

**Monthly Environmental Monitoring & Auditing Report for**  
**Drainage Diversion Works for the Comprehensive Residential Development**  
**at Various Lots in DD227 & DD229,**  
**Tai Po Tsai, Sai Kung**

**March 2013**

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## **TABLE OF CONTENT**

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
<b>2</b>	<b>Project Information.....</b>	<b>1</b>
<b>3</b>	<b>Project Organization.....</b>	<b>2</b>
	<b>3.1 Key personal contact information chart.....</b>	<b>2</b>
<b>4</b>	<b>Construction Stage .....</b>	<b>3</b>
	<b>4.1 Construction Activities in Reporting Period .....</b>	<b>3</b>
	<b>4.2 Construction Activities for Coming Months .....</b>	<b>3</b>
	<b>4.3 Environmental Status.....</b>	<b>4</b>
<b>5</b>	<b>Noise Monitoring .....</b>	<b>4</b>
	<b>5.1 Monitoring Parameters and Methodology .....</b>	<b>4</b>
	<b>5.2 Monitoring Equipment .....</b>	<b>4</b>
	<b>5.3 Monitoring Locations.....</b>	<b>5</b>
	<b>5.4 Monitoring Frequency .....</b>	<b>8</b>
	<b>5.5 Monitoring Results and Interpretation .....</b>	<b>8</b>
	<b>5.6 Action and Limit Level for Construction noise .....</b>	<b>9</b>
	<b>5.7 Monitoring Schedule for the next reporting period .....</b>	<b>14</b>
<b>6</b>	<b>Water Monitoring.....</b>	<b>15</b>
	<b>6.1 Water Quality Monitoring Parameters and Methodology.....</b>	<b>15</b>
	<b>6.2 Monitoring Equipment .....</b>	<b>15</b>
	<b>6.3 Monitoring Locations.....</b>	<b>16</b>
	<b>6.4 Monitoring Frequency .....</b>	<b>18</b>
	<b>6.5 Monitoring Results and Interpretation .....</b>	<b>18</b>
	<b>6.6 Action and Limit Level for Water Quality .....</b>	<b>19</b>
	<b>6.7 Monitoring Schedule for Next Reporting Period .....</b>	<b>24</b>
<b>7</b>	<b>Air Quality Monitoring.....</b>	<b>25</b>
	<b>7.1 Monitoring Methodology and Parameters .....</b>	<b>25</b>
	<b>7.2 Monitoring Equipment .....</b>	<b>25</b>
	<b>7.3 Monitoring Locations.....</b>	<b>26</b>
	<b>7.4 Monitoring Frequency .....</b>	<b>28</b>
	<b>7.5 Monitoring Results and Interpretation .....</b>	<b>28</b>
	<b>7.6 Action and Limit Level for 1-hr TSP and 24-hrs TSP .....</b>	<b>29</b>
	<b>7.7 Monitoring Schedule for Next Reporting Period .....</b>	<b>32</b>
<b>8</b>	<b>Ecology.....</b>	<b>33</b>
<b>9</b>	<b>Action Taken in Event of Exceedance.....</b>	<b>33</b>
<b>10</b>	<b>Construction Waste Disposal .....</b>	<b>33</b>
<b>11</b>	<b>Status of Permits and Licenses .....</b>	<b>36</b>

<b>12</b>	<b>Compliant Log</b> .....	37
<b>13</b>	<b>Site Environmental Audits</b> .....	37
	<b>13.1 Site Inspection</b> .....	37
	<b>13.2 Compliance with Legal and Contractual Requirement</b> .....	38
	<b>13.3 Implementation Status and Effectiveness of Mitigation Measures</b> ...	38
<b>14</b>	<b>Future Key Issues and Recommendations</b> .....	39
<b>15</b>	<b>Conclusions</b> .....	40

### **LIST OF APPENDIXES**

Appendix A: Construction Master Programme and Site Location Plan

Appendix B: Key Personal Contact Information Chart

Appendix C: Calibration Certificates for Measuring Instruments

Appendix D: Construction Noise Monitoring Data

Appendix E: Water Quality Monitoring Data

Appendix F: Air Quality Monitoring Data

Appendix G: Complaint Report

## **EXECUTIVE SUMMARY**

This is the seventh monthly Environmental Monitoring and Audit (EM&A) Report for Drainage Diversion Works for the Comprehensive Residential Development at Various Lots in DD227 & DD229, Tai Po Tsai, Sai Kung under New World Project Management Ltd. This report concludes the impact monitoring for the activities undertaken during the period from 1<sup>st</sup> of March 2013 to 31<sup>st</sup> March 2013. The major site activities in this reporting period were mainly tree felling and transplant and stream course diversion works.

The Environmental Team (ET) is responsible for the EM&A works required in the Particular Specifications (PS). Site inspections were carried out on weekly basis to investigate and audit the equipment and work methodologies with respect to pollution control and environmental mitigation. The weekly inspections and photos records were kept.

Noise, water quality and air quality monitoring were performed during the reporting period. Results were compared with the established Action/Limit (A/L) level.

In general, waste management was satisfactory during the reporting period.

Impact monitoring for air quality was conducted in the reporting period. No exceedance of A/L level was reported.

Furthermore, impact monitoring for water quality was conducted. Total 1 number of Limit Level exceedance was recorded in this reporting period. For the non-compliance events, it was believed that the exceedance records at W2 were caused by adverse weather and natural fluctuation, since the record of SS at control station has also exceeded its Limit Level. Therefore, the exceedances records at W2 were unlikely to be related to this project.

A complaint was received on 28 Feb 2013 regarding the complaint on the air and noise pollution. Environmental Team has received the formal complaint letter issued by EPD on 28 March 2013. The site investigation with IEC and contractor was conducted on 2 April 2013.

According to the Action & Limit Level Criteria for Noise Quality, it was considered as Action Level when one documented complaint is received.

It is expected that noise, water quality and air quality impacts may be resulted from the site works. ET has reminded the contractor to provide environmental pollution control measures wherever necessary and to keep a good environmental management at site practice. The recommended mitigation measures proposed for the project as well as implementation status can refer to section 13.3.

The ET will continue to implement the environmental monitoring & audit programme in accordance with the PS and Environmental Permit requirement.

## **1 Introduction**

This is the seventh monthly Environmental Monitoring and Audit (EM&A) Report for Drainage Diversion Works for the Comprehensive Residential Development at Various Lots in DD227 & DD229, Tai Po Tsai, Sai Kung under New World Project Management Ltd.. The site layout plan is shown in **Appendix A**. The Environmental Team, Environmental Pioneers & Solutions Limited was appointed by Hip Seng Construction Co. Ltd. to prepare the report. The report is to be submitted to the Contractor, the Engineer and the IEC.

This report presents the results of the environmental monitoring of the project activities conducted within the reporting period from 1<sup>st</sup> March 2013 to 31<sup>st</sup> March 2013. This report included the noise monitoring, water quality monitoring, air quality monitoring and regular site inspections for verification of implementation of the mitigation measures as recommended in the Environmental Permit (FEP-02/428/2011/A) (EP), PS and the Contractor's Environmental Management Plan (EMP).

