


China State Construction Engineering (Hong Kong) Ltd.

Contract No. CV/2007/03

**Development at Anderson Road –
Site Formation and Associated
Infrastructure Works****Monthly EM&A Report for
November 2018**

January 2019

	Name	Signature
Prepared & Checked:	Alex Chan	Alex Chan
Reviewed, Approved & Certified:	Yiu Wah Fung (ETL)	

Version: 0

Date: 9 January 2019

Disclaimer

This report is prepared for China State Construction Engineering (Hong Kong) Ltd. and is given for its sole benefit in relation to and pursuant to Contract No. CV/2007/03 Development at Anderson Road – Site Formation and Associated Infrastructure Works and may not be disclosed to, quoted to or relied upon by any person other than China State Construction Engineering (Hong Kong) Ltd. without our prior written consent. No person (other than China State Construction Engineering (Hong Kong) Ltd.) into whose possession a copy of this report comes may rely on this report without our express written consent and China State Construction Engineering (Hong Kong) Ltd. may not rely on it for any purpose other than as described above.

AECOM Asia Co. Ltd.

11/F, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong.

Tel: (852) 3922 9000 Fax: (852) 2317 7609 www.aecom.com

Ref.: OAPANDSNEM00_0_2090L.19

8 January 2019

Engineer's Representative
Ove Arup & Partners
Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong

By Post and Fax: 2407 8382

Attention: Mr. YK Cheung

Dear Sir,

**Re: Contract No. CV/2007/03 (Environmental Permit No. EP-140/2002)
Development at Anderson Road
Site Formation and Associated Infrastructure Works
Monthly EM&A Report for November 2018**

Reference is made to the Environmental Team's submission of the draft Monthly EM&A Report for November 2018 received by e-mail on 8 January 2019 for our review and comment.

Please be informed that we have no adverse comment on the captioned submission. We write to verify the captioned submission in accordance with Condition 3.3 of the Environmental Permit No. EP-140/2002.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

Yours faithfully,



David Yeung
Independent Environmental Checker

c.c. AECOM Attn.: Mr. Y. W. Fung
 CSCEC Attn.: Mr. Holmes Wong

By Fax: 3922 9797
By Email

Q:\Projects\OAPANDSNEM00\Corr\OAPANDSNEM00_0_2090L.19.docx

Table of Content

	Page
EXECUTIVE SUMMARY	1
1 INTRODUCTION.....	4
1.1 Background	4
1.2 Scope of Report	4
1.3 Project Organization.....	4
1.4 Summary of Construction Works	5
1.5 Summary of EM&A Programme Requirements	6
2 AIR QUALITY MONITORING.....	7
2.1 Monitoring Requirements	7
2.2 Monitoring Equipment	7
2.3 Monitoring Locations	7
2.4 Monitoring Parameters, Frequency and Duration	8
2.5 Monitoring Methodology	8
2.6 Monitoring Schedule for the Reporting Month	10
2.7 Monitoring Results	11
3 NOISE MONITORING.....	12
3.1 Monitoring Requirements	12
3.2 Monitoring Equipment	12
3.3 Monitoring Locations	12
3.4 Monitoring Parameters, Frequency and Duration	13
3.5 Monitoring Methodology	13
3.6 Monitoring Schedule for the Reporting Month	14
3.7 Monitoring Results	14
4 ENVIRONMENTAL SITE INSPECTION AND AUDIT.....	15
4.1 Site Inspection.....	15
4.2 Advice on the Solid and Liquid Waste Management Status	16
4.3 Environmental Licenses and Permits.....	16
4.4 Implementation Status of Environmental Mitigation Measures.....	17
4.5 Summary of Exceedances of the Environmental Quality Performance Limit	17
4.6 Summary of Complaints, Notification of Summons and Successful Prosecutions	17
5 FUTURE KEY ISSUES	18
5.1 Construction Programme for the Coming Two Months.....	18
5.2 Key Issues for the Coming Two Months	18
5.3 Monitoring Schedule for the Coming Month	18
6 CONCLUSIONS AND RECOMMENDATIONS	19
6.1 Conclusions.....	19
6.2 Recommendations	20

List of Tables

Table 1.1	Contact Information of Key Personnel
Table 2.1	Air Quality Monitoring Equipment
Table 2.2	Locations of Air Quality Monitoring Stations
Table 2.3	Air Quality Monitoring Parameters, Frequency and Duration
Table 2.4	Summary of 1-hour TSP Monitoring Results in the Reporting Period
Table 2.5	Summary of 24-hour TSP Monitoring Results in the Reporting Period
Table 3.1	Noise Monitoring Equipment
Table 3.2	Locations of Impact Noise Monitoring Stations
Table 3.3	Noise Monitoring Parameters, Frequency and Duration
Table 3.4	Summary of Impact Noise Monitoring Results in the Reporting Period
Table 4.1	Summary of Environmental Licensing and Permit Status

List of Figures

Figure 1.1	General Layout Plan
Figure 2.1	Monitoring Locations

List of Appendices

Appendix A	Project Organization Structure
Appendix B	Implementation Schedule of Environmental Mitigation Measures
Appendix C	Summary of Action and Limit Levels
Appendix D	Calibration Certificates of Equipment
Appendix E	EM&A Monitoring Schedules
Appendix F	Air Quality Monitoring Results and their Graphical Presentations
Appendix G	Noise Monitoring Results and their Graphical Presentations
Appendix H	Meteorological Data for the Reporting Month
Appendix I	Event Action Plan
Appendix J	Cumulative Statistics on Exceedances, Complaints, Notification of Summons and Successful Prosecutions

EXECUTIVE SUMMARY

The Project “Development at Anderson Road – Site Formation and Associated Infrastructure Works” (hereafter called “the Project”) is proposed to form platforms for housing development and associated uses in area of about 20 hectares, and to carry out necessary infrastructural upgrading or improvement works to cater for the proposed development.

China State Construction Engineering (Hong Kong) Limited (CSCE) was commissioned as the Contractor of the Project. AECOM Asia Co. Ltd. (AECOM) was employed by CSCE as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) works for the Project.

The impact EM&A for the Project includes air quality and noise monitoring. The EM&A programme for Sau Ming Primary School (ID 4) and Sau Mau Ping Catholic Primary School (ID 5) commenced on 1 May 2008, while for Kwun Tong Government Secondary School (ID 1A), On Yat House (ID 2) and Sau Nga House (ID 3) commenced on 1 June 2008.

The monitoring stations ID 4 & ID 5 will serve both the entire Development of Anderson Road (Schedule 3 Designated Project (DP)) project as well as the Widening of Po Lam Road (Schedule 2 DP) project.

The construction for the Widening of Po Lam Road (Schedule 2 DP) project was commenced on 21 September 2011.

This report documents the findings of EM&A works for ID 1A, ID 2, ID 3, ID 4 and ID 5 conducted in the period between 1 and 30 November 2018. According to the Contractor, construction activities in the reporting period were:

- Site clearance works
- Defect rectification works
- Sprayed concrete for slope
- Rock mesh installation
- Construction of surface channel

Breaches of Action and Limit Levels for Air Quality

All 1-hour TSP and 24-hour TSP results were below the Action and Limit Levels in the reporting month.

Breaches of Action and Limit Levels for Noise

According to the information provided by the Contractor, no Action Level exceedance of noise was recorded since no noise related complaint was received in the reporting month.

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

Complaint, Notification of Summons and Successful Prosecution

According to the information provided by the Contractor, no environmental complaint and no notification of summons and successful prosecution were received in the reporting month.

Reporting Changes

There was no reporting change in the reporting month.

Future Key Issues

Key issues to be considered in the coming month included:-

- Properly store and label oil drums and chemical containers placed on site;
- Proper chemicals, chemical wastes and wastes management;
- Maintenance works should be carried out within roofed, paved areas with proper drainage system to handle run-off from maintenance works;
- Collection and segregation of construction waste and general refuse should be carried out properly and regularly;
- Site runoff should be properly collected and treated prior to discharge;
- Regular review and maintenance of drainage systems and desilting facilities;
- Exposed slopes/soil stockpiles should be properly treated to avoid generation of silty surface run-off during rainstorm;
- Proper mitigation measures should be provided to avoid relocation of treated contaminated soil;
- Regular review and maintenance of wheel washing facilities provided at all site entrances/exits;
- Suppress dust generated from work processes with use of bagged cements, earth movements, drilling works, breaking works, excavation activities, exposed areas/slopes/soil stockpiles and haul road traffic;
- Conduct regular inspection of the working machineries within works area to avoid any dark smoke emission and oil leakage;
- Quieter powered mechanical equipment should be used;
- Provision of proper and effective noise control measures, such as erection of movable noise barriers during blasting, breaking and drilling works and at crushing plant works area and provision of acoustic material wrapping to breaking tips of breakers; and
- Proper protection and regular inspection of existing trees, transplanted/retained trees.

1 INTRODUCTION

1.1 Background

- 1.1.1 The Project site is located in the East Kowloon District. It is bounded by Anderson Road to the north, the realigned Sau Mau Ping Road to the south, Po Lam Road to the east, and Lee On Road and Shun On Road to the west.
- 1.1.2 The objective of the Project “Development at Anderson Road Site Formation and Associated Infrastructure Works” under Contract CV/2007/03 (hereafter called “the Project”) is to provide land for constructing public housing and government and public facilities. The development will provide 16,100 public housing units for 48,000 people in phases between 2015 and 2016.
- 1.1.3 The scope of works of this Project includes construction of site formation, roads, drains and upgrading of existing infrastructure to provide usable land of about 20 hectares for housing and associated government, institution or community uses at the site between existing Anderson Road Quarry and Sau Mau Ping Road in Kwun Tong District.
- 1.1.4 The Project was anticipated to be completed in the fourth quarter of 2016.
- 1.1.5 Part of the Project involving widening of existing Po Lam Road is a designated project and is governed by an Environmental Permit (EP) EP-140/2002, while the rest of the Project is non-designated. Baseline monitoring covering the entire Project site was undertaken and baseline monitoring report was prepared prior to commencement of construction of the Project in accordance with Conditions 3.2 and 3.4 of the EP (EP-140/2002) and the Environmental Monitoring and Audit (EM&A) Manual. The construction for the Widening of Po Lam Road was commenced on 21 September 2011.
- 1.1.6 According to the EP and the EM&A Manual of the Project, there is a need of an EM&A programme including air quality and noise monitoring.
- 1.1.7 The EM&A programme for Sau Ming Primary School (ID 4) and Sau Mau Ping Catholic Primary School (ID 5) commenced on 1 May 2008, while for Kwun Tong Government Secondary School (ID 1A), On Yat House (ID 2) and Sau Nga House (ID 3) commenced on 1 June 2008.
- 1.1.8 The monitoring stations ID 4 & ID 5 will serve both the entire Development of Anderson Road (Schedule 3 Designated Project (DP)) project as well as the Widening of Po Lam Road. (Schedule 2 DP) project.
- 1.1.9 AECOM Asia Co. Ltd. (AECOM) was employed by the Contractor, China State Construction Engineering (Hong Kong) Limited (CSCE), as the Environmental Team (ET) to undertake the EM&A works for the Project. In accordance with the EM&A Manual of the Project, environmental monitoring of air quality, noise and environmental site inspections would be required for this Project.

1.2 Scope of Report

- 1.2.1 This is the 135th monthly EM&A Report under the Contract CV/2007/03 - Development at Anderson Road – Site Formation and Associated Infrastructure Works. This report presents a summary of the environmental monitoring and audit works, list of activities and mitigation measures proposed by the ET for the Project in November 2018 for ID 1A, ID 2, ID 3, ID 4 and ID 5.

1.3 Project Organization

- 1.3.1 The project organization structure is shown in Appendix A. The key personnel contact names and numbers are summarized in Table 1.1.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
ER (Ove Arup)	Resident Engineer	Yu Kit CHEUNG	2407 0300	2407 8382
	Assistant Resident Engineer	Brendon LEE	2407 0300	2407 8382
IEC (Ramboll)	Independent Environmental Checker	David Yeung	3465 2888	3465 2899
Contractor (CSCE)	Site Agent	Holmes Wong	2704 2095	2702 6553
	Safety and Environmental Officer	Raymond Ma	6221 9331	2702 6553
ET (AECOM)	ET Leader	Yiu Wah Fung	3922 9366	2317 7609

1.4 Summary of Construction Works

1.4.1 According to the Contractor, the Contractor has carried out the following major activities in the reporting month:

- Site clearance works
- Defect rectification works
- Sprayed concrete for slope
- Rock mesh installation
- Construction of surface channel

1.4.2 The general layout plan of the Project site showing the contract area is shown in Figure 1.1.

1.4.3 The environmental mitigation measures implementation schedule are presented in Appendix B.

1.5 Summary of EM&A Programme Requirements

1.5.1 The EM&A programme required environmental monitoring for air quality, noise and environmental site inspections for air quality, noise, water quality, chemical and waste management. The EM&A requirements for each parameter described in the following sections include:-

- All monitoring parameters;
- Monitoring schedules for the reporting month and forthcoming months;
- Action and Limit levels for all environmental parameters;
- Event / Action Plan;
- Environmental mitigation measures, as recommended in the Project EIA study final report; and
- Environmental requirement in contract documents.

2 AIR QUALITY MONITORING

2.1 Monitoring Requirements

2.1.1 In accordance with the EM&A Manual, 1-hour and 24-hour TSP levels at 5 air quality monitoring stations were established. Impact 1-hour TSP monitoring was conducted for at least three times every 6 days, while impact 24-hour TSP monitoring was carried out for at least once every 6 days. The Action and Limit level of the air quality monitoring is provided in Appendix C.

2.2 Monitoring Equipment

2.2.1 24-hour TSP air quality monitoring was performed using High Volume Sampler (HVS) located at each designated monitoring station. The HVS meets all the requirements of the EM&A Manual. Portable direct reading dust meters were used to carry out the 1-hour TSP monitoring. Brand and model of the equipment is given in Table 2.1.

Table 2.1 Air Quality Monitoring Equipment

Equipment	Brand and Model
Portable direct reading dust meter (1-hour TSP)	Sibata Digital Dust Monitor (Model No. LD-3 and LD-3B)
High Volume Sampler (24-hour TSP)	Tisch Total Suspended Particulate Mass Flow Controlled High Volume Air Sampler (Model No. TE-5170) & Graseby High Volume TSP Sampler (Model No. GMW 2310)
Calibration Kit for High Volume Sampler	Orifice (Model No. TE-5025A)

2.3 Monitoring Locations

2.3.1 Monitoring stations, ID 2, ID 3, ID 4 and ID 5, were set up at the proposed locations in accordance with EM&A Manual, while monitoring station, ID 1A, was set up at a location agreed by the ER and IEC. Figure 2.1 shows the locations of the monitoring stations. Table 2.2 describes the details of the monitoring stations.

Table 2.2 Locations of Air Quality Monitoring Stations

ID	Location	Monitoring Station
1A	Kwun Tong Government Secondary School	Roof top of the premises facing Anderson Road
2	On Yat House	Roof top of the premises facing Lee On Road
3	Sau Nga House	Roof top of the premises facing Sau Mau Ping Road
4	Sau Ming Primary School	Roof top of the premises
5	Sau Mau Ping Catholic Primary School	Roof top of the premises

2.4 Monitoring Parameters, Frequency and Duration

2.4.1 Table 2.3 summarizes the monitoring parameters, frequency and duration of impact TSP monitoring.

Table 2.3 Air Quality Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter	Frequency and Duration
ID 1A, ID 2, ID 3, ID 4 & ID5	1-hour TSP	At least 3 times every 6 days
	24-hour TSP	At least once every 6 days

2.5 Monitoring Methodology

2.5.1 24-hour TSP Monitoring

- (a) The HVS was installed in the vicinity of the air sensitive receivers. The following criteria were considered in the installation of the HVS:-
- (i) A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
 - (ii) The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
 - (iii) A minimum of 2 meters separation from walls, parapets and penthouse for rooftop sampler.
 - (iv) A minimum of 2 meters separation from any supporting structure, measured horizontally is required.
 - (v) No furnace or incinerator flues nearby.
 - (vi) Airflow around the sampler was unrestricted.
 - (vii) Permission was obtained to set up the samplers and access to the monitoring stations.
 - (viii) A secured supply of electricity was obtained to operate the samplers.
 - (ix) The sampler was located more than 20 meters from any dripline.
 - (x) Any wire fence and gate, required to protect the sampler, did not obstruct the monitoring process.
 - (xi) Flow control accuracy was kept within $\pm 2.5\%$ deviation over 24-hour sampling period.
- (b) Preparation of Filter Papers
- (i) Glass fibre filters, G810 were labelled and sufficient filters that were clean and without pinholes were selected.
 - (ii) All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was < 50% and not variable by more than $\pm 5\%$. A convenient working RH was 40%.
 - (iii) All filter papers were prepared and analysed by ALS Technichem (HK) Pty Ltd., which is a HOKLAS accredited laboratory and has comprehensive quality assurance and quality control programmes.

(c) Field Monitoring

- (i) The power supply was checked to ensure the HVS works properly.
- (ii) The filter holder and the area surrounding the filter were cleaned.
- (iii) The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
- (iv) The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
- (v) The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied was sufficient to avoid air leakage at the edges.
- (vi) Then the shelter lid was closed and was secured with the aluminium strip.
- (vii) The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
- (viii) A new flow rate record sheet was set into the flow recorder.
- (ix) On site temperature and atmospheric pressure readings were taken and the flow rate of the HVS was checked and adjusted at around 1.3 m³/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m³/min).
- (x) The programmable digital timer was set for a sampling period of 24 hrs, and the starting time, weather condition and the filter number were recorded.
- (xi) The initial elapsed time was recorded.
- (xii) At the end of sampling, on site temperature and atmospheric pressure readings were taken and the final flow rate of the HVS was checked and recorded.
- (xiii) The final elapsed time was recorded.
- (xiv) The sampled filter was removed carefully and folded in half-length so that only surfaces with collected particulate matter were in contact.
- (xv) It was then placed in a clean plastic envelope and sealed.
- (xvi) All monitoring information was recorded on a standard data sheet.
- (xvii) Filters were then sent to ALS Technichem (HK) Pty Ltd. for analysis.

(d) Maintenance and Calibration

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

2.5.2 1-hour TSP Monitoring

(a) Measuring Procedures

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

- (i) Turn the power on.
- (ii) Close the air collecting opening cover.
- (iii) Push the "TIME SETTING" switch to [BG].
- (iv) Push "START/STOP" switch to perform background measurement for 6 seconds.
- (v) Turn the knob at SENSI ADJ position to insert the light scattering plate.
- (vi) Leave the equipment for 1 minute upon "SPAN CHECK" is indicated in the display.
- (vii) Push "START/STOP" switch to perform automatic sensitivity adjustment. This measurement takes 1 minute.
- (viii) Pull out the knob and return it to MEASURE position.
- (ix) Push the "TIME SETTING" switch the time set in the display to 3 hours.
- (x) Lower down the air collection opening cover.
- (xi) Push "START/STOP" switch to start measurement.

(b) Maintenance and Calibration

- (i) The 1-hour TSP meter was calibrated at 1-year intervals against a continuous particulate TEOM Monitor, Series 1400ab. Calibration certificates of the Laser Dust Monitors are provided in Appendix D.

2.6 Monitoring Schedule for the Reporting Month

2.6.1 The schedule for environmental monitoring in November 2018 is provided in Appendix E.

2.7 Monitoring Results

2.7.1 The monitoring results for 1-hour TSP and 24-hour TSP are summarized in Tables 2.4 and 2.5 respectively. Detailed air quality monitoring results are presented in Appendix F.

Table 2.4 Summary of 1-hour TSP Monitoring Results in the Reporting Period

	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
ID 1A	60.6	58.5 – 63.4	201.5	500
ID 2	60.2	56.1 – 64.2	197.0	500
ID 3	61.7	58.7 – 63.6	203.7	500
ID 4	60.5	57.0 – 63.9	264.6	500
ID 5	61.1	58.2 – 63.5	267.4	500

Table 2.5 Summary of 24-hour TSP Monitoring Results in the Reporting Period

	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
ID 1A	28.3	11.6 – 65.2	170.2	260
ID 2	38.9	16.0 – 54.0	200.0	260
ID 3	39.2	22.3 – 59.9	200.0	260
ID 4	41.5	22.2 – 76.7	181.3	260
ID 5	36.7	11.3 – 62.0	180.8	260

2.7.2 All 1-hour TSP and 24-hour TSP results were below the Action and Limit Levels in the reporting month.

2.7.3 The event action plan is annexed in Appendix I.

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

2.7.5 Weather information including wind speed and wind direction is annexed in Appendix H. The information was obtained from Hong Kong Observatory Tseung Kwan O Automatic Weather Station and Anemometer Station.

3 NOISE MONITORING

3.1 Monitoring Requirements

3.1.1 In accordance with the EM&A Manual, impact noise levels should be obtained at 5 noise monitoring stations. Impact noise monitoring was conducted for at least once per week during the construction phase of the Project. The Action and Limit level of the noise monitoring is provided in Appendix C.

3.2 Monitoring Equipment

3.2.1 Noise monitoring was performed using sound level meter at each designated monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator was deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in Table 3.1.

Table 3.1 Noise Monitoring Equipment

Equipment	Brand and Model
Integrated Sound Level Meter	B&K (Model No. 2238 and 2250-L)
Acoustic Calibrator	B&K (Model No. 4231)

3.3 Monitoring Locations

3.3.1 Monitoring stations, ID 2, ID3, ID 4 and ID 5, were set up at the proposed locations in accordance with EM&A Manual, while monitoring station, ID 1A, was set up at a location agreed by the ER and IEC. Figure 2.1 shows the locations of the monitoring stations. Table 3.2 describes the details of the monitoring stations.

Table 3.2 Locations of Impact Noise Monitoring Stations

ID	Location	Monitoring Station
1A	Kwun Tong Government Secondary School	1m from the exterior of the roof top façade of the premises facing Anderson Road
2	On Yat House	1m from the exterior of the roof top façade of the premises facing Lee On Road
3	Sau Nga House	1m from the exterior of the roof top façade of the premises facing Sau Mau Ping Road
4	Sau Ming Primary School	1m from the exterior of the roof top façade of the premises facing Sau Mau Ping Road
5	Sau Mau Ping Catholic Primary School	1m from the exterior of the roof top façade of the premises facing Po Lam Road

3.4 Monitoring Parameters, Frequency and Duration

3.4.1 Table 3.3 summarizes the monitoring parameters, frequency and duration of impact noise monitoring.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter and Duration	Frequency
ID 1A, ID 2, ID 3, ID 4 & ID5	30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays. L_{eq} , L_{10} and L_{90} would be recorded.	At least once per week

3.5 Monitoring Methodology

3.5.1 Monitoring Procedure

- (a) The sound level meter was set on a tripod at a height of 1.2 m above the ground.
- (b) Façade measurements were made at all monitoring locations.
- (c) The battery condition was checked to ensure the correct functioning of the meter.
- (d) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - (i) frequency weighting: A
 - (ii) time weighting: Fast
 - (iii) time measurement: $L_{eq(30\text{-minutes})}$ during non-restricted hours i.e. 07:00 – 1900 on normal weekdays; $L_{eq(5\text{-minutes})}$ during restricted hours i.e. 19:00 – 23:00 and 23:00 – 07:00 of normal weekdays, whole day of Sundays and Public Holidays
- (e) Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB (A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- (f) During the monitoring period, the L_{eq} , L_{10} and L_{90} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- (g) Noise measurement was paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.
- (h) Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

3.5.2 Maintenance and Calibration

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

3.6 Monitoring Schedule for the Reporting Month

3.6.1 The schedule for environmental monitoring in November 2018 is provided in Appendix E.

3.7 Monitoring Results

3.7.1 The monitoring results for noise are summarized in Table 3.4 and the monitoring data is provided in Appendix G.

Table 3.4 Summary of Impact Noise Monitoring Results in the Reporting Period

	Average, dB(A), L_{eq} (30 mins)	Range, dB(A), L_{eq} (30 mins)	Limit Level, dB(A), L_{eq} (30 mins)
ID 1A	54.6	44.5 – 58.5	*65/70
ID 2	58.2	54.4 – 60.7	75
ID 3	61.3	52.6 – 64.1	75
ID 4	58.3	49.4 – 63.5	*65/70
ID 5	59.3	55.6 – 60.1	*65/70

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

3.7.2 According to the information provided by the Contractor, no Action Level exceedance of noise was recorded since no noise related complaint was received in the reporting month.

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

3.7.4 The event action plan is annexed in Appendix I.

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

4 ENVIRONMENTAL SITE INSPECTION AND AUDIT

4.1 Site Inspection

4.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. In the reporting month, 5 site inspections were carried out on 1, 9, 16, 23 and 30 November 2018. Particular observations and status of non-compliance are described below.

4.1.2 The Contractor rectified most of the observations as identified during the environmental site inspections in the reporting month within the agreed time frame, excepted one outstanding finding was observed in on 16 November 2018.

4.1.3 U-channel blocked by soil and general refuse was observed in Lee On Road on 16 November 2018. The Contractor was advised to keep the U-channel clear of waste. The blockage of U-channel was observed on 23 November 2018, so outstanding was defined. This item was rectified on 30 November 2018.

4.1.4 Air Quality Impact

- Dusty work was carried without dust control measure was observed. The Contractor was advised to implement water spray during dusty work.
- Silt was observed in the road near construction site. The Contractor was advised to spray water to prevent dust spread.

4.1.5 Construction Noise Impact

- No specific observation was identified in the reporting month.

4.1.6 Water Quality Impact

- Drainage system blocked by general refuse and construction waste were observed. The Contractor was advised to keep the drainage system clear of waste.

4.1.7 Chemical and Waste Management

- Drainage system blocked by general refuse and construction waste were observed. The Contractor was advised to keep the drainage system clear of waste.
- Improper storage of general refuse was observed. The Contractor was advised to remove the general refuse.
- General refuse and construction waste spread in the construction site was observed. The Contractor was advised to improve the site tidiness.

4.1.8 Landscape and Visual Impact

- No specific observation was identified in the reporting month.

4.1.9 Miscellaneous

- General refuse spread in the construction site was observed. The Contractor was advised to improve the site tidiness.
- Improper storage of construction material was observed. The Contractor was advised to remove the construction material.

4.2 Advice on the Solid and Liquid Waste Management Status

4.2.1 The Contractor is registered as a chemical waste producer for this Project. C&D materials and wastes sorting were carried out on site. Receptacles were available for C&D wastes and general refuse collection.

4.2.2 As advised by the Contractor, 0 tonnes of C&D materials were generated on site in the reporting month.

For C&D waste, 0 kg of metals was generated and collected by registered recycling collector. 0 kg of paper cardboard packaging and 0 kg of plastics were generated on site and collected by registered recycling collector. No chemical waste was collected by licensed chemical waste collectors. 0 kg of other types of wastes (e.g. general refuse and tree debris) were generated on site and disposed of at North East New Territories (NENT) Landfill.

4.2.3 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.

4.2.4 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.

4.3 Environmental Licenses and Permits

4.3.1 The environmental licenses and permits for this Project and valid in the reporting month is summarized in Table 4.1.

Table 4.1 Summary of Environmental Licensing and Permit Status

Statutory Reference	Description	Permit No.	Valid Period		Remarks
			From	To	
EIAO	Environmental Permit	EP-140/2002	--	--	- Widening of a section of Po Lam Road
		EP-483/2013	--	--	- Operation of a widened Po Lam Road
APCO	NA notification	--	16/04/09	--	- Whole Construction Site
WPCO	Discharge Licence	WT0002359 3-2016	22/02/16	31/08/19	- Discharge of Construction Runoff
WDO	Chemical Waste Producer Registration	5213-292- C3249-32	19/03/08	--	- Whole Construction Site
	Waste Charges Account	7006839	12/03/08	--	- Whole Construction Site

4.4 Implementation Status of Environmental Mitigation Measures

- 4.4.1 The Contractor rectified most of the observations as identified during the environmental site inspections in the reporting month within the agreed time frame, excepted one outstanding finding was observed in on 16 November 2018. This item was rectified on 30 November 2018.
- 4.4.2 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in Appendix B. Many necessary mitigation measures were implemented properly.

4.5 Summary of Exceedances of the Environmental Quality Performance Limit

- 4.5.1 All 1-hour TSP and 24-hour TSP results were below the Action and Limit Levels in the reporting month.
- 4.5.2 According to the information provided by the Contractor, no Action Level exceedance of noise was recorded since no noise related complaint was received in the reporting month.
- 4.5.3 No Limit Level exceedance of noise was recorded at all monitoring stations in the reporting month.
- 4.5.4 Cumulative statistics on exceedances is provided in Appendix J.

4.6 Summary of Complaints, Notification of Summons and Successful Prosecutions

- 4.6.1 Complaints shall be referred to the ET Leader for action. The ET Leader shall undertake the following procedures upon receipt of any complaint:-
- Log complaint and date of receipt onto the complaint database and inform the IC(E) immediately;
 - Investigate the complaint to determine its validity, and assess whether the source of the problem is due to works activities;
 - Identify mitigation measures in consultation with the IC(E) if a complaint is valid and due to works;
 - Advise the Contractor if additional mitigation measures are required;
 - Review the Contractor's response to identified mitigation measures, and the updated situation;
 - If the complaint is transferred from EPD, submit interim report to EPD on status of the complaint investigation and follow-up action within the time frame assigned by EPD;
 - Undertake additional monitoring and audit to verify the situation if necessary, and review that circumstances leading to the complaint to not recur;
 - Report investigation results and subsequent actions to complainant (if the source of complaint is EPD, the results should be reported within the time frame assigned by EPD); and
 - Record the complaint, investigation, the subsequent actions and the results in the monthly EM&A reports.
- 4.6.2 During any complaint investigation work, the Contractor and the ER shall cooperate with the ET Leader in providing all necessary information and assistance for completion of the investigation. If mitigation measures are identified in the investigation, the Contractor shall promptly carry out the mitigation. The ER shall ensure that all necessary measures have been carried out by the Contractor.
- 4.6.3 Referring to the information provided by the Contractor, no environmental complaint and no notification of summons and successful prosecution were received in the reporting month.
- 4.6.4 Cumulative statistics on complaints, notification of summons and successful prosecutions is provided in Appendix J.

5 FUTURE KEY ISSUES

5.1 Construction Programme for the Coming Two Months

5.1.1 The major construction works in December 2018 and January 2019 will be:

- Site clearance works
- Defect rectification works
- Construction of surface channel
- Sprayed concrete for slope
- Rock mesh installation

5.2 Key Issues for the Coming Two Months

5.2.1 Key issues to be considered in the coming months included:

- Properly store and label oil drums and chemical containers placed on site;
- Proper chemicals, chemical wastes and wastes management;
- Maintenance works should be carried out within roofed, paved areas with proper drainage system to handle run-off from maintenance works;
- Collection and segregation of construction waste and general refuse should be carried out properly and regularly;
- Site runoff should be properly collected and treated prior to discharge;
- Regular review and maintenance of drainage systems and desilting facilities;
- Exposed slopes/soil stockpiles should be properly treated to avoid generation of silty surface run-off during rainstorm;
- Proper mitigation measures should be provided to avoid relocation of treated contaminated soil;
- Regular review and maintenance of wheel washing facilities provided at all site entrances/exits;
- Suppress dust generated from work processes with use of bagged cements, earth movements, drilling works, breaking works, excavation activities, exposed areas/slopes/soil stockpiles and haul road traffic;
- Conduct regular inspection of the working machineries within works area to avoid any dark smoke emission and oil leakage;
- Quieter powered mechanical equipment should be used;
- Provision of proper and effective noise control measures, such as erection of movable noise barriers during blasting, breaking and drilling works and at crushing plant works area and provision of acoustic material wrapping to breaking tips of breakers; and
- Proper protection and regular inspection of existing trees, transplanted/retained trees.

5.3 Monitoring Schedule for the Coming Month

5.3.1 The tentative schedule for environmental monitoring in December 2018 is provided in Appendix E.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

- 6.1.1 The construction phase of the project commenced in May 2008.
- 6.1.2 1-hour TSP, 24-hour TSP and noise monitoring were carried out in the reporting month.
- 6.1.3 All 1-hour TSP and 24-hour TSP results were below the Action and Limit Levels in the reporting month.
- 6.1.4 No Action Level exceedance of noise was recorded at all monitoring stations in the reporting month.
- 6.1.5 No Limit Level exceedance of noise was recorded at all monitoring stations in the reporting month.
- 6.1.6 Environmental site inspections were carried out 5 times in November 2018. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit. Most of the identified items were rectified within one week excepted one outstanding finding was observed in on 16 November 2018. This item was rectified on 30 November 2018.
- 6.1.7 According to the information provided by the Contractor, no environmental complaint and no notification of summons and successful prosecution were received in the reporting month.

6.2 Recommendations

6.2.1 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:-

6.2.2 Air Quality Impact

- The Contractor was advised to implement water spray during dusty work.
- The Contractor was advised to spray water to prevent dust spread.

6.2.3 Construction Noise Impact

- No specific observation was identified in the reporting month.

6.2.4 Water Quality Impact

- The Contractor was advised to keep the drainage system clear of waste.

6.2.5 Chemical and Waste Management

- The Contractor was advised to keep the drainage system clear of waste.
- The Contractor was advised to remove the improper stored general refuse.
- The Contractor was advised to improve the site tidiness.

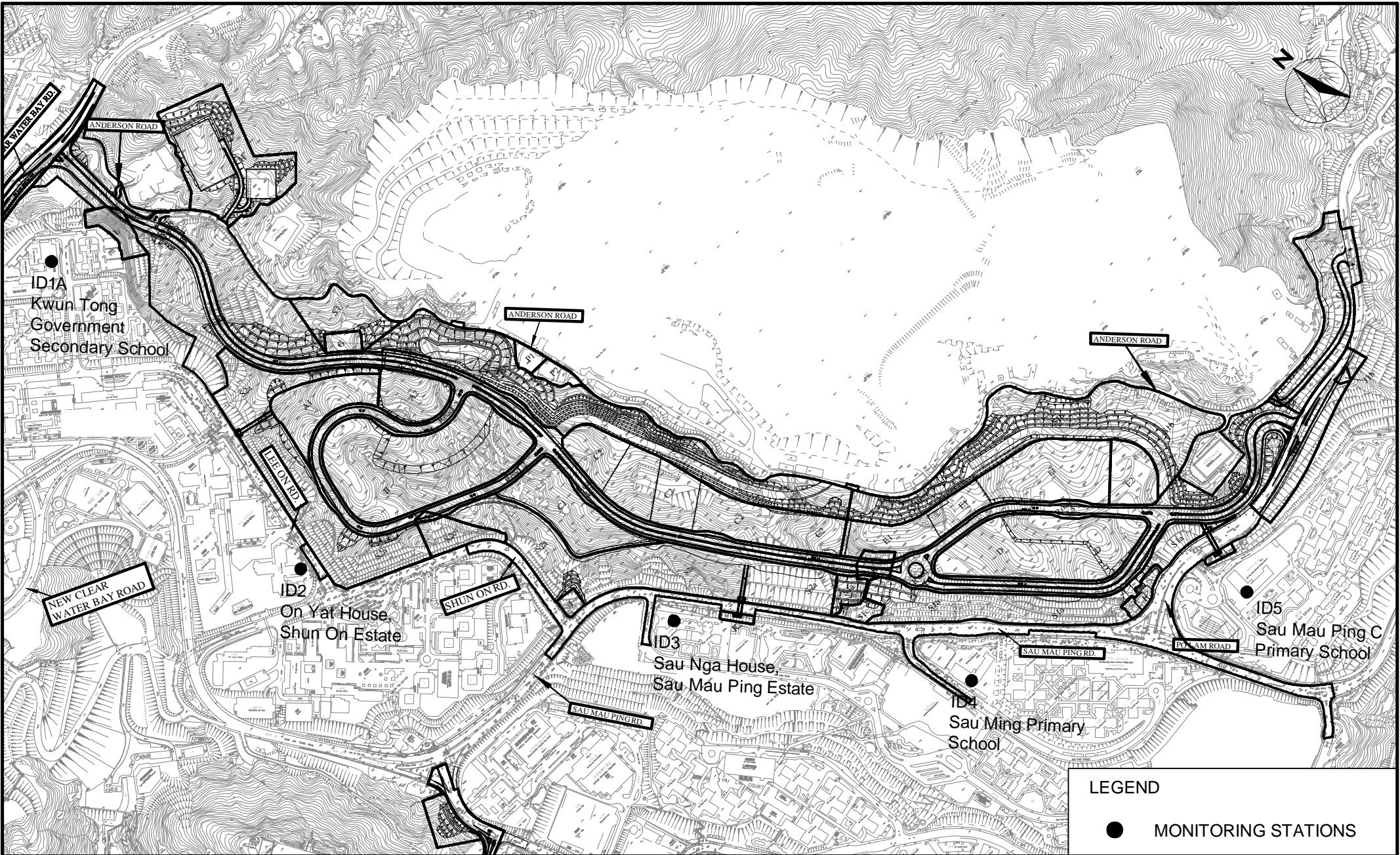
6.2.6 Landscape and Visual Impact

- No specific observation was identified in the reporting month.

6.2.7 Miscellaneous

- The Contractor was advised to improve the housekeeping and site tidiness.
- The Contractor was advised to remove the construction material.

FIGURES



LEGEND			
●	MONITORING STATIONS		

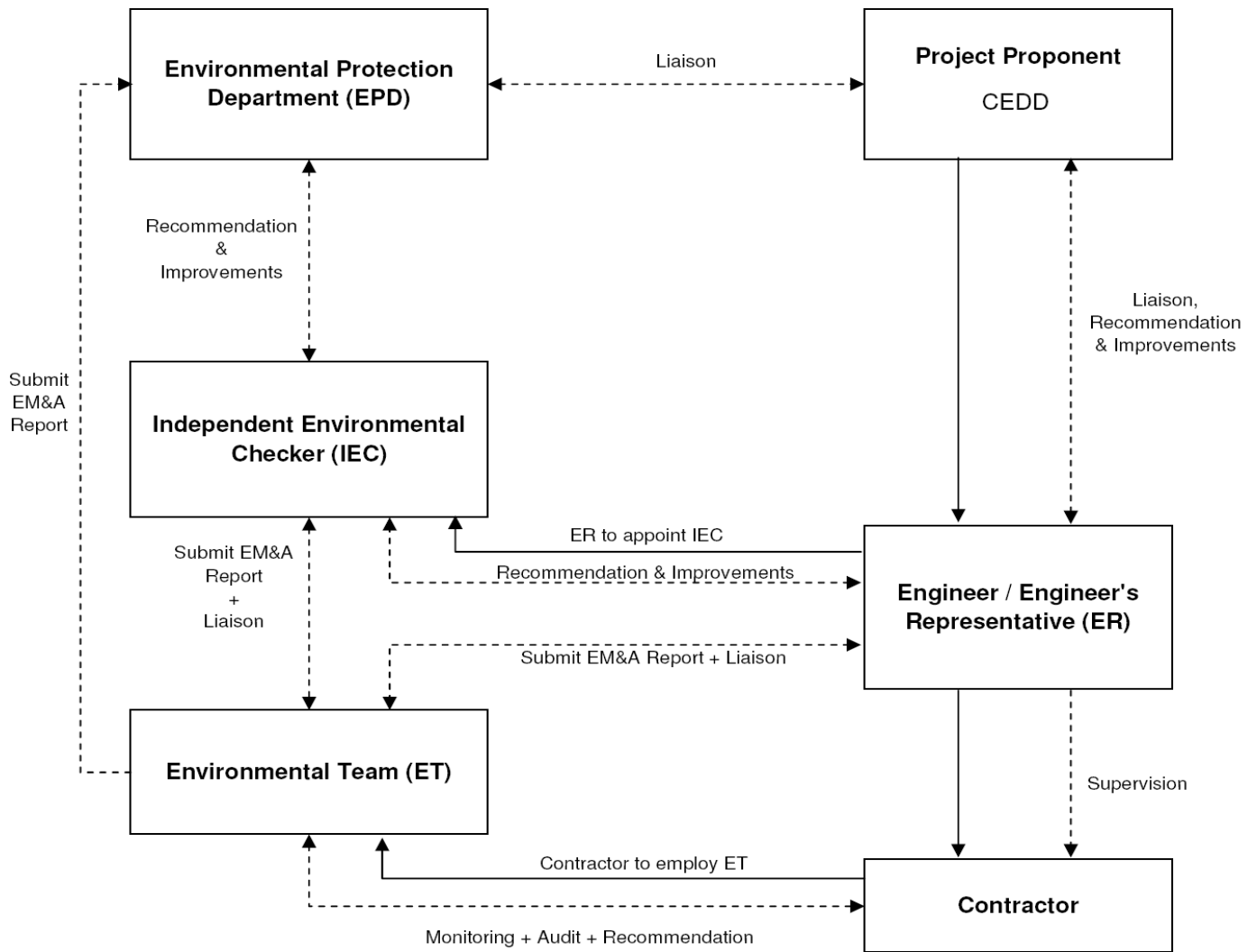


DEVELOPMENT AT ANDERSON ROAD
SITE FORMATION AND ASSOCIATED INFRASTRUCTURE WORKS
MONITORING LOCATIONS

SCALE	N.T.S.	DATE	APR 08
CHECK	CWHY	DRAWN	RWHW
JOB No.	60043155	DRAWING No.	FIG 2.1
		REV	-

APPENDIX A

Project Organization Structure



——— Employment Relationship
 - - - - - Working Relationship



Contract No. CV/2007/03
 Development at Anderson Road – Site Formation and Associated
 Infrastructure Works

Project Organization Structure

SCALE	N.T.S.	DATE	2009
CHECK	ENFL	DRAWN	LCHC
JOB NO.	60043155	APPENDIX	Rev
		A	-

APPENDIX B

**Implementation Schedule of Environmental Mitigation
Measures**

Appendix B - Implementation Schedule of Environmental Mitigation Measures

Environmental Mitigation Measures		Location	Implementation Status
Construction Noise Impact			
Site Formation	Silenced powered mechanical equipment (PME) for most equipment (including drill rig, backhoe, dump truck, breaker and crane) and the decrease of percentage on time usage of drill rig among the Central Area from 50% to 40% is proposed.	All construction sites	V
	Temporary movable noise barrier shall be used to shield the noise emanating from the drilling rig in order to provide adequate shielding for the affected NSRs.	All construction sites	V
Construction Air Quality Impact			
General Site	Mean vehicle speed of haulage trucks at 10km/hr.	All construction sites	V
Practice	Twice daily watering of all open site areas.	All construction sites	V
	Regular watering (once every 1 hour) of all site roads and access roads with frequent truck movement.	All construction sites	V
	During road transportation of excavated spoil, vehicles should be covered to avoid dust impact. Wheel washing facilities should be installed at all site exits together with regular watering of the site access roads.	All construction sites	V
	Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.	All construction sites	V
	Establishment and use of vehicle wheel and body washing facilities at the exit points of the site, combined with cleaning of public roads were necessary.	Site exits	@

China State Construction Engineering (Hong Kong) Ltd.

General Site Practice	Suitable side and tailboards on haulage vehicles.	All construction sites	V
	Watering of temporary stockpiles.	All construction sites	V
Blasting	Use of select aggregate and fines to stem the charge with drill holes and watering of blast face.	All construction sites	N/A
	Use of vacuum extraction drilling methods.	All construction sites	N/A
	Carefully sequenced blasting.	All construction sites	N/A
Crushing	Fabric filters installed for the crushing plant.	All construction sites	N/A
	Water sprays on the crusher.	All construction sites	N/A
Loading and Unloading Points, and conveyor Belt System	Water sprays at all fixed loading and unloading points (at the crusher and conveyor belts).	All construction sites	N/A
	The loading point at the crusher is enclosed with dust collection system installed.	All construction sites	N/A
	When transferring materials from conveyor belt or crusher to the dump trucks or chutes, dust curtains are used for controlling dust.	All construction sites	N/A
	Cover the conveyor belts with steel roof and canvas sides.	All construction sites	N/A
Construction Water Quality Impact			
Construction Phase	All active working areas should be bounded to retain storm water with sufficient retention time to ensure that suspended solids are not discharged from the site in concentrations above those specified in the TM for the Victoria Harbour (Phase I) WCZ. All fuel storage areas should be bounded with drainage directed to an oil interceptor.	Site drainage system	@

China State Construction Engineering (Hong Kong) Ltd.

	Separate treatment facilities may be required for effluent from site offices, toilets (unless chemical toilets are used) and canteens.	Site drainage system	V
	Discharged wastewater from the construction sites to surface water and/or public drainage systems should be controlled through licensing. Discharge should follow fully the terms and conditions in the licenses.	All works area	V
	Relevant practice for dealing with various type of construction discharges provided in EPD's ProPECC Note PN 1/94 should be adopted.	All works area	V
Waste Management			
Waste Disposal	Different types of wastes should be segregated, stored, transported and disposed of separately in accordance with the relevant legislative requirements and guidelines as proper practice of waste management.	All construction sites	@
	Sorting of wastes should be done on-site. Different types of wastes should be segregated and stored in different stockpiles, containers or skips to enhance recycling of materials and proper disposal of spoil.	All construction sites	V
	Excavated spoil should be used as much as possible to minimize off-side fill material requirements and disposal of spoil.	All construction sites	V
	Chemical waste should be recycled on-site or removed by licenced companies. It should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical wastes. When off-site	All construction sites	V

China State Construction Engineering (Hong Kong) Ltd.

	disposal is required, it should be collected and delivered by licenced contractors to Tsing Yi Chemical Waste Treatment Facility and disposed of in accordance with the Chemical Waste (General) Regulation.		
	Necessary mitigation measures should be adopted to prevent the uncontrolled disposal of chemical and hazardous waste into air, soil, surface waters and ground waters.	All construction sites	V
Waste Storage	Chemical material storage areas should be bounded, constructed of impervious materials and have the capacity to contain 120 percent of the total volume of the containers. Indoor storage areas must have sufficient ventilation to prevent the build-up of fumes, and must be capable of evacuating the space in the event of an accidental release. Outdoor storage areas must be covered with a canopy or contain provisions for the safe removal of rainwater. In both cases, storage areas must not be connected to the foul or stormwater sewer system.	All construction sites	V
	Dangerous materials as defined under the DGO, including fuel, oil and lubricants, should be stored and properly labelled on site in accordance with the requirements in the DGO. If transportation of hazardous materials is necessary, hazardous materials, chemical wastes and fuel should be packed or stored in containers or vessels of suitable design and construction to prevent leakage, spillage or escape.	All construction sites	V
	Human waste should be discharged into septic tanks provided by the contractors and removed regularly by a hygiene services company. Refuse containers such as open skips should be provided at every work site for use	All construction sites	V

China State Construction Engineering (Hong Kong) Ltd.

	by the workforce. On-site refuse collection points must also be provided.		
Landscape and Visual			
Additional Measures	Planting and vegetation restoration (including transplanted trees) on soil slopes including restoration of grassland, scrub and woodland on slopes around the development platforms and access road. Restoration would be undertaken using predominantly native species.	Whole development	V
Additional Measures	Screen planting along the access roads, to limit impacts of elevated structures and rock slopes.	Whole development	V
	Colouring of shotcrete slopes.	Whole development	V
	Limited planting on shotcrete slopes.	Whole development	V
	Landscape buffers and planting in and around the development itself to screen partially close views of the site.	Whole development	V
	Screen planting in front of retaining walls / granite cladding to those walls to reduce glare and visual impacts.	Whole development	V
	Careful design of road elevated structure and abutments, to limit visual impacts.	Whole development	V
	Roadside landscape features / hardworks to limit visual impacts.	Whole development	V
	Conservation of CDG or CDV recovered from the site for re-use in the landscape restoration.	Whole development	V
	Preservation (by transplanting if necessary) of any trees identified as being of particular landscape value.	Whole development	V
Ecology			

China State Construction Engineering (Hong Kong) Ltd.

	Woodland planting on soft cut slopes available (about 13.4ha) within the development site. Native species, preferably with documented ecological utility, should be used.	Soft cut slopes	V
	Seeds of the native species when possible should be added into the hydroseeding mix. Seedlings should be pit planted with placement of slow release fertilizer.	Soft cut slopes	N/A
	Maintenance and service, including weeding, fertilizing, replacement of dead plants, etc. should be performed during the first 1 years of planting to enhance the survival rate of the plants.	Soft cut slopes	N/A
Contaminated Land			
	In accordance with the approved Contamination Assessment Report (CAR) and Remediation Action Plan (RAP) in Nov 2006, it is recommended that cement solidification / stabilization prior to on-site backfill for heavy metal contaminated soil and excavation followed by disposal at designated landfill for organic contaminated soil. Upon the completion of the proposed remediation exercise as outlined in CAR & RAP, a Remediation Report will be compiled for submission to EPD to demonstrate that the proposed soil remediation has been carried out properly and satisfactorily. Results from the confirmation tests will also be included in the Remediation Report. Photos showing the area of excavation, the solidification process, and remediated soil and site shall also be included in the report for reference.	Locations specified in CAR	V

China State Construction Engineering (Hong Kong) Ltd.

Landfill Gas Hazard			
	Further site investigation should be carried out during the detailed design stage in order to measure landfill gas around the perimeter of the site, to re-confirm that there is no preferential pathway for landfill gas migration and to assess the potential for landfill gas hazards on the future development. If a landfill gas hazard is identified, mitigation measures should be proposed and implemented to address the hazard.	The whole development site	V

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

APPENDIX C

Summary of Action and Limit Levels

Appendix C - Summary of Action and Limit Levels

Table 1 – Action and Limit Levels for 1-hour TSP

Location	Action Level	Limit Level
ID 1A	201.5	500
ID 2	197.0	500
ID 3	203.7	500
ID 4	264.6	500
ID 5	267.4	500

Table 2 – Action and Limit Levels for 24-hour TSP

Location	Action Level	Limit Level
ID 1A	170.2	260
ID 2	200.0	260
ID 3	200.0	260
ID 4	181.3	260
ID 5	180.8	260

Table 3 – Action and Limit Levels for Construction Noise (0700-1900 hrs of normal weekdays)

Location	Action Level	Limit Level
ID 1A	When one documented complaint is received from any one of the sensitive receivers	*65 / 70 dB(A)
ID 2		75 dB(A)
ID 3		75 dB(A)
ID 4		*65 / 70 dB(A)
ID 5		*65 / 70 dB(A)

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

APPENDIX D

Calibration Certificates of Equipments

Certificate of Calibration

Calibration Certification Information			
Cal. Date: December 26, 2017	Rootsmeter S/N: 438320	Ta: 291	°K
Operator: Jim Tisch		Pa: 763.3	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 0843		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4140	3.2	2.00
2	3	4	1	1.0010	6.4	4.00
3	5	6	1	0.8910	7.9	5.00
4	7	8	1	0.8480	8.8	5.50
5	9	10	1	0.7030	12.7	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H (Ta/Pa)}$ (y-axis)
1.0241	0.7243	1.4342	0.9958	0.7042	0.8732
1.0198	1.0188	2.0283	0.9916	0.9906	1.2349
1.0178	1.1423	2.2677	0.9896	1.1107	1.3807
1.0166	1.1988	2.3783	0.9885	1.1656	1.4481
1.0113	1.4386	2.8684	0.9834	1.3988	1.7464
QSTD	m=	2.00314	QA	m=	1.25433
	b=	-0.01725		b=	-0.01050
	r=	0.99996		r=	0.99996

Calculations			
Vstd= $\Delta Vol \left(\frac{Pa - \Delta P}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)$	Va= $\Delta Vol \left(\frac{Pa - \Delta P}{Pa} \right)$		
Qstd= $Vstd / \Delta Time$	Qa= $Va / \Delta Time$		
For subsequent flow rate calculations:			
Qstd= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa= $1/m \left(\left(\sqrt{\Delta H (Ta/Pa)} \right) - b \right)$		

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH:	calibrator manometer reading (in H2O)
ΔP:	rootsmeter manometer reading (mm Hg)
Ta:	actual absolute temperature (°K)
Pa:	actual barometric pressure (mm Hg)
b:	intercept
m:	slope

RECALIBRATION
US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor
 Manufacturer/Brand: SIBATA
 Model No.: LD-3
 Equipment No.: A.005.07a
 Sensitivity Adjustment Scale Setting: 557 CPM
 Operator: Mike Shek (MSKM)

Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®
 Venue: Cyberport (Pui Ying Secondary School)
 Model No.: Series 1400AB
 Serial No: Control: 140AB219899803
 Sensor: 1200C143659803 K₀: 12500
 Last Calibration Date*: 3 May 2018

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 557 CPM
 Sensitivity Adjustment Scale Setting (After Calibration): 557 CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
			Temp (°C)	R.H. (%)			
1	05-05-18	09:15 - 10:15	27.6	79	0.05367	2151	35.85
2	05-05-18	10:15 - 11:15	27.6	80	0.05864	2347	39.12
3	05-05-18	11:15 - 12:15	27.7	80	0.06661	2679	44.65
4	05-05-18	12:15 - 13:15	27.7	79	0.06335	2546	42.43

Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
 2. Total Count was logged by Laser Dust Monitor
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X

Slope (K-factor): 0.0015
 Correlation coefficient: 0.9994

Validity of Calibration Record: 5 May 2019

Remarks:

QC Reviewer: YW Fung

Signature: 

Date: 07 May 2018

EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor
 Manufacturer/Brand: SIBATA
 Model No.: LD-3
 Equipment No.: A.005.09a
 Sensitivity Adjustment Scale Setting: 797 CPM
 Operator: Mike Shek (MSKM)

Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®
 Venue: Cyberport (Pui Ying Secondary School)
 Model No.: Series 1400AB
 Serial No: Control: 140AB219899803
 Sensor: 1200C143659803 K_o: 12500
 Last Calibration Date*: 3 May 2018

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 797 CPM
 Sensitivity Adjustment Scale Setting (After Calibration): 797 CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
			Temp (°C)	R.H. (%)			
1	05-05-18	09:45 - 10:45	27.6	79	0.05483	2176	36.26
2	05-05-18	10:45 - 11:45	27.7	80	0.05813	2324	38.73
3	05-05-18	11:45 - 12:45	27.7	79	0.06734	2701	45.02
4	05-05-18	12:45 - 13:45	27.7	79	0.06375	2545	42.41

Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
 2. Total Count was logged by Laser Dust Monitor
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X

Slope (K-factor): 0.0015
 Correlation coefficient: 0.9977

Validity of Calibration Record: 5 May 2019

Remarks:

QC Reviewer: YW Fung

Signature: 

Date: 07 May 2018

EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor
 Manufacturer/Brand: SIBATA
 Model No.: LD-3
 Equipment No.: A.005.10a
 Sensitivity Adjustment Scale Setting: 753 CPM
 Operator: Mike Shek (MSKM)

Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®
 Venue: Cyberport (Pui Ying Secondary School)
 Model No.: Series 1400AB
 Serial No: Control: 140AB219899803
 Sensor: 1200C143659803 K_c: 12500
 Last Calibration Date*: 3 May 2018

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 753 CPM
 Sensitivity Adjustment Scale Setting (After Calibration): 753 CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
			Temp (°C)	R.H. (%)			
1	05-05-18	10:00 - 11:00	27.7	80	0.05415	2164	36.06
2	05-05-18	11:00 - 12:00	27.7	80	0.05973	2375	39.58
3	05-05-18	12:00 - 13:00	27.7	79	0.06718	2693	44.88
4	05-05-18	13:00 - 14:00	27.7	80	0.06486	2587	43.11


Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
 2. Total Count was logged by Laser Dust Monitor
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X

Slope (K-factor): 0.0015
 Correlation coefficient: 0.9986

Validity of Calibration Record: 5 May 2019

Remarks:

QC Reviewer: YW Fung Signature:  Date: 07 May 2018

EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor
 Manufacturer/Brand: SIBATA
 Model No.: LD-3
 Equipment No.: A.005.11a
 Sensitivity Adjustment Scale Setting: 799 CPM
 Operator: Mike Shek (MSKM)

Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®
 Venue: Cyberport (Pui Ying Secondary School)
 Model No.: Series 1400AB
 Serial No: Control: 140AB219899803
 Sensor: 1200C143659803 K₀: 12500
 Last Calibration Date*: 3 May 2018

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 799 CPM
 Sensitivity Adjustment Scale Setting (After Calibration): 799 CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
			Temp (°C)	R.H. (%)			
1	06-05-18	10:00 - 11:00	27.9	80	0.05121	2045	34.08
2	06-05-18	11:00 - 12:00	27.9	81	0.05413	2164	36.06
3	06-05-18	12:00 - 13:00	27.9	80	0.05616	2252	37.53
4	06-05-18	13:00 - 14:00	28.0	80	0.05824	2321	38.68


Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
 2. Total Count was logged by Laser Dust Monitor
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X

Slope (K-factor): 0.0015
 Correlation coefficient: 0.9976

Validity of Calibration Record: 6 May 2019

Remarks:

QC Reviewer: YW Fung Signature:  Date: 07 May 2018

EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor
 Manufacturer/Brand: SIBATA
 Model No.: LD-3B
 Equipment No.: A.005.13a
 Sensitivity Adjustment Scale Setting: 643 CPM

Operator: Mike Shek (MSKM)

Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®
 Venue: Cyberport (Pui Ying Secondary School)
 Model No.: Series 1400AB
 Serial No: Control: 140AB219899803
 Sensor: 1200C143659803 Ko: 12500
 Last Calibration Date*: 3 May 2018

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 643 CPM
 Sensitivity Adjustment Scale Setting (After Calibration): 643 CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
			Temp (°C)	R.H. (%)			
1	06-05-18	10:15 - 11:15	27.9	80	0.05124	2057	34.28
2	06-05-18	11:15 - 12:15	27.9	81	0.05453	2179	36.32
3	06-05-18	12:15 - 13:15	28.0	81	0.05658	2273	37.88
4	06-05-18	13:15 - 14:15	28.0	80	0.05736	2307	38.45

Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
 2. Total Count was logged by Laser Dust Monitor
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X

Slope (K-factor): 0.0015
 Correlation coefficient: 0.9968

Validity of Calibration Record: 6 May 2019

Remarks:

QC Reviewer: YW Fung

Signature: 

Date: 07 May 2018

EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor
 Manufacturer/Brand: SIBATA
 Model No.: LD-3B
 Equipment No.: A.005.16a
 Sensitivity Adjustment Scale Setting: 521 CPM

Operator: Mike Shek (MSKM)

Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®
 Venue: Cyberport (Pui Ying Secondary School)
 Model No.: Series 1400AB
 Serial No: Control: 140AB219899803
 Sensor: 1200C143659803 K₀: 12500
 Last Calibration Date*: 3 May 2018

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 521 CPM
 Sensitivity Adjustment Scale Setting (After Calibration): 521 CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
			Temp (°C)	R.H. (%)			
1	14-07-18	10:15 - 11:15	29.1	79	0.04328	1742	29.03
2	14-07-18	11:15 - 12:15	29.1	78	0.04673	1874	31.23
3	14-07-18	12:15 - 13:15	29.2	79	0.04904	1961	32.68
4	14-07-18	13:15 - 14:15	29.2	79	0.04734	1897	31.62


- Note:
1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
 2. Total Count was logged by Laser Dust Monitor
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X

Slope (K-factor): 0.0015
 Correlation coefficient: 0.9974

Validity of Calibration Record: 14 July 2019

Remarks:

QC Reviewer: YW Fung Signature:  Date: 16 July 2018



CERTIFICATE OF CALIBRATION

Certificate No.: 18CA0914 03 Page 1 of 2

Item tested

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

Item submitted by

Customer Name: AECOM ASIA CO., LTD.
Address of Customer: -
Request No.: -
Date of receipt: 14-Sep-2018

Date of test: 17-Sep-2018

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2019	CIGISMEC
Signal generator	DS 360	33873	24-Apr-2019	CEPREI
Signal generator	DS 360	61227	23-Apr-2019	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 55 ± 10 %
Air pressure: 1005 ± 5 hPa

Test specifications

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

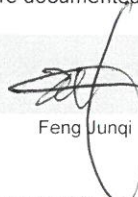
Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory:



Feng Junqi

Date: 18-Sep-2018

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 18CA0914 03

Page 2 of 2

1, Electrical Tests

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

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

2, Acoustic tests

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

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

3, Response to associated sound calibrator

N/A

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

- End -

Calibrated by:

Date:

Fung Chi Yip
17-Sep-2018

Checked by:

Date:

Shek Kwong Tat
18-Sep-2018

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



CERTIFICATE OF CALIBRATION

Certificate No.: 18CA0321 01-02 Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	Microphone	Preamp
Manufacturer:	B & K	B & K	B & K
Type/Model No.:	2250-L	4950	ZC0032
Serial/Equipment No.:	2681366	2665582	17190
Adaptors used:	-	-	-

(N 011.01)

Item submitted by

Customer Name: AECOM ASIA CO LTD
Address of Customer: -
Request No.: -
Date of receipt: 21-Mar-2018

Date of test: 23-Mar-2018

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	08-Sep-2018	CIGISMEC
Signal generator	DS 360	33873	25-Apr-2018	CEPREI
Signal generator	DS 360	61227	01-Apr-2018	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 50 ± 10 %
Air pressure: 1000 ± 5 hPa

Test specifications

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

Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory:



Feng Jun Qi

Date: 24-Mar-2018

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 18CA0321 01-02

Page 2 of 2

1, Electrical Tests

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

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	0.8	
	Lin	Pass	1.6	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	A	Pass	0.3	
	C	Pass	0.3	
Frequency weightings	Lin	Pass	0.3	
	Time weightings	Single Burst Fast	Pass	0.3
	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
	R.M.S. accuracy	Crest factor of 3	Pass	0.3
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 ³ at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/10 ⁴ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
	Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

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

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

3, Response to associated sound calibrator

N/A

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

- End -

Calibrated by:

Date:

Fung Chi Yip
23-Mar-2018

Checked by:

Date:

Lam Tze Wai
24-Mar-2018

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



CERTIFICATE OF CALIBRATION

Certificate No.: 18CA0406 02-02 Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: B & K
Type/Model No.: 4231
Serial/Equipment No.: 3006428 / N004.03
Adaptors used: -

Item submitted by

Customer: AECOM ASIA CO LIMITED
Address of Customer: -
Request No.: -
Date of receipt: 06-Apr-2018

Date of test: 09-Apr-2018

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	11-Apr-2018	SCL
Preamplifier	B&K 2673	2743150	05-May-2018	CEPREI
Measuring amplifier	B&K 2610	2346941	03-May-2018	CEPREI
Signal generator	DS 360	33873	25-Apr-2018	CEPREI
Digital multi-meter	34401A	US36087050	25-Apr-2018	CEPREI
Audio analyzer	8903B	GB41300350	21-Apr-2018	CEPREI
Universal counter	53132A	MY40003662	22-Apr-2018	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 50 ± 10 %
Air pressure: 1005 ± 5 hPa

Test specifications

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

Test results

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

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

Approved Signatory:

Feng Jun Qi

Date: 11-Apr-2018

Company Chop:



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



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 18CA0406 02-02

Page: 2 of 2

1, Measured Sound Pressure Level

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

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	(Output level in dB re 20 μ Pa)
			Estimated Expanded Uncertainty dB
1000	94.00	94.20	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

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

At 1000 Hz **STF = 0.015 dB**

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

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

At 1000 Hz **Actual Frequency = 999.96 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

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

At 1000 Hz **TND = 0.4 %**

Estimated expanded uncertainty 0.7 %

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

- End -

Calibrated by:

Fung Chi Yip

Date: 09-Apr-2018

Checked by:

Lam Tze Wai

Date: 11-Apr-2018

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

APPENDIX E

EM&A Monitoring Schedules

**CV/2007/03 - Development at Anderson Road
Impact Air Quality and Noise Monitoring Schedule for November 2018**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Nov	2-Nov	3-Nov
					24-hour TSP 1-hour TSP Noise (ID1A, 2-5)	
4-Nov	5-Nov	6-Nov	7-Nov	8-Nov	9-Nov	10-Nov
				24-hour TSP 1-hour TSP Noise (ID1A, 2-5)		
11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov	17-Nov
			24-hour TSP 1-hour TSP Noise (ID1A, 2-5)			
18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov	24-Nov
		24-hour TSP 1-hour TSP Noise (ID1A, 2-5)				
25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	
	24-hour TSP 1-hour TSP Noise (ID1A, 2-5)					

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

**CV/2007/03 - Development at Anderson Road
Tentative Impact Air Quality and Noise Monitoring Schedule for December 2018**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Dec
						24-hour TSP 1-hour TSP (ID1A, 2-5)
2-Dec	3-Dec	4-Dec	5-Dec	6-Dec	7-Dec	8-Dec
					24-hour TSP 1-hour TSP Noise (ID1A, 2-5)	
9-Dec	10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec
				24-hour TSP 1-hour TSP Noise (ID1A, 2-5)		
16-Dec	17-Dec	18-Dec	19-Dec	20-Dec	21-Dec	22-Dec
			24-hour TSP 1-hour TSP Noise (ID1A, 2-5)			
23-Dec	24-Dec	25-Dec	26-Dec	27-Dec	28-Dec	29-Dec
	24-hour TSP 1-hour TSP Noise (ID1A, 2-5)					24-hour TSP 1-hour TSP (ID1A, 2-5)
30-Dec	31-Dec					

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

APPENDIX F

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

Appendix F
Air Quality Monitoring Results

1-hour TSP Monitoring Results at Station ID 1A (Kwun Tong Government Secondary School)

Date	Start Time (hh:mm)	1st Hour	2nd Hour	3rd Hour
		Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)
2-Nov-18	10:00	59.7	62.9	61.4
8-Nov-18	10:06	60.1	58.8	60.7
14-Nov-18	10:10	62.3	61.7	63.4
20-Nov-18	10:55	59.1	62.0	58.5
26-Nov-18	10:00	58.7	59.6	60.4
Average				60.6
Min				58.5
Max				63.4

1-hour TSP Monitoring Results at Station ID 2 (On Yat House)

Date	Start Time (hh:mm)	1st Hour	2nd Hour	3rd Hour
		Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)
2-Nov-18	10:20	60.3	63.3	58.7
8-Nov-18	10:25	59.1	58.4	57.9
14-Nov-18	11:00	63.7	62.0	64.2
20-Nov-18	11:09	57.9	59.8	56.1
26-Nov-18	10:20	60.7	59.1	61.4
Average				60.2
Min				56.1
Max				64.2

1-hour TSP Monitoring Results at Station ID 3 (Sau Nga House)

Date	Start Time (hh:mm)	1st Hour	2nd Hour	3rd Hour
		Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)
2-Nov-18	11:00	61.1	62.5	63.6
8-Nov-18	11:10	61.3	59.0	60.6
14-Nov-18	10:30	61.2	63.3	62.5
20-Nov-18	11:25	61.5	62.8	58.7
26-Nov-18	10:55	61.6	63.0	62.2
Average				61.7
Min				58.7
Max				63.6

1-hour TSP Monitoring Results at Station ID 4 (Sau Ming Primary School)

Date	Start Time (hh:mm)	1st Hour	2nd Hour	3rd Hour
		Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)
2-Nov-18	11:30	62.4	63.9	61.0
8-Nov-18	11:30	59.7	58.1	57.0
14-Nov-18	14:00	60.1	61.8	63.2
20-Nov-18	11:44	60.7	57.3	57.6
26-Nov-18	11:10	58.9	62.6	63.3
Average				60.5
Min				57.0
Max				63.9

1-hour TSP Monitoring Results at Station ID 5 (Sau Mau Ping Catholic Primary School)

Date	Start Time (hh:mm)	1st Hour	2nd Hour	3rd Hour
		Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)
2-Nov-18	13:15	60.6	61.8	58.2
8-Nov-18	14:05	60.6	62.2	58.5
14-Nov-18	14:20	61.9	62.6	60.4
20-Nov-18	11:58	60.2	62.8	59.1
26-Nov-18	13:15	62.1	63.5	61.7
Average				61.1
Min				58.2
Max				63.5

Appendix F
Air Quality Monitoring Results

24-hour TSP Monitoring Results at Station ID 1A (Kwun Tong Government Secondary School)

Date	Weather Condition	Air Temp. (°C)	Atmospheric Pressure(hPa)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Filter Weight (g)		Particulate weight(g)	Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)
				Initial	Final			Initial	Final		Initial	Final		
2-Nov-18	Sunny	27.4	1012.5	1.3276	1.3312	1.33	1914.3	2.6828	2.8077	0.1249	21612.39	21636.39	24.00	65.2
8-Nov-18	Sunny	27.3	1016.6	1.3253	1.3275	1.33	1910.0	2.6677	2.6911	0.0234	21636.39	21660.39	24.00	12.3
14-Nov-18	Sunny	25.5	1015.6	1.3026	1.3059	1.30	1878.1	2.6625	2.7240	0.0615	21660.39	21684.39	24.00	32.7
20-Nov-18	Fine	24.0	1017.4	1.3051	1.3060	1.31	1880.0	2.6806	2.7025	0.0219	21684.39	21708.39	24.00	11.6
26-Nov-18	Fine	20.9	1018.9	1.3648	1.3578	1.36	1960.3	2.6778	2.7159	0.0381	21708.39	21732.39	24.00	19.4
													Average	28.3
													Min	11.6
													Max	65.2

24-hour TSP Monitoring Results at Station ID 2 (On Yat House)

Date	Weather Condition	Air Temp. (°C)	Atmospheric Pressure(hPa)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Filter Weight (g)		Particulate weight(g)	Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)
				Initial	Final			Initial	Final		Initial	Final		
2-Nov-18	Sunny	27.4	1012.5	1.2962	1.2998	1.30	1869.1	2.6565	2.7544	0.0979	23881.12	23905.12	24.00	52.4
8-Nov-18	Sunny	27.3	1016.6	1.2939	1.2961	1.30	1864.8	2.6793	2.7267	0.0474	23905.12	23929.12	24.00	25.4
14-Nov-18	Sunny	25.5	1015.6	1.2935	1.2969	1.30	1865.1	2.6602	2.7610	0.1008	23929.12	23953.12	24.00	54.0
20-Nov-18	Fine	24.0	1017.4	1.2961	1.2969	1.30	1867.0	2.6756	2.7625	0.0869	23953.12	23977.12	24.00	46.5
26-Nov-18	Fine	20.9	1018.9	1.3593	1.3521	1.36	1952.2	2.6697	2.7010	0.0313	23977.12	24001.12	24.00	16.0
													Average	38.9
													Min	16.0
													Max	54.0

24-hour TSP Monitoring Results at Station ID 3 (Sau Nga House)

Date	Weather Condition	Air Temp. (°C)	Atmospheric Pressure(hPa)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Filter Weight (g)		Particulate weight(g)	Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)
				Initial	Final			Initial	Final		Initial	Final		
2-Nov-18	Sunny	27.4	1012.5	1.3063	1.3099	1.31	1883.7	2.6756	2.7885	0.1129	26195.01	26219.01	24.00	59.9
8-Nov-18	Sunny	27.3	1016.6	1.2939	1.2961	1.30	1864.8	2.6776	2.7779	0.1003	26219.01	26243.01	24.00	53.8
14-Nov-18	Sunny	25.5	1015.6	1.3036	1.3070	1.31	1879.6	2.6617	2.7162	0.0545	26243.01	26267.01	24.00	29.0
20-Nov-18	Fine	24.0	1017.4	1.3062	1.3072	1.31	1881.6	2.6800	2.7383	0.0583	26267.01	26291.01	24.00	31.0
26-Nov-18	Fine	20.9	1018.9	1.3655	1.3589	1.36	1961.6	2.6851	2.7288	0.0437	26291.01	26315.01	24.00	22.3
													Average	39.2
													Min	22.3
													Max	59.9

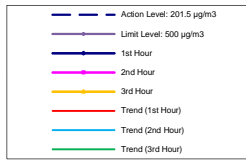
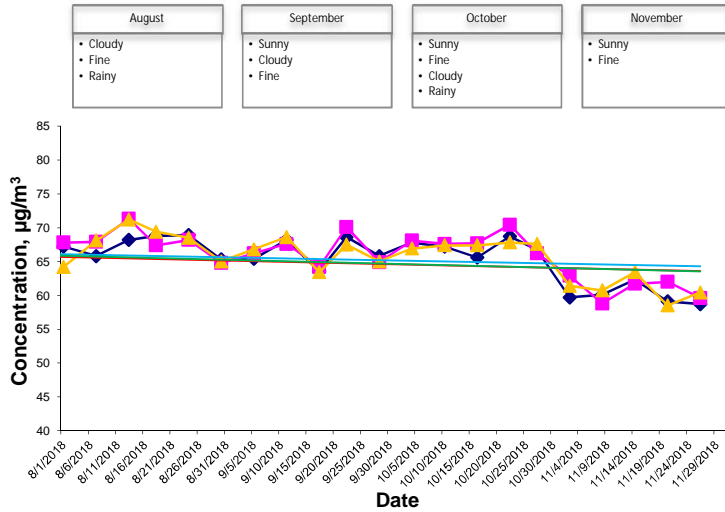
24-hour TSP Monitoring Results at Station ID 4 (Sau Ming Primary School)

Date	Weather Condition	Air Temp. (°C)	Atmospheric Pressure(hPa)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Filter Weight (g)		Particulate weight(g)	Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)
				Initial	Final			Initial	Final		Initial	Final		
2-Nov-18	Sunny	27.4	1012.5	1.3052	1.3093	1.31	1882.4	2.6770	2.8213	0.1443	26995.01	27019.01	24.00	76.7
8-Nov-18	Sunny	27.3	1016.6	1.3030	1.3051	1.30	1877.8	2.6685	2.7298	0.0613	27019.01	27043.01	24.00	32.6
14-Nov-18	Sunny	25.5	1015.6	1.2935	1.2969	1.30	1865.1	2.6558	2.7281	0.0723	27043.01	27067.01	24.00	38.8
20-Nov-18	Fine	24.0	1017.4	1.2961	1.2969	1.30	1867.0	2.6891	2.7590	0.0699	27067.01	27091.01	24.00	37.4
26-Nov-18	Fine	20.9	1018.9	1.3725	1.3644	1.37	1970.6	2.6720	2.7157	0.0437	27067.01	27091.01	24.00	22.2
													Average	41.5
													Min	22.2
													Max	76.7

24-hour TSP Monitoring Results at Station ID 5 (Sau Mau Ping Catholic Primary School)

Date	Weather Condition	Air Temp. (°C)	Atmospheric Pressure(hPa)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Filter Weight (g)		Particulate weight(g)	Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)
				Initial	Final			Initial	Final		Initial	Final		
2-Nov-18	Sunny	27.4	1012.5	1.3009	1.3048	1.30	1876.1	2.6748	2.7911	0.1163	22686.57	22710.57	24.00	62.0
8-Nov-18	Sunny	27.3	1016.6	1.3275	1.3267	1.33	1911.0	2.6726	2.7783	0.1057	22710.57	22734.57	24.00	55.3
14-Nov-18	Sunny	25.5	1015.6	1.3036	1.3070	1.31	1879.6	2.6649	2.7302	0.0653	22734.57	22758.57	24.00	34.7
20-Nov-18	Fine	24.0	1017.4	1.3051	1.3060	1.31	1880.0	2.6893	2.7269	0.0376	22758.57	22782.57	24.00	20.0
26-Nov-18	Fine	20.9	1018.9	1.3712	1.3633	1.37	1968.8	2.6704	2.6926	0.0222	22758.57	22782.57	24.00	11.3
													Average	36.7
													Min	11.3
													Max	62.0

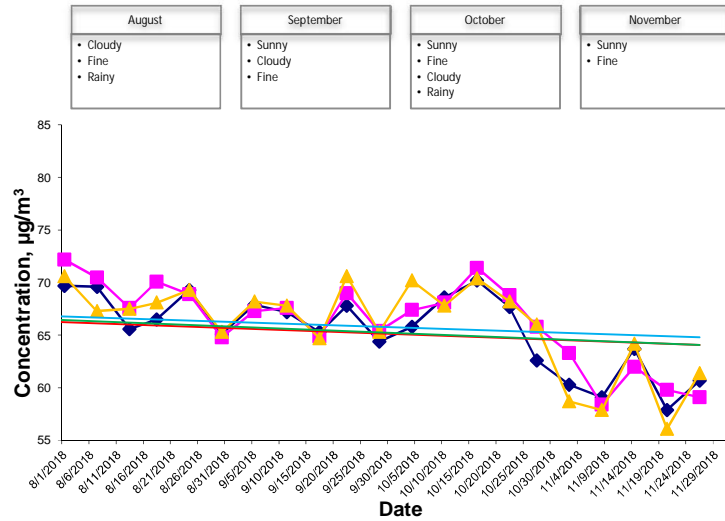
ID 1A



Major site activities during past 4 months:

- Site clearance works
- Defect rectification works
- Construction of planter
- Construction of handrail
- Sprayed concrete for slope
- Rock mesh installation
- Construction of surface channel
- Reinstatement of existing cross road ducts for traffic signal system

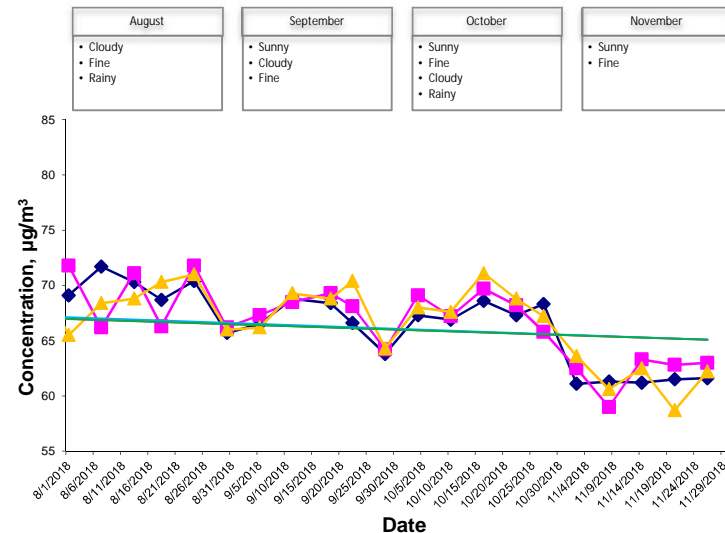
ID 2



Major site activities during past 4 months:

- Site clearance works
- Defect rectification works
- Construction of planter
- Construction of handrail
- Sprayed concrete for slope
- Rock mesh installation
- Construction of surface channel
- Reinstatement of existing cross road ducts for traffic signal system

ID 3



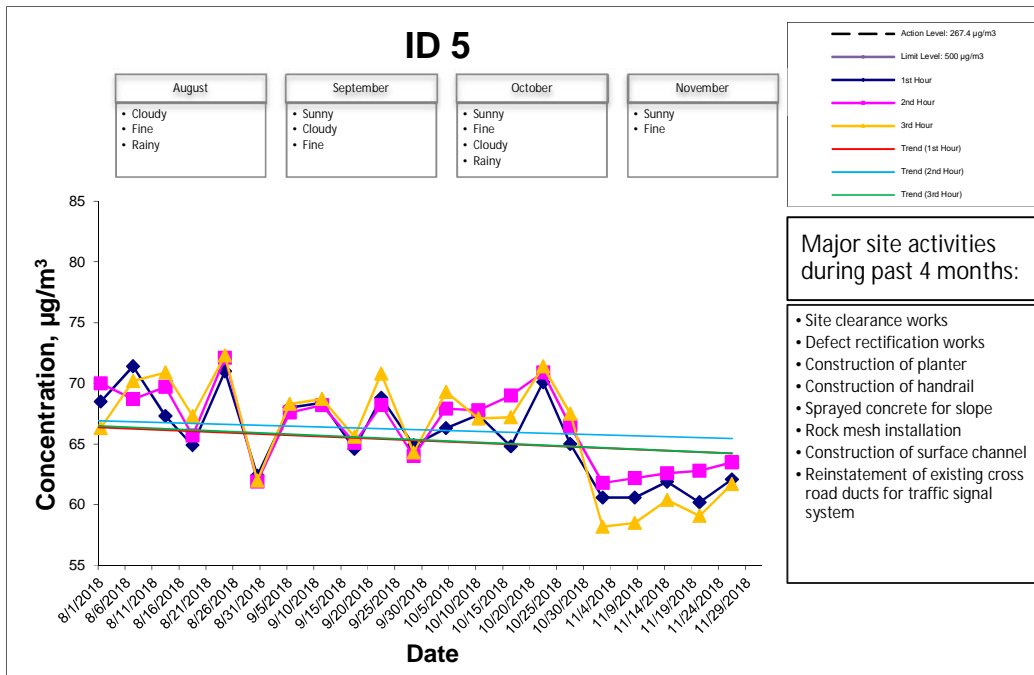
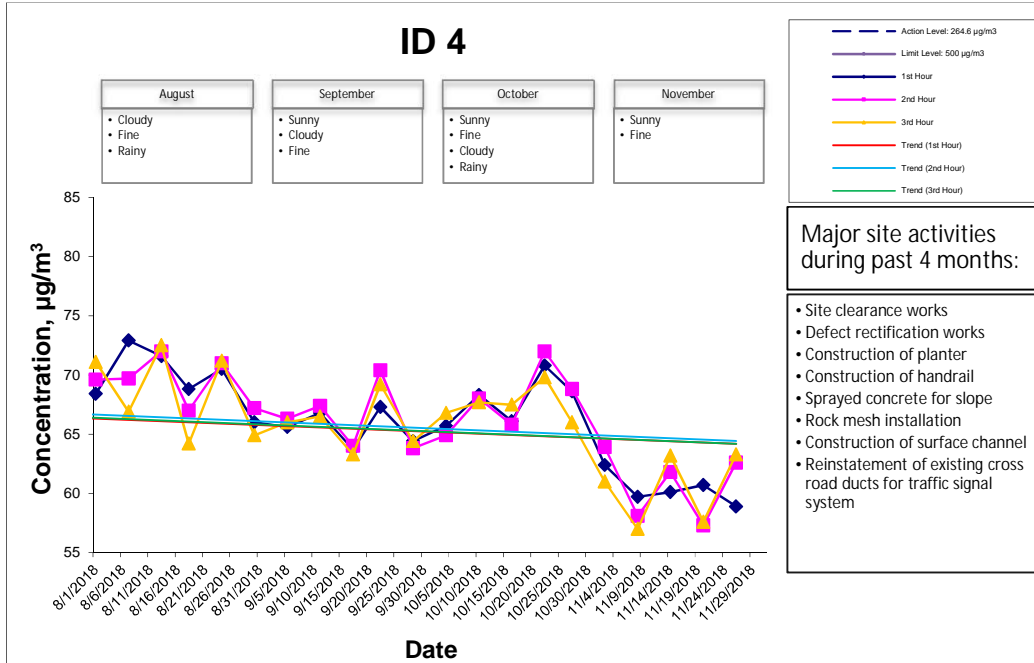
Major site activities during past 4 months:

- Site clearance works
- Defect rectification works
- Construction of planter
- Construction of handrail
- Sprayed concrete for slope
- Rock mesh installation
- Construction of surface channel
- Reinstatement of existing cross road ducts for traffic signal system

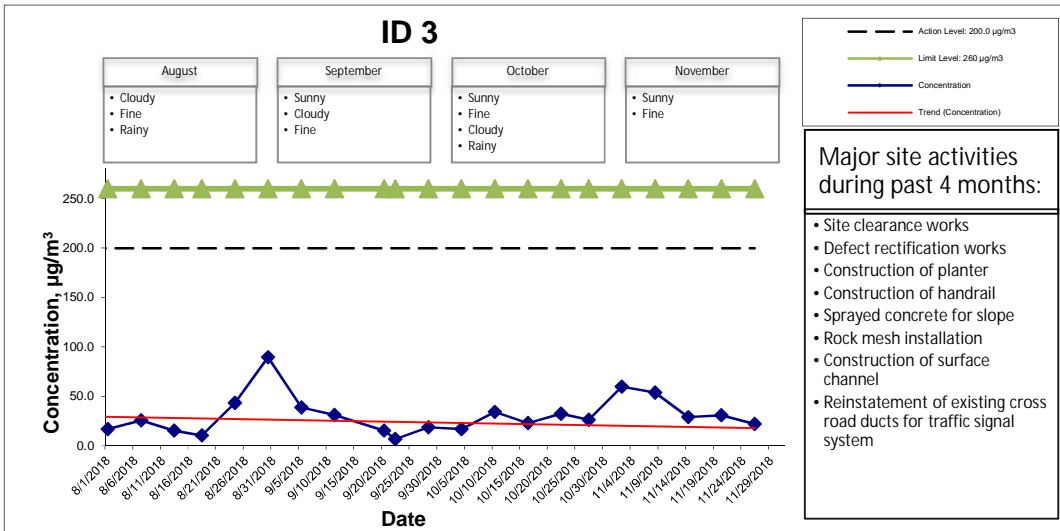
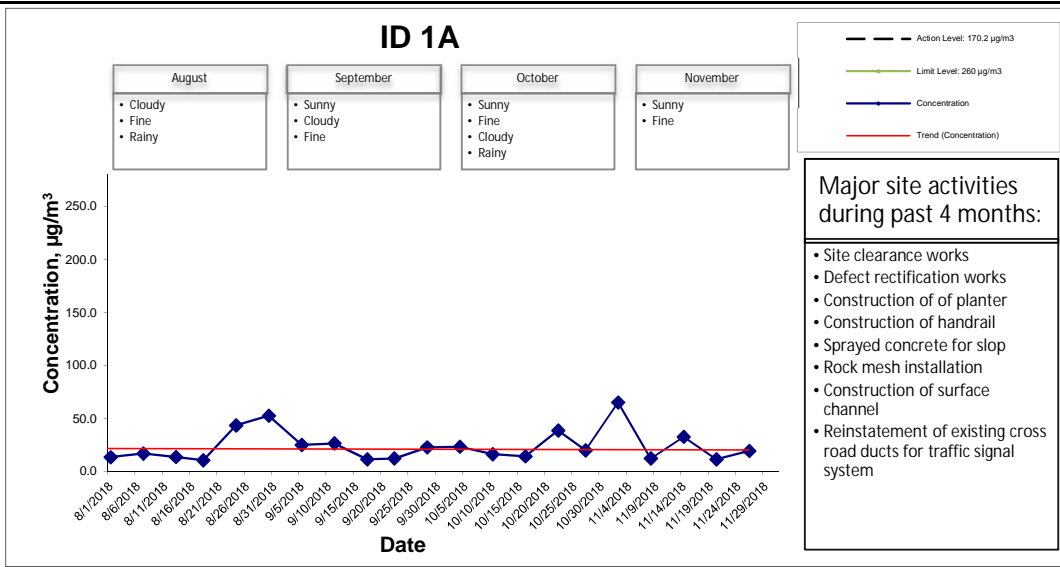


**Development at Anderson Road - Site Formation
and Associated Infrastructure Works**
Graphical Presentations of Impact 1-hour TSP
Monitoring Results

SCALE	N.T.S.	DATE	Dec-18
CHECK	FYW	DRAWN	DTTW
JOB NO.	60043155	APPENDIX No.	Rev.
		F	-



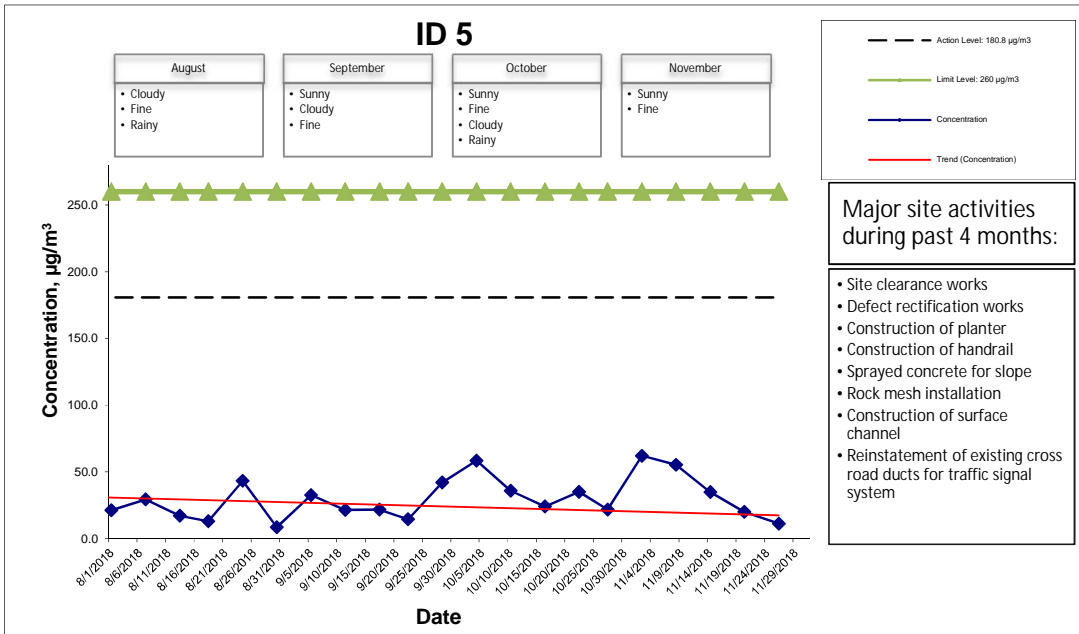
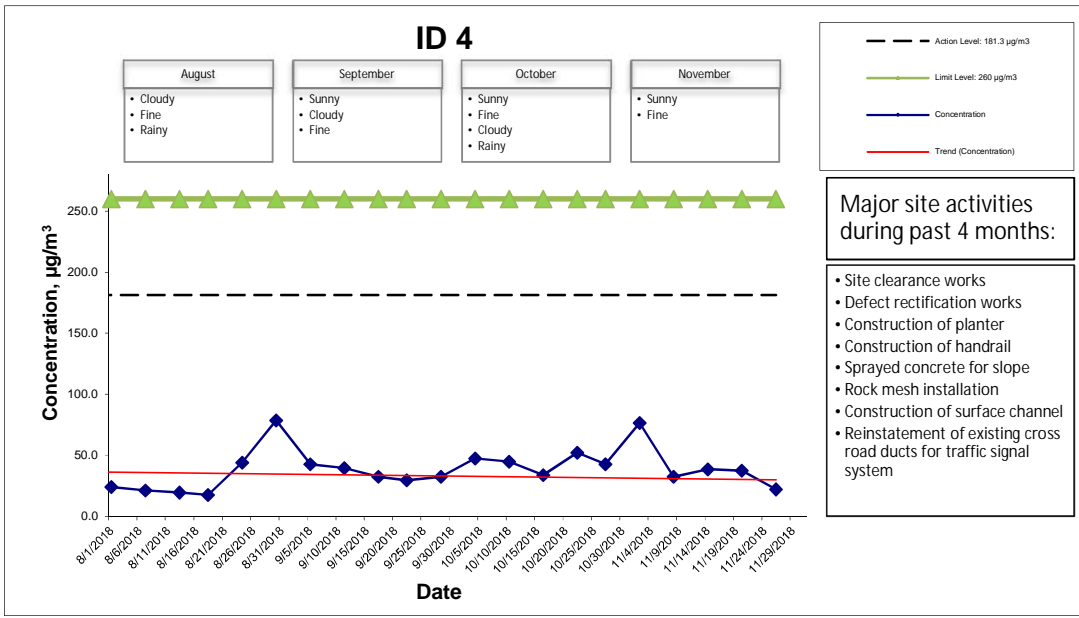
	Development at Anderson Road - Site Formation and Associated Infrastructure Works	SCALE	N.T.S.	DATE	Dec-18
	Graphical Presentations of Impact 1-hour TSP Monitoring Results	CHECK	FYW	DRAWN	DTTW
		JOB NO.	60043155	APPENDIX No.	F
					-



**Development at Anderson Road - Site Formation
and Associated Infrastructure Works**

**Graphical Presentations of Impact 24-hour TSP
Monitoring Results**

SCALE	N.T.S.	DATE	Dec-18
CHECK	FYW	DRAWN	DTTW
JOB NO.	60043155	APPENDIX No. F	Rev. -



	Development at Anderson Road - Site Formation	SCALE	N.T.S.	DATE	Dec-18
	and Associated Infrastructure Works	CHECK	FYW	DRAWN	DTTW
	Graphical Presentations of Impact 24-hour TSP	JOB NO.	60043155	APPENDIX No.	Rev.
	Monitoring Results			F	-

APPENDIX G

**Noise Monitoring Results and
their Graphical Presentations**

Appendix G Noise Monitoring Results

Daytime Noise Monitoring Results at Station ID 1A (Kwun Tong Government Secondary School)

Date	Weather Condition	Noise Level for 30-min, dB(A) ⁺				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level**, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
2-Nov-18	Sunny	10:00	56.0	59.2	58.0	44.5	57.8	70	N
8-Nov-18	Sunny	10:05	56.5	60.0	59.0	52.8	57.8	70	N
14-Nov-18	Sunny	10:10	52.8	56.9	55.4	55.4	57.8	70	N
20-Nov-18	Fine	13:05	58.2	63.5	61.2	58.5	57.8	70	N
26-Nov-18	Sunny	10:00	56.5	60.0	58.8	51.9	57.8	70	N
		Min	52.8	56.9		44.5			
		Max	58.2	63.5		58.5			
		Average	--	--		54.6			

Daytime Noise Monitoring Results at Station ID 2 (On Yat House)

Date	Weather Condition	Noise Level for 30-min, dB(A) ⁺				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
2-Nov-18	Sunny	10:20	61.5	65.5	64.0	59.7	62.0	75	N
8-Nov-18	Sunny	10:25	61.5	64.5	63.4	57.8	62.0	75	N
14-Nov-18	Sunny	11:00	60.5	64.0	62.8	55.1	62.0	75	N
20-Nov-18	Fine	13:50	60.0	64.5	62.7	54.4	62.0	75	N
26-Nov-18	Sunny	10:20	60.5	65.5	64.4	60.7	62.0	75	N
		Min	60.0	64.0		54.4			
		Max	61.5	65.5		60.7			
		Average	--	--		58.2			

Daytime Noise Monitoring Results at Station ID 3 (Sau Nga House)

Date	Weather Condition	Noise Level for 30-min, dB(A) ⁺				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
2-Nov-18	Sunny	11:00	62.0	67.5	66.7	63.2	64.1	75	N
8-Nov-18	Sunny	11:10	62.0	66.5	65.6	60.3	64.1	75	N
14-Nov-18	Sunny	10:30	60.4	66.5	64.4	52.6	64.1	75	N
20-Nov-18	Fine	14:36	62.0	65.8	64.1	64.1	64.1	75	N
26-Nov-18	Sunny	10:55	61.0	66.5	65.3	59.1	64.1	75	N
		Min	60.4	65.8		52.6			
		Max	62.0	67.5		64.1			
		Average	--	--		61.3			

Daytime Noise Monitoring Results at Station ID 4 (Sau Ming Primary School)

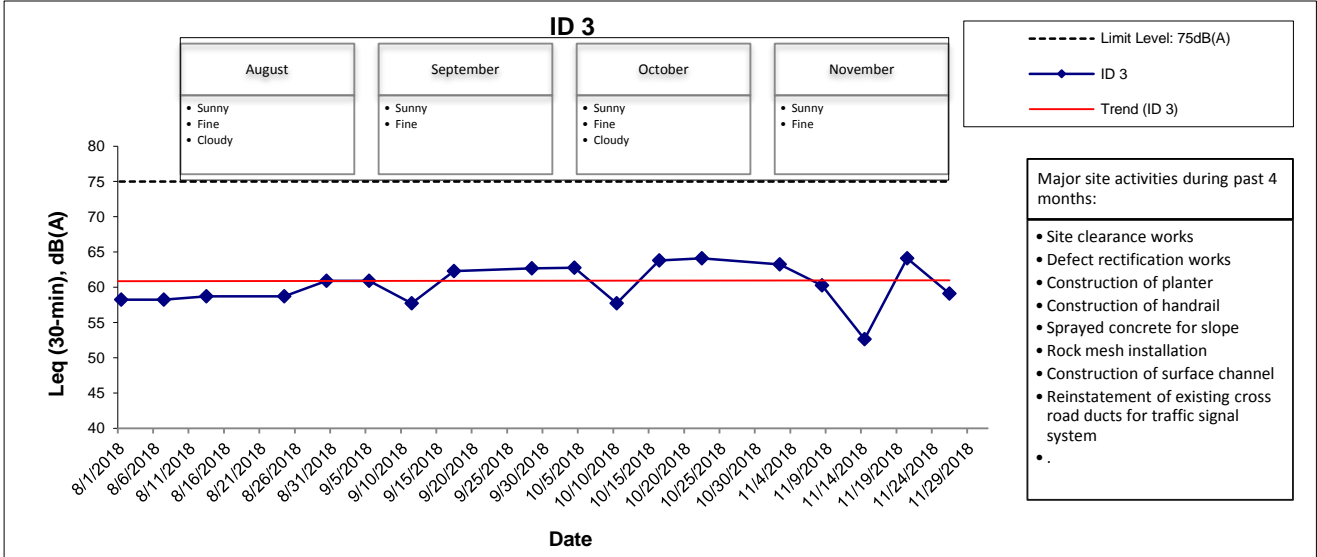
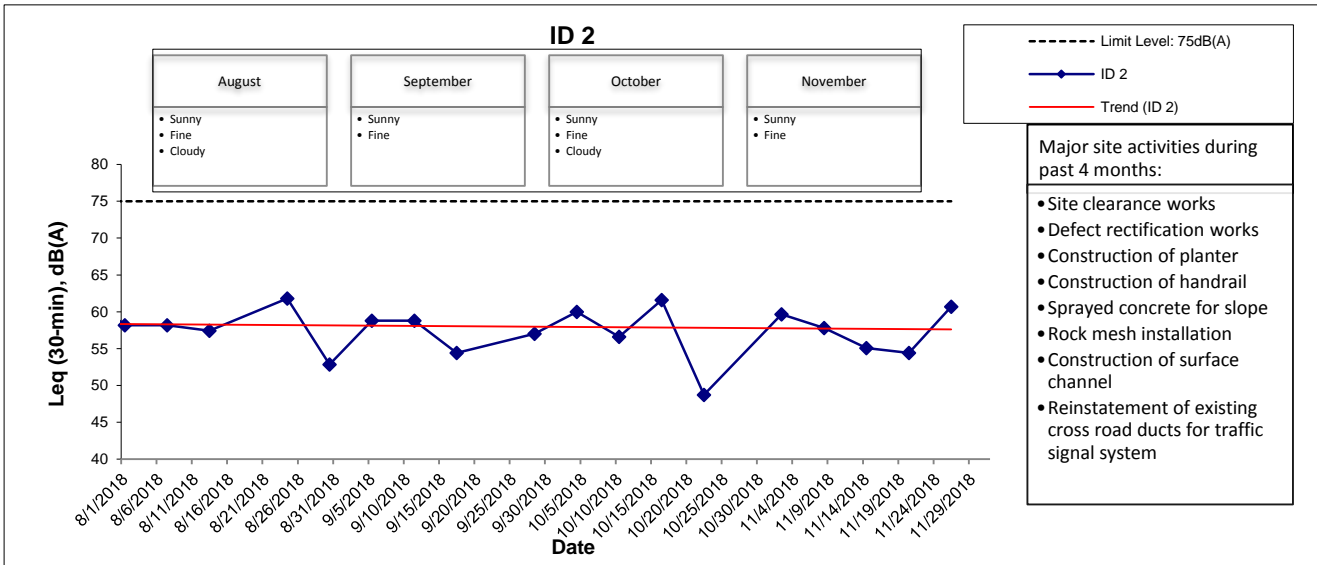
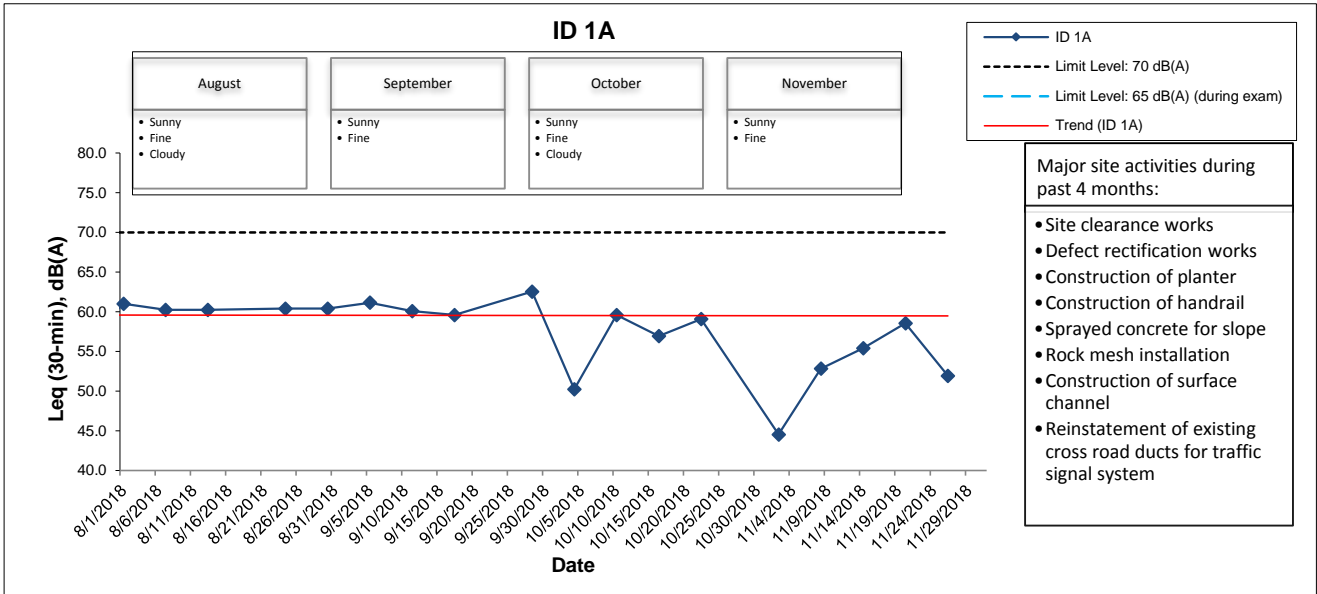
Date	Weather Condition	Noise Level for 30-min, dB(A) ⁺				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level**, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
2-Nov-18	Sunny	11:30	63.5	68.0	66.3	57.4	65.7	70	N
8-Nov-18	Sunny	11:30	62.5	67.5	66.0	54.2	65.7	70	N
14-Nov-18	Sunny	14:00	62.0	67.5	65.8	49.4	65.7	70	N
20-Nov-18	Fine	15:58	60.7	65.3	63.5	63.5	65.7	70	N
26-Nov-18	Sunny	11:10	62.5	67.5	66.0	54.2	65.7	70	N
		Min	60.7	65.3		49.4			
		Max	63.5	68.0		63.5			
		Average	--	--		58.3			

Daytime Noise Monitoring Results at Station ID 5 (Sau Mau Ping Catholic Primary School)

Date	Weather Condition	Noise Level for 30-min, dB(A) ⁺				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level**, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
2-Nov-18	Sunny	13:15	57.7	61.8	60.0	60.0	64.7	70	N
8-Nov-18	Sunny	14:05	56.0	61.5	60.1	60.1	64.7	70	N
14-Nov-18	Sunny	14:20	57.2	60.5	59.1	59.1	64.7	70	N
20-Nov-18	Fine	16:30	63.0	66.8	65.2	55.6	64.7	70	N
26-Nov-18	Sunny	13:15	57.0	61.0	60.1	60.1	64.7	70	N
		Min	56.0	60.5		55.6			
		Max	63.0	66.8		60.1			
		Average	--	--		59.3			

⁺ - Façade measurement

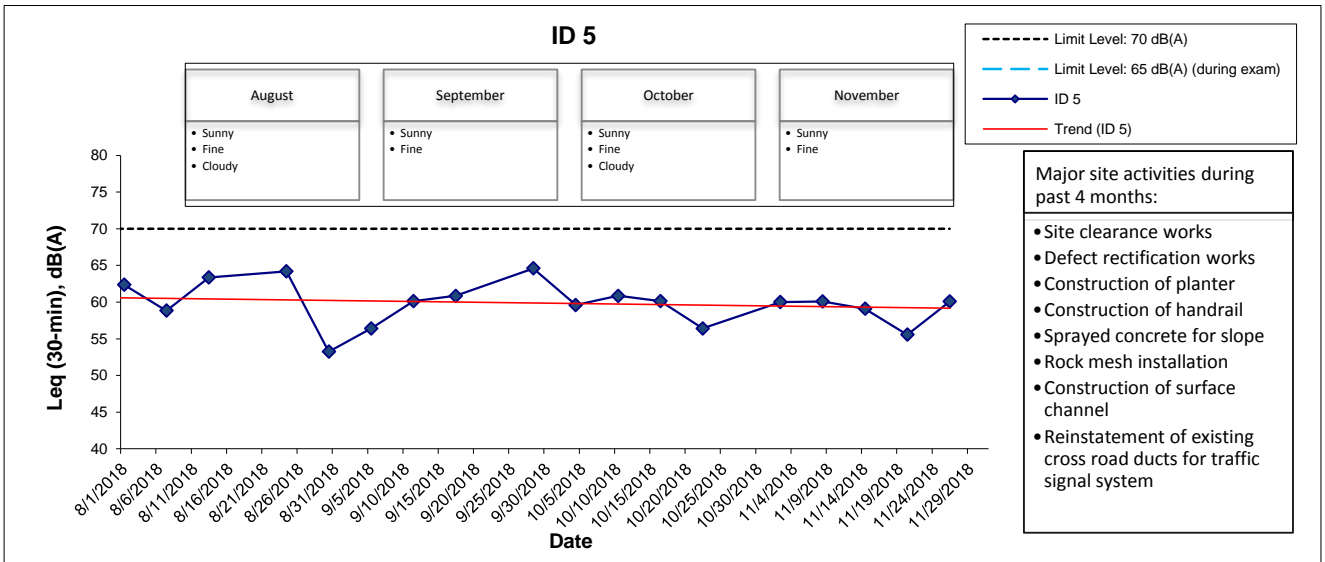
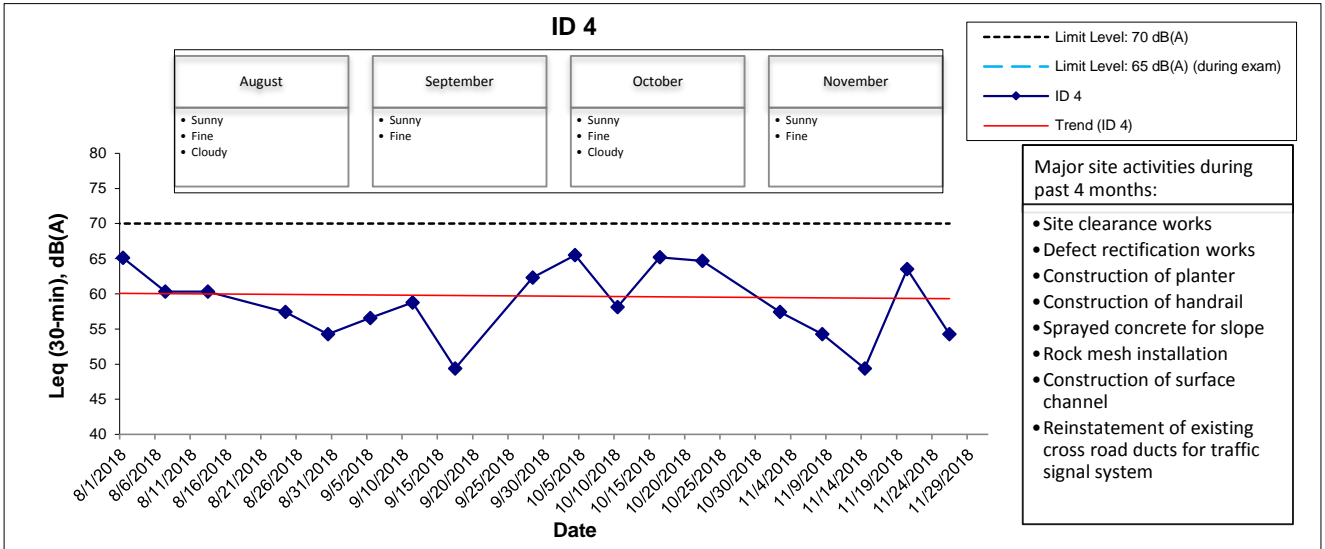
** - Limit Level of 70dB(A) applies to education institutes while 65dB(A) applies during school examination period.



**Development at Anderson Road - Site Formation and
Associated Infrastructure Works**

Graphical Presentations of Noise Monitoring Results

SCALE	N.T.S.	DATE	Nov-18
CHECK	FYW	DRAWN	DTTW
JOB NO.	60043155	APPENDIX	Rev
		G	-



	Development at Anderson Road - Site Formation and Associated Infrastructure Works	SCALE	N.T.S.	DATE	Dec-18
	Graphical Presentations of Noise Monitoring Results	CHECK	FYW	DRAWN	DTTW
		JOB NO.	60043155	APPENDIX	G
					-

APPENDIX H

Meteorological Data for the Reporting Month

[Home](#)[What's new](#)[About us](#)[HKO Side Lights](#)[Our Services](#)[Visitors Figures](#)[Press releases](#)[Weather Note \(Chinese\)](#)[Weather Warning](#)[Local Weather](#)[Observations](#)[Weather Forecast](#)[Weather Monitoring](#)[Imagery](#)[Computer Forecast](#)[Products](#)[MyObservatory](#)[Met on Map](#)[Tropical Cyclones](#)[Aviation Weather](#)[Services](#)[Marine Meteorological](#)[Services](#)[Weather Information for](#)[Sports](#)[Weather Information for](#)[Communities](#)[China Weather](#)[World Weather](#)[Climatological Information](#)[Services](#)[> Climate Watch](#)[> Climate Statistics](#)[> Climate Prediction](#)[> Climate Knowledge](#)[> Need More](#)[Information?](#)[> Global Climate](#)[Services](#)[> Other Useful Links](#)[Climate Forecast](#)[Climate Change](#)[El Nino and La Nina](#)[Earthquakes and](#)[Tsunamis](#)[Astronomy, Space](#)[Weather and](#)[Geomagnetism](#)[Time and Calendar](#)[Back](#)

Daily Extract of Meteorological Observations , November 2018

Year Month

Day	Hong Kong Observatory							
	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)				
01	1012.5	27.4	24.6	22.6	11.6	45	84	0.0
02	1015.5	24.8	22.4	20.1	16.6	70	91	0.1
03	1016.7	23.4	21.5	19.4	19.1	86	99	8.3
04	1016.6	25.7	23.7	22.3	20.7	83	92	Trace
05	1016.8	26.7	24.5	23.5	20.5	79	77	Trace
06	1017.5	27.1	24.7	23.3	20.5	78	41	0.0
07	1017.6	27.1	25.0	23.6	20.8	77	73	0.0
08	1016.6	27.3	25.2	23.9	20.5	75	81	Trace
09	1016.8	27.1	24.5	22.9	19.4	74	82	0.0
10	1017.9	25.4	23.9	23.4	19.9	78	88	Trace
11	1017.0	25.7	23.8	22.5	19.9	79	68	0.0
12	1014.2	28.0	24.9	23.2	20.6	77	76	Trace
13	1014.1	26.3	24.3	23.2	19.9	76	80	Trace
14	1015.6	25.5	23.5	22.7	19.0	76	80	Trace
15	1015.8	23.6	23.2	22.7	19.9	82	86	Trace
16	1015.2	24.9	23.9	22.9	21.2	85	87	1.1
17	1015.8	23.8	23.5	23.1	21.3	87	96	0.5
18	1016.2	25.8	23.8	22.7	20.8	84	85	0.0
19	1017.5	25.8	23.9	22.0	19.1	75	78	0.0
20	1017.4	24.0	23.1	22.0	19.4	80	84	0.1
21	1016.4	27.2	23.9	21.2	20.4	81	82	2.4
22	1019.9	21.9	20.4	18.8	13.6	65	88	0.2
23	1020.1	23.4	20.9	18.1	14.2	66	40	Trace
24	1019.7	23.1	21.7	20.5	16.6	73	78	Trace
25	1018.8	21.6	19.5	17.4	16.5	84	95	21.0
26	1018.9	20.9	19.0	17.0	17.0	89	93	15.7
27	1019.0	22.5	20.5	19.0	17.5	83	89	16.3
28	1019.3	21.4	20.3	19.2	18.5	89	88	7.7
29	1021.0	23.3	21.3	19.8	16.7	75	46	Trace
30	1020.4	23.2	21.5	20.1	16.2	72	46	0.0
Mean/Total	1017.2	24.8	22.9	21.4	18.6	78	79	73.4
Normal [§]	1017.7	24.1	21.8	19.8	16.0	71	54	37.6

Trace means rainfall less than 0.05 mm

§ 1981-2010 Climatological Normal

2003© | [Important notices](#) | [Privacy policy](#)

Last revision date: <17 Jun 2016>

[Radiation Monitoring,
Assessment and
Protection](#)

[Educational Resources](#)

[Publications](#)

[Media and Information
Services](#)

[Audio/Video Webpage](#)

[Electronic services](#)

[World Meteorological
Organization-Official City
Weather Forecasts](#)

[World Meteorological Day](#)

[Severe Weather
Information Centre 2.0](#)

[World Meteorological
Organization-Global
Severe Weather](#)

[Public forms](#)

[Contact & Support](#)

[Access to information](#)

[Tender notices](#)

[Links](#)

[Important notices](#)

[Personalized Website](#)

[Mobile Version](#)

[RSS Feeds](#)

[Text Only Version](#)

[Back](#)



APPENDIX I

Event Action Plan

Appendix I – Event Action Plan

Event and Action Plan for Air Quality

Event	ACTION			
	ET	IC(E)	ER	Contractor
ACTION LEVEL				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source 2. Inform IC(E) and ER. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily 	<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.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source. 2. Inform IC(E) and ER. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Discuss with IC(E) and Contractor for remedial actions required. 6. If exceedance continues, arrange meeting with IC(E) 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 ER on the effectiveness of proposed remedial measures. 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Ensure remedial actions properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposal for remedial actions to IC(E) within 3 working days of notification. 2. Implement the agreed proposals. 3. Amend proposal if appropriate.

Event and Action Plan for Air Quality

Event	ACTION			
	ET	IC(E)	ER	Contractor
LIMIT LEVEL				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source. 2. Inform ER and EPD. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 5. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results. 	<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 ER on the effectiveness of proposed remedial measures. 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Ensure remedial actions properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification. 3. Implement the agreed proposals 4. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source. 2. Inform ER and EPD. 3. Repeat measurements to confirm finding. 4. Increase monitoring frequency to daily. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Arrange meeting with IC(E) and ER to discuss the remedial actions to be taken. 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results. 8. If exceedance stops, cease additional monitoring. 	<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 ER accordingly. 3. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. In consultation with IC(E), agree with Contractor on the remedial measures to be implemented. 4. Ensure remedial measures properly implemented. 5. If exceedance continues, consider what portion of the work is responsible and instruct Contractor to stop the portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification. 3. Implement the agreed proposals. 4. Amend proposal if appropriate.

Event and Action Plan for Noise

Event	Action			
	ET	IC(E)	ER	Contractor
1.Exceedance for Action Level	<ol style="list-style-type: none"> 1. Notify IC(E) and Contractor. 2. Carry out investigation. 3. Report the results of investigation to IC(E) and Contractor. 4. Discuss with Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by ET. 2. Review the proposed remedial measures by the Contractor and advise ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Require Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IC(E). 2. Implement noise mitigation proposals.
1.Exceedance for Limit Level	<ol style="list-style-type: none"> 1. Notify IC(E), ER, EPD and Contractor. 2. Identify sources. 3. Repeat measurements to confirm finding. 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Inform IC(E), ER and EPD the causes and actions taken for the exceedance. 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results. 8. If exceedance stops, cease additional monitoring. 	<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 ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Require Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented 5. If exceedance continues, consider what portion of the work is responsible and instruct Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant portion of works as determined by ER until the exceedance is abated.

APPENDIX J

**Cumulative Statistics of Exceedances, Complaints,
Notification of Summons and Successful Prosecutions**

Appendix J - Cumulative Statistics on Exceedances, Complaints, Notification of Summons and Successful Prosecutions

Cumulative statistics on Exceedances

		Total no. recorded in this month	Total no. recorded since project commencement
1-Hour TSP	Action	-	-
	Limit	-	-
24-Hour TSP	Action	-	17
	Limit	-	1
Noise	Action	-	32
	Limit	-	1

Cumulative statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. recorded in this month	Total no. recorded since project commencement
Environmental complaints	-	-	-	-	75
Notification of summons	-	-	-	-	6
Successful Prosecutions	-	-	-	-	2