment A02
- Driving sheet piles at Subway SW6 between Staircases ST2 and ST3
- Carry out protection works to CLP's cables for sheet piling works

According to the noise monitoring works carried out at M4 – Lee Kau Yan Memorial School on the same date as shown the table below, no exceedance in Limit Level was recorded.

Station	Date	Measured Noise Level, Leq(30min) dB (A)	Baseline Level dB (A)	Construction Noise Level: Leq(30min) dB (A)	Limit Level
M4 Lee Kau Yan Memorial School	11-Apr-17	73.7	76.7	73.7 Measured \leq Baseline	70.0

Considering to the monitoring station M4 is closer to the construction site than M3 and no construction work under the Project were carried at the vicinity of M3 with outside the site boundary of the Project, the exceedance was considered as non-project related as the major noise sources were the traffic noise from Prince Edward Road East or the construction sites near M3.

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

APPENDIX I
SITE AUDIT SUMMARY

Contract No. KLN/2016/04

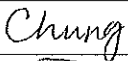

Environmental Monitoring Works for Contract No. KL/2015/02

Kai Tak Development - Stage 5A Infrastructure at Former North Apron Area

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170407
Date	7 April 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.: 170331), all environmental deficiencies were rectified/improved by the Contractor.	

	Name	Signature	Date
Recorded by	KC Chung		7 April 2017
Checked by	Dr. Priscilla Choy		7 April 2017

Contract No. KLN/2016/04

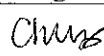
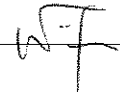
Environmental Monitoring Works for Contract No. KL/2015/02

Kai Tak Development - Stage 5A Infrastructure at Former North Apron Area

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170412
Date	12 April 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.: 170407), no major environmental deficiency was identified during site inspection.	

	Name	Signature	Date
Recorded by	KC Chung		12 April 2017
Checked by	Dr. Priscilla Choy		12 April 2017

Contract No. KLN/2016/04

Environmental Monitoring Works for Contract No. KL/2015/02


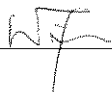
Kai Tak Development - Stage 5A Infrastructure at Former North Apron Area

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	170421
Date	21 April 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	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	D. Noise	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	F. Visual and Landscape	
170421-001	<ul style="list-style-type: none">Fencing should be provide to the tree protection zone at Portion 2.	F 1 & F 4
	G. Permits /Licences	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	H. Others	
	<ul style="list-style-type: none">Follow-up on previous audit section (Ref. No.: 170412), no major environmental deficiency was identified during site inspection.	

	Name	Signature	Date
Recorded by	Cecilia Yang		21 April 2017
Checked by	Dr. Priscilla Choy		21 April 2017

Contract No. KLN/2016/04

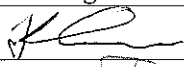

Environmental Monitoring Works for Contract No. KL/2015/02

Kai Tak Development - Stage 5A Infrastructure at Former North Apron Area

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	170428
Date	28 April 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	
	• 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.: 170421), all environmental deficiency was improved/rectified by the Contractor.	

	Name	Signature	Date
Recorded by	Kelvin Koo		28 April 2017
Checked by	Dr. Priscilla Choy		28 April 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	<ol style="list-style-type: none"> 1. Identify source and investigate the causes of exceedance; 2. Inform Contactor, IEC and ER; 3. Repeat measurement to confirm finding. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action Level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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

Appendix J - Event Action Plans

	<p>EPD, IEC and ER informed of the results.</p>	<p>4. Advise the ER on the effectiveness of the proposed remedial measures.</p>	<p>implemented; 4. Supervise implementation of remedial measures; 5. Conduct meeting with ET and IEC if exceedance continues.</p>	<p>working days of notification; 4. Implement the agreed proposals.</p>
<p>Limit Level being exceeded by two or more consecutive sampling</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>

Appendix J - Event Action Plans

Event/Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 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. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals. <p>(The above actions should be taken within 2 working days after the exceedance is identified)</p>
Limit Level being exceeded	<ol style="list-style-type: none"> 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; 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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;

Appendix J - Event Action Plans

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

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	<p>ER</p> <p>2. Increase monitoring frequency</p> <p>3. Discuss remedial actions with IEC, ER and Contractor</p> <p>4. Monitor remedial actions until rectification has been completed</p> <p>5. If non-conformity stops, cease additional monitoring</p>	<p>2. Check Contractor's working method</p> <p>3. Discuss with ET and Contractor on possible remedial measures</p> <p>4. Advise ER on effectiveness of proposed remedial measures</p> <p>5. Supervise implementation of remedial measures.</p>	<p>implemented</p>	<p>undertake any necessary replacement</p>
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**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
<i>Construction Air Quality</i>		
S6.5	8 times daily watering of the work site with active dust emitting activities.	^
S6.8	<p>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.</p> <ul style="list-style-type: none"> • 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 extend 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. 	<p style="margin-top: 0;">^</p> <p style="margin-top: 10px;">^</p> <p style="margin-top: 10px;">^</p> <p style="margin-top: 10px;">^</p> <p style="margin-top: 10px;">^</p> <p style="margin-top: 10px;">^</p> <p style="margin-top: 10px;">^</p> <p style="margin-top: 10px;">^</p> <p style="margin-top: 10px;">^</p> <p style="margin-top: 10px;">^</p>

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<p>S6.8</p>	<ul style="list-style-type: none"> • <u>DWFI compound for JVBC:</u> 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 desilting 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. • <u>Desilting compound for KTN:</u> 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 desilting 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. • <u>Decking or reconstruction of KTN within apron area:</u> 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. • <u>Localised maintenance dredging:</u> 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 	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>
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Appendix K – Summary of Implementation Schedule of Mitigation Measures for Construction Phase

	<p>impacts at the future ASRs during the maintenance dredging operation.</p> <ul style="list-style-type: none"> • <u>Improvement of water circulation in KTAC and KTTS:</u> 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. • <u>In-situ sediment treatment by bioremediation:</u> Bioremediation would be applied to the entire KTAC and KTTS. 	<p>N/A</p> <p>N/A</p>
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	<p>Good Site Practice:</p> <ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction 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. 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
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	N/A
	(ii) Provision of structural fins	N/A
S7.8	(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

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S7.8	(i) Provision of low noise surfacing in a section of Road L4 before occupation of Site 111; 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: <ul style="list-style-type: none"> • 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

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

	<ul style="list-style-type: none"> 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	<p>Construction Phase</p> <p><u>Marine-based Construction</u></p> <p><i>Capital and Maintenance Dredging for Cruise Terminal</i></p> <p>Mitigation measures for construction of the proposed cruise terminal should follow those recommended in the approved EIA for CT Dredging.</p>	N/A
S8.8	<p><i>Fireboat Berth, Runway Opening and Road T2</i></p> <p>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.</p>	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 2,000m ³ per day (using two grab dredgers).	N/A
8.8	Silt screens shall be applied to seawater intakes at WSD seawater intake.	N/A

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S8.8	<p><u>Land-based Construction</u></p> <p><i>Construction Runoff</i></p> <p>Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion.</p> <p>Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include:</p> <ul style="list-style-type: none"> • use of sediment traps • adequate maintenance of drainage systems to prevent flooding and overflow 	<p style="text-align: center;">^</p> <p style="text-align: center;">^</p>
S8.8	<p>Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September).</p> <p>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.</p>	<p style="text-align: center;">^</p>
S8.8	<p>Construction site should be provided with adequately designed perimeter channel and pre-treatment facilities and proper maintenance.</p> <p>The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection.</p> <p>Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond.</p> <p>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.</p>	<p style="text-align: center;">^</p>
S8.8	<p>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.</p>	<p style="text-align: center;">^</p>
S8.8	<p>Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50 m³ 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.</p>	<p style="text-align: center;">^</p>
S8.8	<p>Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.</p>	<p style="text-align: center;">^</p>
S8.8	<p>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</p>	<p style="text-align: center;">^</p>

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	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	<i>Drainage</i> 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	<i>Sewage Effluent</i> 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.	^

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S8.8	<p><i>Stormwater Discharges</i></p> <p>Minimum distances of 100 m should be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes</p>	^
S8.8	<p><i>Debris and Litter</i></p> <p>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</p>	^
S8.8	<p><i>Construction Works at or in Close Proximity of Storm Culvert or Seafront</i></p> <p>The proposed works should preferably be carried out within the dry season where the flow in the drainage channel /storm culvert/ nullah is low.</p>	^
S8.8	<p>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.</p>	^
S8.8	<p>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</p>	^
S8.8	<p>Stockpiling of construction materials and dusty materials should be covered and located away from any water courses.</p>	^
S8.8	<p>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.</p>	^
S8.8	<p>Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable.</p>	^
S8.8	<p>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.</p>	^
S8.8	<p>Construction effluent, site run-off and sewage should be properly collected and/or treated.</p>	^
S8.8	<p>Any works site inside the storm water courses should be temporarily isolated, such as by placing of sandbags or silt curtains with lead</p>	N/A

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	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	<p>Good Site Practices</p> <p>It is not anticipated that adverse waste management related impacts would arise, provided that good site practices are adhered to.</p> <p>Recommendations for good site practices during the dredging activities include:</p> <ul style="list-style-type: none"> • 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). 	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
S9.5	<p>Waste Reduction Measures</p> <p>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:</p> <ul style="list-style-type: none"> • 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 	<p>^</p> <p>^</p> <p>^</p>

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

	<ul style="list-style-type: none"> 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 	<p>^</p> <p>^</p>
S9.5	<p>Dredged Marine Sediment</p> <p>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)</p>	N/A
S9.5	<p>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</p>	N/A
S9.5	<p>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:</p> <ul style="list-style-type: none"> 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 	<p>N/A</p> <p>N/A</p> <p>N/A</p>

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

<p>S9.5</p>	<p>Construction and Demolition Material</p> <p>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:</p> <ul style="list-style-type: none"> • 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 <p>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.</p>	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>
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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 <i>Waste Disposal (Chemical Waste) (General) Regulation</i>	^
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	^
<i>Construction Landscape and Visual</i>		
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: April 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



Monthly Summary Waste Flow Table for 2017

As at 2 May 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 '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	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	5445	0	0	0	5445	0	0	0	0	0	21
May											
June											
Sub-total											
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	44730	0	0	0	44730	0	0	0	0	0	49

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 '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)

- 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 forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,00 m³. (PS Clause 25.02A(7) refers).