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 September 2014

October 2014

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ENVIRON

Ref.: OAPANDSNEM00_0_1340L.14 22 October 2014

By Post and Fax: 2407 8382

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

Attention: Mr. Dennis Leung

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 September 2014

Reference is made to the Environmental Team's submission of the draft Monthly EM&A Report for September 2014 received by e-mail on 14 October 2014 and the subsequent revision of the report received by e-mail on 21 October 2014 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 kind attention and please do not hesitate to contact the undersigned should you have any queries.

Yours sincerely,

David Yeung
Independent Environmental Checker

c.c.	AECOM	Attn.: Mr. Y. W. Fung	Fax: 3922 9797
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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 September 2014. As informed by the Contractor, construction activities in the reporting period were:-

- Site clearance
- Establishment of temporary access road and temporary drainage
- Slope stabilization and upgrading works
- Temporary traffic arrangement and road work at New Clear Water Bay Road, Sau Mau Ping Road, Sau Fung Street , J2 and J/O Po Lam Road
- Toe / Berm planter and platform drainage construction
- Retaining wall structural works
- Trench excavation and pipe laying
- RE wall panel installation and backfilling
- Pipe pile construction of Footbridge C
- Structural works at Footbridges A, B and C
- Pipe Jacking at Sau Mau Ping Road
- Earth work and C&D stock pile
- Breaking of rock trench at public road
- Drainage construction at public road
- Construction of the twin 1800mm dia. pipes
- Construction of the coping structure at R15b
- Installation of precast panel to Bridge A
- Installation of noise barriers
- Waterworks
- Mini-pile construction of Footbridge A tower B

Breaches of Action and Limit Levels for Air Quality

No exceedance of Action and Limit Levels were recorded for both 1-hour TSP and 24-hour TSP monitoring at all monitoring locations in the reporting month.

Breaches of Action and Limit Levels for Noise

According to the information provided by the Contractor, no Action Level exceedance 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 is anticipated to complete in mid 2015.

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 seventy sixth 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 September 2014 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)	Chief Resident Engineer	Dennis Leung	3656 3000	3656 3100
	Senior Resident Engineer	Michael Wright	3656 3000	3656 3100
	Resident Engineer (Safety and Environmental)	Kenneth Lee	3656 3000	3656 3100
IEC (ENVIRON)	Independent Environmental Checker	David Yeung	3465 2888	3465 2899
Contractor (CSCE)	Site Agent	C S Yeung	2704 2095	2702 6553
	Environmental Manager	Leo Chung	2704 2095	2702 6553
ET (AECOM)	ET Leader	Yiu Wah Fung	3922 9366	2317 7609

1.4 Summary of Construction Works

1.4.1 As informed by the Contractor, the Contactor has carried out the following major activities in the reporting month:-

- Site clearance
- Establishment of temporary access road and temporary drainage
- Slope stabilization and upgrading works
- Temporary traffic arrangement and road work at New Clear Water Bay Road, Sau Mau Ping Road, Sau Fung Street , J2 and J/O Po Lam Road
- Toe / Berm planter and platform drainage construction
- Retaining wall structural works
- Trench excavation and pipe laying
- RE wall panel installation and backfilling
- Pipe pile construction of Footbridge C
- Structural works at Footbridges A, B and C
- Pipe Jacking at Sau Mau Ping Road
- Earth work and C&D stock pile
- Breaking of rock trench at public road
- Drainage construction at public road
- Construction of the twin 1800mm dia. pipes
- Construction of the coping structure at R15b
- Installation of precast panel to Bridge A
- Installation of noise barriers
- Waterworks
- Mini-pile construction of Footbridge A tower B

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 & GMW-2310)

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 ±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 ±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 m^3/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m^3/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 September 2014 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 ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
ID 1A	76.5	74.4 – 78.6	201.5	500
ID 2	76.3	73.8 – 78.3	197.0	500
ID 3	76.0	72.9 – 79.0	203.7	500
ID 4	76.0	73.6 – 79.0	264.6	500
ID 5	76.8	73.9 – 80.1	267.4	500

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

	Average ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
ID 1A	25.9	17.8 – 35.8	170.2	260
ID 2	31.2	17.0 – 55.1	200.0	260
ID 3	52.4	30.0 – 80.8	200.0	260
ID 4	37.6	17.2 – 53.6	181.3	260
ID 5	48.4	18.8 – 93.1	180.8	260

2.7.2 No Action and Limit Level exceedance was recorded for both 1-hour TSP and 24-hour TSP monitoring at all monitoring locations 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	Rion (Model No. NL-31) & B&K (Model No. 2238)
Acoustic Calibrator	Rion (Model No. NC-73)

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 September 2014 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	59.1	52.4 – 64.3	*65/70
ID 2	62.7	61.6 – 64.1	75
ID 3	61.9	55.0 – 65.2	75
ID 4	62.6	58.1 – 64.8	*65/70
ID 5	61.7	58.3 – 64.4	*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 noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded.

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 4, 11, 17, 25 and 30 September 2014. Particular observations and status of non-compliance issued by IEC are described below.

4.1.2 The Contractor has rectified most of the observations as identified during the environmental site inspections in the reporting month within a agreed time frame. Rectification of the remaining identified items are undergoing by the Contractor. Follow-up inspections on the status on provision of mitigation measures will be conducted to ensure all identified items are mitigated properly.

4.1.3 Air Quality Impact

- Dark smoke from a generator on the slope at Portion G was observed. The Contractor should maintain all plants/equipment in a good condition to prevent dark smoke emission.
- Exposed slope beside Road L2 was observed. The Contractor should cover the slope with tarpaulin sheets to minimize dust generation.

4.1.4 Construction Noise Impact

- The panels of a generator on the slope of Portion G were open during operation. The Contractor should keep all panels of the generator close during operation to minimize noise nuisance.

4.1.5 Water Quality Impact

- Stagnant water inside the drip tray at Portion C2 was observed. The Contractor should clear the stagnant water to prevent mosquito breeding.

4.1.6 Chemical and Waste Management

- A generator at Bridge B was placed on bare ground without a drip tray. The Contractor should provide the generator with a drip tray to retain oil leakage, if any.
- Oil leakage was observed from an excavator at Portion A2. The Contractor should clear the leaked oil and dispose of the contaminated soil as chemical wastes.
- General refuse was accumulated at Footbridge B. The Contractor should clear the refuse regularly.
- An oil drum at Portion C2 was placed on bare ground without a drip tray. The Contractor should place the oil drum inside a drip tray to retain oil leakage, if any.
- Chemical containers were observed on bare ground without drip trays at Towers A and B of Footbridge B. The Contractor should place the chemical containers inside a drip tray to retain oil leakage, if any.
- Chemical containers at Footbridge A were observed on bare ground without drip trays. The Contractor should place the chemical containers inside a drip tray to retain oil leakage, if any.

4.1.7 Landscape and Visual Impact

- Nil

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, a total of 2170.5m^3 C&D material was generated on site in the reporting month. 2170.5m^3 of hard rock and large broken concrete was generated and transferred to Anderson Road Quarry for further process.

For C&D waste, no of metals was generated and collected by registered recycling collector. 10kg of paper cardboard packing and 10kg of plastic were generated on site and collected by registered recycling collector. No chemical waste was collected by licensed chemical waste collectors. 57.6 tonnes 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 Practise 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 - Improvement works to existing roads
APCO	NA notification	--	16/04/09	--	- Whole Construction Site
WPCO	Discharge License	WT00018111-2014	03/03/14	31/08/14*	- Discharge of Construction Runoff
	Discharge License	EP670/I/C0613/293	02/02/12	28/02/17	- Discharge from Road L6
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
NCO	Construction Noise Permit	GW-RE0900-14	13/08/14	08/02/15	- Whole Construction Site

Remark: * Renewal of the Discharge License WT00018111-2014 was applied in early July by the Contractor. Its approval is pending.

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

4.4 Implementation Status of Environmental Mitigation Measures

4.4.1 In response to the site audit findings, the Contractor carried out corrective actions promptly for particular items recorded. Outstanding items were closely monitored to ensure mitigation measures are implemented properly.

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 level at all monitoring locations in the reporting month.

4.5.2 According to the information provided by the Contractor, no noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded.

4.5.3 No Limit Level exceedance for 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 October and November 2014 will be:-

- Site clearance
- Establishment of temporary access road and temporary drainage
- Slope stabilization and upgrading works
- Temporary traffic arrangement and road work at New Clear Water Bay Road, Sau Mau Ping Road, Sau Fung Street , J2 and J/O Po Lam Road
- Toe / Berm planter and platform drainage construction
- Retaining wall structural works
- Trench excavation and pipe laying
- RE wall panel installation and backfilling
- Pipe pile construction of Footbridge C
- Structural works at Footbridges A, B and C
- Pipe Jacking at Sau Mau Ping Road
- Earth work and C&D stock pile
- Breaking of rock trench at public road
- Drainage construction at public road
- Construction of the twin 1800mm dia. pipes
- Construction of the coping structure at R15b
- Installation of precast panel to Bridge A
- Installation of noise barriers
- Waterworks
- Mini-pile construction of Footbridge A tower B

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 October 2014 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 monitoring results complied with the Action / Limit Level at all monitoring locations in the reporting month.

6.1.4 According to the Contractor's information, no noise complaint was received in the reporting month. Hence, no Action Level exceedance was recorded.

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

6.1.6 Environmental site inspections were carried out 5 times in September 2014. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.

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:-

Air Quality Impact

- Proper maintenance to the machineries should be provided to prevent dark smoke.
- Covering of exposed slopes with tarpaulin sheets to minimize dust generation.

Construction Noise Impact

- Noise abatement mechanism should be provided to prevent noise nuisance.

Water Quality Impact

- Stagnant water and deposited silt should be cleared regularly.

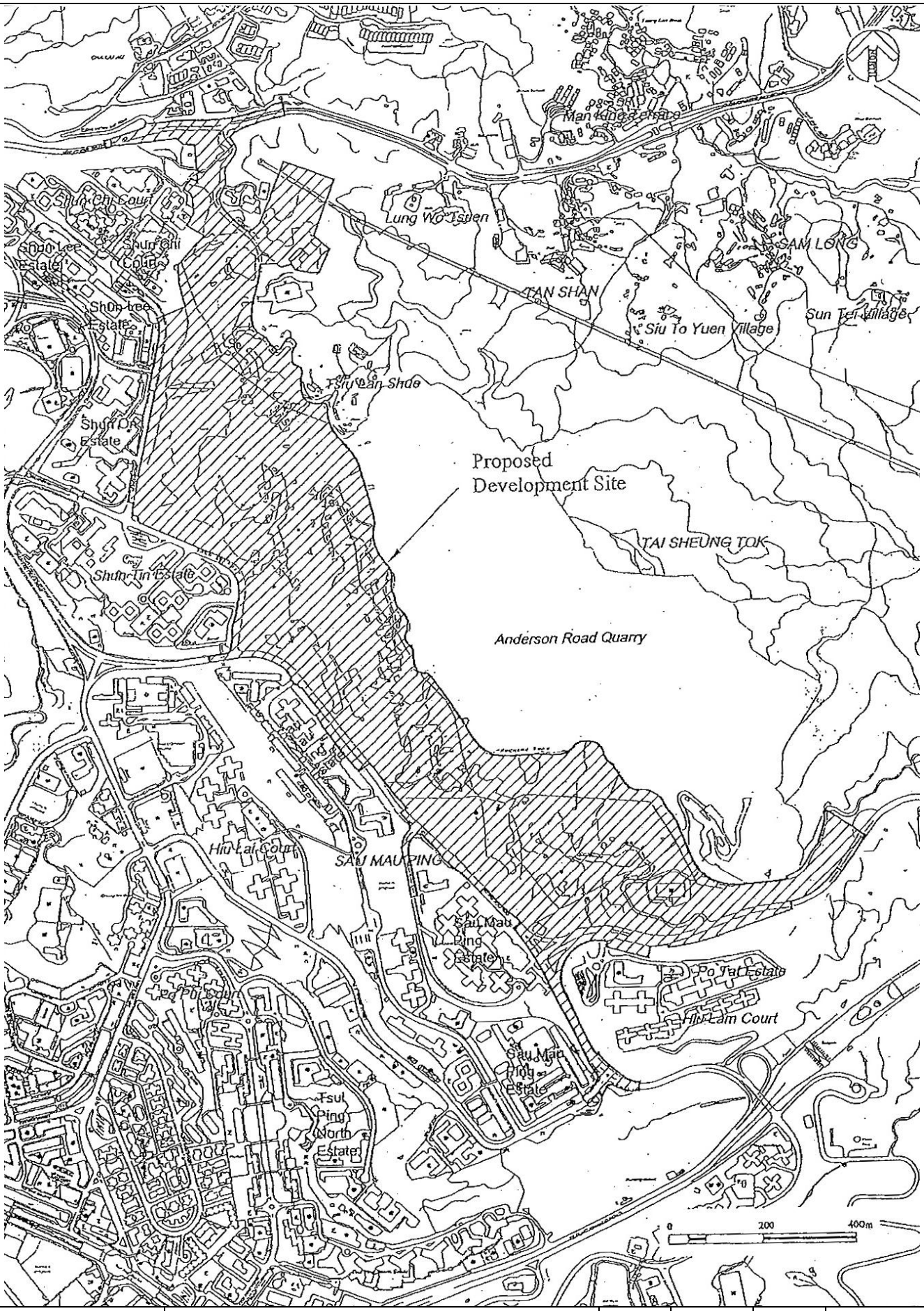
Chemical and Waste Management

- Sufficient drip tray should be provided to the equipment and chemical containers in order to retain any oil or chemical leakage. Moreover, regular inspection should be conducted to maintain the status of the equipment to prevent any oil leakage and to ensure that maintenance works are carried out in roofed, paved and confined works area only.
- Clearance of general refuse regularly.

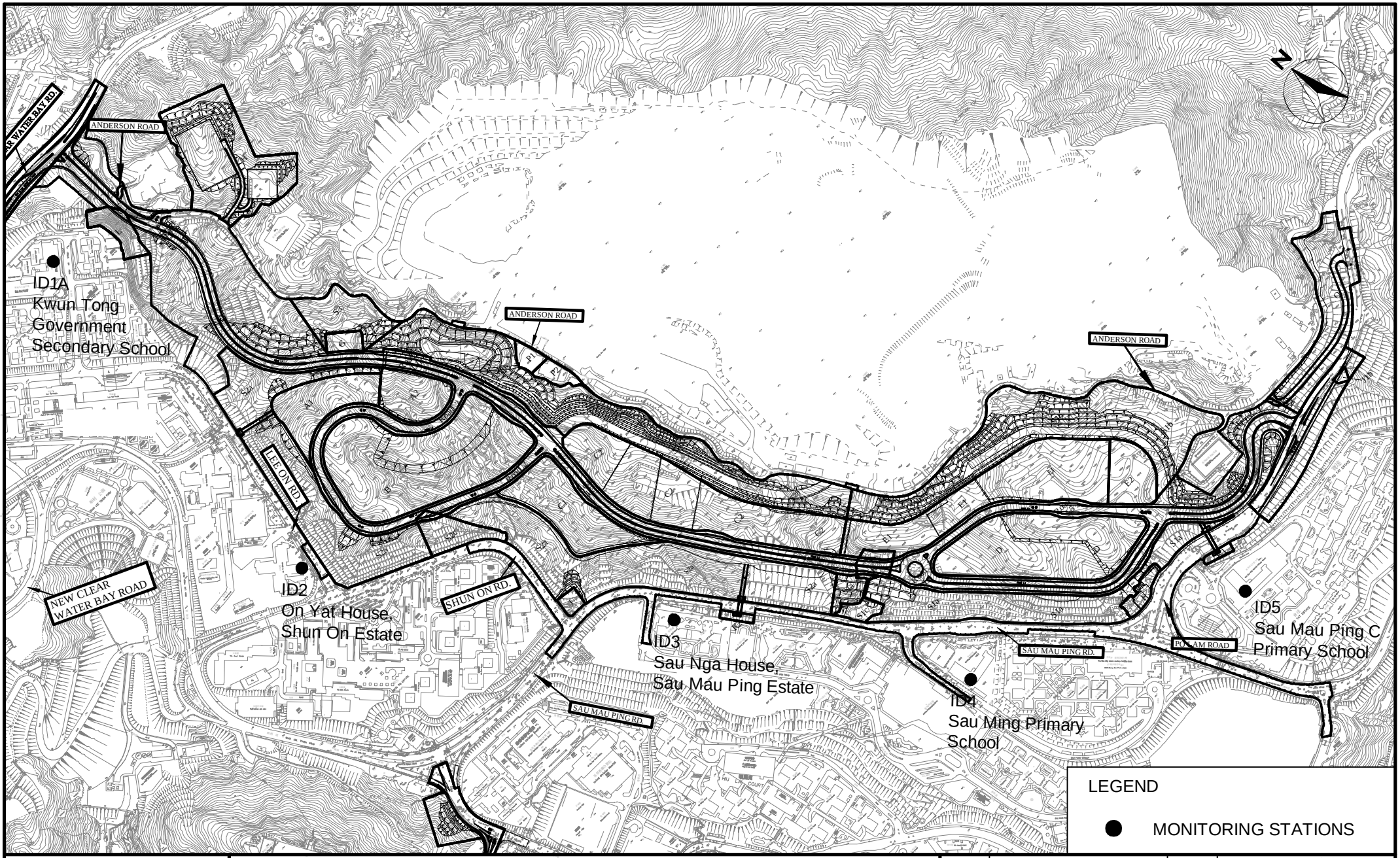
Landscape and Visual Impact

- No specific observation was identified in the reporting month.

FIGURES



AECOM	**Development at Anderson Road - Site Formation and Associated Infrastructure Works**	SCALE	N.T.S.	DATE	Nov-09
		CHECK	ENFL	DRAWN	LCHC
	GENERAL LAYOUT PLAN	JOB NO.	60043155	**DRAWING No.** FIG 1.1	**Rev.** -



AECOM

DEVELOPMENT AT ANDERSON ROAD
SITE FORMATION AND ASSOCIATED INFRASTRUCTURE WORKS

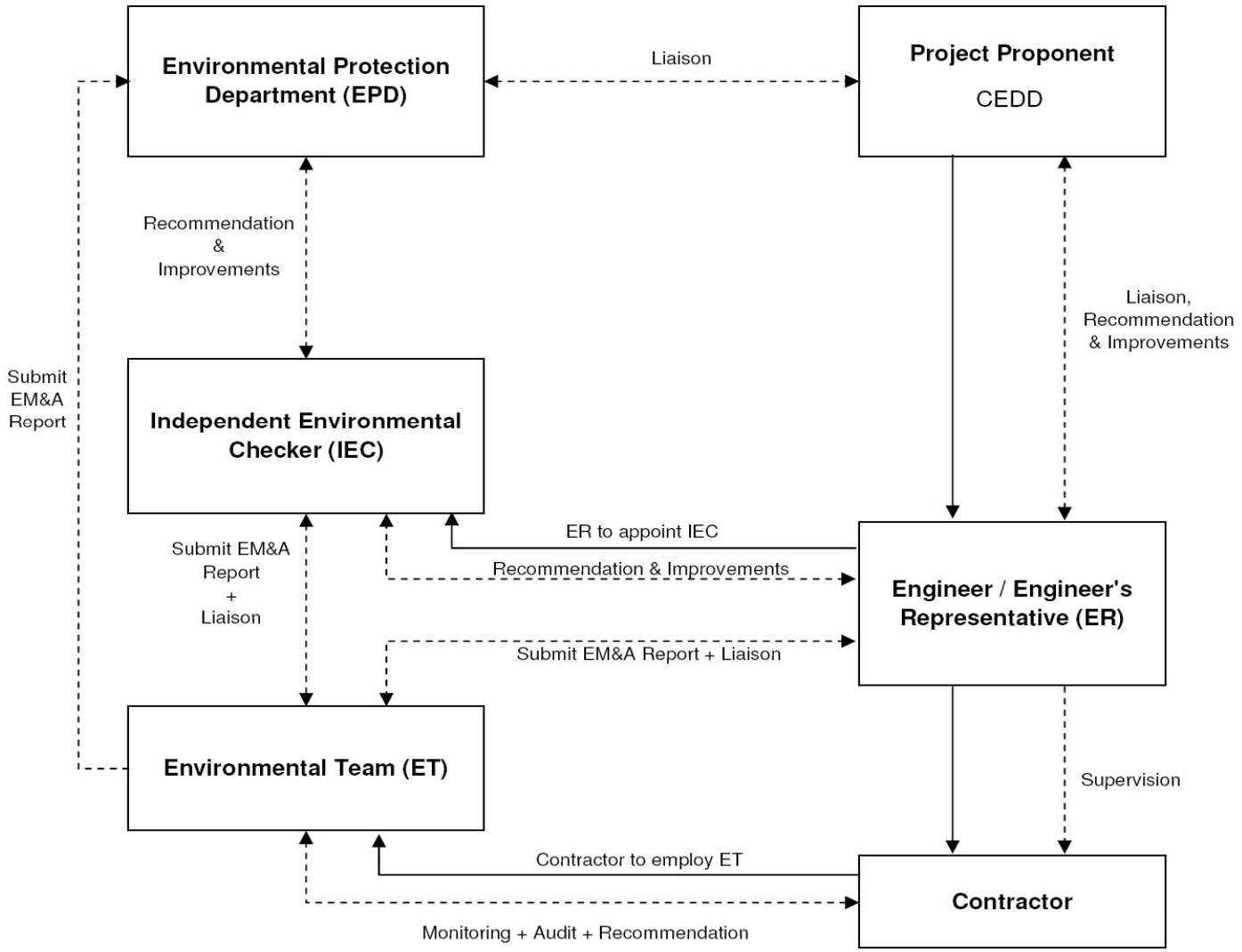
MONITORING LOCATIONS

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

P:\60043155\1.01\CAD\Drawing\Report\Anderson_monitoring_location.dwg

APPENDIX A

Project Organization Structure



Employment Relationship

Working Relationship

AECOM	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 A	Rev -

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 Practice	Mean vehicle speed of haulage trucks at 10km/hr.	All construction sites	V
	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	Site exits	V

	necessary.		
General Site Practice	Suitable side and tailboards on haulage vehicles.	All construction sites	V
	Watering of temporary stockpiles.	All construction sites	@
Blasting	Use of select aggregate and fines to stem the charge with drill holes and watering of blast face.	All construction sites	V
	Use of vacuum extraction drilling methods.	All construction sites	V
	Carefully sequenced blasting.	All construction sites	V
Crushing	Fabric filters installed for the crushing plant.	All construction sites	V
	Water sprays on the crusher.	All construction sites	V
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	V
	The loading point at the crusher is enclosed with dust collection system installed.	All construction sites	V
	When transferring materials from conveyor belt or crusher to the dump trucks, chutes or dust curtains are used for controlling dust.	All construction sites	V
	Cover the conveyor belts with steel roof and canvas sides.	All construction sites	V
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	Site drainage system	V

	with drainage directed to an oil interceptor.		
Construction Phase	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	Difference 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	All construction sites	V

	Packaging, Labelling and Storage of Chemical wastes. When off-site 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	@
	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	All construction sites	V

	containers such as open skips should be provided at every work site for use 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	N/A
Additional Measures	Screen planting along the access roads, to limit impacts of elevated structures and rock slopes.	Whole development	N/A
	Colouring of shotcrete slopes.	Whole development	N/A
	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	N/A
	Screen planting in front of retaining walls / granite cladding to those walls to reduce glare and visual impacts.	Whole development	N/A
	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	N/A
	Preservation (by transplanting if necessary) of any trees identified as being	Whole development	V

	of particular landscape value.		
Ecology			
	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	N/A
	Seeds of the native species when possible should be added into the hydroseeding mix. Seedings 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 complied 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	N/A (Works In Progress)

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	N/A

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

AECOM Asia Company Limited

TSP - Total Suspended Particulates Sampler
Field Calibration Report

Station: Kwun Tong Government Secondary School (ID1A)
Operator: Leung Yiu Ting
Date: 15-Aug-14
Next Due Date: 15-Oct-14
Pump No.: 763
Verified Against: O.T.S -- 0843
Equipment No.: A-001-64T
Expiration Date: 9-Dec-2014

Ambient Condition					
Temperature, Ta	304	Kelvin	Pressure, Pa	752.9	mmHg

Orifice Transfer Standard Information					
Equipment No.:	843	Slope, mc	1.99102	Intercept, bc	-0.00616
Last Calibration Date:	9-Dec-13	**mc x Qstd + bc = [H x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	9-Dec-14				

Calibration of TSP Sampler

Calibration Point	H in. of water	[H x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (m^3/min) **X - axis**	W in. of oil	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	8.8	2.92	1.47	5.9	2.39
2	7.5	2.70	1.36	5.0	2.20
3	5.8	2.37	1.19	3.5	1.84
4	4.1	2.00	1.01	2.2	1.46
5	2.8	1.65	0.83	1.4	1.17

By Linear Regression of Y on X

Slope , mw = 1.9511 **Intercept, bw =** -0.4747

Correlation Coefficient* = 0.9988

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.21 m^3/min (43 CFM)

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

m x Qstd + b = [W x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point W = (m x Qstd + b)^2 x (760 / Pa) x (Ta / 298) = **3.66**

*If Correlation Coefficient < 0.990, check and recalibrate again.

Remarks:

QC Reviewer: WS CHAN Signature: [signature] Date: 18/8/14

AECOM Asia Company Limited

TSP - Total Suspended Particulates Sampler
Field Calibration Report

Station: On Yat House (ID2)
Date: 15-Aug-14
Pump No.: 1654
Equipment No.: A-001-61T

Operator: Leung Yiu Ting
Next Due Date: 15-Oct-14
Verified Against: O.T.S -- 0843
Expiration Date: 9-Dec-2014

Ambient Condition					
Temperature, Ta	304	Kelvin	Pressure, Pa	752.9	mmHg

Orifice Transfer Standard Information					
Equipment No.:	843	Slope, mc	1.99102	Intercept, bc	-0.00616
Last Calibration Date:	9-Dec-13	**mc x Qstd + bc = [H x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	9-Dec-14				

Calibration of TSP Sampler

Calibration Point	H in. of water	[H x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (m^3/min) **X - axis**	W in. of oil	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	8.5	2.87	1.44	5.7	2.35
2	6.4	2.49	1.25	4.2	2.02
3	5.2	2.25	1.13	3.0	1.71
4	4.2	2.02	1.02	2.2	1.46
5	3.0	1.71	0.86	1.4	1.17

By Linear Regression of Y on X

Slope , mw = **2.0887** **Intercept, bw =** **-0.6391**

Correlation Coefficient* = **0.9977**

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.21 m^3/min (43 CFM)

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

m x Qstd + b = [W x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point W = (m x Qstd + b)^2 x (760 / Pa) x (Ta / 298) = **3.67**

*If Correlation Coefficient < 0.990, check and recalibrate again.

Remarks:

QC Reviewer: W S CHAN Signature: Date: 18/8/14

AECOM Asia Company Limited

TSP - Total Suspended Particulates Sampler
Field Calibration Report

Station: Sau Nga House (ID3)
Date: 15-Aug-14
Pump No.: 1272
Equipment No.: A-001-31T

Operator: Leung Yiu Ting
Next Due Date: 15-Oct-14
Verified Against: O.T.S -- 0843
Expiration Date: 9-Dec-2014

Ambient Condition					
Temperature, Ta	304	Kelvin	Pressure, Pa	752.9	mmHg

Orifice Transfer Standard Information					
Equipment No.:	843	Slope, mc	1.99102	Intercept, bc	-0.00616
Last Calibration Date:	9-Dec-13	**mc x Qstd + bc = [H x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	9-Dec-14				

Calibration of TSP Sampler

Calibration Point	H in. of water	[H x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (m^3/min) **X - axis**	W in. of oil	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	8.1	2.80	1.41	5.6	2.33
2	6.5	2.51	1.26	4.4	2.07
3	5.5	2.31	1.16	3.5	1.84
4	4.3	2.04	1.03	2.4	1.53
5	3.1	1.74	0.88	1.7	1.28

By Linear Regression of Y on X

Slope , mw = 2.0397 **Intercept, bw =** -0.5316

Correlation Coefficient* = 0.9978

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.21 m^3/min (43 CFM)

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

m x Qstd + b = [W x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point W = (m x Qstd + b)^2 x (760 / Pa) x (Ta / 298) = **3.86**

*If Correlation Coefficient < 0.990, check and recalibrate again.

Remarks:

QC Reviewer: WS CHAN Signature: [signature] Date: 18/8/14

AECOM Asia Company Limited

TSP - Total Suspended Particulates Sampler
Field Calibration Report

Station: Sau Ming Primary School (ID4)
Operator: Shum Kam Yuen
Date: 14-Aug-14
Next Due Date: 14-Oct-14
Pump No.: 1275
Verified Against: O.T.S -- 0843
Equipment No.: A-001-28T
Expiration Date: 9-Dec-2014

Ambient Condition					
Temperature, Ta	302	Kelvin	Pressure, Pa	752.8	mmHg

Orifice Transfer Standard Information					
Equipment No.:	843	Slope, mc	1.99102	Intercept, bc	-0.00616
Last Calibration Date:	9-Dec-13	**mc x Qstd + bc = [H x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	9-Dec-14				

Calibration of TSP Sampler

Calibration Point	H in. of water	[H x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (m^3/min) **X - axis**	W in. of oil	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	8.4	2.87	1.44	5.8	2.38
2	6.4	2.50	1.26	4.4	2.07
3	5.5	2.32	1.17	3.4	1.82
4	4.3	2.05	1.03	2.5	1.56
5	3.3	1.80	0.91	1.8	1.33

By Linear Regression of Y on X

Slope , mw = **2.0132** **Intercept, bw =** **-0.5074**

Correlation Coefficient* = **0.9981**

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.21 m^3/min (43 CFM)

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

m x Qstd + b = [W x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point W = (m x Qstd + b)^2 x (760 / Pa) x (Ta / 298) = **3.81**

*If Correlation Coefficient < 0.990, check and recalibrate again.

Remarks:

QC Reviewer: WS CHAN Signature: Date: 15/8/14

AECOM Asia Company Limited

TSP - Total Suspended Particulates Sampler
Field Calibration Report

Station: Sau Mau Ping Catholic Primary School (ID5)
Operator: Shum Kam Yuen
Date: 14-Aug-14
Next Due Date: 14-Oct-14
Pump No.: 10088
Verified Against: O.T.S -- 0843
Equipment No.: A-001-13T
Expiration Date: 9-Dec-2014

Ambient Condition					
Temperature, Ta	302	Kelvin	Pressure, Pa	752.8	mmHg

Orifice Transfer Standard Information					
Equipment No.:	843	Slope, mc	1.99102	Intercept, bc	-0.00616
Last Calibration Date:	9-Dec-13	**mc x Qstd + bc = [H x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	9-Dec-14				

Calibration of TSP Sampler

Calibration Point	H in. of water	[H x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (m^3/min) **X - axis**	W in. of oil	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	8.1	2.81	1.41	5.9	2.40
2	7.2	2.65	1.33	4.6	2.12
3	5.5	2.32	1.17	3.5	1.85
4	4.3	2.05	1.03	2.4	1.53
5	2.9	1.68	0.85	1.4	1.17

By Linear Regression of Y on X

Slope , mw = 2.1295 **Intercept, bw =** -0.6520

Correlation Coefficient* = 0.9965

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.21 m^3/min (43 CFM)

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

m x Qstd + b = [W x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point W = (m x Qstd + b)^2 x (760 / Pa) x (Ta / 298) = **3.79**

*If Correlation Coefficient < 0.990, check and recalibrate again.

Remarks:

QC Reviewer: WS CHAN Signature: Date: 15/8/14

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Dec 09, 2013 Rootsmeter S/N 0438320 Ta (K) - 290
Operator Tisch Orifice I.D. - 0843 Pa (mm) - 755.65

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4140	3.2	2.00
2	NA	NA	1.00	0.9940	6.4	4.00
3	NA	NA	1.00	0.8870	7.9	5.00
4	NA	NA	1.00	0.8450	8.8	5.50
5	NA	NA	1.00	0.6990	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
1.0174	0.7195	1.4295		0.9957	0.7042	0.8761
1.0131	1.0192	2.0216		0.9915	0.9975	1.2390
1.0109	1.1397	2.2602		0.9894	1.1155	1.3852
1.0098	1.1950	2.3705		0.9883	1.1696	1.4528
1.0044	1.4369	2.8590		0.9830	1.4063	1.7522
Qstd slope (m) =		1.99102		Qa slope (m) =		1.24674
intercept (b) =		-0.00616		intercept (b) =		-0.00378
coefficient (r) =		0.99996		coefficient (r) =		0.99996
y axis = SQRT[H2O(Pa/760)(298/Ta)]				y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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*	K_o: *12500*	
Last Calibration Date*:	*10 May 2014*		

*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	*11-05-14*	*09:30 - 10:30*	*26.7*	*75*	*0.04434*	*1775*	*29.58*
2	*11-05-14*	*10:30 - 11:30*	*26.7*	*75*	*0.04716*	*1880*	*31.33*
3	*11-05-14*	*11:30 - 12:30*	*26.8*	*76*	*0.04927*	*1964*	*32.73*
4	*11-05-14*	*12:30 - 13:30*	*26.8*	*75*	*0.05035*	*2015*	*33.58*

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: *0.9982*

Validity of Calibration Record: *11 May 2015*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 12 May 2014

EQUIPMENT CALIBRATION RECORD

Type:	***Laser Dust Monitor***
Manufacturer/Brand:	***SIBATA***
Model No.:	***LD-3***
Equipment No.:	***A.005.08a***
Sensitivity Adjustment Scale Setting:	***702 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*:	*10 May 2014*		

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): *702* CPM
Sensitivity Adjustment Scale Setting (After Calibration): *702* 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	*11-05-14*	*09:45 - 10:45*	*26.7*	*75*	*0.04568*	*1713*	*28.50*
2	*11-05-14*	*10:45 - 11:45*	*26.7*	*75*	*0.04857*	*1819*	*30.32*
3	*11-05-14*	*11:45 - 12:45*	*26.8*	*76*	*0.05063*	*1903*	*31.72*
4	*11-05-14*	*12:45 - 13:45*	*26.8*	*75*	*0.05116*	*1922*	*32.03*

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): *0.0016*
Correlation coefficient: *0.9984*

Validity of Calibration Record: *11 May 2015*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 12 May 2014

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*: *10 May 2014*

*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	*11-05-14*	*13:30 - 14:30*	*26.8*	*75*	*0.05034*	*2017*	*33.62*
2	*11-05-14*	*14:30 - 15:30*	*26.9*	*76*	*0.05211*	*2084*	*34.73*
3	*11-05-14*	*15:30 - 16:30*	*26.9*	*76*	*0.05163*	*2066*	*34.43*
4	*11-05-14*	*16:30 - 17:30*	*26.9*	*76*	*0.05272*	*2113*	*35.22*

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: *0.9965*

Validity of Calibration Record: *11 May 2015*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 12 May 2014

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_o: *12500*	
Last Calibration Date*:	*10 May 2014*		

*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	*11-05-14*	*13:45 - 14:45*	*26.8*	*75*	*0.04984*	*1996*	*33.27*
2	*11-05-14*	*14:45 - 15:45*	*26.9*	*76*	*0.05196*	*2077*	*34.62*
3	*11-05-14*	*15:45 - 16:45*	*26.9*	*76*	*0.05141*	*2055*	*34.25*
4	*11-05-14*	*16:45 - 17:45*	*26.9*	*76*	*0.05263*	*2109*	*35.15*

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: *0.9969*

Validity of Calibration Record: *11 May 2015*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 12 May 2014

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*	K_o: *12500*	
Last Calibration Date*:	*10 May 2014*		

*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	*18-05-14*	*09:00 - 10:00*	*28.3*	*77*	*0.04527*	*1815*	*30.25*
2	*18-05-14*	*10:00 - 11:00*	*28.3*	*77*	*0.04811*	*1923*	*32.05*
3	*18-05-14*	*11:00 - 12:00*	*28.3*	*77*	*0.05103*	*2041*	*34.02*
4	*18-05-14*	*12:00 - 13:00*	*28.4*	*77*	*0.05366*	*2157*	*35.95*

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: *0.9987*

Validity of Calibration Record: *18 May 2015*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 19 May 2014

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* K_o: *12500*
Last Calibration Date*: *10 May 2014*

*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	*18-05-14*	*09:30 - 10:30*	*28.3*	*77*	*0.04614*	*1846*	*30.77*
2	*18-05-14*	*10:30 - 11:30*	*28.3*	*77*	*0.04823*	*1934*	*32.23*
3	*18-05-14*	*11:30 - 12:30*	*28.3*	*77*	*0.05152*	*2053*	*34.22*
4	*18-05-14*	*12:30 - 13:30*	*28.4*	*77*	*0.05391*	*2162*	*36.03*

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: *0.9981*

Validity of Calibration Record: *18 May 2015*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 19 May 2014

EQUIPMENT CALIBRATION RECORD

Type:	***Laser Dust Monitor***
Manufacturer/Brand:	***SIBATA***
Model No.:	***LD-3B***
Equipment No.:	***A.005.14a***
Sensitivity Adjustment Scale Setting:	***786 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*:	*10 May 2014*

*Remarks: Recommended interval for hardware calibration is 1 year

Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): *786* CPM
Sensitivity Adjustment Scale Setting (After Calibration): *786* 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	*18-05-14*	*12:45 - 13:45*	*28.4*	*77*	*0.05027*	*2158*	*35.97*
2	*18-05-14*	*13:45 - 14:45*	*28.5*	*76*	*0.05161*	*2211*	*36.85*
3	*18-05-14*	*14:45 - 15:45*	*28.5*	*76*	*0.05235*	*2247*	*37.45*
4	*18-05-14*	*15:45 - 16:45*	*28.4*	*77*	*0.05203*	*2233*	*37.22*

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): *0.0014*
Correlation coefficient: *0.9969*

Validity of Calibration Record: *18 May 2015*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 19 May 2014

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓
E-mail: smec@cigismec.com Website: www.cigismec.com
Tel : (852) 2873 6860
Fax : (852) 2555 7533
HOKLAS 028

CERTIFICATE OF CALIBRATION

Certificate No.: 14CA0305 06-01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2285692 N.009.04	,	2250420
Adaptors used:	-	,	-

Item submitted by

Customer Name:	AECOM ASIA CO. LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	05-Mar-2014

Date of test: 07-Mar-2014

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	22-Jun-2014	CIGISMEC
Signal generator	DS 360	33873	15-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI

Ambient conditions

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

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.

3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure 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: Huang Jian Min/Feng Jun Qi **Date:** 12-Mar-2014 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓
E-mail: smec@cigismec.com Website: www.cigismec.com
Tel : (852) 2873 6860
Fax : (852) 2555 7533
HKLAS 028

CERTIFICATE OF CALIBRATION

Certificate No.: 14CA0702 01-01

Item tested

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

Item submitted by

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	02-Jul-2014

Date of test: 03-Jul-2014

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	20-Jun-2015	CIGISMEC
Signal generator	DS 360	33873	09-Apr-2015	CEPREI
Signal generator	DS 360	61227	09-Apr-2015	CEPREI

Ambient conditions

Temperature:	21 ± 1 °C
Relative humidity:	60 ± 10 %
Air pressure:	1000 ± 10 hPa

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.

3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure 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: Huang Jian Min/Feng Jun Qi **Date:** 04-Jul-2014 **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.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓
E-mail: smec@cigismec.com Website: www.cigismec.com
Tel : (852) 2873 6860
Fax : (852) 2555 7533
HOKLAS 028

CERTIFICATE OF CALIBRATION

Certificate No.: 13CA1107 01-01

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	Rion Co., Ltd.	,	Rion Co., Ltd.
Type/Model No.:	NL-31	,	UC-53A
Serial/Equipment No.:	00320528 / N.007.03A	,	90565
Adaptors used:	-	,	-

Item submitted by

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	07-Nov-2013

Date of test: 08-Nov-2013

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	22-Jun-2014	CIGISMEC
Signal generator	DS 360	33873	15-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI

Ambient conditions

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

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.

3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure 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: Huang Jian Min/Feng Jun Qi **Date:** 11-Nov-2013 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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.

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
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Tel : (852) 2873 6860
Fax : (852) 2555 7533
HOKLAS 028

CERTIFICATE OF CALIBRATION

Certificate No.: 13CA1107 01-02 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Rion Co., Ltd.
Type/Model No.:	NC-73
Serial/Equipment No.:	10307223 / N.004.08
Adaptors used:	-

Item submitted by

Curstomer:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	07-Nov-2013

Date of test: 08-Nov-2013

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	17-Apr-2014	SCL
Preamplifier	B&K 2673	2239857	16-Apr-2014	CEPREI
Measuring amplifier	B&K 2610	2346941	24-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI
Digital multi-meter	34401A	US36087050	10-Dec-2013	CEPREI
Audio analyzer	8903B	GB41300350	15-Apr-2014	CEPREI
Universal counter	53132A	MY40003662	15-Apr-2014	CEPREI

Ambient conditions

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

Test specifications

1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.

2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.

3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

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

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

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 11-Nov-2013 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

APPENDIX E

EM&A Monitoring Schedules

CV/2007/03 - Development at Anderson Road
Impact Air Quality and Noise Monitoring Schedule for September 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Sep	2-Sep	3-Sep	4-Sep	5-Sep	6-Sep
				24-hour TSP 1-hour TSP Noise (ID1-5)		
7-Sep	8-Sep	9-Sep	10-Sep	11-Sep	12-Sep	13-Sep
			24-hour TSP 1-hour TSP Noise (ID1-5)			
14-Sep	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep
		24-hour TSP 1-hour TSP Noise (ID1-5)				
21-Sep	22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep
	24-hour TSP 1-hour TSP Noise (ID1-5)					24-hour TSP 1-hour TSP (ID1-5)
28-Sep	29-Sep	30-Sep				

CV/2007/03 - Development at Anderson Road
Tentative Impact Air Quality and Noise Monitoring Schedule for October 2014

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Oct	2-Oct	3-Oct	4-Oct
					24-hour TSP 1-hour TSP Noise (ID1-5)	
5-Oct	6-Oct	7-Oct	8-Oct	9-Oct	10-Oct	11-Oct
				24-hour TSP 1-hour TSP Noise (ID1-5)		
12-Oct	13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct
		24-hour TSP 1-hour TSP Noise (ID1-5)				
19-Oct	20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct
	24-hour TSP 1-hour TSP Noise (ID1-5)					24-hour TSP 1-hour TSP (ID1-5)
26-Oct	27-Oct	28-Oct	29-Oct	30-Oct	31-Oct	
					24-hour TSP 1-hour TSP Noise (ID1-5)	

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 Conc. (μg/m^3)	2nd Hour Conc. (μg/m^3)	3rd Hour Conc. (μg/m^3)
4-Sep-14	11:26	76.5	77.4	75.9
10-Sep-14	11:00	78.0	76.2	75.2
16-Sep-14	13:31	77.1	78.6	77.9
22-Sep-14	11:17	74.8	76.7	75.5
27-Sep-14	12:08	74.4	75.9	77.6
			Average	76.5
			Min	74.4
			Max	78.6

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

Date	Start Time (hh:mm)	1st Hour Conc. (μg/m^3)	2nd Hour Conc. (μg/m^3)	3rd Hour Conc. (μg/m^3)
4-Sep-14	11:13	78.2	74.8	76.1
10-Sep-14	11:08	78.3	74.7	75.6
16-Sep-14	13:16	76.2	76.7	77.3
22-Sep-14	11:00	77.5	76.2	73.9
27-Sep-14	11:55	78.2	77.1	73.8
			Average	76.3
			Min	73.8
			Max	78.3

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

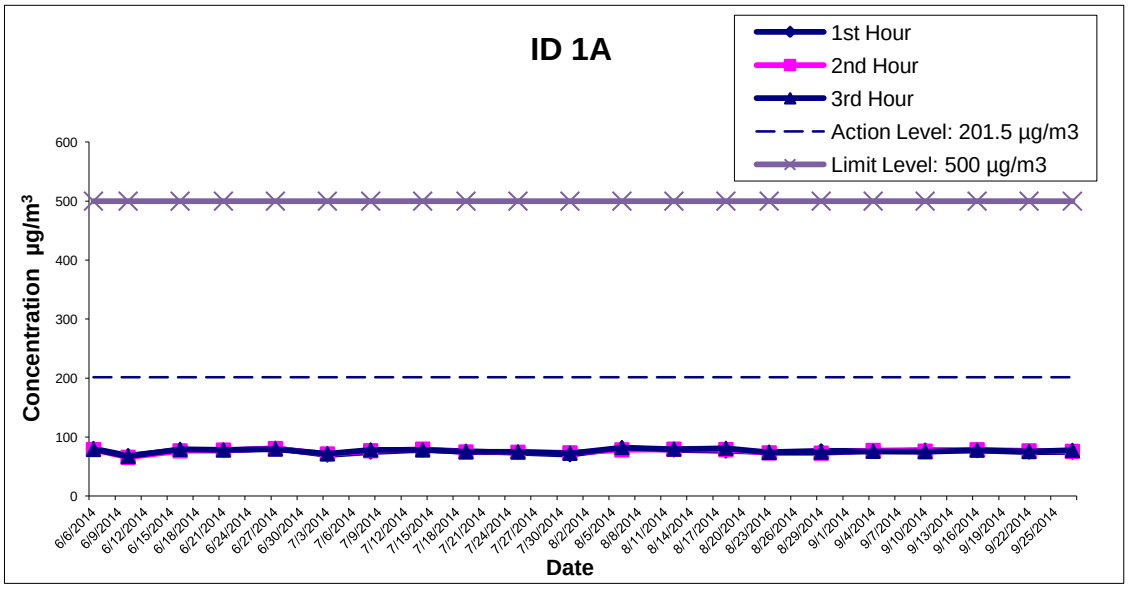
Date	Start Time (hh:mm)	1st Hour Conc. (μg/m^3)	2nd Hour Conc. (μg/m^3)	3rd Hour Conc. (μg/m^3)
4-Sep-14	10:45	79.0	76.6	74.1
10-Sep-14	10:40	73.2	76.0	74.9
16-Sep-14	13:07	78.0	77.4	78.5
22-Sep-14	10:44	76.5	75.7	75.0
27-Sep-14	11:20	75.5	72.9	76.1
			Average	76.0
			Min	72.9
			Max	79.0

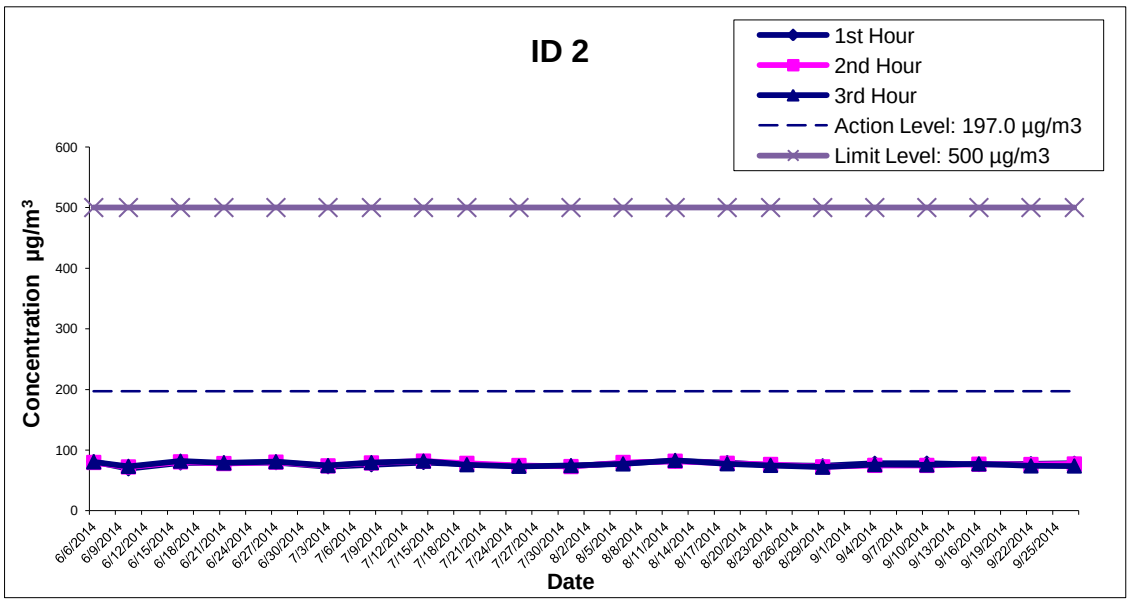
1-hour TSP Monitoring Results at Station ID 4 (Sau Ming Primary School)

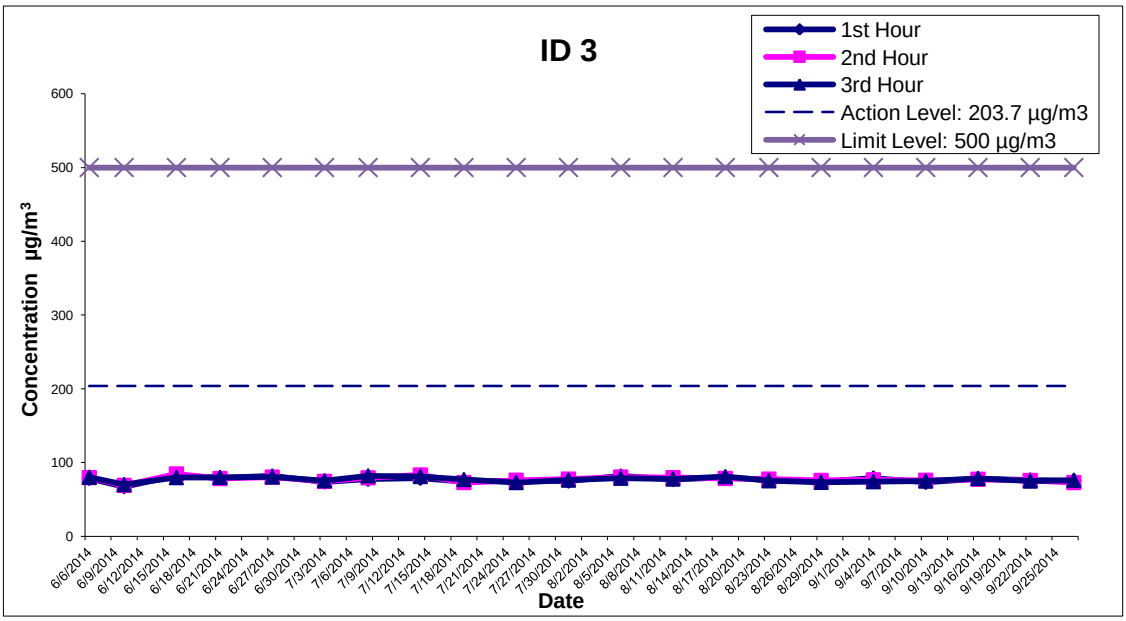
Date	Start Time (hh:mm)	1st Hour Conc. (μg/m^3)	2nd Hour Conc. (μg/m^3)	3rd Hour Conc. (μg/m^3)
4-Sep-14	10:31	74.6	73.9	77.4
10-Sep-14	10:02	75.5	77.8	75.0
16-Sep-14	12;52	79.0	77.8	78.2
22-Sep-14	10:16	77.9	75.1	73.6
27-Sep-14	11:04	76.8	74.0	73.7
			Average	76.0
			Min	73.6
			Max	79.0

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

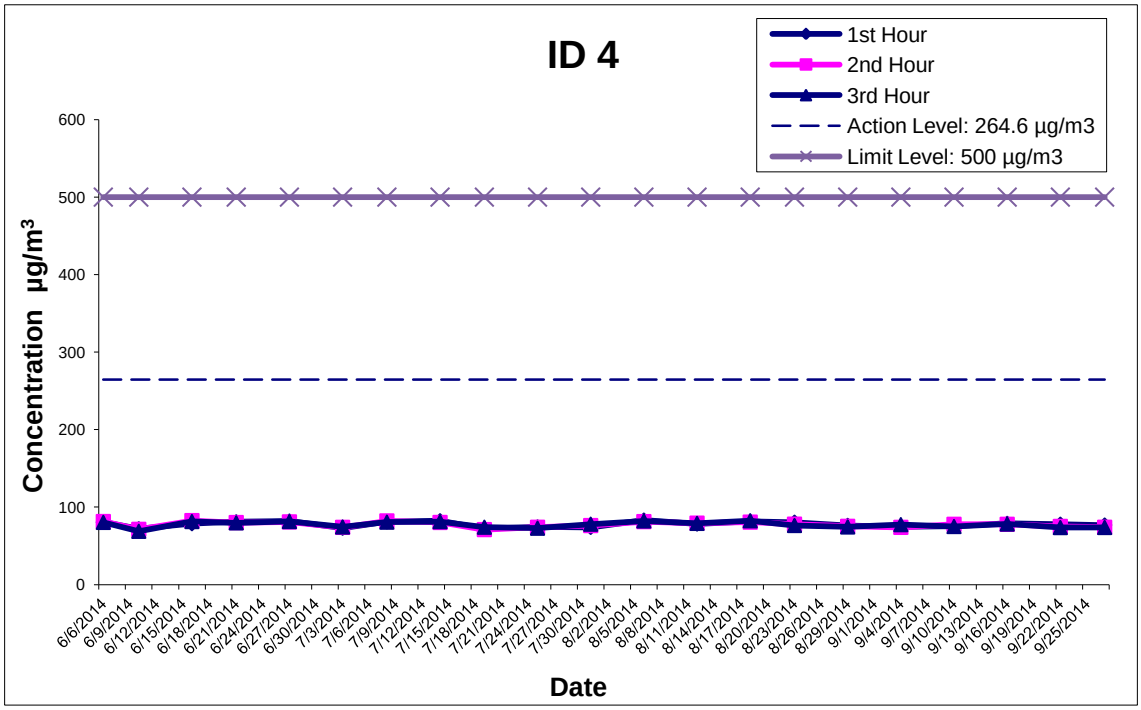
Date	Start Time (hh:mm)	1st Hour Conc. (μg/m^3)	2nd Hour Conc. (μg/m^3)	3rd Hour Conc. (μg/m^3)
4-Sep-14	10:17	80.1	73.9	75.2
10-Sep-14	10:15	78.2	76.4	77.2
16-Sep-14	12:31	77.7	79.0	78.3
22-Sep-14	10:33	74.9	75.8	77.2
27-Sep-14	10:33	77.9	74.1	75.6
			Average	76.8
			Min	73.9
			Max	80.1

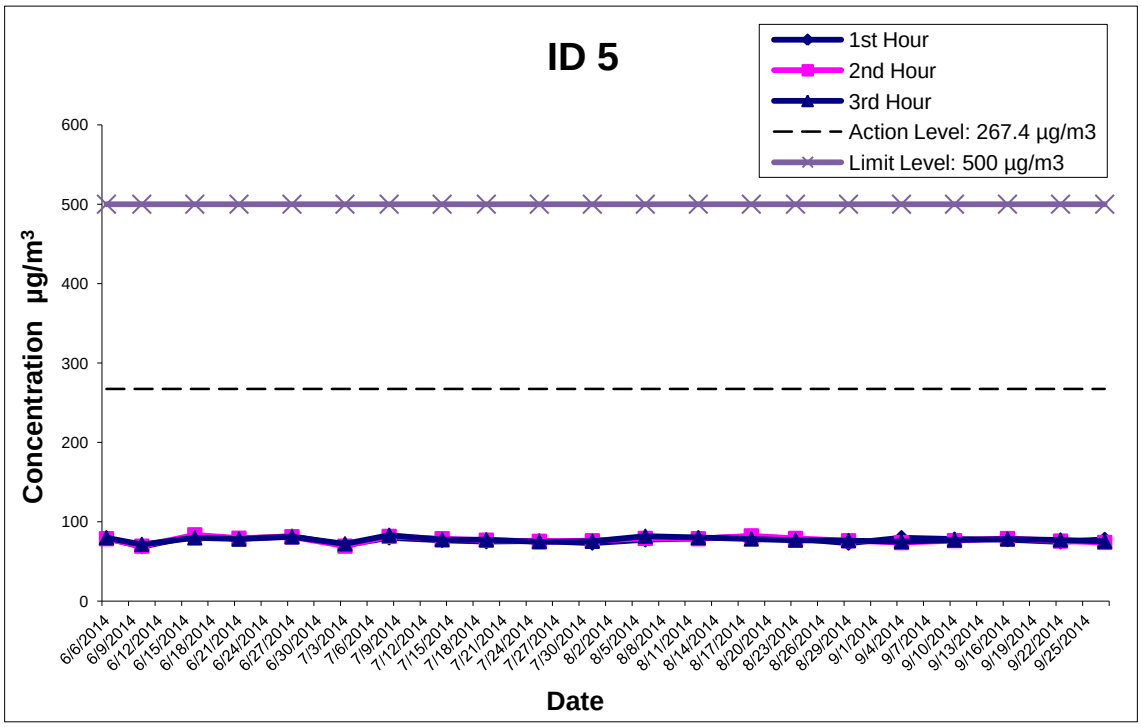






AECOM	**Development at Anderson Road - Site Formation and Associated Infrastructure Works**	SCALE	N.T.S.	DATE	Oct-14
		CHECK	FYW	DRAWN	JCYK
	Graphical Presentations of Impact 1-hour TSP Monitoring Results	JOB NO.	60043155	**APPENDIX No.** F	**Rev.** -





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		CHECK	FYW	DRAWN	JCYK
		JOB NO.	60043155	**APPENDIX No.** F	**Rev.** -

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. ($\mu g/m^3$)
				Initial	Final			Initial	Final		Initial	Final		
4-Sep-14	Fine	29.2	1006.9	1.29	1.29	1.29	1852.6	2.6999	2.7508	0.0509	20015.79	20039.79	24.00	27.5
10-Sep-14	Sunny	30.0	1008.1	1.29	1.29	1.29	1853.6	2.7237	2.7567	0.0330	20039.79	20063.79	24.00	17.8
16-Sep-14	Rainy	27.3	1003.6	1.28	1.29	1.29	1853.0	2.7785	2.8267	0.0482	20063.79	20087.79	24.00	26.0
22-Sep-14	Fine	27.2	1007.1	1.29	1.29	1.29	1863.6	2.7488	2.8155	0.0667	20087.79	20111.79	24.00	35.8
27-Sep-14	Fine	28.7	1013.0	1.34	1.33	1.33	1922.0	2.7387	2.7816	0.0429	20111.79	20135.79	24.00	22.3
													Average	25.9
													Min	17.8
													Max	35.8

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. ($\mu g/m^3$)
				Initial	Final			Initial	Final		Initial	Final		
4-Sep-14	Fine	29.2	1006.9	1.28	1.28	1.28	1838.7	2.7180	2.7904	0.0724	17375.12	17399.12	24.00	39.4
10-Sep-14	Sunny	30.0	1008.1	1.28	1.28	1.28	1839.7	2.7200	2.7678	0.0478	17399.12	17423.12	24.00	26.0
16-Sep-14	Rainy	27.3	1003.6	1.27	1.28	1.28	1839.5	2.7752	2.8094	0.0342	17423.12	17447.12	24.00	18.6
22-Sep-14	Fine	27.2	1007.1	1.28	1.28	1.28	1847.5	2.7132	2.8150	0.1018	17447.12	17471.12	24.00	55.1
27-Sep-14	Fine	28.7	1013.0	1.33	1.33	1.33	1912.8	2.7241	2.7567	0.0326	17471.12	17495.12	24.00	17.0
													Average	31.2
													Min	17.0
													Max	55.1

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

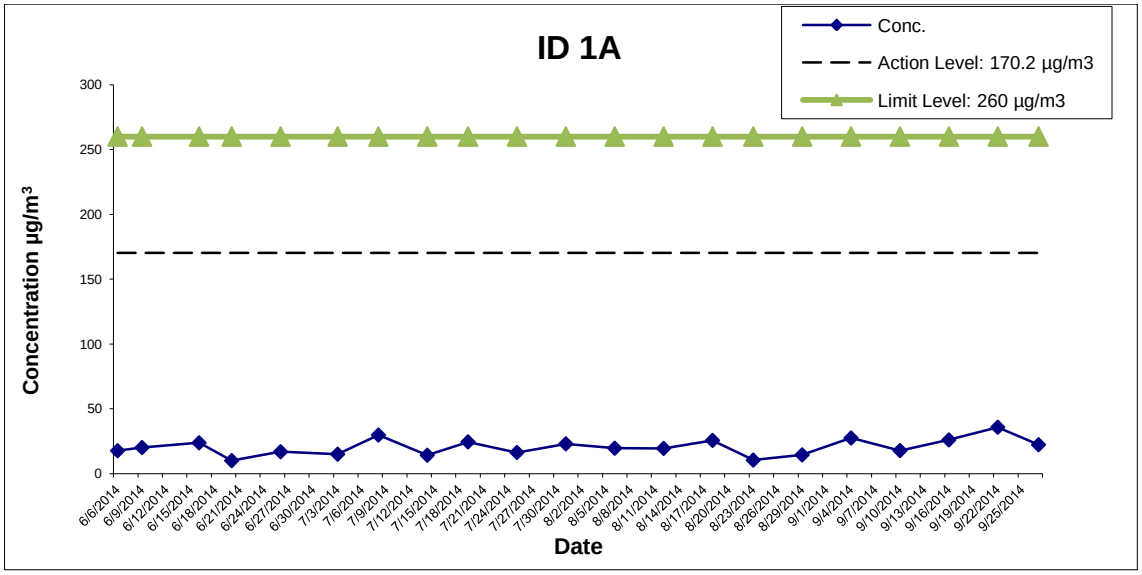
Date	Weather Condition	Air Temp. (°C)	Atmospheric Pressure(hPa)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Filter Weight (g)		Particulate weight(g)	Elapse Time		Sampling Time(hrs.)	Conc. ($\mu g/m^3$)
				Initial	Final			Initial	Final		Initial	Final		
4-Sep-14	Fine	29.2	1006.9	1.29	1.29	1.29	1853.4	2.7222	2.8280	0.1058	19619.01	19643.01	24.00	57.1
10-Sep-14	Sunny	30.0	1008.1	1.29	1.29	1.29	1854.5	2.7223	2.7779	0.0556	19643.01	19667.01	24.00	30.0
16-Sep-14	Rainy	27.3	1003.6	1.28	1.29	1.29	1854.3	2.7797	2.8708	0.0911	19667.01	19691.01	24.00	49.1
22-Sep-14	Fine	27.2	1007.1	1.29	1.30	1.29	1862.1	2.7130	2.8634	0.1504	19691.01	19715.01	24.00	80.8
27-Sep-14	Fine	28.7	1013.0	1.34	1.33	1.33	1922.0	2.7447	2.8314	0.0867	19715.01	19739.01	24.00	45.1
													Average	52.4
													Min	30.0
													Max	80.8

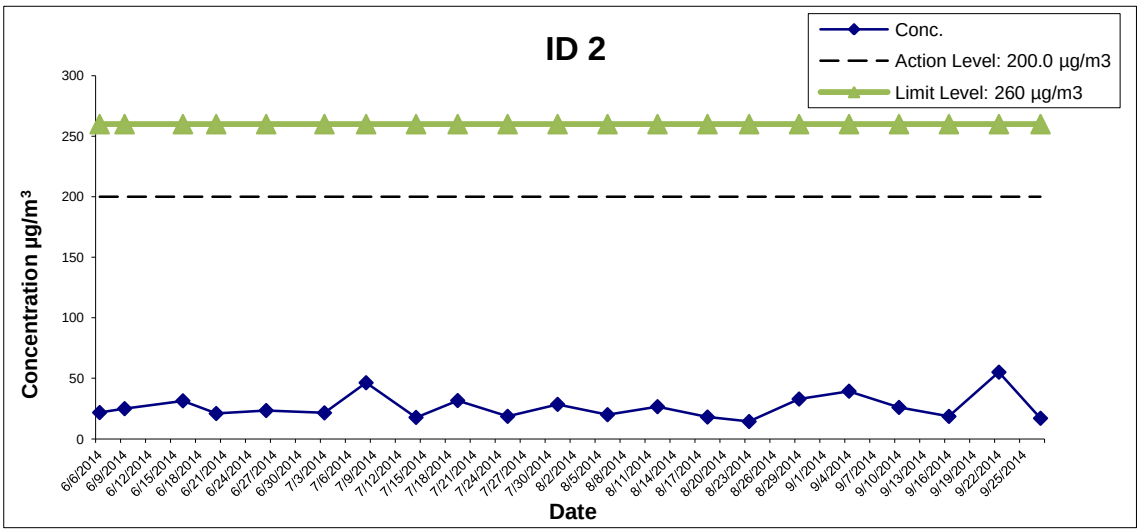
24-hour TSP Monitoring Results at Station ID 4 (Sau Ming Primary School)

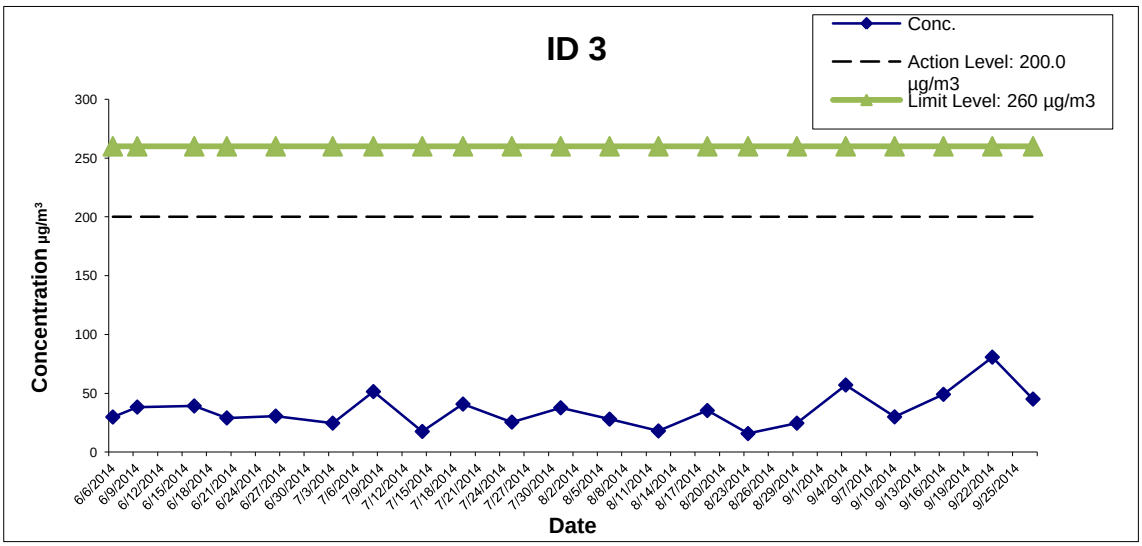
Date	Weather Condition	Air Temp. (°C)	Atmospheric Pressure(hPa)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Filter Weight (g)		Particulate weight(g)	Elapse Time		Sampling Time(hrs.)	Conc. ($\mu g/m^3$)
				Initial	Final			Initial	Final		Initial	Final		
4-Sep-14	Fine	29.2	1006.9	1.28	1.28	1.28	1848.5	2.7310	2.8007	0.0697	20300.27	20324.27	24.00	37.7
10-Sep-14	Sunny	30.0	1008.1	1.29	1.28	1.28	1849.7	2.7050	2.7368	0.0318	20324.07	20348.07	24.00	17.2
16-Sep-14	Rainy	27.3	1003.6	1.28	1.29	1.28	1849.4	2.8074	2.9065	0.0991	20348.07	20372.07	24.00	53.6
22-Sep-14	Fine	27.2	1007.1	1.29	1.29	1.29	1858.2	2.7944	2.8934	0.0990	20372.07	20396.07	24.00	53.3
27-Sep-14	Fine	28.7	1013.0	1.34	1.34	1.34	1926.6	2.7402	2.7907	0.0505	20396.07	20420.07	24.00	26.2
													Average	37.6
													Min	17.2
													Max	53.6

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

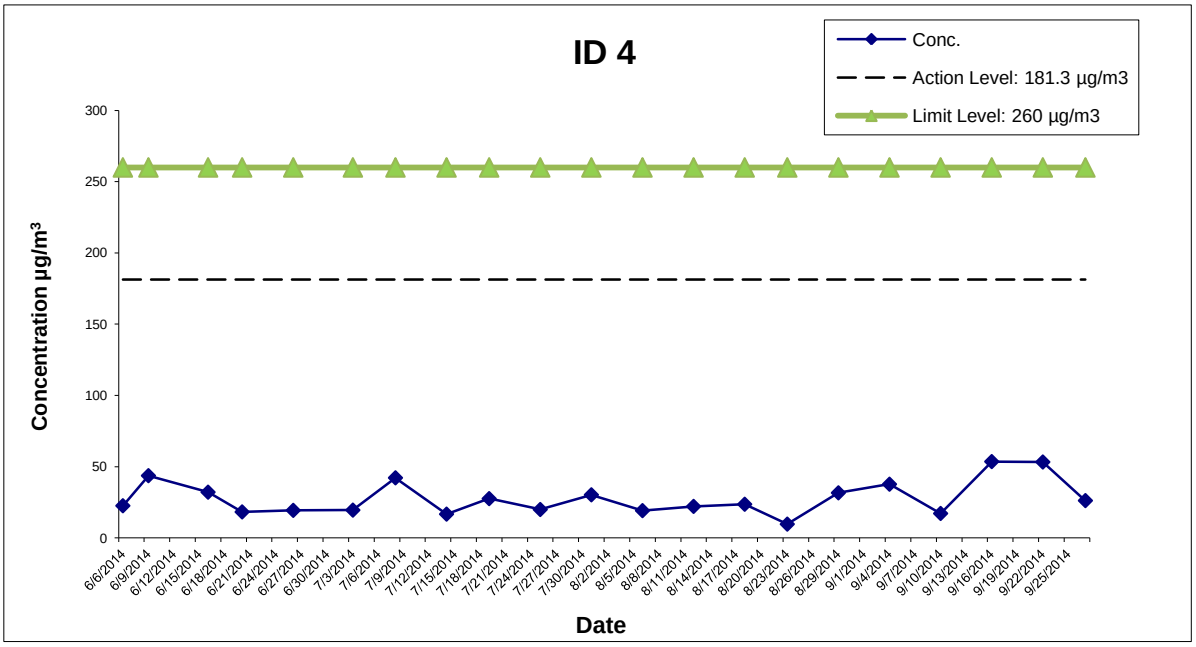
Date	Weather Condition	Air Temp. (°C)	Atmospheric Pressure(hPa)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Filter Weight (g)		Particulate weight(g)	Elapse Time		Sampling Time(hrs.)	Conc. ($\mu g/m^3$)
				Initial	Final			Initial	Final		Initial	Final		
4-Sep-14	Fine	29.2	1006.9	1.28	1.28	1.28	1843.2	2.7289	2.8233	0.0944	15130.37	15154.37	24.00	51.2
10-Sep-14	Sunny	30.0	1008.1	1.28	1.28	1.28	1844.4	2.7037	2.7383	0.0346	15154.37	15178.37	24.00	18.8
16-Sep-14	Rainy	27.3	1003.6	1.28	1.29	1.28	1844.1	2.8062	2.8945	0.0883	15178.37	15202.37	24.00	47.9
22-Sep-14	Fine	27.2	1007.1	1.28	1.29	1.29	1852.6	2.7928	2.9652	0.1724	15202.37	15226.37	24.00	93.1
27-Sep-14	Fine	28.7	1013.0	1.34	1.34	1.34	1926.2	2.7288	2.7882	0.0594	15226.37	15250.37	24.00	30.8
													Average	48.4
													Min	18.8
													Max	93.1

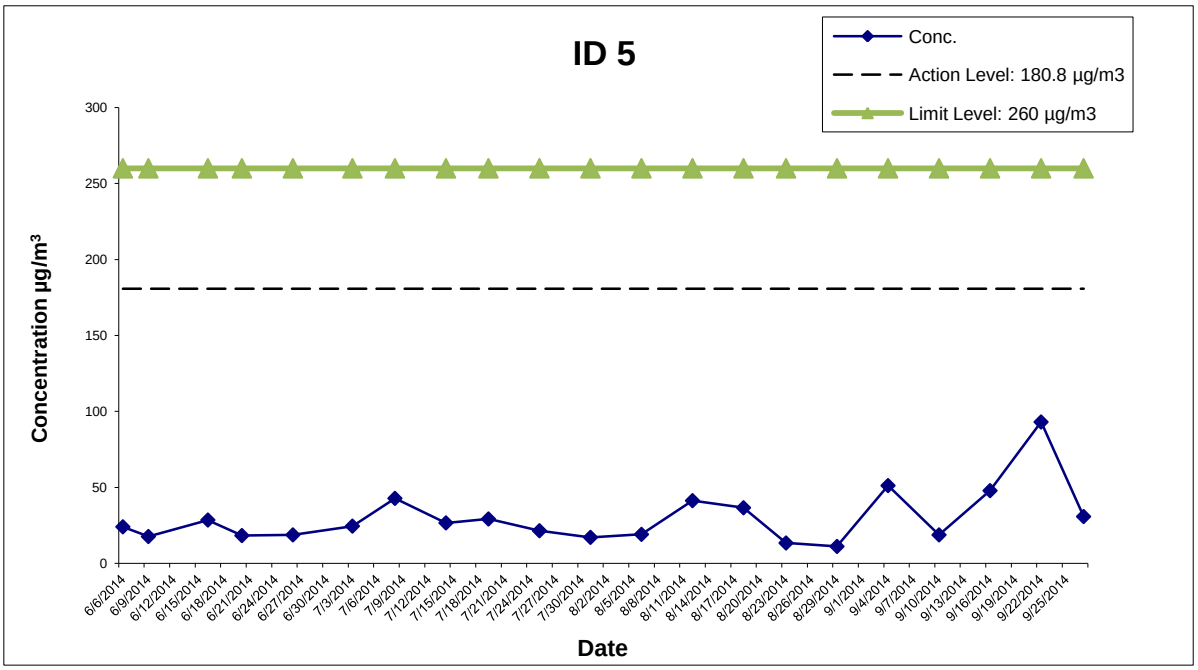






AECOM	Development at Anderson Road - Site Formation and Associated Infrastructure Works Graphical Presentations of Impact 24-hour TSP Monitoring Results	SCALE	N.T.S.	DATE	Oct-14	
		CHECK	FYW	DRAWN	JCYK	
		JOB NO.	60043155	APPENDIX No. F		Rev. -





AECOM	**Development at Anderson Road - Site Formation and Associated Infrastructure Works** **Graphical Presentations of Impact 24-hour TSP Monitoring Results**	SCALE	N.T.S.	DATE	Oct-14
		CHECK	FYW	DRAWN	JCKY
		JOB NO.	60043155	**APPENDIX No.** F	**Rev.** -

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				
4-Sep-14	Sunny	11:30	60.0	63.0	61.7	64.3	57.8	70	N
10-Sep-14	Sunny	13:02	62.6	68.9	64.8	52.4	57.8	70	N
16-Sep-14	Rainy	13:36	62.8	68.0	66.1	52.4	57.8	70	N
22-Sep-14	Sunny	11:20	61.0	64.5	63.1	56.2	57.8	70	N
		Min	57.0	60.4		52.4			
		Max	61.4	67.8		64.3			
		Average	--	--		59.1			

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				
4-Sep-14	Sunny	11:15	61.1	63.9	62.6	64.1	62.0	75	N
10-Sep-14	Sunny	11:08	61.8	67.4	64.4	61.8	62.0	75	N
16-Sep-14	Rainy	13:18	62.2	67.7	65.8	61.8	62.0	75	N
22-Sep-14	Sunny	11:03	63.0	66.8	65.1	63.3	62.0	75	N
		Min	60.0	66.0		61.6			
		Max	62.6	69.4		64.1			
		Average	--	--		62.7			

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				
4-Sep-14	Sunny	13:15	63.7	67.9	66.2	55.0	64.1	75	N
10-Sep-14	Sunny	13:40	60.5	68.0	64.2	63.2	64.1	75	N
16-Sep-14	Rainy	15:00	65.0	67.8	66.4	63.2	64.1	75	N
22-Sep-14	Sunny	13:22	62.0	66.0	64.5	65.2	64.1	75	N
		Min	60.0	66.9		55.0			
		Max	62.0	69.0		65.2			
		Average	--	--		61.9			

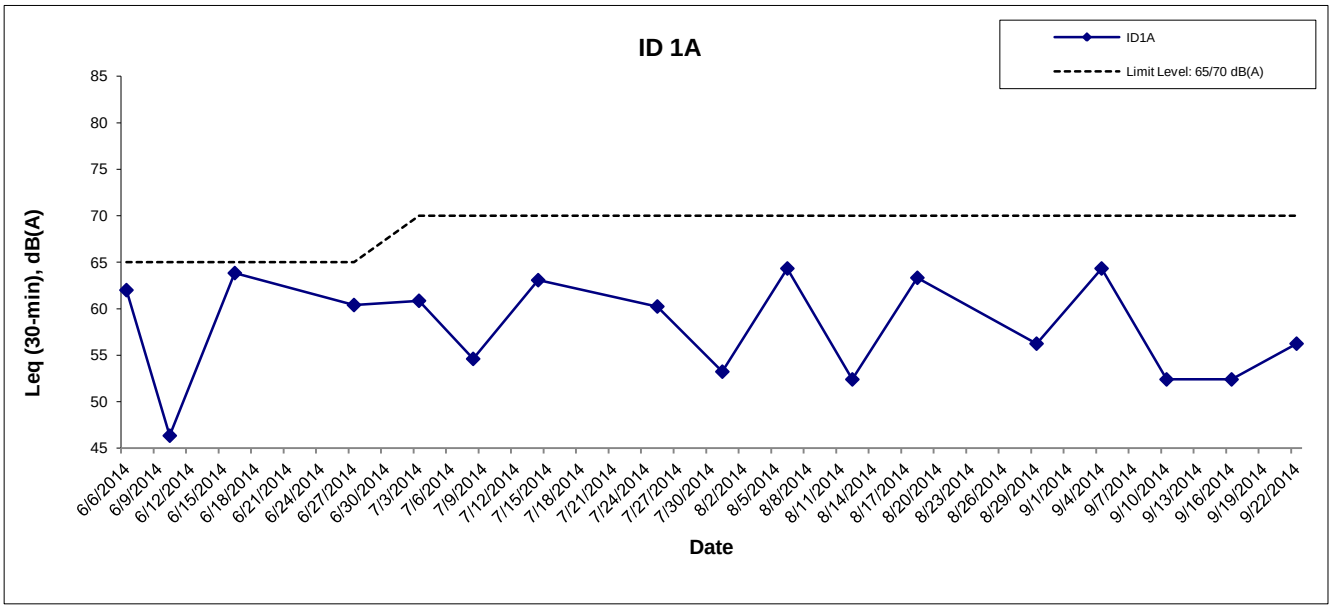
+ - Façade measurement
** - Limit Level of 70dB(A) applies to education institutes while 65dB(A) applies during school examination period.

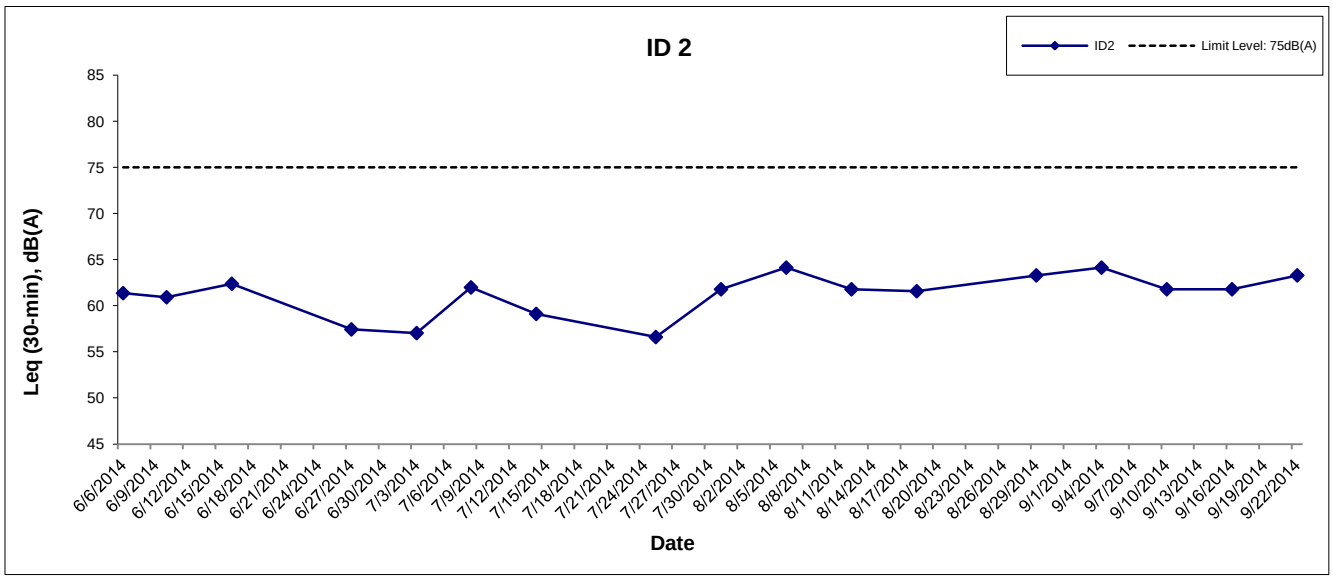
Daytime Noise Monitoring Results at Station ID 4 (Sau Ming Primary School)

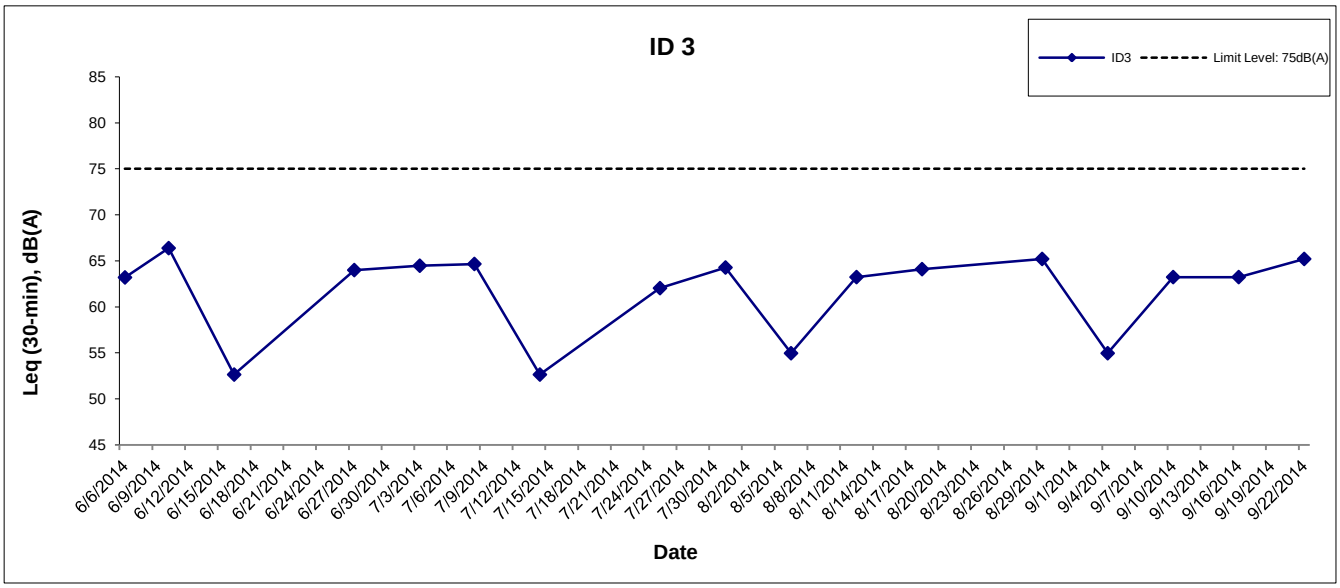
Date	Weather Condition	Noise Level for 30-min, dB(A)+				Baseline Corrected Level, dB(A)	Baseline Noise Level, dB(A)	Limit Level**, dB(A)	Exceedance (Y/N)
		Time	L90	L10	Leq				
4-Sep-14	Sunny	14:24	62.8	67.0	65.3	64.4	65.7	70	N
10-Sep-14	Sunny	15:00	63.2	68.6	65.1	58.1	65.7	70	N
16-Sep-14	Rainy	14:07	63.8	68.8	67.0	58.1	65.7	70	N
22-Sep-14	Sunny	16:25	63.5	67.5	65.8	63.2	65.7	70	N
		Min	61.5	64.5		58.1			
		Max	63.0	68.2		64.8			
		Average	--	--		62.6			

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				
4-Sep-14	Sunny	15:30	63.0	68.5	67.0	58.3	64.7	70	N
10-Sep-14	Sunny	15:40	62.0	68.2	64.4	62.2	64.7	70	N
16-Sep-14	Rainy	12:33	62.8	67.7	65.9	62.2	64.7	70	N
22-Sep-14	Sunny	15:40	65.3	68.8	67.4	62.0	64.7	70	N
		Min	59.5	63.5		58.3			
		Max	63.4	68.3		64.4			
		Average	--	--		61.7			







AECOM

Development at Anderson Road - Site Formation and Associated Infrastructure Works

Graphical Presentations of Noise Monitoring Results

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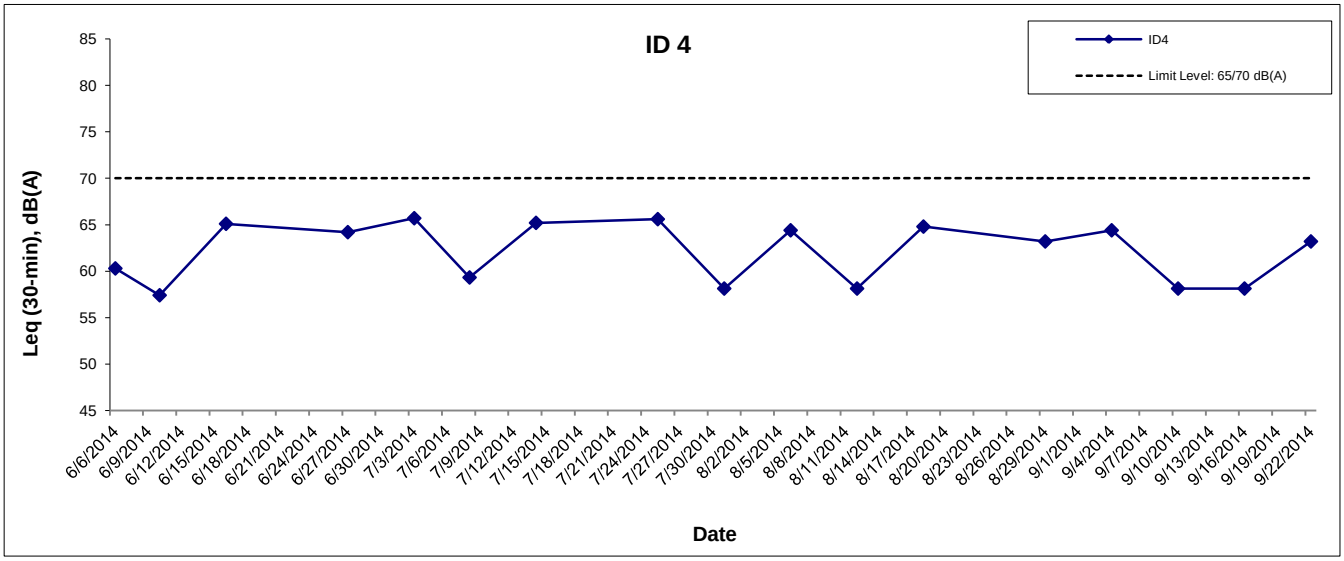
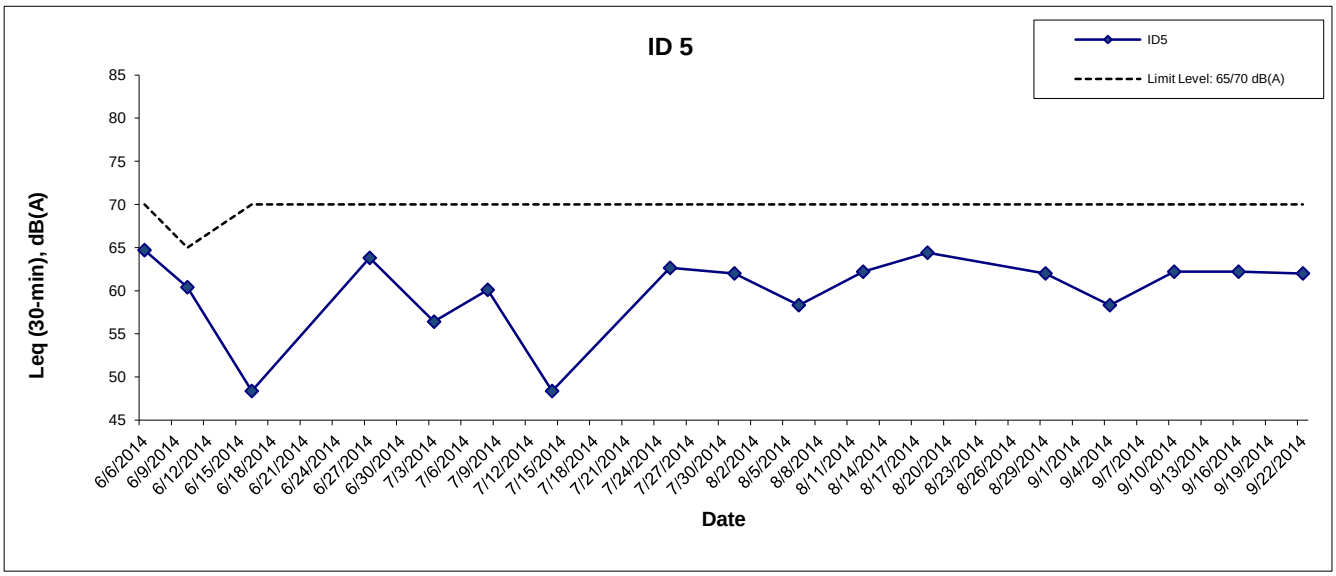
CHECK	FYW	DRAWN	JCYK
JOB NO.	60043155	APPENDIX G	Rev -





AECOM	**Development at Anderson Road - Site Formation and Associated Infrastructure Works**	SCALE	N.T.S.	DATE	Oct-14
		CHECK	FYW	DRAWN	JCYK
	Graphical Presentations of Noise Monitoring Results	JOB NO.	60043155	**APPENDIX** G	**Rev** -

APPENDIX H

Meteorological Data for the Reporting Month

Extract of Meteorological Observations for Tseung Kwan O Automatic Weather Station, September 2014 (Table 1)

Date	Mean Pressure at M.S.L. (hPa)	Air Temperature			Mean Dew Point Temperature (deg C)	Relative Humidity		
		Max. (deg C)	Mean (deg C)	Min. (deg C)		Max. (%)	Mean (%)	Min. (%)
Sep 1	******	33.2	28.9	26.0	25.3	95	82	59
Sep 2	******	33.3	28.5	25.4	24.8	99	82	58
Sep 3	******	34.9	29.6	25.9	24.5	93	75	50
Sep 4	******	34.8	29.3	26.2	25.5	96	81	55
Sep 5	******	30.9	28.6	26.5	25.7	94	84	69
Sep 6	******	33.5	29.1	26.0	24.7	95	79	54
Sep 7	******	32.2	28.9	26.9	25.6	95	82	67
Sep 8	******	31.2	28.3	27.1	25.9	93	87	73
Sep 9	******	33.7	29.0	26.0	25.1	96	81	58
Sep 10	******	33.5	29.1	25.8	25.0	98	80	56
Sep 11	******	33.6	29.3	26.2	25.0	97	79	52
Sep 12	******	31.4	27.2	25.4	25.5	98	91	69
Sep 13	******	31.9	28.3	26.3	26.0	99	88	68
Sep 14	******	32.9	28.6	26.1	26.0	99	87	62
Sep 15	******	33.0	28.3	26.1	25.1	97	84	59
Sep 16	******	28.8	27.2	25.1	24.8	95	87	75
Sep 17	******	29.4	27.9	27.0	25.5	93	87	79
Sep 18	******	33.0	28.2	25.4	25.2	99	85	59
Sep 19	******	34.4	28.8	25.5	25.4	98	83	54
Sep 20	******	32.8	28.3	25.0	21.9	91	69	50
Sep 21	******	28.9	26.0	23.5	20.3	82	71	59
Sep 22	******	30.7	26.1	22.6	20.8	91	74	51
Sep 23	******	31.9	26.4	22.4	21.9	95	78	52
Sep 24	******	32.6	26.7	23.3	23.1	98	82	52
Sep 25	******	32.6	27.5	23.9	23.5	98	80	55
Sep 26	******	32.3	27.2	24.7	23.7	96	82	58
Sep 27	******	31.9	27.2	24.6	24.0	98	83	60
Sep 28	******	32.8	27.4	24.1	24.0	98	83	57
Sep 29	******	32.7	27.8	24.2	24.3	98	82	59
Sep 30	******	35.5	28.9#	25.1	24.9	98	79	51
Mean	******	32.5	28.1#	25.3	24.4	96	82	59
	******	35.5	29.6#	27.1	26.0	99	91	79

Maximum								
Minimum	******	28.8	26.0#	22.4	20.3	82	69	50

Extract of Meteorological Observations for Tseung Kwan O Automatic Weather Station, September 2014 (Table 2)

Date	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
Sep 1	0.0	110	5.5
Sep 2	0.0	190	4.2
Sep 3	0.0	220#	4.8#
Sep 4	*****	010	4.7
Sep 5	*****	030	6.7
Sep 6	*****	020	5.7
Sep 7	*****	020	8.7
Sep 8	*****	100	5.5
Sep 9	*****	180	5.2
Sep 10	*****	190	4.4
Sep 11	*****	010	5.2
Sep 12	*****	010	7.4
Sep 13	*****	100	5.4
Sep 14	*****	060	5.0
Sep 15	*****	020	10.4
Sep 16	*****	120	16.0
Sep 17	*****	100	11.6
Sep 18	*****	180	4.5
Sep 19	*****	300	3.8
Sep 20	*****	340#	9.9#
Sep 21	*****	330#	6.1#
Sep 22	*****	070	4.6
Sep 23	*****	060#	4.1#
Sep 24	*****	290	4.1
Sep 25	*****	190	3.8
Sep 26	*****	100	4.1
Sep 27	*****	100	3.8
Sep 28	*****	100	4.0
Sep 29	*****	190	4.2
Sep 30	0.0#	290#	4.5#
Mean	-----	100#	5.9#
Total	0.0#	---	-----
Maximum	0.0#	---	16.0#
Minimum	0.0#	---	3.8#

*** unavailable

missing (less than 24 hourly observations a day)

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

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	1. Identify source 2. Inform IC(E) and ER. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by ET. 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice. 2. Amend working methods if appropriate.
Exceedance for two or more consecutive samples	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.	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.	1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Ensure remedial actions properly implemented.	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	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.	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.	1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Ensure remedial actions properly implemented.	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	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 by 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.	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.	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.	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	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.	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.	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.	1. Submit noise mitigation proposals to IC(E). 2. Implement noise mitigation proposals.
1.Exceedance for Limit Level	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.	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.	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.	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	-	14
	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	-	-	-	-	74
Notification of summons	-	-	-	-	6
Successful Prosecutions	-	-	-	-	2