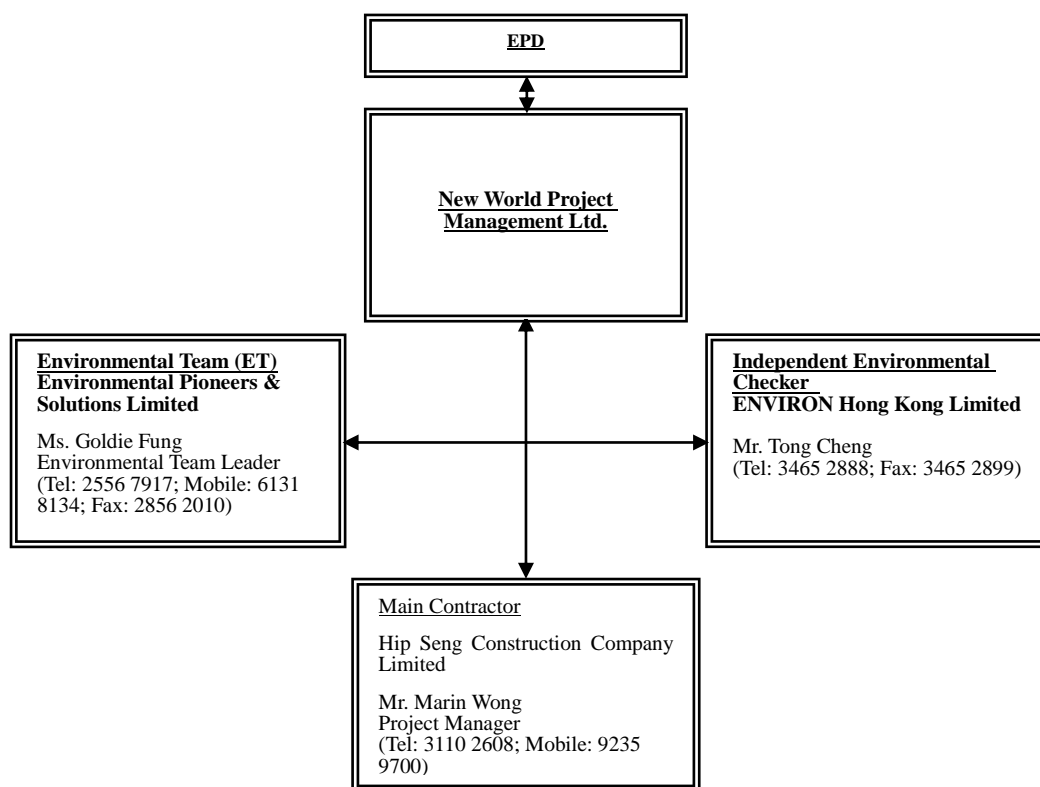
## **2 Project Information**

Construction works of "Drainage Diversion Works for the Comprehensive Residential Development at Various Lots in DD227 & DD229, Tai Po Tsai, Sai Kung" project has been commenced in Sep 2012 and is expected to be completed by July 2013. Construction master program is shown in **Appendix A**.

### 3 Project Organization

The Main Contractor, Hip Seng Construction Company Limited, has commissioned Environmental Pioneers & Solutions Limited as the Environmental Team, which comprises the environmental team leader, the environmental technicians to undertake the environmental monitoring and audit work for this project.

The Environmental management structure is shown in Fig. 3.1



#### 3.1 Key personal contact information chart

Detail contact of key persons involved in environmental aspect of the project is shown in **Appendix B**.



## **4 Construction Stage**

### **4.1 Construction Activities in Reporting Period**

Major activities in the reporting period included the followings:

- Tree felling and transplant
  - Fencing to retained trees
  
- Stream course diversion works
  - Top slab of box culvert outfall
  - Concrete pipe installation
  - Concreting works for manhole S5A and S5B
  - Sand trap and catch pit outside site boundary
  - Sand trap inlet at Zone B5

### **4.2 Construction Activities for Coming Months**

Proposed key construction works in the coming month will include:

- Tree felling and transplant
  - Fencing to retained trees
  
- Stream course diversion works
  - Concreting bending works for manhole S5A and S5B
  - Sand trap and manhole construction works outside site boundary
  - Sand trap inlet at Zone B5
  - Temporary surface channel outside site boundary for flooding preventive measure

### **4.3 Environmental Status**

The site layout plan is shown in **Appendix A**.

Locations of the monitoring and control stations with environmental sensitive receivers are presented in Section 5.3, 6.3, and 7.3 for noise monitoring, water quality monitoring, and air quality monitoring respectively.

## **5 Noise Monitoring**

### **5.1 Monitoring Parameters and Methodology**

The construction noise level was measured in terms of the A-weighted equivalent continuous sound pressure level ( $L_{eq}$ ).  $L_{eq(30minutes)}$  was used as the monitoring parameter for the impact monitoring in the time period between 0700 to 1900 hours on normal weekdays. For all other time period,  $L_{eq(5minutes)}$  was employed for comparison with the Noise Control Ordinance (NCO) criteria.

Noise measurement results obtained from each monitoring location were recorded in the Construction Noise Monitoring Data Sheet immediately after the measurement. As supplementary information for data auditing, statistical results  $L_{10}$  and  $L_{90}$  were also be recorded for reference.

In case of non-compliance with the construction noise criteria, more frequent monitoring, as specified in the Action plan in Table 5.7.2, shall be carried out. This additional monitoring shall be carried out until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.

### **5.2 Monitoring Equipment**

The sound level meters and calibrators comply with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications as referred to in the Technical Memorandum (TM) to the Noise Control Ordinance was deployed as monitoring equipment for noise measurement.

Noise measurement was not be made in the presence of fog, rain, wind with a steady speed exceeding  $5\text{ms}^{-1}$  or wind with gust exceeding  $10\text{ms}^{-1}$ . Thus wind speed was checked by the portable wind speed indicator capable of measuring the wind speed in m/s. Table 5.2.1 summarizes the equipment list for noise monitoring.

Table 5.2.1 Equipment List for Noise Monitoring

Equipment	Manufacturer & Model No.	Precision Grade	Qty
Integrated sound level meter	Svan 955	IEC61672 Type 1 IEC 1260 Class 1	1
Acoustical calibrator	SV30A	IEC 942 Type 1	1
Remarks: Calibration details of the sound level meter and acoustical calibrator are given in <b>Appendix C</b> for reference			

### 5.3 Monitoring Locations

According to the PS, impact noise monitoring was undertaken at four locations during the construction phase of the project. The monitoring locations are summarized in Table 5.3.1 and are shown in Figure 5.3.1.

Noise measurement for N4 location was taken at a point 1m from the exterior of the selected premises and at a height with no disturbance to the dweller and least obstructed view, so that façade measurement was made for monitoring location N4 and the free field measurements were made for monitoring locations N1, N2 and N3.

Table 5.3.1 Noise Monitoring Locations during Construction Phase

Identification No.	Noise Monitoring Locations
N1	Staff Quarters 1-12, HKUST
N2	174, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung
N3	152A, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung
N4	109, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung

In accordance with the requirements in the PS, weekly impact monitoring was

conducted. For the time period between 0700 and 1900 hours on normal weekdays, and noise parameter of  $L_{eq(30minutes)}$  was measured. As if the construction works were carried out during restricted period (i.e. 1900-2300, 2300-0700 of next day and Sundays / general holiday), impact monitoring that comprises 3 consecutive  $L_{eq(5minutes)}$  would be carried out.

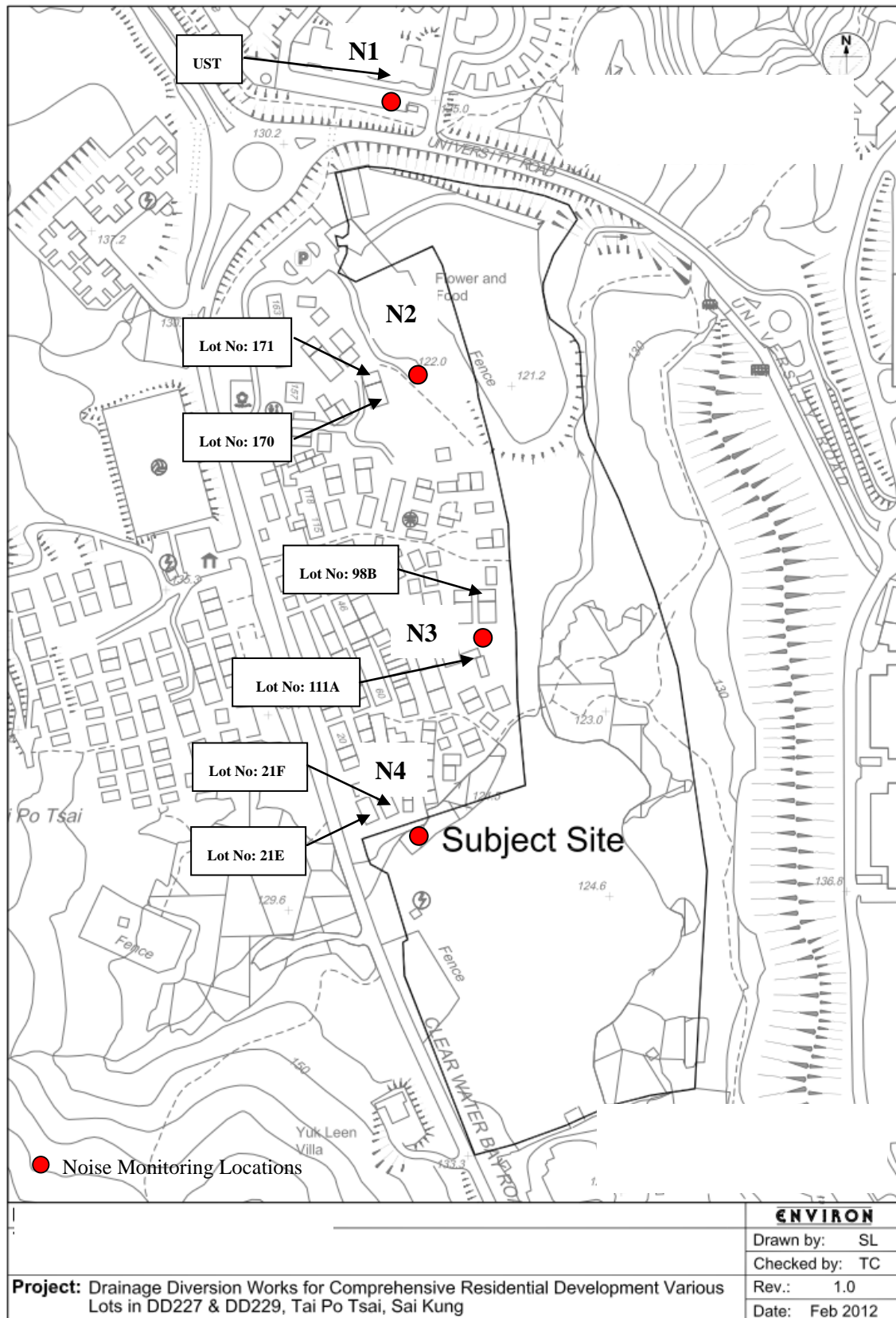


Figure 5.3.1 Impact noise monitoring locations

## 5.4 Monitoring Frequency

The regular monitoring for each location was performed on a basis of once in every 6 days.

Monitoring was carried out on 4<sup>th</sup>, 9<sup>th</sup>, 15<sup>th</sup>, 21<sup>st</sup> and 27<sup>th</sup> of March 2013.

## 5.5 Monitoring Results and Interpretation

Relevant details of the noise monitoring results are presented in Table 5.5.1. The results of N1 ranged between 60.4dB (A) and 63.1dB (A), N2 ranged between 60.7dB (A) and 65.3dB (A), N3 ranged between 60.8dB (A) and 64.5dB (A) and N4 ranged between 63.1dB (A) and 66.8dB (A) were within the limit levels and therefore no exceedance was found.

Location	Parameter	Date	Time	L <sub>Aeq</sub> dB(A)	Limit dB(A)	Exceedance	Weather
*N1	Leq30min	4-Mar-13	13:00	62.5	75	N	Cloudy
*N1	Leq30min	9-Mar-13	13:15	60.4	75	N	Cloudy
*N1	Leq30min	15-Mar-13	13:07	63.1	75	N	Cloudy
*N1	Leq30min	21-Mar-13	13:20	62.8	75	N	Cloudy
*N1	Leq30min	27-Mar-13	13:45	61.8	75	N	Sunny
*N2	Leq30min	4-Mar-13	11:20	60.8	75	N	Cloudy
*N2	Leq30min	9-Mar-13	11:00	60.8	75	N	Cloudy
*N2	Leq30min	15-Mar-13	11:30	60.7	75	N	Cloudy
*N2	Leq30min	21-Mar-13	14:00	64.1	75	N	Cloudy
*N2	Leq30min	27-Mar-13	13:08	65.3	75	N	Sunny
*N3	Leq30min	4-Mar-13	9:18	64.5	75	N	Cloudy
*N3	Leq30min	9-Mar-13	9:30	63.1	75	N	Cloudy
*N3	Leq30min	15-Mar-13	10:00	63.8	75	N	Cloudy
*N3	Leq30min	21-Mar-13	10:30	60.8	75	N	Cloudy
*N3	Leq30min	27-Mar-13	10:35	64.0	75	N	Sunny
N4	Leq30min	4-Mar-13	10:20	63.4	75	N	Cloudy
N4	Leq30min	9-Mar-13	10:20	64.7	75	N	Cloudy
N4	Leq30min	15-Mar-13	10:45	66.8	75	N	Cloudy

N4	Leq30min	21-Mar-13	11:15	63.1	75	N	Cloudy
N4	Leq30min	27-Mar-13	10:01	65.6	75	N	Sunny

\*The equivalent noise level of N1, N2 and N3 is corrected by +3dB(A).

Remarks: Raw datasheet for noise monitoring is attached in **Appendix D** for reference.

## 5.6 Action and Limit Level for Construction noise

The Action and Limit (A/L) levels for construction noise are defined in Table 5.6.1. Should non-compliance of the criteria occur, action in accordance with the Action Plan in Table 5.6.2 should be carried out.

As noise complaint was received during the reporting period, it was considered as action level in accordance with Action/Limit level criteria.

<b>Table 5.6.1 Action and Limit Levels for Construction Noise at All Sensitive Receivers</b>		
<b>Time Period</b>	<b>Action</b>	<b>Limit</b>
Daytime 0700 – 1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A)*
1900 – 2300 on all days and 0700 – 2300 on general holidays (including Sundays)		60/65/70 dB(A)**
2300 – 0700 on all days		45/50/55 dB(A)**

Table 5.6.2 Event / Action Plan for Construction Noise

EVENT				
	ET Leader	IEC	ER	CONTRACTOR
Exceedance for one sample in Action Level	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures.</li> <li>2. Inform ER, IEC and Contractor.</li> <li>3. Repeat measurement to confirm finding.</li> <li>4. Increase monitoring frequency to daily.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET.</li> <li>2. Check Contractor's working method.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify any unacceptable practice.</li> <li>2. Amend working methods if appropriate.</li> </ol>



<p>Exceedance for two or more consecutive samples in Action Level.</p>	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures.</li> <li>2. Inform IEC and Contractor.</li> <li>3. Repeat measurements to confirm findings.</li> <li>4. Increase monitoring frequency to daily.</li> <li>5. Discuss with IEC and Contractor on remedial actions.</li> <li>6. If exceedance continues, arrange meeting with IEC and ER.</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Checking monitoring data submitted by ET.</li> <li>2. Check Contractor's working method.</li> <li>3. Discuss with ET and Contractor on possible remedial measures.</li> <li>4. Advise the ER on the effectiveness of the proposed remedial measures.</li> <li>5. Supervisor implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing.</li> <li>2. Notify Contractor.</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit proposals for remedial actions to IEC within three working days of notification.</li> <li>2. Implement the agreed proposals.</li> <li>3. Amend proposals if appropriate.</li> </ol>
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<p>Exceedance for on sample in Limit Level</p>	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures.</li> <li>2. Inform ER, Contractor and EPD.</li> <li>3. Repeat measurement to confirm finding.</li> <li>4. Increase monitoring frequency to daily.</li> <li>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Checking monitoring data submitted by ET</li> <li>2. Check Contractor's working method</li> <li>3. Discuss with ET and Contractor on possible remedial measures</li> <li>4. Advise the ER on the effectiveness of the proposed remedial measures.</li> <li>5. Supervisor implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing.</li> <li>2. Notify Contractor.</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance.</li> <li>2. Submit proposals for remedial actions to IEC within three working days of notification.</li> <li>3. Implement the agreed proposals.</li> <li>4. Amend proposal if appropriate.</li> </ol>
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<p>Exceedance for two or more consecutive samples in Limit Level</p>	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures.</li> <li>2. Notify IEC, ER, Contractor and EPD.</li> <li>3. Repeat measurement to confirm findings.</li> <li>4. Increase monitoring frequency to daily.</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken.</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET and Contractor on the potential remedial actions.</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing.</li> <li>2. Notify Contractor.</li> <li>3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented.</li> <li>4. Ensure remedial measures properly implemented</li> <li>5. If exceedance continues consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated remedial actions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance.</li> <li>2. Submit proposals for remedial actions to IEC within three working days of notification.</li> <li>3. Implement the agreed proposals.</li> <li>4. Resubmit proposals if problem still not under control.</li> <li>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>
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	informed of the results 8. If exceedance stops, cease additional monitoring			
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### **5.7 Monitoring Schedule for the next reporting period**

Noise monitoring schedule is proposed to be carried out on 2<sup>nd</sup>, 8<sup>th</sup>, 13<sup>th</sup>, 19<sup>th</sup> and 25<sup>th</sup> of April 2013.

## **6 Water Monitoring**

### **6.1 Water Quality Monitoring Parameters and Methodology**

Turbidity in Nephelometric Turbidity Unit (NTU), and Dissolved Oxygen (DO) in mg/L, temperature, water depth and pH measurements were in-situ measurements and suspended solids measurements were performed by a HOKLAS accredited laboratory using recommended reference method APHA 2540D.

### **6.2 Monitoring Equipment**

Turbidity, DO, Salinity, pH and temperature was measured by an instrument complied with the following requirements:

The instrument is a portable as well as weatherproof multimeter complete with cable and uses a DC power source. It is capable of measuring:

- A turbidity between 0-1000NTU;
- A dissolved Oxygen level in the range of 0-20mg/L and 0-200% saturation;
- A temperature of 0-50°C;
- pH in the range of 0-14.

The measurements were performed by a portable and weatherproof multi-meter, model TOA-DKK WQC-24. The equipment was calibrated and verified by certified laboratory every 3 months to ensure they perform to the same level of accuracy as stated in the manufacturer's specification. Detailed calibration records of the multi-meter were shown in Appendix C for reference

Suspended solids were determined by the water samples collected from the monitoring locations for further analysis in accredited HOKLAS laboratory. Water samples were contained by polythene bottles, packed in ice (cooled in 4°C without frozen) and delivered to the laboratory for analysis as soon as possible after collection.

Since water depths for all monitoring stations were less than 0.5m during the

impact measurement period, only mid-depth level was monitored. The monitoring parameters and measurement methods of water quality monitoring are summarized in Table 6.2.1.

<b>Table 6.2.1 – Water Quality Monitoring Parameters and Measurement Methods</b>	
<b>Parameter</b>	<b>Measurement Method</b>
Temperature (°C)	<i>in-situ</i>
Turbidity (NTU)	
pH	
Dissolved Oxygen (mg/L and %)	
Suspended Solids (mg/L)	Reference method APHA 2540D

### 6.3 Monitoring Locations

In accordance with the PS, monitoring stations were established at two locations, which are summarized in Table 6.3.1.

<b>Table 6.3.1 – Water Quality Monitoring Locations</b>		
<b>Monitoring Station</b>	<b>Coordinates</b>	
	<b>Easting</b>	<b>Northing</b>
W1 (upstream)	E:844944	N:821720
W2 (downstream)	E:844959	N:822249

As illustrated in Figure 6.3.1, W1 served as the control station while W2 was the monitoring location of water quality.

In accordance with the PS, measurements shall be taken at 3 water depths, namely, 1m below water surface, mid-depth and 1m above river bed, except where the water depth less than 6m, the mid-depth station may be omitted. Should the water depth be less than 3m, only the mid-depth station will be monitored.

As the depth of water was less than 3m, water samples were collected at mid-depth of each monitoring stations for measurements and sample collection.



Figure 6.3.1 Water Quality Monitoring Locations

## 6.4 Monitoring Frequency

Water quality monitoring for each monitoring station was performed at mid-flood or mid-ebb tides for 3 days per week during the course of the construction river works.

Monitoring was carried out on 2<sup>nd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup>, 12<sup>th</sup>, 14<sup>th</sup>, 16<sup>th</sup>, 19<sup>th</sup>, 21<sup>st</sup>, 23<sup>rd</sup>, 26<sup>th</sup> and 28<sup>th</sup> of March 2013.

## 6.5 Monitoring Results and Interpretation

Water quality monitoring was carried out twelve times in this reporting month. Detailed on-site measurements are shown in **Appendix E**. Table 6.5.1 presents consolidated results throughout the reporting month.

There was 1 number of Limit Level exceedance (SS) recorded in this reporting period as shown in Table 6.5.2. It was believed that the exceedance records at W2 were caused by adverse weather and natural fluctuation, since the record of SS at control station has also exceeded its Limit Level. Therefore, the exceedances records at W2 were unlikely to be related to this project.

Table 6.5.1 Summary of Water Quality Monitoring Results of this reporting month

	Average of Monitoring Results					
	<i>Temperature</i> (°C)	<i>Turbidity</i> (NTU)	<i>pH</i>	<i>Dissolved</i> <i>Oxygen</i> (mg/L)	<i>Dissolved</i> <i>Oxygen</i> (%)	<i>Suspended</i> <i>Solids</i> (mg/L)
W1	22.3	3.6	8.08	8.38	96.5	12.58
W2	22.3	4.0	7.95	7.9	88.5	11.75

Table 6.5.2 1 number of Limit Level exceedance during the reporting month

Date	Location	Parameter	Interpretations
		SS (mg/l)	
28/3/2013	W1	65.0	Exceedance was caused by adverse weather and natural fluctuation
	W2	65.0	



## 6.6 Action and Limit Level for Water Quality

Based on the criteria stipulated in PS (Table 6.6.1) and baseline water quality monitoring data obtained, the A/L levels are shown in Table 6.6.2. The A/L levels for W1 were ignored since W1 functions as the control station for the project. If the water quality monitoring results at any impact stations exceeded the criteria, the actions in accordance with the Event and Action Plan in Table 6.6.3 should be taken.

<b>Table 6.6.1 Action and Limit Levels for Water Quality at All Monitoring Stations</b>		
<b>Parameters</b>	<b>Action</b>	<b>Limit</b>
DO in mg/L	5 percentile of baseline data	4 mg/L or 1 percentile of baseline data
SS in mg/L	95 percentile of baseline data or 120% of upstream control station's SS recorded on the same day	99 percentile of baseline data or 130% of upstream control station's SS recorded on the same day
Turbidity in NTU	95 percentile of baseline data or 120% of upstream control station's Turbidity recorded on the same day	99 percentile of baseline data or 130% of upstream control station's Turbidity recorded on the same day
pH	<6.5 or >8.4 or > the upstream control station's pH recorded on the same day	<6.0 or >9.0

<b>Table 6.6.2 Action and Limit Levels for Water Quality at All Monitoring Stations</b>		
<b>Parameters</b>	<b>Monitoring Stations</b>	
	<b>W2</b>	
	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L	6.42	6.24
SS in mg/L	18.9	19.8

Turbidity in NTU	6.2	6.2
pH	<6.5 or >8.4	<6.0 or >9.0

Remarks:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For SS and Turbidity, non-compliance of the water quality limits occurs when monitoring results is higher than the limits.
3. For pH, for the action level, reference is made to the data recorded at EPD' river monitoring stations at the nearby Tseng Lan Shue Stream (JR3, JR6 and JR22) from year 2006 to 2010; while the limit level is referring to the water quality objective for Inland Water of Junk Bay Water Control Zone.

Table 6.6.3 Event and action Plan for Water Quality

Event	ET Leader	IEC	ER	Contractor
<b>ACTION LEVEL</b>				
Exceedance for one sample day	<ol style="list-style-type: none"> <li>1. Repeat in-site measurement to confirm findings.</li> <li>2. Identify source(s) of impact.</li> <li>3. Inform IEC and Contractor.</li> <li>4. Check monitoring data, all plant, equipment and Contractor's working methods.</li> <li>5. Discuss mitigation measures with IEC and Contractor.</li> <li>6. Repeat measurement on next day of exceedance.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET and Contractor on the mitigation measures.</li> <li>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>3. Assess effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with IEC on the proposed mitigation measures.</li> <li>2. Make agreement on mitigation measures to be implemented.</li> <li>3. Assess effectiveness of implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER and confirm notification of the non-compliance in writing.</li> <li>2. Rectify unacceptable practice.</li> <li>3. Check all plant and equipment.</li> <li>4. Consider changes of working methods.</li> <li>5. Discuss with ET, IEC and propose mitigation measures to IEC and ER.</li> <li>6. Implement the agreed mitigation measures.</li> </ol>

<p>Exceedance for more than one consecutive sampling days</p>	<ol style="list-style-type: none"> <li>1. Repeat in-situ measurements to confirm findings.</li> <li>2. Identify source(s) of impact.</li> <li>3. Inform IEC and Contractor.</li> <li>4. Check monitoring data, all plant, equipment and Contractor's working methods.</li> <li>5. Discuss mitigation measures with IEC and Contractor.</li> <li>6. Ensure mitigation measures are implemented.</li> <li>7. Prepare to increase the monitoring frequency to daily.</li> <li>8. Repeat measurement on next day of exceedance.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET and Contractor on the mitigation measures.</li> <li>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly.</li> <li>3. Assess effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with IEC on the proposed mitigation measures.</li> <li>2. Make agreement on the mitigation measures to be implemented.</li> <li>3. Assess effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER and confirm notification of the non-compliance in writing.</li> <li>2. Rectify unacceptable practice.</li> <li>3. Check all plant and equipment.</li> <li>4. Consider changes of working methods.</li> <li>5. Discuss with ET and IEC and propose mitigation measures within three working days.</li> <li>6. Implement the agreed mitigation measures.</li> </ol>
<b>LIMIT LEVEL</b>				
<p>Exceedance for one sampling day</p>	<ol style="list-style-type: none"> <li>1. Repeat in-situ measurements to confirm findings.</li> <li>2. Identify source(s) of impact.</li> <li>3. Inform EPD, IEC, Contractor.</li> <li>4. Check monitoring data, all plant, equipment and</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET and Contractor on the mitigation measures.</li> <li>2. Review proposals on mitigation measures submitted by</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with IEC, ET and Contractor on the proposed mitigation measures.</li> <li>2. Request Contractor to critically review the</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER and confirm notification of the non-compliance in writing.</li> <li>2. Rectify unacceptable practice.</li> <li>3. Check all plant and equipment.</li> </ol>

	<p>Contractor's working methods;</p> <p>5. Discuss mitigation measures with IEC, ER and Contractor.</p> <p>6. Ensure mitigation measures are implemented.</p> <p>7. Increase the monitoring frequency to daily until no exceedance of Limit level.</p>	<p>Contractor and advise the ER accordingly.</p> <p>3. Assess effectiveness of the implemented mitigation measures.</p>	<p>working methods.</p> <p>3. Make agreement on the mitigation measures to be implemented.</p> <p>4. Assess the effectiveness of the implemented mitigation measures.</p>	<p>4. Consider changes of working methods.</p> <p>5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within three working days.</p> <p>6. Implement the agreed mitigation measures.</p>
<p>Exceedance for more than on consecutive sampling days</p>	<p>1. Repeat in-situ measurements to confirm findings.</p> <p>2. Identify source(s) of impact.</p> <p>3. Inform EPD, IEC and Contractor.</p> <p>4. Check monitoring data, all plant, equipment and Contractor's working methods.</p> <p>5. Discuss mitigation measures with IEC, ER and Contractor.</p> <p>6. Ensure mitigation measures are implemented.</p> <p>7. Increase the monitoring frequency to daily</p>	<p>1. Discuss with ET and Contractor on the mitigation measures.</p> <p>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly.</p> <p>3. Assess the effectiveness of the implemented mitigation measures.</p>	<p>1. Discuss with IEC, ET and Contractor on the proposed mitigation measures.</p> <p>2. Request Contractor to critically review the working methods.</p> <p>3. Make agreement on the mitigation measures to be implemented.</p> <p>4. Assess the effectiveness of the</p>	<p>1. Inform the ER and confirm notification of the non-compliance in writing.</p> <p>2. Rectify unacceptable practice.</p> <p>3. Check all plant and equipment.</p> <p>4. Consider changes of working methods.</p> <p>5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within three working days.</p>

	<p>until no exceedance of Limit level for two consecutive days.</p>		<p>implemented mitigation measures.                      5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the work until no exceedance of Limit Level.</p>	<p>6. Implement the agreed mitigation measures.                      7. As directed by the ER, to slow down or to stop all or part of the work or construction activities.</p>
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### 6.7 Monitoring Schedule for Next Reporting Period

Water quality monitoring schedule is proposed to be carried out on 2<sup>nd</sup>, 5<sup>th</sup>, 9<sup>th</sup>, 11<sup>th</sup>, 13<sup>th</sup>, 16<sup>th</sup>, 18<sup>th</sup>, 20<sup>th</sup>, 23<sup>rd</sup>, 25<sup>th</sup>, 27<sup>th</sup> and 30<sup>th</sup> of April 2013.

## 7 Air Quality Monitoring

### 7.1 Monitoring Methodology and Parameters

1-hr and 24-hrs air quality monitoring have been carried out during the reporting period.

Measurements of 1-hr TSP monitoring were taken by a Dust Trak aerosol monitor or its equivalent that is a portable and battery-operated laser photometer capable of performing real time 1-hr TSP measurements.

24-hrs TSP was measured by the High Volume Sampler. The filter papers for each monitoring locations were sent to the accredited HOKLAS laboratory for further analysis.

Other relevant data such as monitoring location, time, weather conditions and any other special phenomena at the construction site were recorded during the measurement period.

### 7.2 Monitoring Equipment

24-hrs TSP was measured by the High Volume Sampler. And the 3 sets of 1-hr TSP were carried out by the portable dust meter. The measurement equipments are listed in Table 7.2.1 and Calibration Certificates of the equipments are shown in **Appendix C**.

Table 7.2.1 Air Quality Monitoring Equipments

Equipment	Manufacturer & Model No.	Parameter	Qty
Laser Dust Monitor	1. AM510 2. SIBATA/LD-3B	1-hr TSP	2
High Volume Sampler	TE-5025A	24-hrs TSP	4

### 7.3 Monitoring Locations

Monitoring locations were established at 4 locations, which are summarized in Table 7.3.1 and are shown in Figure 7.3.1

Table 7.3.1 Air Quality Monitoring Locations

Identification No.	TSP Monitoring Locations
D1	Staff Quarters 1-12, HKUST
D2	174, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung
D3	152A, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung
D4	109, Lots in DD227 & DD229, Tai Po Tsai, Sai Kung



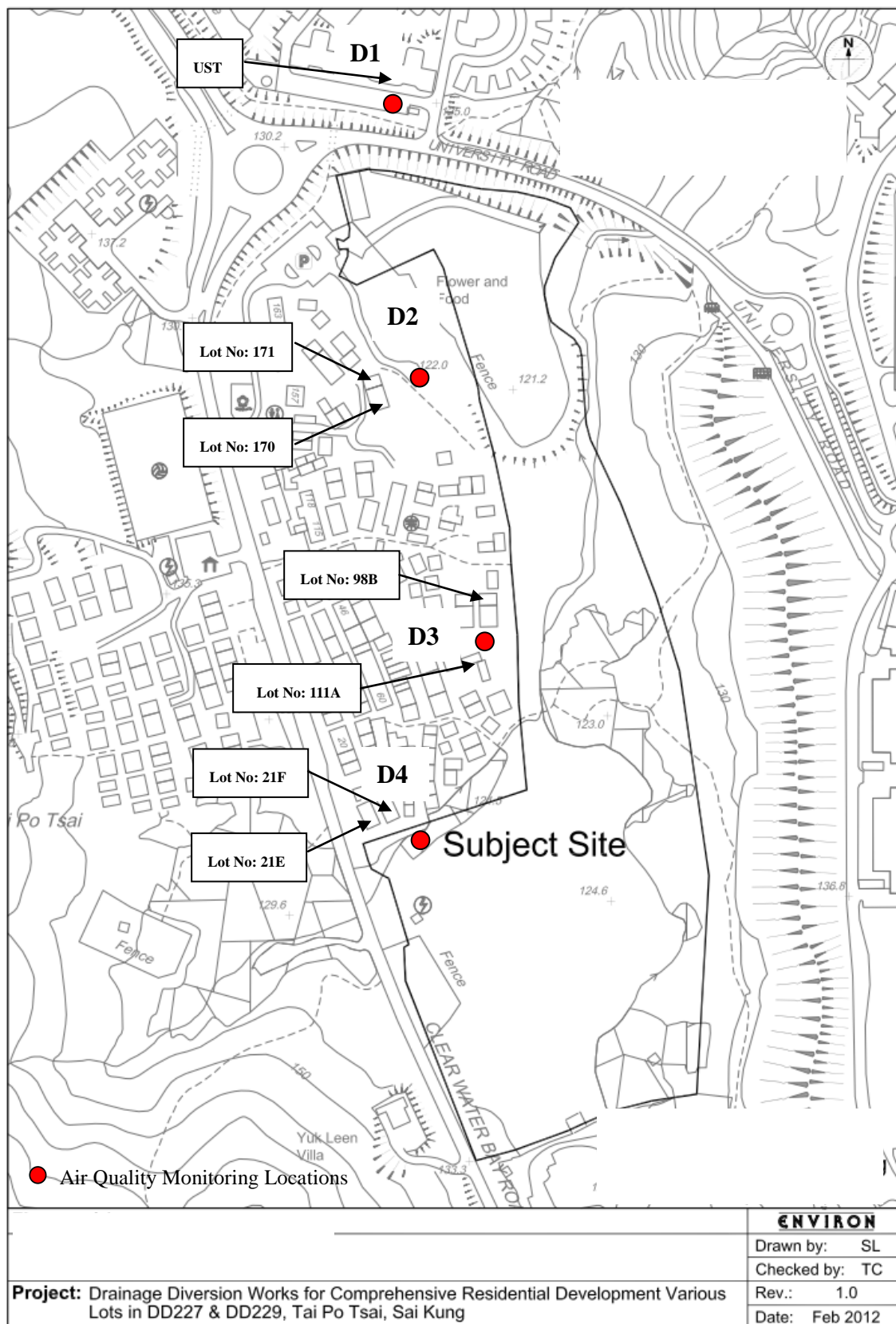


Figure 7.3.1 Air Quality Monitoring Locations

## 7.4 Monitoring Frequency

For 1-hr and 24-hr TSP monitoring, the sampling frequency of at least once in every six days.

Monitoring was carried out on 4<sup>th</sup>, 9<sup>th</sup>, 15<sup>th</sup>, 21<sup>st</sup> and 27<sup>th</sup> of March 2013.

## 7.5 Monitoring Results and Interpretation

1-hr TSP and 24-hrs TSP were carried out during this reporting. And, no exceedance was recorded.

1-hr TSP monitoring was conducted at four designated monitoring locations. The monitoring results are summarized in Table 7.5.1.

Location	Range (µg/m <sup>3</sup> ) (Min – Max)	Average (µg/m <sup>3</sup> )
D1	38-182	106.8
D2	49-170	101.8
D3	44-169	100.7
D4	53-154	101.1

24-hrs TSP monitoring data was obtained at four designated monitoring locations. The monitoring results are summarized in Table 7.5.2.

Location	Range (µg/m <sup>3</sup> ) (Min – Max)	Average (µg/m <sup>3</sup> )
D1	37.7-102.7	73.5
D2	33.6-98.5	67.0
D3	38.2-98.6	67.1
D4	33.9-109.8	76.2

Details of the monitoring data were presented in **Appendix F**.

## 7.6 Action and Limit Level for 1-hr TSP and 24-hrs TSP

The Action and Limit levels for all monitoring stations are summarized in Table 7.6.1 and Table 7.6.2, which would be applied for compliance assessment of air quality for this project. If the air quality monitoring results at any impact stations exceeded the criteria, the actions in accordance with the Event and Action Plan in Table 7.6.3 should be taken.

Monitoring Station	Monitoring Frequency	Action Level	Limit Level
D1	1-hr	285.6 $\mu\text{g}/\text{m}^3$	500 $\mu\text{g}/\text{m}^3$
D2		279.4 $\mu\text{g}/\text{m}^3$	500 $\mu\text{g}/\text{m}^3$
D3		289.4 $\mu\text{g}/\text{m}^3$	500 $\mu\text{g}/\text{m}^3$
D4		284.3 $\mu\text{g}/\text{m}^3$	500 $\mu\text{g}/\text{m}^3$

Monitoring Station	Monitoring Frequency	Action Level	Limit Level
D1	24-hrs	156.4 $\mu\text{g}/\text{m}^3$	260 $\mu\text{g}/\text{m}^3$
D2		153.8 $\mu\text{g}/\text{m}^3$	260 $\mu\text{g}/\text{m}^3$
D3		155.2 $\mu\text{g}/\text{m}^3$	260 $\mu\text{g}/\text{m}^3$
D4		158.0 $\mu\text{g}/\text{m}^3$	260 $\mu\text{g}/\text{m}^3$

Table 7.6.3 Event and action Plan for Air Quality

Event	ET Leader	IEC	ER	Contractor
<b>ACTION LEVEL</b>				
Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the cause s of exceedance and propose remedial measures.</li> <li>2. Inform ER , IEC and Contractor.</li> <li>3. Repeat measurement to confirm finding.</li> <li>4. Increase monitoring frequency to daily.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET.</li> <li>2. Check Contractor’s working method.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify any unacceptable practice.</li> <li>2. Amend working methods if appropriate.</li> </ol>
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures.</li> <li>2. Inform IEC and Contractor.</li> <li>3. Repeat measurements to confirm findings</li> <li>4. Increase monitoring frequency to daily.</li> <li>5. Discuss with IEC and Contractor on remedial actions.</li> <li>6. If exceedance continues, arrange meeting with IEC and ER</li> <li>7. If exceedance stops,</li> </ol>	<ol style="list-style-type: none"> <li>1. Checking monitoring data submitted by ET.</li> <li>2. Check Contractor’s working method.</li> <li>3. Discuss with ET and Contractor on Possible remedial measures.</li> <li>4. Advise the ER on the effectiveness of the proposed remedial measures.</li> <li>5. Supervisor implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing.</li> <li>2. Notify Contractor.</li> <li>3. Ensure remedial measures properly implemented</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit proposals for remedial actions to IEC within three working days of notification.</li> <li>2. Implement the agreed proposals.</li> <li>3. Amend proposal if appropriate.</li> </ol>

	cease additional monitoring.			
<b>LIMIT LEVEL</b>				
Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures.</li> <li>2. Inform ER, Contractor and EPD.</li> <li>3. Repeat measurement to confirm finding.</li> <li>4. Increase monitoring frequency to daily.</li> <li>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the result.</li> </ol>	<ol style="list-style-type: none"> <li>1. Checking monitoring data submitted by ET.</li> <li>2. Check Contractor's working method</li> <li>3. Discuss with ET and Contractor on possible remedial measures</li> <li>4. Advise the ER on the effectiveness of the proposed remedial measures.</li> <li>5. Supervisor implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing.</li> <li>2. Notify Contractor.</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance.</li> <li>2. Submit proposals for remedial actions to IEC within three working days of notification.</li> <li>3. Implement the agreed proposals.</li> <li>4. Amend proposal if appropriate.</li> </ol>
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures.</li> <li>2. Notify IEC, ER, Contractor and EPD.</li> <li>3. Repeat measurement to confirm findings.</li> <li>4. Increase monitoring frequency to daily.</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET and Contractor on the potential remedial actions.</li> <li>2. Reviews Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing.</li> <li>2. Notify Contractor.</li> <li>3. In consultation with the IEC, agree with the Contractor on the remedial measures to</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance.</li> <li>2. Submit proposals for remedial actions to IEC within three working days of notification.</li> <li>3. Implement the agreed proposals</li> <li>4. Resubmit proposals if problem still not</li> </ol>

	<p>mitigation to be implemented.</p> <p>6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken.</p> <p>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</p> <p>8. If exceedance stops, cease additional monitoring</p>	<p>3. Supervisor the implementation of remedial measures.</p>	<p>be implemented.</p> <p>4. Ensure remedial measures properly implemented.</p> <p>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated remedial actions.</p>	<p>under control.</p> <p>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated</p>
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### 7.7 Monitoring Schedule for Next Reporting Period

1-hr TSP and 24-hrs TSP monitoring schedule is proposed to be carried out on 2<sup>nd</sup>, 8<sup>th</sup>, 13<sup>th</sup>, 19<sup>th</sup> and 25<sup>th</sup> of April 2013.

## **8 Ecology**

During the reporting period, tree protection measures have been implemented by contractor, such as provision of tree protective fencing for the retained trees and transplanted trees. The tree protection zone has enough space to prevent the construction activities to damage the trees. And, the felled trees were also removed accordingly.

As the existing river was diverted temporarily, contractor was reminded that the water flow in the existing river within the site should be maintained.

## **9 Action Taken in Event of Exceedance**

If the measurements (Noise, Water and Air) exceed the action / limit level, exceedance details will be reported and follow-up actions will be taken by relevant parties involved.

During the reporting month there was no exceedance for air measurements recorded; therefore, no actions were taken.

For water quality monitoring, total 1 number of Limit Level exceedance (SS) was recorded in this reporting month in accordance with the established level. It was believed that the exceedance records at W2 were caused by adverse weather and natural fluctuation, since the record of SS at control station has also exceeded its Limit Level. Therefore, the exceedances records at W2 were unlikely to be related to this project.

For noise monitoring, action level exceedance was recorded, since the noise complaint was received during the reporting period. According to the site investigation, proper mitigation measures were implemented by contractor. The detailed information is shown in **Appendix G**.

## **10 Construction Waste Disposal**

It is the contractor's responsibility to ensure that all wastes produced during the construction phase for the drainage improvement works are handled, stored and disposed in accordance with good waste management practices and

EPD's regulation and requirement. Waste materials generated during construction activities, such as construction and demolition (C&D) material, chemical wastes and general refuse, are recommended to be audited at regular intervals to ensure that proper storage, transportation and disposal practices are being implemented.

Table 10.1 is a summary of figures of the construction wastes disposal provided by Contractor.



Table 10.1 Summary of Construction Waste Disposal

Month	Actual Quantities of Inert C & D Materials Generated Monthly						Actual Quantities of C & D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/cardboard packaging	Plastics (see note3)	Chemical Waste	Others, e.g. general refuse
	(in'000ton)	(in'000ton)	(in'000ton)	(in'000ton)	(in'000ton)	(in'000ton)	(in'000kg)	(in'000kg)	(in'000kg)	(in'000kg)	(in'000kg)
Sep 12	0	0	0	0	0	0	0	0	0	0	0
Oct 12	0	0	0	0	0	0	0	0	0	0	0
Nov 12	2.77	0	0	0	2.77	0	0	0	0	0	0.031
Dec 12	3.70	0	0	0	3.70	0	0	0	0	0	0.006
Jan 13	43.89	0	0	0	43.89	0	0	0	0	0	0
Feb 13	68.93	0	0	0	68.93	0	0	0	0	0	0.016
Mar 13	55.30	0	0	0	55.30	0	0	0	0	0	6.77
Apr 13	0	0	0	0	0	0	0	0	0	0	0
May 13	0	0	0	0	0	0	0	0	0	0	0
Jun 13	0	0	0	0	0	0	0	0	0	0	0
July 13	0	0	0	0	0	0	0	0	0	0	0
Aug 13	0	0	0	0	0	0	0	0	0	0	0
Total	174.59	0	0	0	174.59	0	0	0	0	0	6.823
Forecast of Total Quantities of C & D Materials to be Generated from the Contract											
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/cardboard packaging	Plastics (see note3)	Chemical Waste	Others, e.g. general refuse
	(in'000ton)	(in'000ton)	(in'000ton)	(in'000ton)	(in'000ton)	(in'000ton)	(in'000kg)	(in'000kg)	(in'000kg)	(in'000kg)	(in'000kg)
	581	1.67	180	0	239	0	0	0	0	0	240

## 11 Status of Permits and Licenses

Table 11.1 is the updated status of environmental related permits/ license obtained for the construction activities

Table 11.1 Status of Permits and Licenses Obtained					
Description	License / Permit No.#	Date of Issue	Site	Date of expiry	Status
EP	EP-428/2011	4 November 2011	Various Lots in DD227 & DD229, Tai Po Tsai, Sai Kung	N/A	Superseded by VEP
EP	EP-428/2011/A	1 June 2012			Valid
FEP	FEP-01/428/2011/A	9 July 2012			Surrendered on 28 Nov 2012
FEP	FEP-02/428/2011/A	26 November 2012			Valid
Discharge License	WT00014162-2012	18 October 2012			Valid
Registration as a Chemical Waste Producer	349704	27 Sep 2012			Valid
Waste Disposal	N/A	N/A			N/A
Notification Pursuant to Section 3(1) of The Air Pollution Control (Construction Dust) Regulation	349519	4 Sep 2012			Valid

## 12 Compliant Log

There was one formal complaint received during the reporting period. Therefore, the follow up actions for the environmental complaint is required.

Table 12.1 Summary of Formal Complaints received				
	Noise	Water	Air	Others
Year 2012	0	0	0	0
January 2013	0	0	0	0
February 2013	0	0	0	0
March 2013	1	0	1	0
Total	1	0	1	0

A complaint was received on 28 Feb 2013 regarding the complaint on the air and noise pollution. Environmental Team has received the formal complaint letter issued by EPD on 28 March 2013. The site investigation with IEC and contractor was conducted on 2 April 2013.

During the site investigation, proper mitigation measures on dust and noise impact were implemented by contractor. ET has also analyzed the monitoring data and repeated the measurements. No exceedance was observed. The detailed information is shown in **Appendix G**.

## 13 Site Environmental Audits

### 13.1 Site Inspection

Site inspections were undertaken weekly to inspect the construction activities in active site areas to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented.

Within this reporting period, site inspections were conducted on 4<sup>th</sup>, 15<sup>th</sup>, 20<sup>th</sup> and 27<sup>th</sup> of March 2013. A detailed checklist of each site inspection together with comments and relevant photos have been filed and kept. The findings from inspection were summarized in Table 12.1.

Table 12.1 Summary results of site inspections findings

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
20 & 26 Feb 13 4 & 15 Mar 13	Observation	Drip tray was not provided for the power generator.	Contractor was reminded that the drip tray should be provided for the chemical materials for prevention of leakage.	Drip tray was provided for the power generator.	20 Mar 13	N/A
4 Mar 13	Observation	Haul Road was dry and dusty.	Contractor was reminded that routine water spraying should be implemented for dust suppression.	Routine water spraying was implemented by contractor.	15 Mar 13	N/A
20 Mar 13	Observation	General refuse was observed within the site area.	Contractor was reminded to dispose the general refuse regularly.	General refuse was disposed by contractor	27 Mar 13	N/A

### 13.2 Compliance with Legal and Contractual Requirement

There was one complaint regarding to the noise and air pollution recorded for the month of March 2013.

### 13.3 Implementation Status and Effectiveness of Mitigation Measures

Contractor has implemented mitigation measures to address those problems as advised by ET. Some of the measures taken by the contractor were considered as effective to minimize negative impact to the environment. Ongoing investigation will be carried out to observe performance and effectiveness of those measures. Outstanding environmental items will be inspected in next month.

As there were some ongoing follow up practices, contractor was reminded to regularly review and rectify the discrepancy once found and maintain good site condition. The contractor implemented various environmental mitigation

measures as recommended in the Environmental Permit.

#### **14 Future Key Issues and Recommendations**

According to the forecasted site activities, key environmental issues to be considered should at least include the following items:

- Site water control and relevant protective measures
- Dust suppression
- Noise control
- Control and disposal for construction wastes generated from works

Tree protective measures for tree planting and transplanting should be implemented such as tree protection zone and regular watering.

## **15 Conclusions**

Tree felling and transplant and stream course diversion works were major site activities being carried out within this reporting period.

Regular site meetings and inspection audits led by the seniors for discussing site environmental matters were held among Contractor and the ET on weekly basis. Also monthly site meeting and inspection audits with the above parties and IEC were carried out on 20<sup>th</sup> March 2013.

No exceedance was recorded for Air during the reporting period.

Impact monitoring for water quality was conducted. Total 1 number of Limit Level exceedance was recorded in this reporting period. For the non-compliance events, it was believed that the exceedance records at W2 were caused by adverse weather and natural fluctuation, since the record of SS at control station has also exceeded its Limit Level. Therefore, the exceedances records at W2 were unlikely to be related to this project.

Also, there was one formal complaints recorded regarding the complaint on the air and noise pollution. Action level exceedance of noise monitoring was considered in accordance with Action/Limit level criteria.

ET has reminded the contractor to provide environmental pollution control measures wherever necessary, and to keep a good environmental management at site practice.

The ET will continue to implement the environmental monitoring & audit programme in accordance with the PS and Environmental Permit requirements.

# **Appendix A**

Construction Master Programme and Site Location Plan

















# **Appendix B**

## **Key Personal Contact Information Chart**

### Key Personal Contact Information Chart

<b>Organization Name</b>	<b>Role</b>	<b>Name</b>	<b>Telephone</b>	<b>Fax Number</b>
ENVIRON Hong Kong Limited	Independent Environmental Checker (IEC)	Mr. Tong Cheng	3465 2888	3465 2899
Hip Seng Construction Company Limited	Main Contractor	Mr. Martin Wong	3110 2608	3110 2606
Environmental Pioneers & Solutions Limited	Environmental Team (ET)	Ms. Goldie Fung	2556 9172	2856 2010



# **Appendix C**

## Calibration Certificates for Measuring Instruments



# Calibration Certificate

Certificate No. **28553**

Page 1 of 5 Pages

**Customer :** Environmental Pioneers and Solutions Limited

**Address :** Flat A, 19/F., Chai Wan Industrial Centre Building, 21 Lee Chung Street, Chai Wan, HK.

**Order No. :** Q23300

**Date of receipt :** 11-Dec-12

## Item Tested

**Description :** Sound Level Meter

**Manufacturer :** SVAN

**Model :** 955

**Serial No. :** 27302

## Test Conditions

**Date of Test :** 8-Jan-13

**Supply Voltage :** --

**Ambient Temperature :** (23 ± 3)°C

**Relative Humidity :** (50 ± 25) %

## Test Specifications

Calibration check.

Ref. Document/Procedure: Z01.

## Test Results


All results were within the IEC 61672 Type1, IEC 1260 Class1 and manufacturer's specification.  
The results are shown in the attached page(s).


Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S017	Multi-Function Generator	C127181	SCL-HKSAR
S024	Sound Level Calibrator	28588	NIM-PRC & SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).  
The test results apply to the above Unit-Under-Test only

**Calibrated by :**   
P. F. Wong

**Approved by :**   
Dorothy Cheuk

**Date:** 8-Jan-13



# Calibration Certificate

Certificate No. 28553

Page 2 of 5 Pages

Results :

1. Self-generated noise: 2.0 dBA (Mfr's Spec (Electrical)  $\leq 14$  dBA)

2. Acoustical signal test

UUT Setting				Applied Value (dB)	UUT Reading (dB)	
Range (dB)	Frequency Weighting	Time Weighting	1/1 Octave Filter		Before adjust	After adjust
25-120	A	F	OFF	94.0	--	93.5
		S	OFF		--	93.5
	C	F	OFF	--	93.5	
	A	F	OFF	114.0	--	113.9
		S	OFF		--	113.9
	C	F	OFF	--	113.9	
	A	F	ON	94.0	--	93.5
	A	F	ON	114.0	--	113.9
45-139	A	F	OFF	94.0	*91.6	93.5
		S	OFF		--	93.5
	C	F	OFF	--	93.5	
	A	F	OFF	114.0	--	113.9
		S	OFF		--	113.9
	C	F	OFF	--	113.9	
	A	F	ON	94.0	--	93.5
	A	F	ON	114.0	--	113.9

Mfr's Spec. :  $\pm 0.7$  dB

Uncertainty :  $\pm 0.1$  dB

3 Electrical signal tests of frequency weightings (A weighting)

Frequency	Attenuation (dB)	IEC 61672 Type 1 Spec.
31.5 Hz	-39.5	- 39.4 dB, $\pm 2$ dB
63 Hz	-26.5	- 26.2 dB, $\pm 1.5$ dB
125 Hz	-16.2	- 16.1 dB, $\pm 1.5$ dB
250 Hz	-8.7	- 8.6 dB, $\pm 1$ dB
500 Hz	-3.3	- 3.2 dB, $\pm 1.4$ dB
1 kHz	0.0 (Ref)	0 dB, $\pm 1.1$ dB
2 kHz	+1.2	+ 1.2 dB, $\pm 1.6$ dB
4 kHz	+1.0	+ 1.0 dB, $\pm 1.6$ dB
8 kHz	-1.1	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	-6.9	- 6.6 dB, + 3.5 dB ~ -17.0 dB

Uncertainty :  $\pm 0.1$  dB



# Calibration Certificate

Certificate No. 28553

Page 3 of 5 Pages

## 4. Frequency & Time weightings at 1 kHz

### 4.1 Frequency Weighting (Fast)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
A	94.0	93.5 (Ref.)	--	± 0.4 dB
C	94.0	93.5	0.0	

### 4.2 Time Weighting (A-weighted)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
Fast	94.0	93.5 (Ref.)	--	± 0.3 dB
Slow	94.0	93.5	0.0	
Time-averaging	94.0	93.5	0.0	

Uncertainty : ± 0.1 dB

## 5. Level linearity on the reference level range

UUT Range	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
140 dB (Ref Level)	137.0	136.5	0.0	± 1.1 dB
	136.0	135.5	0.0	
	135.0	134.5	0.0	
	134.0	133.5	0.0	
	129.0	128.5	0.0	
	124.0	123.5	0.0	
	119.0	118.5	0.0	
	114.0	113.5	0.0	
	109.0	108.5	0.0	
	104.0	103.5	0.0	
	99.0	98.5	0.0	
	94.0	93.5 (Ref)	--	
	89.0	88.5	0.0	
	84.0	83.5	0.0	
	79.0	78.5	0.0	
	74.0	73.5	0.0	
	69.0	68.5	0.0	
	64.0	63.5	0.0	
	59.0	58.5	0.0	
54.0	53.5	0.0		
49.0	48.4	0.1		
48.0	47.4	0.1		

Uncertainty : ± 0.1 dB



# Calibration Certificate

Certificate No. **28553**

Page 4 of 5 Pages

## 6. Toneburst response (4kHz)

UUT Setting	Tone Burst Duration(ms)	UUT Reading(dB)	Difference (dB)	IEC 61672 Type 1 Spec.
Fast	Steady	137.0(Ref)	--	--
	200	136.0	-1.0	-1.0 ± 0.8dB
	2	118.9	-18.1	-18.0, +1.3 dB ~ -1.8 dB
	0.25	109.9	-27.1	-27.0, +1.3 dB ~ -3.3 dB
Slow	Steady	137.0(Ref)	--	--
	200	129.5	-7.5	-7.4 ± 0.8dB
	2	109.9	-27.1	-27.0, +1.3 dB ~ -3.3 dB
Time averaging	Steady	137.0(Ref)	--	--
	200	130.0	-7.0	-7.0±0.8dB
	2	110.8	-26.2	-27.0, +1.3 dB ~ -1.8 dB
	0.25	102.0	-35.0	-36.0, +1.3 dB ~ -3.3 dB

Uncertainty : ± 0.1 dB

## 7. Peak C sound level (140 dB Range, C-weighted, Fast)

Freq(Hz)	Signal Type	Indication of overload	UUT reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
8000	Steady	--	132.0	--	3.2 ± 2.4 dB
	Complete-cycle	No	135.3	3.3 dB	
500	Steady	--	132.0	--	2.4 ± 1.4 dB
	+ve half-cycle	No	129.3	2.7 dB	
	-ve half-cycle	No	129.1	2.9 dB	

Uncertainty : ± 0.1 dB



# Calibration Certificate

Certificate No. 28553

Page 5 of 5 Pages

## 8. Overload indication (140 dB range, A-weighted, Time-average, 4kHz)

UUT Reading at overload (dB)		Difference (dB)	IEC 61672 Type 1 Spec.
+ ve one half cycle	- ve one half cycle		
137.0	138.5	1.5	< 1.8 dB

The overload indicator latched on until reset

Uncertainty :  $\pm 0.1$  dB

## 9. Filter Characteristics

### 9.1 1/1 – Octave Filter

Frequency	Attenuation (dB)	IEC 1260 Class 1 (dB)
125 Hz	-76.4	< - 61
250 Hz	-70.5	< - 42
500 Hz	-36.3	< - 17.5
707 Hz	-4.3	- 2 ~ - 5
1 kHz (Ref)	--	--
1.414 kHz	-2.1	- 2 ~ - 5
2 kHz	-50.6	< - 17.5
4 kHz	-82.3	< - 42
8 kHz	-82.5	< - 61

Uncertainty :  $\pm 0.25$  dB

### Remarks : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1010 hPa.
4. Preamplifier model : SV 12L , S/N : 25732
5. Firmware Version: 6.12.4
6. Power Supply Check: OK
7. The UUT was adjusted with the supplied sound calibrator at the reference sound pressure level before the calibration.
8. \*Out of specification.

----- END -----



# Calibration Certificate

Certificate No. **28554**

Page 1 of 2 Pages

**Customer :** