

**Proposed Road Improvement Works in
West Kowloon Reclamation Development – Phase 1
Quarterly Environmental Monitoring & Audit Report
01/08/2016 – 31/10/2016**

The Contents of this report have been certified by:



Ms. Goldie Fung
(Environmental Team Leader)

Environmental Pioneers & Solutions Limited

Flat A, 8/F, Chaiwan Industrial Centre,
20 Lee Chung Street, Chai Wan, Hong Kong
Tel: 2556 9172 Fax: 2856 2010

TABLE OF CONTENT

Executive Summary	2
1 Introduction	3
1.1 The Project.....	3
1.2 Construction Programme and Activities.....	4
1.3 Project Organization.....	4
2 EM&A Requirements for Monitoring Parameters	5
3 Air Quality Monitoring.....	6
3.1 Monitoring Locations.....	6
3.2 Monitoring Results.....	7
3.3 Baseline Review	8
4 Noise Monitoring.....	10
4.1 Monitoring Locations.....	10
4.2 Monitoring Results.....	10
5 Solid and Liquid Waste Management Status.....	14
6 Landscape and Visual Impact	15
7 Environmental Site Inspection	15
8 Environmental Non-Conformance	16
8.1 Summary of Environmental Exceedances	16
8.2 Summary of Environmental Non-Compliance	16
8.3 Summary of Environmental Complaint.....	16
8.4 Summary of Notification of Summons and Successful Prosecution	16
9 Comment, Recommendations and Conclusions	17
9.1 Comment.....	17
9.2 Recommendations	17
9.3 Conclusions	18

LIST OF APPENDICES

Appendix A: Construction Programme and Project Layout Plan

Appendix B: Project Organization Chart

Appendix C: Monitoring Locations

Appendix D: TSP Monitoring Data

Appendix E: Noise Monitoring Data

Appendix F: Environmental Mitigation Implementation Schedule

Appendix G: Cumulative Log for Environmental Exceedance, Complaints, Notification of
Summons and Successful Prosecutions

Executive Summary

This is the quarterly Environmental Monitoring and Audit (EM&A) Report for Proposed Road Improvement Works in West Kowloon Reclamation Development – Phase 1. The project commenced on 6th February 2016. This report documents the finding of EM&A Works conducted from 1st August 2016 to 31st October 2016.

Environmental Monitoring and Audit Progress

Air Quality Monitoring

Noise Monitoring

Waste Management

Landscape and Visual Impact

Environmental Site Inspection

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

No exceedance of action level and limit level was recorded for TSP. Seventeen exceedances were recorded at NM4 for noise. A Non-compliance item regarding site runoff was issued by IEC on 19th October 2016. No environmental complaint, notification of summons and successful prosecution against the Project were received in this reporting month

Variation in Construction Method

No variation in construction method from the proposed construction programme was made and affected the EM&A.

1 Introduction

1.1 The Project

This is a road improvement project in West Kowloon Reclamation Development (WKRd) for completing the developments and the commissioning of the new transport facilities.

Apart from the additional traffic impacts arising from the major development and transport facilities in WKRd, several major junctions in the area are currently operating with insufficient capacity causing serious congestion to some existing major road corridors such as Jordan Road (JRD), Ferry Street (FST) and Canton Road (CRD).

To enhance the road network of the area, Transport Department commissioned the “West Kowloon Reclamation Development Traffic Study” which identified and recommended Core and Additional Schemes together with the improvement works at the junction of CRD/FST/JRD. Implementation of these schemes would enable most of the key road junctions in the study area to operate with spare capacity, and the traffic queue length would also be reduced avoiding blockage to the upstream junctions

The Environmental Team (ET), Environmental Pioneers & Solutions Limited (EPSL), was appointed by Vibro Construction Co. Ltd. to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Proposed Road Improvement Works in West Kowloon Reclamation Development – Phase 1. The project proponent is Highways Department. This is a Designated Project under the Environmental Impact Assessment Ordinance (Cap.499). The No. of Environment Permit is EP-455/2013.

The construction works and EM&A programme of this project was commenced on 6th February 2016. The construction programme and project layout plan are shown in **Appendix A**.

1.2 Construction Programme and Activities

A summary of the major construction activities undertaken in this reporting period is shown as follows.

August 2016

- Portion I – Underground Investigation Works
- Portion I – Utilities Diversion Works
- Portion HA – Underground Investigation Works
- Portion HA – Utilities Diversion Works
- Portion HA – Piling Works
- Portion J – Utilities Diversion Works
- Portion J – Construction of Retaining Walls
- Portion Q – Road Works (excavation, drainage construction and utilities diversion)

September 2016

- Portion I – Underground Investigation Works
- Portion I – Utilities Diversion Works
- Portion HA – Underground Investigation Works
- Portion HA – Utilities Diversion Works
- Portion HA – Piling Works
- Portion J – Utilities Diversion Works
- Portion J – Construction of Retaining Walls
- Portion Q – Road Works (excavation and utilities diversion)

October 2016

- Portion I – Underground Investigation Works
- Portion I – Utilities Diversion Works
- Portion HA – Underground Investigation Works
- Portion HA – Utilities Diversion Works
- Portion HA – Piling Works
- Portion J – Utilities Diversion Works
- Portion J – Construction of Retaining Walls
- Portion Q – Road Works (excavation and utilities diversion)

1.3 Project Organization

The project organization chart and contact details are shown in **Appendix B**.

2 EM&A Requirements for Monitoring Parameters

Air Quality Monitoring

According to the EM&A Manual Section 3.2 & 3.4, the construction air quality impact shall be evaluated by conducting 1-hr and 24-hr Total Suspended Particulates measurements. 1-hr TSP sampling shall be conducted at a frequency of at least 3 times in every 6 days. 24-hr TSP sampling shall be conducted at a frequency of at least once in every 6 days. The wind speed and wind direction shall be recorded in accordance with the EM&A Manual Section 3.4.3.

Noise Monitoring

According to the EM&A Manual Section 4.2 & 4.4, construction noise level shall be measured in terms of the A-weight equivalent continuous sound pressure level (Leq). Leq 30min shall be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays. One set of 30-min measurement shall be carried out at each monitoring location every week.

Waste Management

According to the EM&A Manual Section 6.2, relevant licences/ permits shall be applied for waste disposal and handling. Waste disposal record/ recycling receipts shall be kept for tracking of waste movement.

Landscape and Visual

According to the EM&A Manual Section 7.2, inspection and audit for the implementation of mitigation measures shall be conducted once every two weeks by the Registered Landscape Architect. The adequacy of tree preservation, status of tree planting and removal shall also be monitored.

3 Air Quality Monitoring

3.1 Monitoring Locations

According to the EM&A Manual Section 3.5, four impact monitoring locations have been established for air quality monitoring, which are summarized in Table 3.1.1. The details of monitoring location plan are shown in **Appendix C**.

Table 3.1.1 Air Quality Monitoring Locations

ID No.	Monitoring Location	Description	Parameter
AM1	Marine Department New Yau Ma Tei Public Cargo Working Area Administrative Building	Ground Floor Face to Hoi Po Road	1-hr TSP
AM2	Garden Building	Ground Floor Face to Canton Road	1-hr TSP
AM3	The Cullinan I	Ground Floor Face to Nga Cheung Road	1-hr TSP
AM4	Lai Chack Middle School	Ground Floor Face to Canton Road	1-hr TSP
AM1	Marine Department New Yau Ma Tei Public Cargo Working Area Administrative Building	Rooftop Face to Hoi Po Road	24-hr TSP
AM2	Garden Building	Ground Floor Face to Canton Road	24-hr TSP
AM3-A ^{*1}	International Commerce Centre (Works Area 4)	Ground Floor Near to International Commerce Centre Roundabout on Nga Cheung Road and	24-hr TSP
AM3-B ^{*1}	The Cullinan II (W Hong Kong)	Ground Floor Near to International Commerce Centre Roundabout on Nga Cheung Road and	24-hr TSP
AM4-A ^{*2}	Tsim Sha Tsui Fire Station	Ground Floor Face to Canton Road	24-hr TSP

Remark:

^{*1} Monitoring station was amended from AM3-A to AM3-B from October 2016. AM3-B is located at the site boundary of Scheme I. There is no obstacle between the site (dust emission source) and monitoring point. It is more representative for monitoring the dust impact caused by the construction activities.

^{*2} 24-hr TSP monitoring at AM4-A was started from August 2016.

3.2 Monitoring Results

1-hr TSP monitoring was conducted at four monitoring locations. The monitoring results are summarized in Table 3.2.1. 24-hr TSP monitoring was conducted at three monitoring locations. The monitoring results are summarized in Table 3.2.2. Detailed impact monitoring data of 1-hr TSP, 24-hr TSP and meteorological data are shown in **Appendix D**.

Table 3.2.1 Summary of average 1-hr TSP monitoring data

Month	Monitoring Locations	Average 1-hr TSP ($\mu\text{g}/\text{m}^3$)	Range 1-hr TSP ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
Aug 16	AM1	55	32 – 105	288	500
	AM2	61	45 – 71	299	500
	AM3	63	16 – 117	299	500
	AM4	86	77 – 96	303	500
Sep 16	AM1	75	18 – 153	288	500
	AM2	67	31 – 126	299	500
	AM3	72	31 – 161	299	500
	AM4	62	35 – 116	303	500
Oct 16	AM1	60	28 – 91	288	500
	AM2	77	48 – 102	299	500
	AM3	73	44 – 111	299	500
	AM4	71	50 – 88	303	500

Table 3.2.2 Summary of average 24-hr TSP monitoring data

	Monitoring Locations	Average 24-hr TSP ($\mu\text{g}/\text{m}^3$)	Range 24-hr TSP ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
Aug 16	AM1	40	22 – 61	157	260
	AM2	72	23 – 181	183	260
	AM3-A	71	37 – 108	177	260
Sep 16	AM1	38	24 – 58	157	260
	AM2	39	25 – 58	183	260
	AM3-A	68	34 – 94	177	260
	AM4-A	61	34 – 84	176	260
Oct 16	AM1	55	25 – 100	157	260
	AM2	44	37 – 61	183	260
	AM3-B	72	39 – 115	177	260
	AM4-A	68	48 – 98	176	260

In accordance with the established action and limited levels for impact monitoring, there was no exceedance recorded in the reporting period.

During the monitoring period, vehicle emissions were identified as one of the dust sources for AM1, AM2, AM3, AM4, AM3-A, AM3-B and AM4-A. TSP level of AM2, AM4 and AM4-A may be affected by construction activities from other construction sites near Canton Road.

3.3 Baseline Review

The comparisons of baseline result, measured result and action and limit levels of 1-hr TSP monitoring and 24-hr TSP monitoring are shown in Table 3.3.1 and Table 3.3.2 for reviewing the baseline data.

Table 3.3.1 Comparisons of Baseline, Impact and Action & Limit Levels of 1-hr TSP

Location	Baseline Level ($\mu\text{g}/\text{m}^3$)	Established Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	Average Impact Monitoring Level (reporting Quarter) ($\mu\text{g}/\text{m}^3$)
AM1	58	288	500	63
AM2	76	299	500	68

AM3	76	299	500	69
AM4	82	303	500	73

Table 3.3.2 Comparisons of Baseline, Impact and Action & Limit Levels of 24-hr TSP

Location	Baseline Level ($\mu\text{g}/\text{m}^3$)	Established Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	Average Impact Monitoring Level (reporting Quarter) ($\mu\text{g}/\text{m}^3$)
AM1	42	157	260	44
AM2	81	183	260	52
AM3-A	72	177	260	70
AM3-B	72	177	260	72
AM4-A	70	176	260	65

The impact monitoring levels of 1-hr TSP and 24-hr TSP obtained from August 2016 to October 2016 were much lower than the action levels established by baseline monitoring data for AM1, AM2, AM3/AM3-A and AM4. The impact monitoring results presented that no dust impacts obviously caused by the construction site and affected by the background environmental conditions. The baseline results are still applicable and valid. Need not to repeat the measurement of baseline monitoring, unless the exceedance of action level of TSP is recorded.

4 Noise Monitoring

4.1 Monitoring Locations

According to the EM&A Manual Section 4.5, five impact monitoring locations have been established for noise impact monitoring during the construction phase of the project, which are summarized in Table 4.1.1. The details of monitoring location plan are shown in **Appendix C**.

Table 4.1.1 Noise Monitoring Locations

Identification No.	Noise Monitoring Location	Description	Measurement Type
NM1	Sorrento - Tower 1	Podium Level Face to Nga Cheung Road	Façade
NM2	Yau Ma Ti Catholic Primary School (Hoi Wang Road)	Ground Floor Face to Hoi Ting Road	Façade
NM3	The Cullinan I	Ground Floor Face to Nga Cheung Road	Façade
NM4	Lai Chack Middle School	Ground Floor Face to Canton Road	Façade
NM5	Yue Tak Building	Ground Floor Face to Jordan Road	Façade

4.2 Monitoring Results

Noise impact monitoring was conducted at five monitoring locations. The monitoring results are summarized in Table 4.2.1. Detailed impact monitoring data of noise are shown in **Appendix E**.

Table 4.2.1 Summary of average noise monitoring data

Monitoring Locations	Monitoring Date	Baseline Level (dB(A))	L _{Aeq} * ¹ (dB(A))	Action Level (dB(A))	Limit Level (dB(A))	Exceedance
NM1	2/8/2016	75.1	66.0	When one documented complaint is received	75 dB(A)	No
	8/8/2016		66.6			No
	13/8/2016		66.7			No
	19/8/2016		65.0			No
	25/8/2016		62.4			No
	31/8/2016		63.2			No
	6/9/2016		64.5			No
	12/9/2016		63.1			No
	17/9/2016		61.4			No
	23/9/2016		68.0			No
	28/9/2016		65.7			No
	4/10/2016		65.4			No
	7/10/2016		65.9			No
	13/10/2016		68.3			No
	19/10/2016		67.3			No
	25/10/2016		69.3			No
	31/10/2016		68.1			No
NM2	2/8/2016	66.5	68.0	When one documented complaint is received	70 dB(A) * ²	No
	8/8/2016		64.2		70 dB(A) * ²	No
	13/8/2016		68.5		70 dB(A) * ²	No
	19/8/2016		65.8		70 dB(A) * ²	No
	25/8/2016		68.0		70 dB(A) * ²	No
	31/8/2016		67.5		70 dB(A) * ²	No
	6/9/2016		69.2		70 dB(A) * ²	No
	12/9/2016		66.4		70 dB(A) * ²	No
	17/9/2016		66.4		70 dB(A) * ²	No
	23/9/2016		66.1		70 dB(A) * ²	No
	28/9/2016		69.6		70 dB(A) * ²	No
	4/10/2016		65.7		70 dB(A) * ²	No
	7/10/2016		66.7		70 dB(A) * ²	No
	13/10/2016		67.8		70 dB(A) * ²	No
	19/10/2016		66.8		70 dB(A) * ²	No

	25/10/2016		66.7		70 dB(A) * ²	No
	31/10/2016		64.0		70 dB(A) * ²	No
NM3	2/8/2016	74.5	73.6	When one documented complaint is received	75 dB(A)	No
	8/8/2016		74.2			No
	13/8/2016		74.1			No
	19/8/2016		73.8			No
	25/8/2016		73.9			No
	31/8/2016		74.4			No
	6/9/2016		72.2			No
	12/9/2016		73.9			No
	17/9/2016		71.3			No
	23/9/2016		72.7			No
	28/9/2016		73.7			No
	4/10/2016		73.5			No
	7/10/2016		74.3			No
	13/10/2016		74.8			No
	19/10/2016		74.3			No
	25/10/2016		73.7			No
	31/10/2016		73.9			No
NM4	2/8/2016	73.3	75.7	When one documented complaint is received	70 dB(A) * ²	Yes
	8/8/2016		76.5		70 dB(A) * ²	Yes
	13/8/2016		76.8		70 dB(A) * ²	Yes
	19/8/2016		75.5		70 dB(A) * ²	Yes
	25/8/2016		76.9		70 dB(A) * ²	Yes
	31/8/2016		76.5		70 dB(A) * ²	Yes
	6/9/2016		73.5		70 dB(A) * ²	Yes
	12/9/2016		74.3		70 dB(A) * ²	Yes
	17/9/2016		73.7		70 dB(A) * ²	Yes
	23/9/2016		73.9		70 dB(A) * ²	Yes
	28/9/2016		74.0		70 dB(A) * ²	Yes
	4/10/2016		74.5		70 dB(A) * ²	Yes
	7/10/2016		74.2		70 dB(A) * ²	Yes
	13/10/2016		75.1		70 dB(A) * ²	Yes
	19/10/2016		74.2		70 dB(A) * ²	Yes
	25/10/2016		72.3		70 dB(A) * ²	Yes
	31/10/2016		74.7		70 dB(A) * ²	Yes
NM5	2/8/2016	71.8	70.8	When one	75 dB(A)	No

	8/8/2016		70.9	documented complaint is received		No
	13/8/2016		71.7			No
	19/8/2016		71.6			No
	25/8/2016		72.2			No
	31/8/2016		71.0			No
	6/9/2016		71.1			No
	12/9/2016		72.5			No
	17/9/2016		72.3			No
	23/9/2016		71.8			No
	28/9/2016		72.0			No
	4/10/2016		71.7			No
	7/10/2016		72.1			No
	13/10/2016		72.8			No
	19/10/2016		72.5			No
	25/10/2016		71.8			No
	31/10/2016		72.2			No

Remark:

*¹ Measured result would be rounded down before comparison with the limit level

*² 70dB(A) for schools during normal teaching periods

*³ 65dB(A) for schools examination periods

In accordance with the established action and limited levels for impact monitoring, seventeen exceedances were recorded at NM4.

The noise source for causing exceedances at NM4 was from the traffic of Canton Road. The NM4 was directly affected by the noise generated from the traffic. The recorded monitoring results at the NM4 were near the baseline noise level. The exceedances were not caused by this project construction works.

During the monitoring period, traffic noise was identified as one of the noise source for NM1, NM2, NM3, NM4 and NM5. Noise levels of NM1 and NM3 may be influenced by the construction activities from other construction sites near Nga Cheung Road. Noise level of NM2 may be influenced by construction activities from other construction sites near Hoi Ting Road. Noise levels of NM4 and NM5 may be influenced by the construction activities from other construction sites near Canton Road.

5 Solid and Liquid Waste Management Status

With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in Table 5.1. During this reporting month, inert C&D materials and general refuse were generated and disposed. No mixed waste was generated. No chemical waste was generated and collected by licensed collector. No paper, plastic and metal was recycled.

Table 5.1 Quantities of Waste Disposed from the Project

Reporting Month	Quantity						
	C&D Materials (inert) ^(a)	C&D Materials (non-inert) ^(b)					
		General Refuse	Mixed Waste	Chemical Waste	Recycled materials		
					Paper/ cardboard	Plastics	Metals
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)
Aug 2016	1026.39	52.44	0	0	0	0	0
Sep 2016	1833.94	7.14	0	0	0	0	0
Oct 2016	785.58	16.77	0	0	0	0	0
Total	3645.91	76.35	0	0	0	0	0
Notes:							
(a) Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.							
(b) Non-inert C&D materials include steel, paper/cardboard packaging waste, plastics and other wastes such as general refuse and vegetative wastes. Steel metal generated from the Project are grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials.							

Waste materials were generated during this reporting period, such as excavated waste, demolition waste and general refuse. Contractor handled, stored and disposed in accordance with good waste management practice and EPD's regulation and requirements.

6 Landscape and Visual Impact

In accordance with the EM&A Manual, the landscape and visual mitigation measures shall be implemented to minimize the landscape and visual impacts during the construction works.

Bi-weekly site inspections were conducted by representatives of the Engineer, Contractor and ET on 12th and 26th August 2016, 9th and 23rd September 2016, 7th and 25th October 2016. The observations, reminders and recommendations made during the site inspections are summarized in Section 8.2.

The implementation status of the proposed mitigation measures for landscape and visual impacts is given in **Appendix F**.

7 Environmental Site Inspection

Site audit was carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.

Joint weekly inspections were conducted by representatives of the Contract Administrator, Engineer, Contractor and ET on 1st, 8th, 17th, 22nd and 29th August 2016, 7th, 13th, 21st and 26th September 2016, 3rd, 11th, 17th, 26th and 31st October 2016. Observations were recorded and summarized in Section 8.2.

During site inspection in the reporting month, a non-compliance item regarding site runoff was issued by IEC on 19th October 2016.

Updated status summary of the Environmental Mitigation Implementation Schedule is provided in **Appendix F**.

8 Environmental Non-Conformance

8.1 Summary of Environmental Exceedances

No exceedance of action level and limit level was recorded for TSP. Seventeen exceedances were recorded at NM4 for noise.

8.2 Summary of Environmental Non-Compliance

A non-compliance item regarding site runoff was issued by IEC on 19th October 2016. Contractor was requested to implement the immediate preventive measures on proper diversion and treatment of on-site wastewater.

8.3 Summary of Environmental Complaint

No environment project-related complaint was received in the reporting period.

8.4 Summary of Notification of Summons and Successful Prosecution

There was no successful environmental prosecution or notification of summons received since the Project commencement.

The cumulative log for environmental exceedance, non-compliance, complaint and summon and successful prosecution since the commencement of the Project is presented in **Appendix G**.

9 Comment, Recommendations and Conclusions

9.1 Comment

The recommended mitigation measures accordance with the EM&A Manual had been effectively implemented to minimize the environmental impacts due to the construction. The contractor had implemented the mitigation measures to control the dust and noise impacts. No dust and noise impacts obviously affected to the environment and sensitive receivers. The planning and response on handling site drainage was insufficient. The preventive measures for wastewater/ site water diversion and treatment were not properly implemented during the heavy rainfall.

9.2 Recommendations

According to the environmental audit performed in the reporting month, the following recommendation was made:

- To set up a chemical storage area and properly store the chemicals;
- To collect, sort and properly store the C&D waste;
- To make a thorough cleaning for the haul road and properly maintain all the equipment;
- To place the generator in a drip tray for preventing oil leakage;
- To provide interception / blockage to stop the runoff, remove the silt from the sedimentation tanks, sump pits, manholes and other possible sources in the drainage system and provide an appropriate drainage plan in directing the site runoff;
- To provide labels to the waste storage area and properly store and sort the waste;
- To remove the C&D materials and maintain a proper storage;
- To properly cover and store the soil;
- To relocate the construction materials which were piled within the TPZ;
- To provide TPZ with robust fence at the dripline of all retained and to-be-transplanted trees.
- To remove the ties;
- To conduct crown pruning for the existing tree which next to T24;
- To properly cover the soil with tarpaulin sheet;
- To provide sandbags interception for preventing the runoff;
- To thoroughly clean up the stain;
- To store the chemicals in a proper area with drip tray;

- To use approved QPMEs or make applications for QPME for the new mechanical equipment;
- To set up the movable noise barriers to the significant noise source such as excavator, concrete pump and pilling machine;
- To frequently remove the sediment and clean up the wastewater treatment facilities;
- To allocate additional areas or containers for sorting and storage of materials and waste;
- To set up the movable noise barriers to the significant noise source such as excavator, concrete pump and pilling machine;
- To repair or replace the breakdown submersible pump and properly maintain all the equipment;
- To properly maintain all the powered mechanical equipment for preventing any dark smoke emission and oil leakage;
- To properly protect the retained trees for preventing any damage when operating powered mechanical equipment;
- To properly store the waste and keep the work areas clean and tidy;
- To implement the preventive measures on proper diversion and treatment of on-site wastewater;
- To allocate additional areas or containers for sorting and storage of materials and waste.

9.3 Conclusions

This is the quarterly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works undertaken during 1st August 2016 to 31st October 2016 in accordance with the EM&A Manual.

No exceedance of action level and limit level was recorded for TSP. Seventeen exceedances were recorded at NM4 for noise.

A non-compliance item regarding site runoff was issued by IEC on 19th October 2016. No environmental complaint, notification of summons and successful prosecution against the Project were received in this reporting month.

14 nos. of environmental site inspections and 6 nos. of landscape and visual inspections were carried out in this reporting month. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.

ET has reminded the contractor to provided environmental pollution control measures, waste management measures and good site practice

The ET will keep tracking of the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all the necessary mitigation measures.

Appendix A: Construction Programme and Project Layout Plan

ID	Task Name	Duration	Start	Finish	2015				2016				2017			
					Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
1	Road Improvement Works in West Kowloon Reclamation Development	956 d	Mon 23/3/15	Thu 2/11/17												
2	West Kowloon Highway South Bound near Western Harbour Tunnel at Portion I	956 d	Mon 23/3/15	Thu 2/11/17												
3	Site Clearance, tree felling	320 d	Mon 23/3/15	Fri 5/2/16												
4	Underground investigation, utilities diversion and piling construction	250 d	Sat 6/2/16	Wed 12/10/16												
5	Pile cap, Pier and Bridge Deck construction	180 d	Thu 13/10/16	Mon 10/4/17												
6	E&M installation and roadworks	76 d	Tue 11/4/17	Sun 25/6/17												
7	Street furniture installation	130 d	Mon 26/6/17	Thu 2/11/17												
8																
9																
10	Canton road at Portion Q	956 d	Mon 23/3/15	Thu 2/11/17												
11	Site Clearance, tree felling	320 d	Mon 23/3/15	Fri 5/2/16												
12	Road works at Canton road footpath and utilities diversion	100 d	Sat 6/2/16	Sun 15/5/16												
13	Construction of sign gantry	50 d	Mon 16/5/16	Mon 4/7/16												
14	Road works at Ferry Street and Jordan road	236 d	Tue 5/7/16	Sat 25/2/17												
15	Road works at Wui Cheung road	250 d	Sun 26/2/17	Thu 2/11/17												
16																
17																
18	Lin Cheung Road North Bound at Portion HA	912 d	Mon 23/3/15	Tue 19/9/17												
19	Site Clearance, tree felling	320 d	Mon 23/3/15	Fri 5/2/16												
20	Underground investigation, utilities diversion and piling construction	250 d	Sat 6/2/16	Wed 12/10/16												
21	Pile cap, Pier and Bridge Deck construction	180 d	Thu 13/10/16	Mon 10/4/17												
22	E&M installation and roadworks	42 d	Tue 11/4/17	Mon 22/5/17												
23	Street furniture installation	120 d	Tue 23/5/17	Tue 19/9/17												
24																
25																
26	Lin Cheung Road South Bound at Portion J	730 d	Mon 23/3/15	Tue 21/3/17												
27	Site Clearance, tree felling	320 d	Mon 23/3/15	Fri 5/2/16												
28	Construction of retaining walls and utilities diversion	140 d	Sat 6/2/16	Fri 24/6/16												
29	Site formation and roadworks	140 d	Sat 25/6/16	Fri 11/11/16												
30	Street furniture installation	130 d	Sat 12/11/16	Tue 21/3/17												

Task



Critical Task



Progress

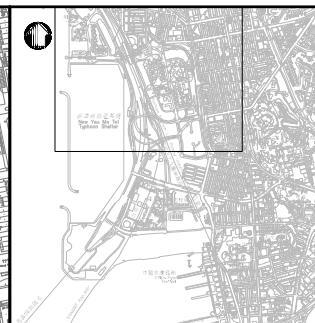


Milestone



Summary





LOCATION PLAN

LEGEND:

- AM1/NM1
(AIR MONITORING STATION/NOISE MONITORING STATION)
- WORKS BOUNDARY

Rev	Description	By	Date

Consultant
**PARSONS
BRINCKERHOFF**

漢
綠 **CINOTECH**

Project title
AGREEMENT NO. CE 44/2011 (HY)
PROPOSED ROAD IMPROVEMENT WORKS IN
WEST KOWLOON RECLAMATION DEVELOPMENT
- PHASE 1 INVESTIGATION,
DESIGN AND CONSTRUCTION

Drawing title
**LOCATION OF MONITORING
STATIONS (PAGE 1 OF 2)**

Drawing no.	CE44/T/ST/EM03			Rev.	2
Drawn	MC	Date	AUG13	Checked	KS
Scale	A3 1:5000	Status	PRELIMINARY	Approved	LC

© COPYRIGHT RESERVED



LOCATION PLAN

LEGEND:

- AM1/NM1
(AIR MONITORING STATION/NOISE MONITORING STATION)
- WORKS BOUNDARY

Rev	Description	By	Date

Consultant

**PARSONS
BRINCKERHOFF**

漢
臻 **CINOTECH**

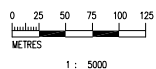
Project title
AGREEMENT NO. CE 44/2011 (HY)
PROPOSED ROAD IMPROVEMENT WORKS IN
WEST KOWLOON RECLAMATION DEVELOPMENT
— PHASE 1 INVESTIGATION,
DESIGN AND CONSTRUCTION

Drawing title
**LOCATION OF MONITORING
STATIONS (PAGE 2 OF 2)**

Drawing no.	CE44/T/ST/EM04			Rev.	2
Drawn	MC	Date	AUG13	Checked	KS
Scale	A3 1:5000	Status	PRELIMINARY		

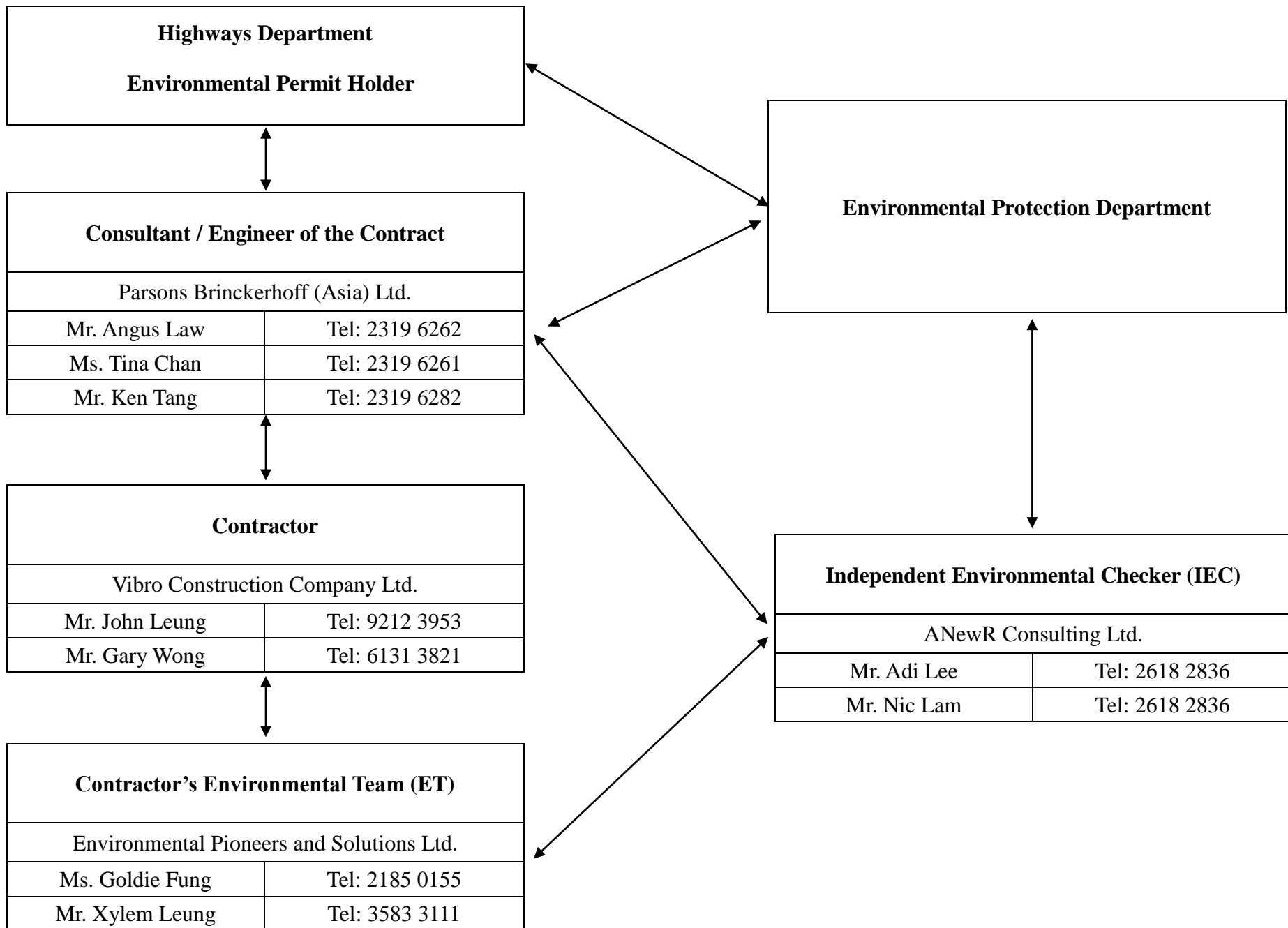
© COPYRIGHT RESERVED

**路政署
HIGHWAYS DEPARTMENT**
主要工程管理部
MAJOR WORKS PROJECT MANAGEMENT OFFICE



VICTORIA HARBOUR

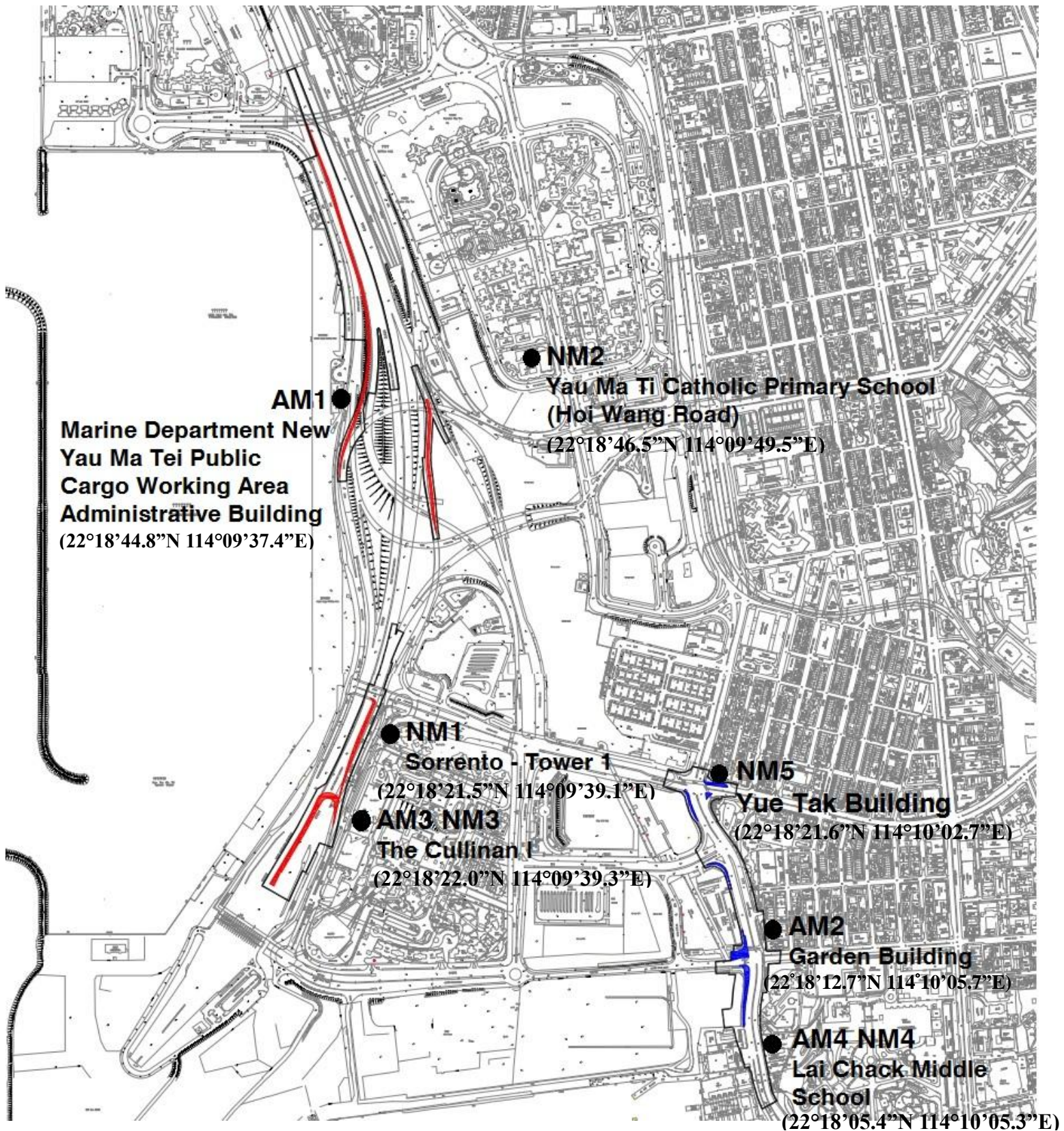
Appendix B: Project Organization Chart












↔ Line of communication

Appendix C: Monitoring Locations

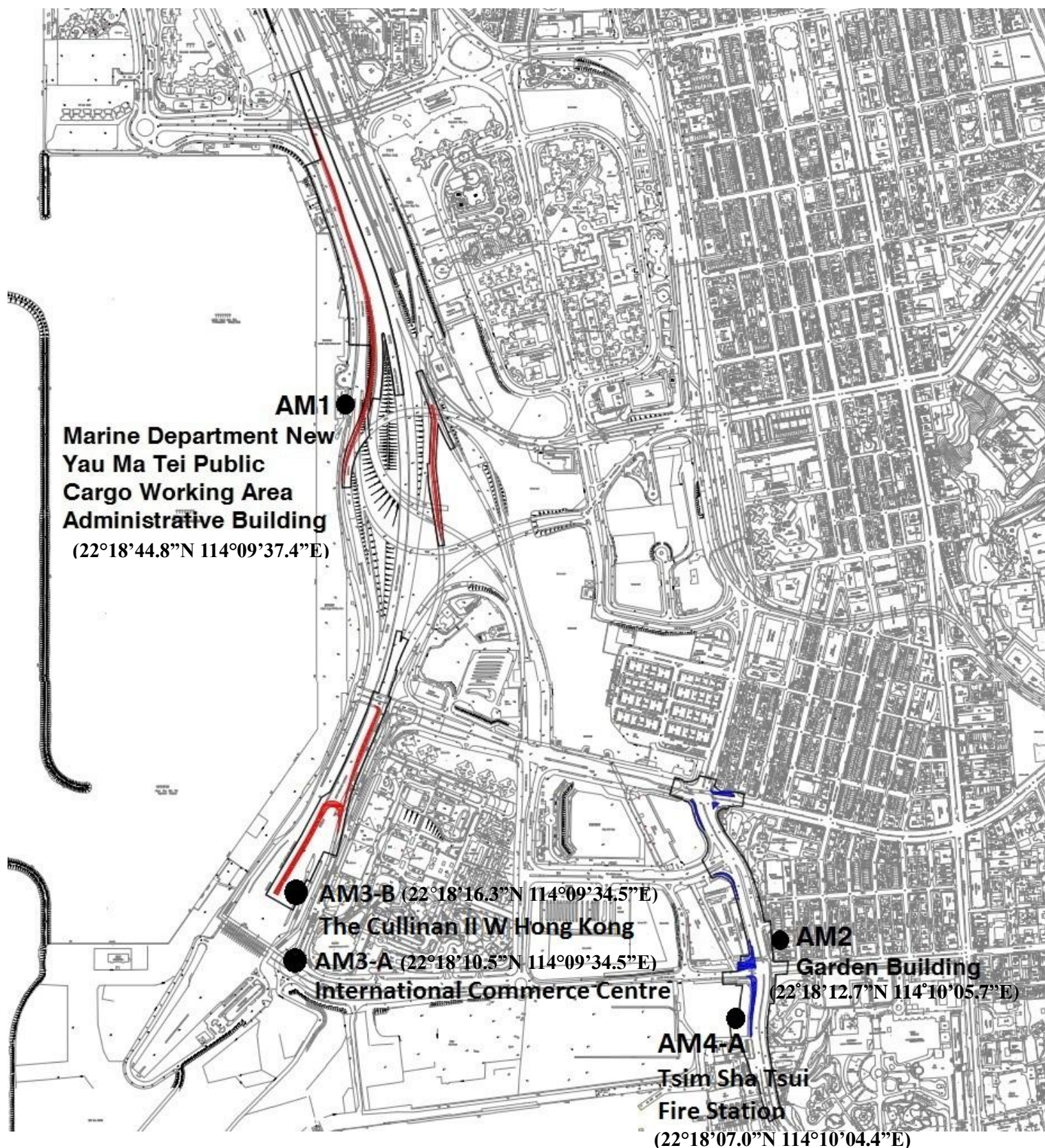
Locations for 1-hr TSP and Noise monitoring



Monitoring Location	Photo Record
<p>AM1</p> <p>Marine Department New Yau Ma Tei Public Cargo Working Area Administrative Building</p>	
<p>AM2</p> <p>Garden Building</p>	
<p>AM3</p> <p>The Cullinan I</p>	
<p>AM4</p> <p>Lai Chack Middle School</p>	

Monitoring Location	Photo Record
<p>NM1</p> <p>Sorrento - Tower 1</p>	
<p>NM2</p> <p>Yau Ma Tei Catholic Primary School (Hoi Wang Road)</p>	
<p>NM3</p> <p>The Cullinan I</p>	
<p>NM4</p> <p>Lai Chack Middle School</p>	
<p>NM5</p> <p>Yue Tak Building</p>	

Locations for 24-hr TSP monitoring



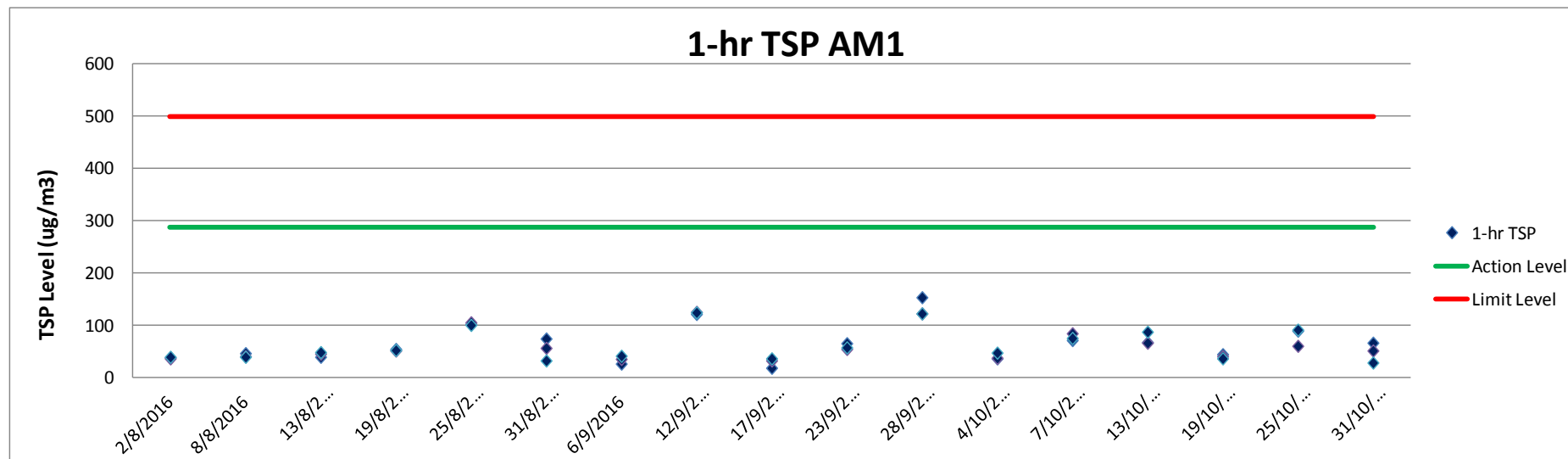
Monitoring Location	Photo Record
<p>AM1</p> <p>Marine Department New Yau Ma Tei Public Cargo Working Area Administrative Building</p>	 <p>A photograph showing a grey electrical meter cabinet on a paved rooftop area. To the left is a white door with ventilation slats. The date stamp in the bottom right corner is 2016/11/07.</p>
<p>AM2</p> <p>Garden Building</p>	 <p>A photograph showing a grey electrical meter cabinet on a paved area. In the background, there is a building entrance with a staircase and a person walking. The date stamp in the bottom right corner is 2016/05/18.</p>
<p>AM3-A</p> <p>International Commerce Centre (Contractor Work Area 4)</p>	 <p>A photograph showing a grey electrical meter cabinet in a construction area. Red and white plastic barriers are visible in the foreground. The date stamp in the bottom right corner is 2015/12/17.</p>
<p>AM3-B</p> <p>The Cullinan II (W Hong Kong)</p>	 <p>A photograph showing a grey electrical meter cabinet next to blue metal structures, possibly part of a construction site. The date stamp in the bottom right corner is 2016/09/28.</p>
<p>AM4-A</p> <p>Tsim Sha Tsui Fire Station</p>	 <p>A photograph showing a grey electrical meter cabinet behind red and white plastic barriers. The date stamp in the bottom right corner is 2016/09/28.</p>

Appendix D: TSP Monitoring Data

1-hr TSP Monitoring Result for AM1

Date	Weather	Temperature (°C) *	Wind Direction *	Wind Speed (m/s) *	Sampling Time			Reading (μ g/m³)			
					1	2	3	1	2	3	Average
2/8/2016	Sunny	25.3 - 29.1	SW	0.8 - 12.5	15:48	16:49	17:50	38	36	39	38
8/8/2016	Sunny	27.3 - 34.6	SW	0.0 - 4.4	13:55	14:56	15:57	46	40	39	42
13/8/2016	Sunny	28.0 - 32.1	SE	0.0 - 5.0	9:23	10:24	11:25	39	45	48	44
19/8/2016	Overcast	26.0 - 31.3	SE	0.8 - 5.0	14:28	15:29	16:30	54	51	52	52
25/8/2016	Sunny	27.3 - 33.2	SE	0.0 - 5.0	9:23	10:24	11:25	102	105	100	102
31/8/2016	Overcast	26.0 - 31.0	SW	0.0 - 5.0	10:09	11:10	12:11	74	56	32	54
6/9/2016	Overcast	25.3 - 27.5	SW	0 - 4.4	14:38	15:39	16:40	26	35	41	34
12/9/2016	Overcast	25.6 - 32.7	SE	0 - 5.0	14:04	15:05	16:06	121	125	124	123
17/9/2016	Sunny	27.3 - 31.9	NE	0 - 5.0	14:02	15:03	16:04	18	32	36	29
23/9/2016	Sunny	26.0 - 31.3	SE	0 - 4.4	14:19	15:20	16:21	65	54	57	59
28/9/2016	Sunny	27.3 - 33.2	W	0.8 - 8.0	10:18	11:19	12:20	153	122	122	132
4/10/2016	Sunny	26.0 - 30.0	SE	0 - 4.4	14:18	15:19	16:20	36	37	47	40
7/10/2016	Overcast	26.0 - 30.0	NE	0 - 5.0	9:40	10:41	11:42	71	84	75	77
13/10/2016	Sunny	23.7 - 28.5	NE	1.2 - 8.0	14:07	15:08	16:09	67	66	87	73
19/10/2016	Overcast	24.0 - 25.9	SE	2.4 - 8.0	9:10	10:11	11:12	44	40	36	40
25/10/2016	Sunny	25.5 - 30.1	E	0 - 4.4	13:48	14:49	15:50	89	60	91	80
31/10/2016	Sunny	25.3-28.7	E	0-5.0	9:46	10:47	11:48	66	51	28	48

*Remark: Data of temperature, wind direction and wind speed was extracted from King's Park Meteorological Station of HKO

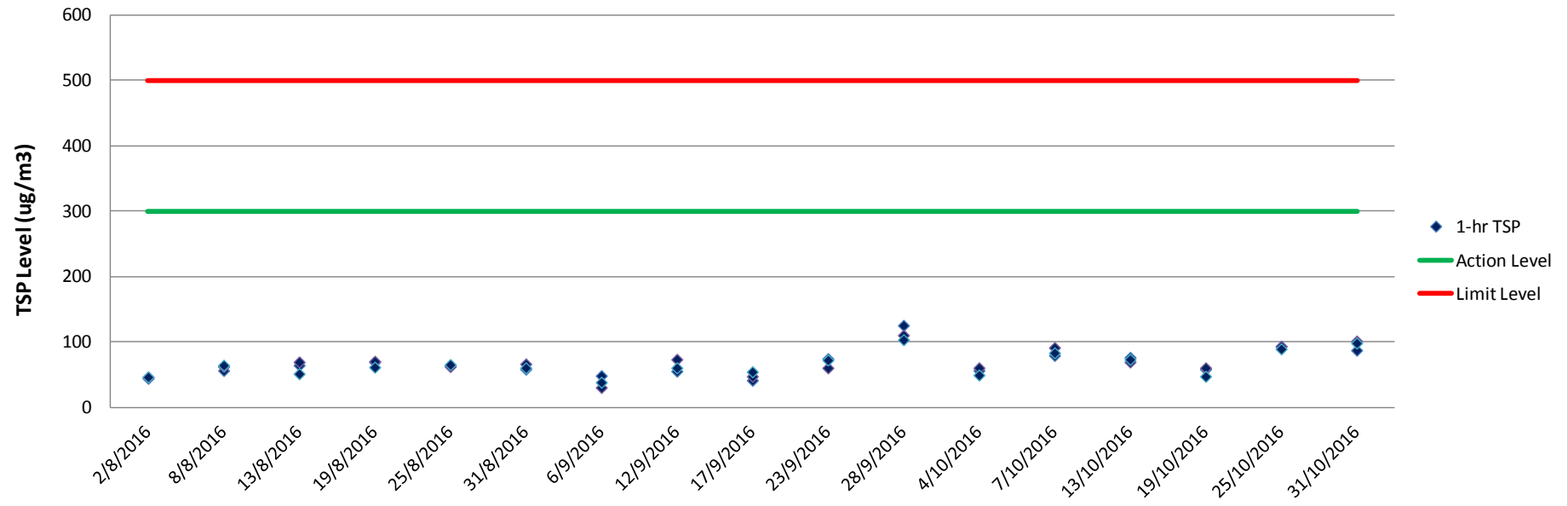


1-hr TSP Monitoring Result for AM2

Date	Weather	Temperature (°C) *	Wind Direction *	Wind Speed (m/s) *	Sampling Time			Reading (μ g/m³)			
					1	2	3	1	2	3	Average
2/8/2016	Sunny	25.3 - 29.1	SW	0.8 - 12.5	15:11	16:12	17:13	45	47	47	46
8/8/2016	Sunny	27.3 - 34.6	SW	0.0 - 4.4	13:30	14:31	15:32	57	63	65	62
13/8/2016	Sunny	28.0 - 32.1	SE	0.0 - 5.0	13:34	14:35	15:36	65	70	52	62
19/8/2016	Overcast	26.0 - 31.3	SE	0.8 - 5.0	14:00	15:01	16:02	70	71	62	68
25/8/2016	Sunny	27.3 - 33.2	SE	0.0 - 5.0	13:38	14:39	15:40	65	63	66	65
31/8/2016	Overcast	26.0 - 31.0	SW	0.0 - 5.0	13:51	14:52	15:53	59	67	61	62
6/9/2016	Overcast	25.3 - 27.5	SW	0 - 4.4	13:00	14:01	15:02	49	31	39	40
12/9/2016	Overcast	25.6 - 32.7	SE	0 - 5.0	13:20	14:21	15:22	56	74	61	64
17/9/2016	Sunny	27.3 - 31.9	NE	0 - 5.0	13:15	14:16	15:17	42	48	55	48
23/9/2016	Sunny	26.0 - 31.3	SE	0 - 4.4	13:22	14:23	15:24	75	61	73	70
28/9/2016	Sunny	27.3 - 33.2	W	0.8 - 8.0	13:30	14:31	15:32	126	111	104	114
4/10/2016	Sunny	26.0 - 30.0	SE	0 - 4.4	13:00	14:01	15:02	57	61	50	56
7/10/2016	Overcast	26.0 - 30.0	NE	0 - 5.0	13:10	14:11	15:12	80	92	84	85
13/10/2016	Sunny	23.7 - 28.5	NE	1.2 - 8.0	14:00	15:01	16:02	77	70	74	74
19/10/2016	Overcast	24.0 - 25.9	SE	2.4 - 8.0	13:00	14:01	15:02	59	61	48	56
25/10/2016	Sunny	25.5 - 30.1	E	0 - 4.4	13:45	14:46	15:47	94	94	90	93
31/10/2016	Sunny	25.3-28.7	E	0-5.0	13:20	14:21	15:22	88	102	99	96

*Remark: Data of temperature, wind direction and wind speed was extracted from King's Park Meteorological Station of HKO

1-hr TSP AM2

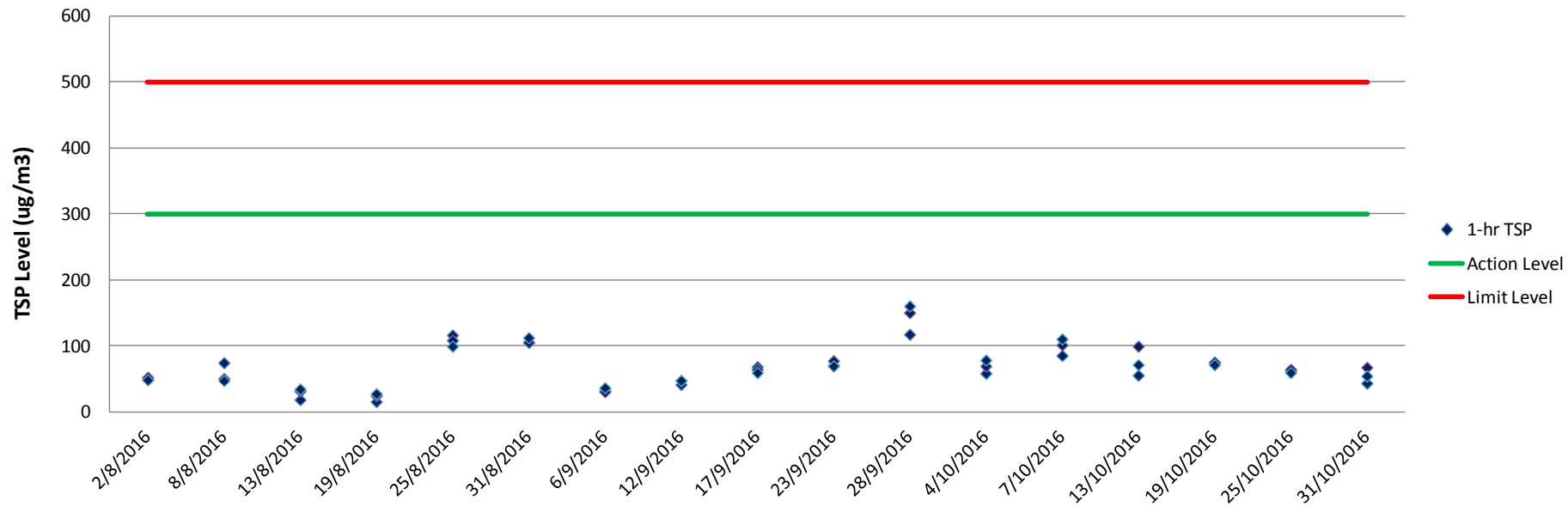


1-hr TSP Monitoring Result for AM3

Date	Weather	Temperature (°C) *	Wind Direction *	Wind Speed (m/s) *	Sampling Time			Reading (μ g/m ³)			
					1	2	3	1	2	3	Average
2/8/2016	Sunny	25.3 - 29.1	SW	0.8 - 12.5	16:31	17:32	18:33	50	53	49	51
8/8/2016	Sunny	27.3 - 34.6	SW	0.0 - 4.4	14:46	15:47	16:48	75	51	48	58
13/8/2016	Sunny	28.0 - 32.1	SE	0.0 - 5.0	10:08	11:09	12:10	19	32	35	29
19/8/2016	Overcast	26.0 - 31.3	SE	0.8 - 5.0	15:06	16:07	17:08	16	25	28	23
25/8/2016	Sunny	27.3 - 33.2	SE	0.0 - 5.0	10:07	11:08	12:09	117	109	100	109
31/8/2016	Overcast	26.0 - 31.0	SW	0.0 - 5.0	10:55	11:56	12:57	106	106	113	108
6/9/2016	Overcast	25.3 - 27.5	SW	0 - 4.4	15:19	16:20	17:21	33	31	37	34
12/9/2016	Overcast	25.6 - 32.7	SE	0 - 5.0	14:48	15:49	16:50	42	48	48	46
17/9/2016	Sunny	27.3 - 31.9	NE	0 - 5.0	14:48	15:49	16:50	69	65	60	65
23/9/2016	Sunny	26.0 - 31.3	SE	0 - 4.4	15:06	16:07	17:08	71	78	70	73
28/9/2016	Sunny	27.3 - 33.2	W	0.8 - 8.0	10:32	11:33	12:34	118	151	161	143
4/10/2016	Sunny	26.0 - 30.0	SE	0 - 4.4	15:00	16:01	17:02	59	70	79	69
7/10/2016	Overcast	26.0 - 30.0	NE	0 - 5.0	15:38	16:39	17:40	86	102	111	100
13/10/2016	Sunny	23.7 - 28.5	NE	1.2 - 8.0	14:24	15:25	16:26	56	100	72	76
19/10/2016	Overcast	24.0 - 25.9	SE	2.4 - 8.0	10:07	11:08	12:09	75	76	72	74
25/10/2016	Sunny	25.5 - 30.1	E	0 - 4.4	14:29	15:30	16:31	63	65	60	63
31/10/2016	Sunny	25.3-28.7	E	0-5.0	10:25	11:26	12:27	44	68	55	56

*Remark: Data of temperature, wind direction and wind speed was extracted from King's Park Meteorological Station of HKO

1-hr TSP AM3

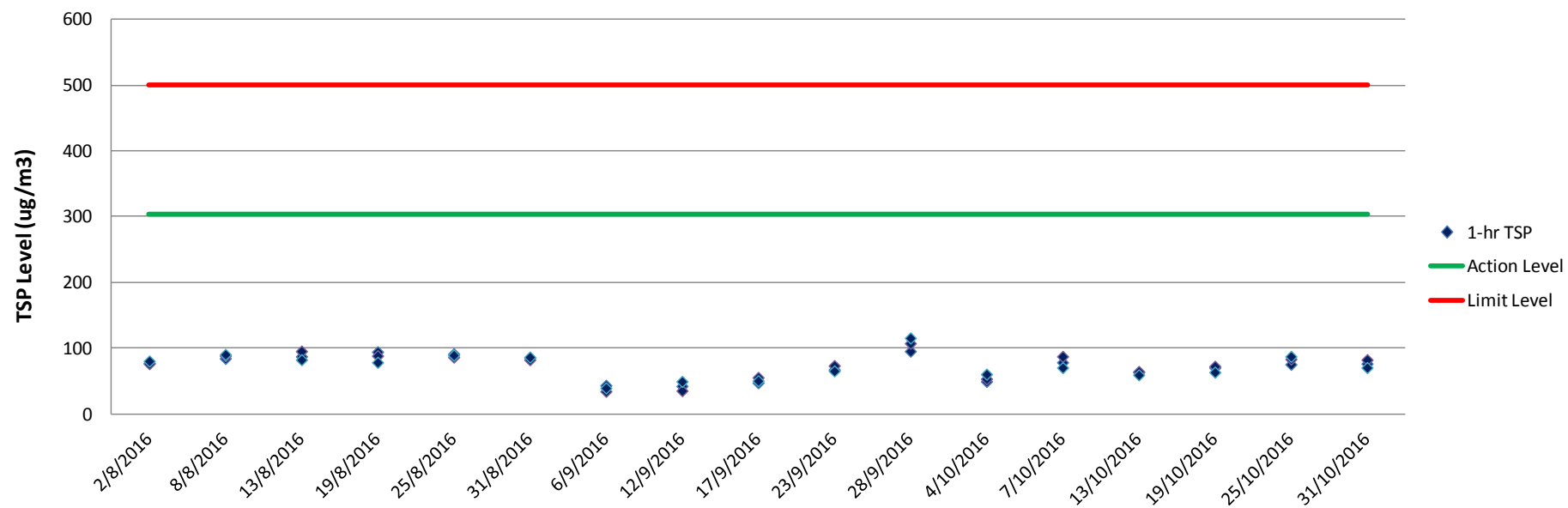


1-hr TSP Monitoring Result for AM4

Date	Weather	Temperature (°C) *	Wind Direction *	Wind Speed (m/s) *	Sampling Time			Reading (μ g/m³)			
					1	2	3	1	2	3	Average
2/8/2016	Sunny	25.3 - 29.1	SW	0.8 - 12.5	15:30	16:31	17:32	78	77	81	79
8/8/2016	Sunny	27.3 - 34.6	SW	0.0 - 4.4	13:21	14:22	15:23	85	89	91	88
13/8/2016	Sunny	28.0 - 32.1	SE	0.0 - 5.0	13:37	14:38	15:39	88	96	83	89
19/8/2016	Overcast	26.0 - 31.3	SE	0.8 - 5.0	13:45	14:46	15:47	95	89	79	88
25/8/2016	Sunny	27.3 - 33.2	SE	0.0 - 5.0	13:25	14:26	15:27	92	87	90	90
31/8/2016	Overcast	26.0 - 31.0	SW	0.0 - 5.0	13:34	14:35	15:36	86	83	87	85
6/9/2016	Overcast	25.3 - 27.5	SW	0 - 4.4	13:30	14:31	15:32	44	35	40	40
12/9/2016	Overcast	25.6 - 32.7	SE	0 - 5.0	13:38	14:39	15:40	43	36	50	43
17/9/2016	Sunny	27.3 - 31.9	NE	0 - 5.0	13:27	14:28	15:29	48	56	51	52
23/9/2016	Sunny	26.0 - 31.3	SE	0 - 4.4	13:35	14:36	15:37	68	74	66	69
28/9/2016	Sunny	27.3 - 33.2	W	0.8 - 8.0	13:41	14:42	15:43	96	108	116	107
4/10/2016	Sunny	26.0 - 30.0	SE	0 - 4.4	13:30	14:31	15:32	50	54	61	55
7/10/2016	Overcast	26.0 - 30.0	NE	0 - 5.0	13:00	14:01	15:02	79	88	71	79
13/10/2016	Sunny	23.7 - 28.5	NE	1.2 - 8.0	13:35	14:36	15:37	64	65	60	63
19/10/2016	Overcast	24.0 - 25.9	SE	2.4 - 8.0	13:15	14:16	15:17	71	73	64	69
25/10/2016	Sunny	25.5 - 30.1	E	0 - 4.4	14:05	15:06	16:07	76	84	88	83
31/10/2016	Sunny	25.3-28.7	E	0-5.0	13:50	14:51	15:52	77	83	71	77

*Remark: Data of temperature, wind direction and wind speed was extracted from King's Park Meteorological Station of HKO

1-hr TSP AM4

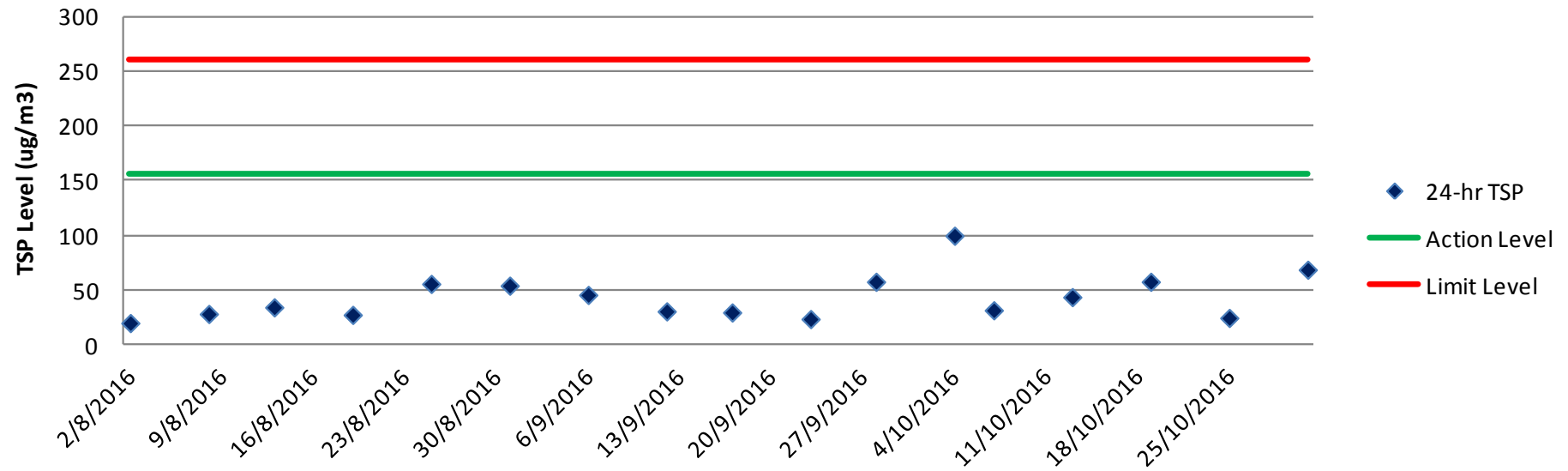


24-hr TSP Monitoring Result for AM1

Sampling ID & Paper No.	Temperature (°C) *	Wind Direction *	Wind Speed (m/s) *	Sampling Date	Wt. of paper (g)			Flow Rate (CFM)	Total Volume (m³)	TSP Concentration (µg/m³)
					Initial Wt.	Final Wt.	Wt. of dust			
AM10802 201293	25.3 - 29.1	SW	0.8 - 12.5	2/8/2016	2.7603	2.8059	0.0456	55.0	2056.70	22
AM10808 201294	27.3 - 34.6	SW	0.0 - 4.4	8/8/2016	2.7729	2.8371	0.0642	55.0	2056.70	31
AM10813 201303	28.0 - 32.1	SE	0.0 - 5.0	13/8/2016	2.7668	2.8446	0.0778	55.0	2056.70	38
AM10819 201301	26.0 - 31.3	SE	0.8 - 5.0	19/8/2016	2.7749	2.8372	0.0623	55.0	2056.70	30
AM10825 201302	27.3 - 33.2	SE	0.0 - 5.0	25/8/2016	2.7646	2.8903	0.1257	55.0	2056.70	61
AM10831 201306	26.0 - 31.0	SW	0.0 - 5.0	31/8/2016	2.7514	2.8735	0.1221	55.0	2056.70	59
AM10906 201327	25.3 - 27.5	SW	0 - 4.4	6/9/2016	2.7914	2.8862	0.0948	55.0	2056.70	46
AM10912 201344	25.6 - 32.7	SE	0 - 5	12/9/2016	2.7860	2.8494	0.0634	55.0	2056.70	31
AM10917 201343	27.3 - 31.9	NE	0 - 5	17/9/2016	2.7816	2.8440	0.0624	55.0	2056.70	30
AM10923 201342	25.9 - 29.5	SE	0 - 4.4	23/9/2016	2.7702	2.8204	0.0502	55.0	2056.70	24
AM10928 201316	28.4 - 32.1	W	0.8 - 8	28/9/2016	2.8041	2.9236	0.1195	55.0	2056.70	58
AM11004 201348	26.0 - 30.0	SE	0 - 4.4	4/10/2016	2.8157	3.0213	0.2056	55.0	2056.70	100
AM11007 201350	26.0 - 30.0	NE	0 - 5.0	7/10/2016	2.8130	2.8794	0.0664	55.0	2056.70	32
AM11013 201981	23.7 - 28.5	NE	1.2 - 8.0	13/10/2016	2.8620	2.9517	0.0897	55.0	2056.70	44
AM11019 201982	24.0 - 25.9	SE	2.4 - 8.0	19/10/2016	2.8574	2.9765	0.1191	55.0	2056.70	58
AM11025 201988	25.5 - 30.1	E	0 - 4.4	25/10/2016	2.8312	2.8827	0.0515	55.0	2056.70	25
AM11031 201977	25.3-28.7	E	0-5.0	31/10/2016	2.8556	2.9978	0.1422	55.0	2056.70	69

*Remark: Data of temperature, wind direction and wind speed was extracted from King's Park Meteorological Station of HKO

24-hr TSP AM1

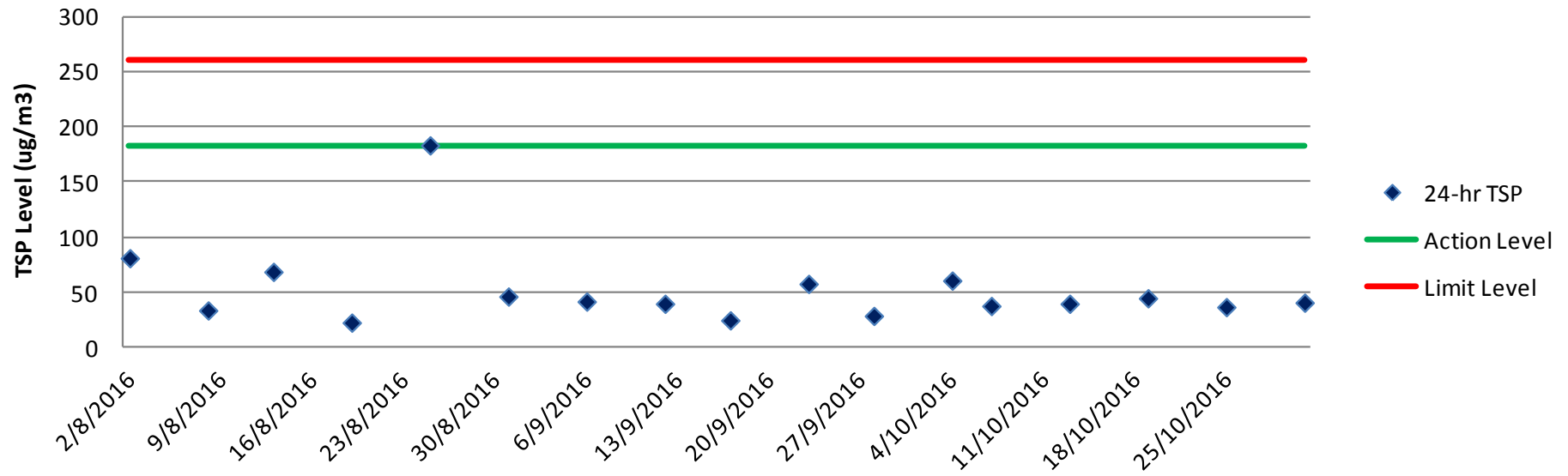


24-hr TSP Monitoring Result for AM2

Sampling ID & Paper No.	Temperature (°C) *	Wind Direction *	Wind Speed (m/s) *	Sampling Date	Wt. of paper (g)			Flow Rate (CFM)	Total Volume (m³)	TSP Concentration (µg/m³)
					Initial Wt.	Final Wt.	Wt. of dust			
AM20802 201300	25.3 - 29.1	SW	0.8 - 12.5	2/8/2016	2.7645	2.9634	0.1989	60.0	2481.33	80
AM20808 201299	27.3 - 34.6	SW	0.0 - 4.4	8/8/2016	2.7749	2.8580	0.0831	60.0	2481.33	33
AM20813 201305	28.0 - 32.1	SE	0.0 - 5.0	13/8/2016	2.7566	2.9252	0.1686	60.0	2481.33	68
AM20819 201334	26.0 - 31.3	SE	0.8 - 5.0	19/8/2016	2.7842	2.8403	0.0561	60.0	2481.33	23
AM20825 201314	27.3 - 33.2	SE	0.0 - 5.0	25/8/2016	2.8110	3.2598	0.4488	60.0	2481.33	181
AM20831 201319	26.0 - 31.0	SW	0.0 - 5.0	31/8/2016	2.8030	2.9169	0.1139	60.0	2481.33	46
AM20906 201315	25.3 - 27.5	SW	0 - 4.4	6/9/2016	2.8068	2.9122	0.1054	60.0	2481.33	42
AM20912 201965	25.6 - 32.7	SE	0 - 5	12/9/2016	2.8660	2.9651	0.0991	60.0	2481.33	40
AM20917 201333	27.3 - 31.9	NE	0 - 5	17/9/2016	2.7778	2.8402	0.0624	60.0	2481.33	25
AM20923 201964	25.9 - 29.5	SE	0 - 4.4	23/9/2016	2.8617	3.0060	0.1443	60.0	2481.33	58
AM20928 201963	28.4 - 32.1	W	0.8 - 8	28/9/2016	2.8611	2.9336	0.0725	60.0	2481.33	29
AM21004 201317	26.0 - 30.0	SE	0 - 4.4	4/10/2016	2.7962	2.9476	0.1514	60.0	2481.33	61
AM21007 201962	26.0 - 30.0	NE	0 - 5.0	7/10/2016	2.8595	2.9533	0.0938	60.0	2481.33	38
AM21013 201339	23.7 - 28.5	NE	1.2 - 8.0	13/10/2016	2.7812	2.8812	0.1000	60.0	2481.33	40
AM21019 201338	24.0 - 25.9	SE	2.4 - 8.0	19/10/2016	2.7786	2.8895	0.1109	60.0	2481.33	45
AM21025 202001	25.5 - 30.1	E	0 - 4.4	25/10/2016	2.8893	2.9807	0.0914	60.0	2481.33	37
AM21031 201996	25.3-28.7	E	0-5.0	31/10/2016	2.8325	2.9332	0.1007	60.0	2481.33	41

*Remark: Data of temperature, wind direction and wind speed was extracted from King's Park Meteorological Station of HKO

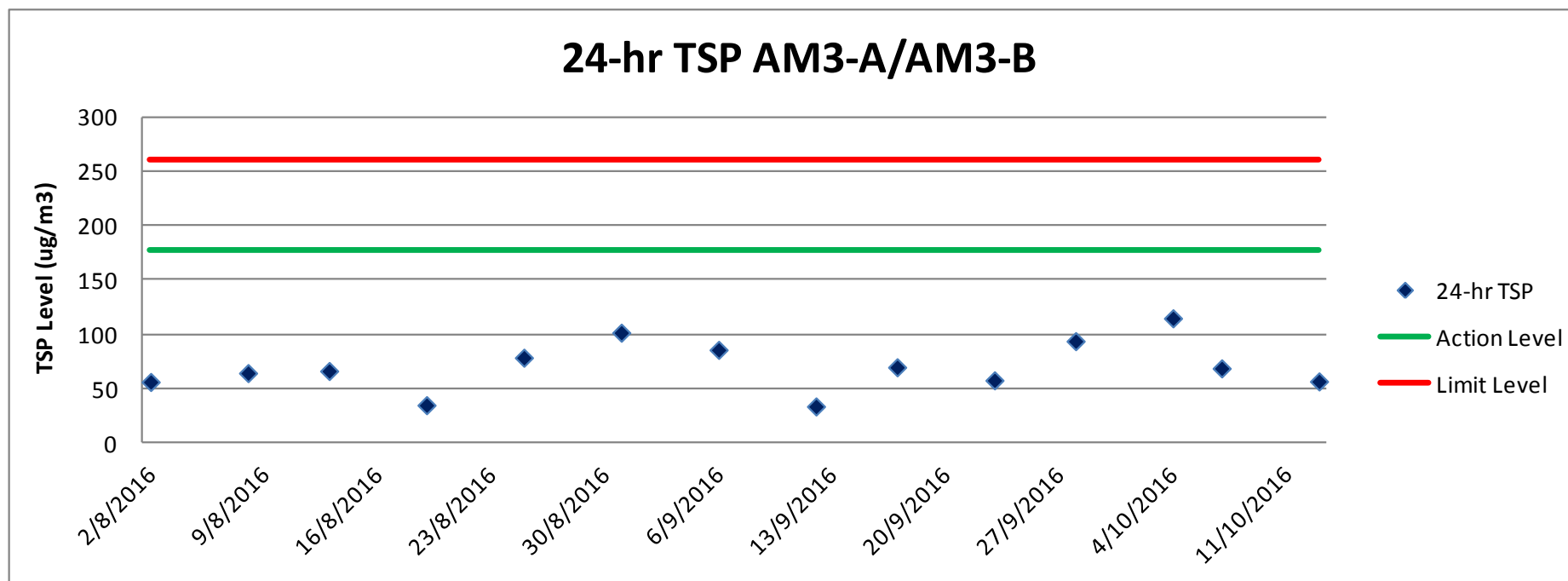
24-hr TSP AM2



24-hr TSP Monitoring Result for AM3-A/AM3-B

Sampling ID & Paper No.	Temperature (°C) *	Wind Direction *	Wind Speed (m/s) *	Sampling Date	Wt. of paper (g)			Flow Rate (CFM)	Total Volume (m³)	TSP Concentration (µg/m³)
					Initial Wt.	Final Wt.	Wt. of dust			
AM3-A0802 201295	25.3 - 29.1	SW	0.8 - 12.5	2/8/2016	2.7745	2.9012	0.1267	55.0	2112.01	60
AM3-A0808 201298	27.3 - 34.6	SW	0.0 - 4.4	8/8/2016	2.7715	2.9165	0.1450	55.0	2112.01	69
AM3-A0813 201069	28.0 - 32.1	SE	0.0 - 5.0	13/8/2016	2.7996	2.9489	0.1493	55.0	2112.01	71
AM3-A0819 201304	26.0 - 31.3	SE	0.8 - 5.0	19/8/2016	2.7557	2.8346	0.0789	55.0	2112.01	37
AM3-A0825 201070	27.3 - 33.2	SE	0.0 - 5.0	25/8/2016	2.8039	2.9806	0.1767	55.0	2112.01	84
AM3-A0831 201328	26.0 - 31.0	SW	0.0 - 5.0	31/8/2016	2.7874	3.0156	0.2282	55.0	2112.01	108
AM3-A0906 201326	25.3 - 27.5	SW	0 - 4.4	6/9/2016	2.8013	2.9829	0.1816	55.0	2112.01	86
AM3-A0912 201347	25.6 - 32.7	SE	0 - 5	12/9/2016	2.8077	2.8794	0.0717	55.0	2112.01	34
AM3-A0917 201346	27.3 - 31.9	NE	0 - 5	17/9/2016	2.7925	2.9411	0.1486	55.0	2112.01	70
AM3-A0923 201345	25.9 - 29.5	SE	0 - 4.4	23/9/2016	2.7985	2.9207	0.1222	55.0	2112.01	58
AM3-A0928 201971	28.4 - 32.1	W	0.8 - 8	28/9/2016	2.8590	3.0583	0.1993	55.0	2112.01	94
AM3-B1004 201972	26.0 - 30.0	SE	0 - 4.4	4/10/2016	2.8704	3.1129	0.2425	55.0	2112.01	115
AM3-B1007 201973	26.0 - 30.0	NE	0 - 5.0	7/10/2016	2.8549	3.0004	0.1455	55.0	2112.01	69
AM3-B1013 201984	23.7 - 28.5	NE	1.2 - 8.0	13/10/2016	2.8428	2.9623	0.1195	55.0	2112.01	57
AM3-B1019 202000	24.0 - 25.9	SE	2.4 - 8.0	19/10/2016	2.8447	3.0452	0.2005	55.0	2112.01	95
AM3-B1025 201990	25.5 - 30.1	E	0 - 4.4	25/10/2016	2.8220	2.9044	0.0824	55.0	2112.01	39
AM3-B1031 201989	25.3-28.7	E	0-5.0	31/10/2016	2.8188	2.9434	0.1246	55.0	2112.01	59

*Remark: Data of temperature, wind direction and wind speed was extracted from King's Park Meteorological Station of HKO



Remark:

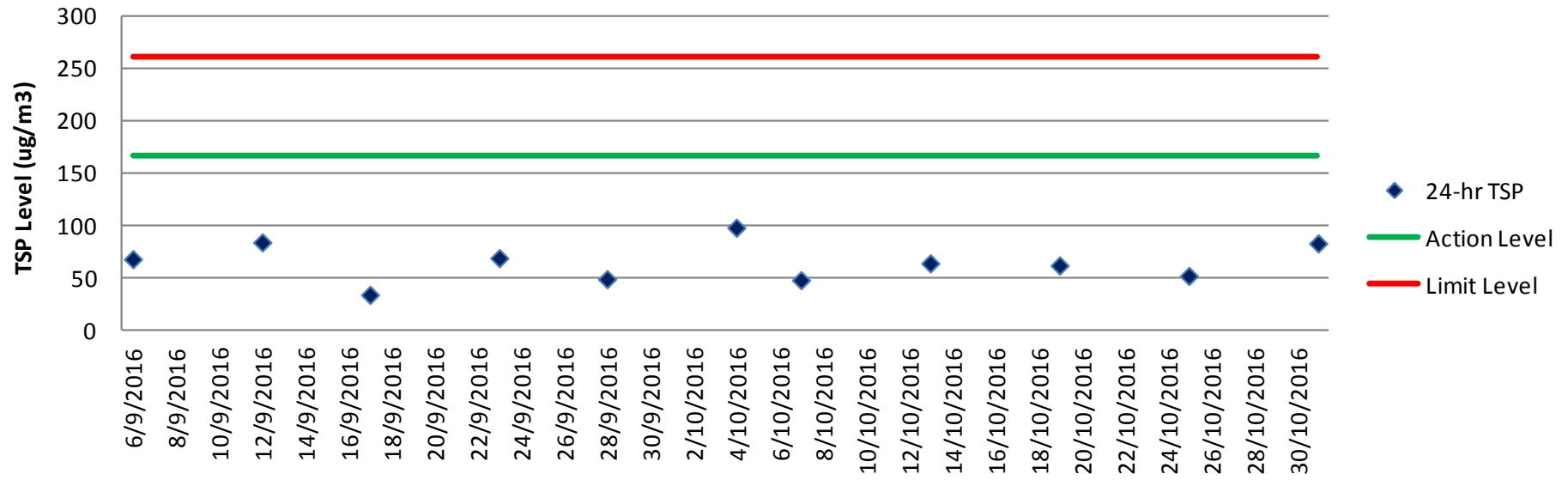
24-hr TSP monitoring for August and September 2016 was carried out at AM3-A. 24-hr TSP monitoring for October 2016 was carried out at AM3-B. Monitoring station was amended from AM3-A to AM3-B from October 2016. AM3-B is located at the site boundary of Scheme I. There is no obstacle between the site (dust emission source) and monitoring point. It is more representative for monitoring the dust impact caused by the construction activities

24-hr TSP Monitoring Result for AM4-A

Sampling ID & Paper No.	Temperature (°C) *	Wind Direction *	Wind Speed (m/s) *	Sampling Date	Wt. of paper (g)			Flow Rate (CFM)	Total Volume (m³)	TSP Concentration (µg/m³)
					Initial Wt.	Final Wt.	Wt. of dust			
AM4-A0906 201332	25.3 - 27.5	SW	0 - 4.4	6/9/2016	2.7903	2.9276	0.1373	55.0	2007.50	68
AM4-A0912 201340	25.6 - 32.7	SE	0 - 5	12/9/2016	2.7822	2.9502	0.1680	55.0	2007.50	84
AM4-A0917 201331	27.3 - 31.9	NE	0 - 5	17/9/2016	2.8128	2.8814	0.0686	55.0	2007.50	34
AM4-A0923 201341	25.9 - 29.5	SE	0 - 4.4	23/9/2016	2.7779	2.9160	0.1381	55.0	2007.50	69
AM4-A0928 201969	28.4 - 32.1	W	0.8 - 8	28/9/2016	2.8611	2.9595	0.0984	55.0	2007.50	49
AM4-A1004 201968	26.0 - 30.0	SE	0 - 4.4	4/10/2016	2.8559	3.0527	0.1968	55.0	2007.50	98
AM4-A1007 201966	26.0 - 30.0	NE	0 - 5.0	7/10/2016	2.8605	2.9577	0.0972	55.0	2007.50	48
AM4-A1013 201975	23.7 - 28.5	NE	1.2 - 8.0	13/10/2016	2.8334	2.9614	0.1280	55.0	2007.50	64
AM4-A1019 201967	24.0 - 25.9	SE	2.4 - 8.0	19/10/2016	2.8530	2.9777	0.1247	55.0	2007.50	62
AM4-A1025 202002	25.5 - 30.1	E	0 - 4.4	25/10/2016	2.8966	3.0007	0.1041	55.0	2007.50	52
AM4-A1031 201993	25.3-28.7	E	0-5.0	31/10/2016	2.8383	3.0051	0.1668	55.0	2007.50	83

*Remark: Data of temperature, wind direction and wind speed was extracted from King's Park Meteorological Station of HKO

24-hr TSP AM4-A



Appendix E: Noise Monitoring Data

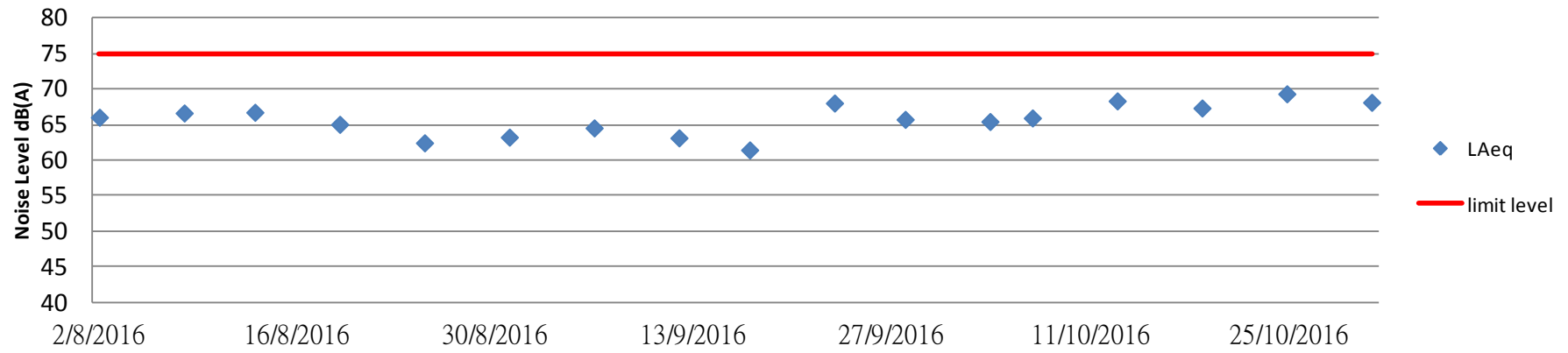
Noise Monitoring Result for NM1

Location	NM1					
Date	2/8/2016	8/8/2016	13/8/2016	19/8/2016	25/8/2016	31/8/2016
Weather Condition	Sunny	Sunny	Sunny	Overcast	Sunny	Overcast
Start Time	15:00	15:00	15:00	15:00	15:00	15:00
Measurement Period	30min	30min	30min	30min	30min	30min
Baseline Level	75.1					
L _{Aeq}	66.0	66.6	66.7	65.0	62.4	63.2
L ₁₀	67.6	67.8	69.9	66.3	63.6	64.4
L ₉₀	63.5	64.1	63.9	61.8	60.4	60.8

Location	NM1				
Date	6/9/2016	12/9/2016	17/9/2016	23/9/2016	28/9/2016
Weather Condition	Overcast	Overcast	Sunny	Sunny	Sunny
Start Time	15:00	15:00	15:00	15:00	15:00
Measurement Period	30min	30min	30min	30min	30min
Baseline Level	75.1				
L _{Aeq}	64.5	63.1	61.4	68.0	65.7
L ₁₀	65.7	64.2	62.6	69.4	68.9
L ₉₀	62.6	60.6	59.3	65.5	63.4

Location	NM1					
Date	4/10/2016	7/10/2016	13/10/2016	19/10/2016	25/10/2016	31/10/2016
Weather Condition	Sunny	Overcast	Sunny	Overcast	Sunny	Sunny
Start Time	16:32	11:16	16:13	10:56	15:29	11:16
Measurement Period	30min	30min	30min	30min	30min	30min
Baseline Level	75.1					
L _{Aeq}	65.4	65.9	68.3	67.3	69.3	68.1
L ₁₀	67.1	68.3	69.5	68.9	70.6	69.6
L ₉₀	63.0	62.7	65.6	64.5	65.6	65.2

Noise - NM1



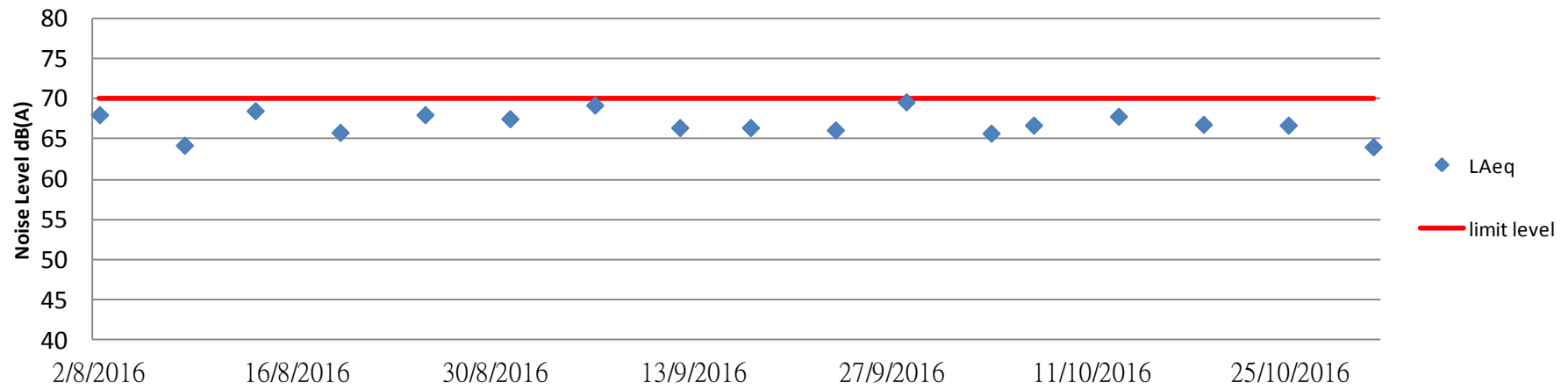
Noise Monitoring Result for NM2

Location	NM2					
Date	2/8/2016	8/8/2016	13/8/2016	19/8/2016	25/8/2016	31/8/2016
Weather Condition	Sunny	Sunny	Sunny	Overcast	Sunny	Overcast
Start Time	9:00	9:00	9:00	9:00	9:00	9:00
Measurement Period	30min	30min	30min	30min	30min	30min
Baseline Level	66.5					
L _{Aeq}	68.0	64.2	68.5	65.8	68.0	67.5
L ₁₀	69.3	65.5	70.1	67.6	72.2	70.1
L ₉₀	63.5	62.4	66.0	62.7	62.3	61.5

Location	NM2				
Date	6/9/2016	12/9/2016	17/9/2016	23/9/2016	28/9/2016
Weather Condition	Overcast	Overcast	Sunny	Sunny	Sunny
Start Time	9:00	9:00	9:00	9:00	9:00
Measurement Period	30min	30min	30min	30min	30min
Baseline Level	66.5				
L _{Aeq}	69.2	66.4	66.4	66.1	69.6
L ₁₀	71.5	69.2	69.2	67.4	72.5
L ₉₀	64.3	59.7	59.7	64.3	56.8

Location	NM2					
Date	4/10/2016	7/10/2016	13/10/2016	19/10/2016	25/10/2016	31/10/2016
Weather Condition	Sunny	Overcast	Sunny	Overcast	Sunny	Sunny
Start Time	9:56	10:15	10:27	10:30	10:41	11:30
Measurement Period	30min	30min	30min	30min	30min	30min
Baseline Level	66.5					
L _{Aeq}	65.7	66.7	67.8	66.8	66.7	64.0
L ₁₀	68.7	69.1	69.8	69.4	68.9	66.6
L ₉₀	61.0	63.4	65.2	60.3	61.3	58.5

Noise - NM2



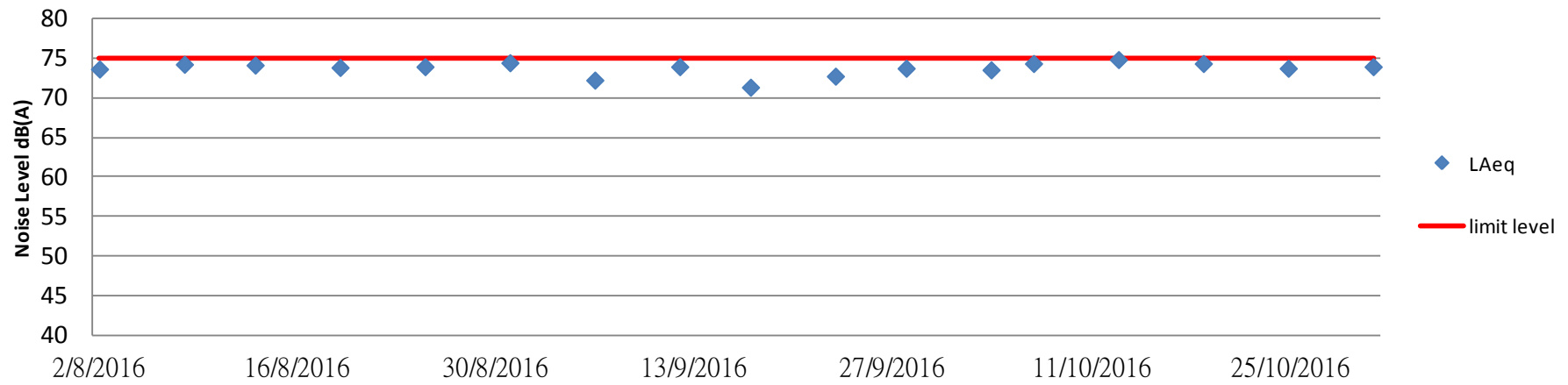
Noise Monitoring Result for NM3

Location	NM3					
Date	2/8/2016	8/8/2016	13/8/2016	19/8/2016	25/8/2016	31/8/2016
Weather Condition	Sunny	Sunny	Sunny	Overcast	Sunny	Overcast
Start Time	14:00	14:00	14:00	14:00	14:00	14:00
Measurement Period	30min	30min	30min	30min	30min	30min
Baseline Level	74.5					
L _{Aeq}	73.6	74.2	74.1	73.8	73.9	74.4
L ₁₀	76.4	75.7	76.6	75.0	75.6	76.6
L ₉₀	69.7	71.0	70.4	74.2	72.0	71.0

Location	NM3				
Date	6/9/2016	12/9/2016	17/9/2016	23/9/2016	28/9/2016
Weather Condition	Overcast	Overcast	Sunny	Sunny	Sunny
Start Time	14:00	14:00	14:00	14:00	14:00
Measurement Period	30min	30min	30min	30min	30min
Baseline Level	74.5				
L _{Aeq}	72.2	73.9	71.3	72.7	73.7
L ₁₀	75.5	76.0	74.3	75.5	75.8
L ₉₀	66.1	68.2	65.3	68.8	68.1

Location	NM3					
Date	4/10/2016	7/10/2016	13/10/2016	19/10/2016	25/10/2016	31/10/2016
Weather Condition	Sunny	Overcast	Sunny	Overcast	Sunny	Sunny
Start Time	15:47	10:34	15:17	10:09	14:38	10:30
Measurement Period	30min	30min	30min	30min	30min	30min
Baseline Level	74.5					
L _{Aeq}	73.5	74.3	74.8	74.3	73.7	73.9
L ₁₀	76.4	77.3	77.8	77.3	76.6	76.6
L ₉₀	68.0	69.0	69.4	69.6	69.8	68.3

Noise - NM3

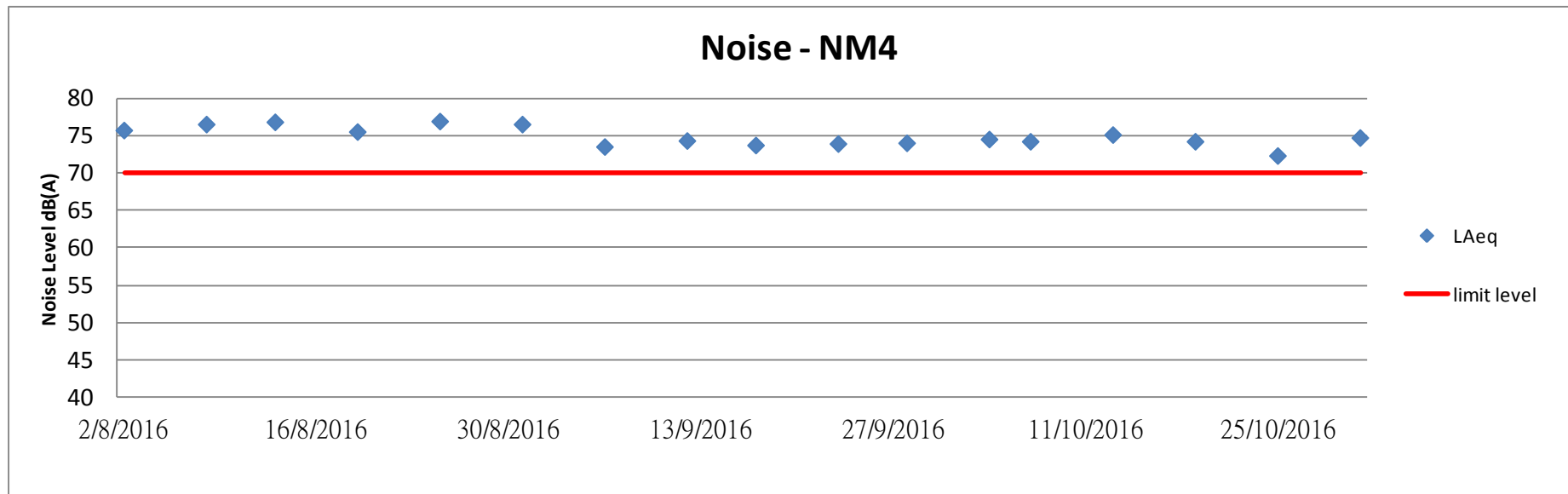


Noise Monitoring Result for NM4

Location	NM4						NM4 (Re-measurement) *					
Date	2/8/2016	8/8/2016	13/8/2016	19/8/2016	25/8/2016	31/8/2016	2/8/2016	8/8/2016	13/8/2016	19/8/2016	25/8/2016	31/8/2016
Weather Condition	Sunny	Sunny	Sunny	Overcast	Sunny	Overcast	Sunny	Sunny	Sunny	Overcast	Sunny	Overcast
Start Time	10:00	10:00	10:00	10:00	10:00	10:00	10:35	10:35	10:35	10:35	10:35	10:35
Measurement Period	30min	30min	30min	30min	30min	30min	30min	30min	30min	30min	30min	30min
Baseline Level	73.3						73.3					
L _{Aeq}	75.7	76.5	76.8	75.5	76.9	76.5	74.9	75.8	76.1	74.4	75.7	76.2
L ₁₀	78.6	79.0	79.2	78.1	79.8	78.7	78.1	79.0	78.8	78.3	77.9	79.3
L ₉₀	71.2	71.8	72.1	70.2	69.5	69.8	71.3	68.9	70.9	71.1	68.1	68.2

Location	NM4					NM4 (Re-measurement) *				
Date	6/9/2016	12/9/2016	17/9/2016	23/9/2016	28/9/2016	6/9/2016	12/9/2016	17/9/2016	23/9/2016	28/9/2016
Weather Condition	Overcast	Overcast	Sunny	Sunny	Sunny	Overcast	Overcast	Sunny	Sunny	Sunny
Start Time	10:00	10:00	10:00	10:00	10:00	10:35	10:35	10:35	10:35	10:35
Measurement Period	30min	30min	30min	30min	30min	30min	30min	30min	30min	30min
Baseline Level	73.3					73.3				
L _{Aeq}	73.5	74.3	73.7	73.9	74.0	74.1	73.8	74.4	73.4	73.6
L ₁₀	75.4	75.9	75.0	76.2	75.3	75.9	75.2	76.2	75.8	75.9
L ₉₀	68.4	69.1	67.4	67.2	66.9	69.3	68.3	68.1	67.3	67.1

Location	NM4						NM4 (Re-measurement) *					
Date	4/10/2016	7/10/2016	13/10/2016	19/10/2016	25/10/2016	31/10/2016	4/10/2016	7/10/2016	13/10/2016	19/10/2016	25/10/2016	31/10/2016
Weather Condition	Sunny	Overcast	Sunny	Overcast	Sunny	Sunny	Sunny	Overcast	Sunny	Overcast	Sunny	Sunny
Start Time	13:49	13:05	13:25	13:25	13:30	13:20	14:20	13:36	13:56	13:56	14:01	13:51
Measurement Period	30min	30min	30min	30min	30min	30min	30min	30min	30min	30min	30min	30min
Baseline Level	73.3						73.3					
L _{Aeq}	74.5	74.2	75.1	74.2	72.3	74.7	75.3	74.1	74.7	74.9	73.7	73.4
L ₁₀	77.2	77.3	77.9	76.7	76.1	77.1	76.9	77.9	77.3	77.3	76.0	76.8
L ₉₀	70.0	68.6	70.1	70.6	65.0	71.1	69.7	70.3	70.9	68.1	68.4	70.6



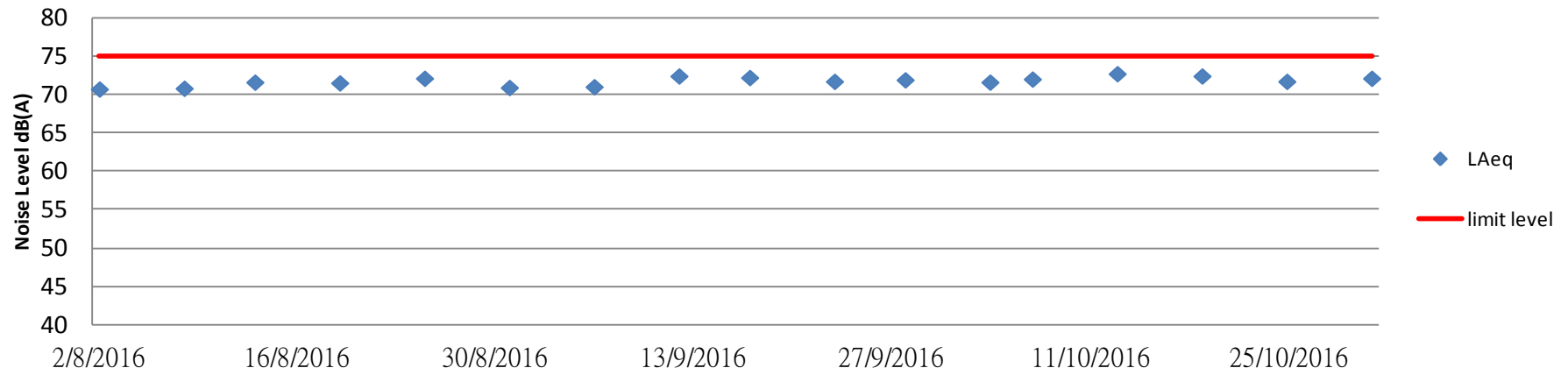
Noise Monitoring Result for NM5

Location	NM5					
Date	2/8/2016	8/8/2016	13/8/2016	19/8/2016	25/8/2016	31/8/2016
Weather Condition	Sunny	Sunny	Sunny	Overcast	Sunny	Overcast
Start Time	11:30	11:30	11:30	11:30	11:30	11:30
Measurement Period	30min	30min	30min	30min	30min	30min
Baseline Level	71.8					
L _{Aeq}	70.8	70.9	71.7	71.6	72.2	71.0
L ₁₀	73.4	74.5	74.6	74.2	74.4	73.6
L ₉₀	65.7	66.1	67.1	66.3	67.4	65.7

Location	NM5				
Date	6/9/2016	12/9/2016	17/9/2016	23/9/2016	28/9/2016
Weather Condition	Overcast	Overcast	Sunny	Sunny	Sunny
Start Time	11:30	11:30	11:30	11:30	11:30
Measurement Period	30min	30min	30min	30min	30min
Baseline Level	71.8				
L _{Aeq}	71.1	72.5	72.3	71.8	72.0
L ₁₀	74.2	73.5	74.6	73.7	73.9
L ₉₀	65.0	64.7	65.1	66.4	65.1

Location	NM5					
Date	4/10/2016	7/10/2016	13/10/2016	19/10/2016	25/10/2016	31/10/2016
Weather Condition	Sunny	Overcast	Sunny	Overcast	Sunny	Sunny
Start Time	15:05	14:21	14:41	14:41	14:46	14:36
Measurement Period	30min	30min	30min	30min	30min	30min
Baseline Level	71.8					
L _{Aeq}	71.7	72.1	72.8	72.5	71.8	72.2
L ₁₀	74.2	74.6	75.8	75.9	74.7	75.2
L ₉₀	66.2	65.5	67.1	67.1	66.0	66.4

Noise - NM5



Appendix F: Environmental Mitigation Implementation Schedule

Implementation Schedule for Environmental Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve	Implementation Status
Air Quality Impact (Construction Phase)								
4.8	A1	housekeeping to minimize dust generation, e.g. by properly handling and storing dusty materials	To minimize dust generation	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	✓
4.8	A2	Adopt dust control measures, such as dust suppression using water spray on exposed soil (at least 8 times per day), in areas with dusty construction activities and during material handling	To minimize dust generation due to erosion	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	✓
4.8	A3	Store cement bags in shelter with 3 sides and the top covered by impervious materials if the stack exceeds 20 bags	To prevent leakage of cement	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	N/A
4.8	A4	Maintain a reasonable height when dropping excavated materials to limit dust generation	To minimize dust generation during movement of excavated materials	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	✓
4.8	A5	Limit vehicle speed within site to 10km/hr and confine vehicle movement in haul road	To minimize dust generation due to traffic movement	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	✓

4.8	A6	Minimize exposed earth after completion of work in a certain area by hydroseeding, vegetating, soil compacting or covering with bitumen	To minimize dust generation due to erosion	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	#
4.8	A7	Provide wheel washing at site exit to clean the vehicle body and wheel	To prevent dust from being brought offsite	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	✓
4.8	A8	Hard pave the area at site exit with concrete, bitumen or hardcores	To prevent dust from being brought offsite	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	✓
4.8	A9	Cover materials on trucks before leaving the site to prevent debris from dropping during traffic movement or being blown away by wind	To prevent falling of debris during traffic movement and by wind	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	✓
4.8	A11	Regular maintenance of plant equipment to prevent black smoke emission	To minimize black smoke emission	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	✓
4.8	A12	Throttle down or switch off unused machines or machine in intermittent use	To minimize unnecessary emission	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	✓
4.8	A13	Carry out regular site inspection to audit the implementation of mitigation measures	To check the implementation status and effectiveness of mitigation measures	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO	✓

4.8	A14	Carry out air quality monitoring throughout the construction period	To monitor construction dust level	HyD's Contractor	At representative ASRs	Prior to and throughout construction phase	EIAO-TM	✓
Noise Impact (Construction Phase)								
3.8	N1	Adopt good site practice, such as regular maintenance of plant equipment, throttle down unused machines	To minimize construction noise level	HyD's Contractor	Whole construction site	Throughout construction phase	NCO,EIAO-TM	✓
3.8	N2	Use Quality Powered Mechanical Equipment (QPME) which produces lower noise level (e.g. Excavator/Loader (EPD-01431), Asphalt Paver (EPD-01226), Road Roller (EPD-00244) and Mobile Crane (EPD-01477))	To minimize construction noise level	HyD's Contractor	Whole construction site	Throughout construction phase	NCO,EIAO-TM	#
3.8	N3	Erect movable noise barrier at significant noise source(e.g. Concrete Pump, Concrete Lorry Mixer, Excavator/Loader, Road Sweeper, Asphalt Paver, Road Roller, Lorry, Breaker and Poker)	To lower noise transmission	HyD's Contractor	Whole construction site	Throughout construction phase	NCO,EIAO-TM	#
3.8	N5	Regular maintenance of plant equipment to prevent noise emission due to impair	To prevent noise emission due to impair	HyD's Contractor	Whole construction site	Throughout construction phase	NCO,EIAO-TM	✓
3.8	N6	Position mobile noisy equipment in location and direction away from NSR	To minimize noise transmission to NSR	HyD's Contractor	Whole construction site	Throughout construction phase	NCO,EIAO-TM	N/A

3.8	N7	Use silencer or muffler on plant equipment and should be properly maintained	To minimize noise transmission	HyD's Contractor	Whole construction site	Throughout construction phase	NCO,EIAO-TM	✓
3.8	N8	Throttle down or switch off unused machines or machine in intermittent use between work	To minimize noise production	HyD's Contractor	Whole construction site	Throughout construction phase	NCO,EIAO-TM	✓
3.8	N9	Make good use of stockpiles or other structures for noise screening	To minimize noise transmission	HyD's Contractor	Whole construction site	Throughout construction phase	NCO,EIAO-TM	N/A
3.8	N10	Avoid carrying out noisy activities at the same time	To minimize noise production	HyD's Contractor	Whole construction site	Throughout construction phase	NCO,EIAO-TM	✓
3.8	N11	Reduce the percentage on-time for some noisy PMEs	To minimize noise production	HyD's Contractor	Whole construction site	Throughout construction phase	NCO,EIAO-TM	✓
3.8	N12	Carry out noise monitoring	To monitor construction noise level	HyD's Contractor	At representative NSRs	Prior to and throughout construction phase	EIAO-TM	✓
Water Impact (Construction Phase)								
5.8	W1	Recirculate settled water for ground boring and drilling during site investigation or rock/soil anchoring.	To minimize wastewater generation	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
5.8	W2	Set up sedimentation tank for settling suspended solids in wastewater before discharge into storm drains. Sand/silt	To reduce the amount of suspended solid in wastewater	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	*

		removal facilities such as sand traps, silt traps and sedimentation basin should be provided with adequate capacity.						
5.8	W3	Pave the construction road between the wheel washing bay and the public road with backfall	To prevent soil and site runoff from leaving the site	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
5.8	W4	Follow ProPECC PN 1/94 "Construction Site Drainage" as far as practicable	To minimize surface runoff and chance of erosion	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
5.8	W5	Provide perimeter channels at site boundaries.	To stop offsite storm runoff from entering the site	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
5.8	W6	Construct catchpits and perimeter channels prior to commencement of site formation works and earthworks.	To stop runoff from flowing across the site	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
5.8	W7	Maintain silt removal facilities, channels, manholes before and after rainstorm.	To prevent failure that may lead to flooding	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	*
5.8	W8	Remove sediment from silt and grit at regular interval.	To prevent blockage the may lead to flooding	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
5.8	W9	Consider environmental requirements when diverting or realigning drainage.	To ensure adequate hydraulic capacity of all drains	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	*

5.8	W10	Maintain a minimum distance of 100m between discharge point of construction site runoff and the existing saltwater intakes. No effluent will be discharged into typhoon shelter. (for loations of seawater intakes, please refer to Figure 5.1 in EIA Report)	To prevent mixing	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
5.8	W11	Arrange soil excavation works outside rainy seasons (April to September) as far as possible. If this cannot beachieved, the following measures should be implemented:	To minimize surface runoff and chance of erosion	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	
		-Cover temporary exposed slope surfaces with impermeable materials, e.g. tarpaulin						#
		- Protect temporary access roads by crushed stone or gravel						✓
		- Proved intercepting channels along crest/edge of excavation						*
		- Carry out adequate surface protection measures well before the arrival of a rainstorm						*
5.8	W12	Compact soil after earthwork. Provide permanent work or surface protection with appropriate drainage channels immediately after forming the final surfaces.	To prevent soil erosion under rainstorm	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
5.8	W13	Prevent rainwater from entering trenches. Excavation of trenches should be dug and backfilled in short sections during rainy	To prevent soil erosion under rainstorm	HyD's Contractor	Whole Construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	*

		seasons. Remove silt in rainwater collected from the trenches or foundation excavations prior to discharge to storm drains.						
5.8	W14	Cover open stockpiles of construction materials (e.g. aggregates, sand and fill materials) with impermeable materials such as tarpaulin during rainstorms.	To prevent soil erosion under rainstorm	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
5.8	W15	Cover and temporary seal manholes (including newly constructed ones) to prevent silt, construction materials or debris and surface runoff from entering foul sewers.	To prevent overloading of foul sewers	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
5.8	W16	Remove waste from the site regularly.	To prevent waste accumulation	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
5.8	W17	Apply discharge license for effluent discharge. Treat the discharge to comply with the requirement in TM-DSS.	To ensure compliance with effluent discharge requirement	HyD's Contractor	Whole construction site	Throughout construction phase	WPCO,TM-DSS, EIAO-TM	✓
5.8	W18	Reuse treated effluent onsite, e.g. dust suppression, wheel washing and general cleaning.	To minimize wastewater generation	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	✓
5.8	W19	Monitor effluent water quality.	To ensure compliance with effluent discharge requirement	HyD's Contractor	Whole construction site	Throughout construction phase	WPCO, EIAO-TM	✓
5.8	W20	Register as chemical waste producer if chemical waste will be generated.	To control chemical waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal (Chemical Waste) (General)	✓

							Regulation, EIAO-TM	
5.8	W21	Perform maintenance of vehicles and equipment that have oil leakage and spillage potential on hard standings within a bunded area with sumps and oil interceptors.	To prevent oil leakage or spillage	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM	✓
5.8	W22	<p>Dispose chemical waste in accordance to Waste Disposal Ordinance. Follow the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i> ,examples as follows:</p> <ul style="list-style-type: none"> - Store chemical wastes with suitable containers to avoid leakage or spillage during storage, handling and transport - Label chemical waste containers according to the CoP to notify and warn the waste handlers - Store chemical wastes at designated safe location with adequate space 	To avoid accident in waste storage and handling	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	✓

5.8	W23	Provide sufficient chemical toilets with regular maintenance by licensed chemical waste collector	To proper collection of taskforce waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	✓
Water Impact (Operational Phase)								
5.8	W24	Direct surface runoff for silt removal through silt trap before flowing to public storm water drainage system	To remove silt in surface runoff	HyD	Whole construction site	Throughout construction phase	WPCO, EIAO-TM	✓
5.8	W25	Regularly maintain the silt traps	To prevent blockage	HyD	Whole construction site	Throughout construction phase	WPCO, EIAO-TM	✓
Waste Management (Construction Phase)								
6.5	WM1	Allocate an area for waste sorting and storage of C&D materials into the following categories for reuse, recycle or disposal: - excavated material suitable for reuse - inert C&D material for disposal offsite - non-inert C&D materials for disposal at landfills - chemical waste - general refuse	To minimize waste generation	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	#
6.5	WM2	Adopt good site practice as follows: - Provide training to workers on site cleanliness, waste management (waste	To proper handling of waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	*

		reduction, reuse and recycle) and chemical handling procedures - Provide sufficient waste collection points and regular removal - Cover waste materials with tarpaulin or in enclosure during transportation - Maintain drainage systems, sumps and oil interceptors - Sort out chemical waste for proper handling and treatment						
6.5	WM3	Adopt waste reduction measures as follows: - Allocate area/containers for sorting, recovering and storing waste for reuse, recycle or disposal (e.g. demolition debris and excavated materials, general refuse like aluminium cans) - Allocate area for proper storage of construction materials to prevent contamination - Minimize wastage through careful planning and avoiding over-purchase of construction materials	To minimize waste generation	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	✓
6.5	WM4	Prepare and implement a site specific Waste Management Plan (WMP) as part of Environmental Management Plan (EMP) in accordance with ETWB TCW No. 19/25. Detail waste management method in the form of avoidance, reuse, recovery,	To provide guidance to waste management	HyD's Contractor	Whole construction site	Throughout construction phase	ETWB TCW No. 19/2005, EIAO-TM	✓

		recycling, storage, collection, treatment and disposal according to the recommendations on the EIA and EM&A Manual. It should be approved by the ER and						
6.5	WM5	Store waste materials properly as follows: - Avoid contamination by proper handling and storing waste - Prevent erosion by covering waste or applying water spray - Maintain and clean storage area regularly - Sort and stockpile different materials at designated location to enhance reuse	To properly store waste	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	#
6.5	WM6	Apply for relevant waste disposal permits in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28).	To properly dispose waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28), EIAO-TM	✓

6.5	WM7	Hire licensed waste disposal contractors for waste collection and removal. Dispose waste at licensed waste disposal facilities	To properly dispose waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	✓
6.5	WM8	Implement trip-ticket system for recording the amount of waste generated, recycled and disposed, including chemical wastes	To monitor movement of waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal (Chemical Waste) (General) Regulation, Waste Disposal Ordinance, EIAO-TM	✓
6.5	WM9	Provide wheel washing bay at site exit to clean the vehicle body and wheel	To prevent dust from being brought offsite	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM	✓
6.5	WM10	Reduce water content in wet spoil generated from piling work by mixing with dry materials. Only dispose treated spoil with less than 25% dry density to Public Fill Reception Facilities	To minimize load to reception facilities	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	✓
6.5	WM11	Dispose dry waste or waste with less than 70% water content by weight to landfill	To minimize load to reception facilities	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	✓
6.5	WM12	Follow the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Waste</i> as follows: - Store chemical wastes with suitable	To avoid accident in waste storage and handling	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	✓

		<p>containers. Seal and maintain the container to avoid leakage or spillage during storage, handling and transport</p> <ul style="list-style-type: none"> - Label chemical waste containers in both English and Chinese with instructions in accordance to Schedule 2 of the Waste Disposal (Chemical Waste) (General) Regulation - The container capacity should be smaller than 450 litres unless agreed by the EPD 						
6.5	WM13	<p>Comply with the requirement of the chemical storage area:</p> <ul style="list-style-type: none"> - Store only chemical waste and label clearly the chemical characters of the waste - Have at least 3 sides enclosed and protected from rainfall with cover - Provide sufficient ventilation - Have impermeable floor and has bunds to contain 110% of the capacity of the largest container or 20% of the total volume of the stored waste in the area, whichever is larger - Adequately spaced incompatible materials 	To ensure proper storage of chemical waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	✓
6.5	WM14	<p>Transfer used lubricants, waste oils and other chemicals to oil recycling companies, if possible, and empty oil drums for reuse or refill. No direct or indirect discharge is permitted</p>	To ensure proper disposal of chemical waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM	N/A

6.5	WM15	Hire licensed chemical waste disposal contractors for waste collection and removal. Dispose chemical waste at the approved CWTC at Tsing Yi or other licensed facility	To ensure proper disposal of chemical waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM	N/A
6.5	WM16	Hire reputable waste collector to separately collect and dispose general refuse from other wastes. Cover the waste to prevent being blown away	To ensure proper disposal of general refuse	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM	✓
6.5	WM17	Provide recycling bins for sorting out recyclables for collection by recycling companies. Non-recyclables should be removed to designated landfills every day by licensed collectors to prevent environmental and health nuisance.	To ensure proper recycling and disposal of general refuse	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM	✓
6.5	WM18	Organize training and reminders to site staff on waste minimization through avoidance and reduction, reusing and recycling	To ensure proper management of general refuse	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM	✓
6.5	WM19	Carry out testing to verify sediment quantity and quality	To verify the categories of sediment to be disposed in accordance with ETWB TC(W) No. 34/2002	HyD's GI Contractor	Drillholes CB1 to 5 as shown in Sediment Sampling and Testing Plan	Throughout construction phase	ETWB TC(W) No. 34/2002	N/A

Landscape and Visual								
7.9.3	CM1	Shorten the construction period	To minimize duration of landscape and visual impact	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM	N/A
7.9.3	CM2	Limit work within site area without encroaching into the landscape resources offsite.	To minimize landscape and visual impact	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM	✓
7.9.3	CM3	Protect retained trees from damage during construction work according to the recommended in the detailed tree assessment report and the approval of Tree Removal Application under ETWB TCW No. 3/2006 Tree Preservation	To maintain and minimize damage to existing greenery	HyD's Contractor	Whole construction site	Throughout construction phase	ETWB TCW 3/2006, EIAOTM	✓
7.9.3	CM4	Transplant unavoidably affected trees wherever possible in accordance with ETWB TCW No. 3/2006 Tree Preservation. Maintain transplanted trees to ensure healthy development during the establishment period	To minimize tree loss and ensure survival of transplanted trees	HyD's Contractor	Whole construction site	Throughout construction phase	ETWB TCW 3/2006, EIAOTM	N/A
7.9.2.6	OM1	Carry out compensatory planting in areas proposed in the Tree Survey and Landscape and Greening Study Report in accordance to ETWB TCW 3/2006, which will be subjected to refinement in detailed design stage. Compensatory planting of a ratio no less than 1:1 in terms of quality and quantity will be provided for any potential tree	To compensate for loss greenery	HyD's Contractor	Whole construction site/Offsite	Construction phase	ETWB TCW 3/2006, EIAOTM	N/A

		felling within the site. Offsite planting may be required due to land constraint. 410 nos. of compensatory trees have been proposed						
7.9.2.6	OM2	Provide vertical greening at piers of elevated roads and shrub planting near amenity planting strips to soften the hard landscape (e.g. climber and shrub for hiding central divider and enclosures). Early comments from the ACABAS and relevant departments, implementation and maintenance agents shall be sought at the earlier stage.	To soften hard landscape	HyD's Contractor	Whole construction site	Construction phase	ETWB TCW 36/2004	N/A
7.9.2.6	OM3	Match the design and materials of road structure with the surrounding environment and with the schematic theme paving of the future West Kowloon Reclamation Development and the Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS)	To match with existing landscape character	HyD's Contractor	Whole construction site	Construction phase	ETWB TCW 36/2004	N/A

Remarks:

- ✓ Compliance of mitigation measure
- X Non-compliance of mitigation measure
- Non-compliance but rectified by the contractor
- * Recommendation was made during site audit but improved/rectified by the contractor
- # Waiting for improving/rectifying by the contractor
- N/A Not Applicable

Appendix G: Cumulative Log for Environmental Exceedance, Complaints,
Notification of Summons and Successful Prosecutions

Cumulative Log for Environmental Exceedance, Non-Compliance, Complaints, Notification of Summons and Successful Prosecution

Reporting Month	Number of Exceedance	Number of Non-Compliance	Number of Environmental Complaints	Number of Notification of Summons	Number of Successful Prosecutions
February 2016	0	0	0	0	0
March 2016	0	0	0	0	0
April 2016	0	0	2	0	0
May 2016	7	0	0	0	0
June 2016	11	0	0	0	0
July 2016	6	0	0	0	0
August 2016	6	0	0	0	0
September 2016	5	0	0	0	0
October 2016	6	1	0	0	0
Grand Total	41	1	2	0	0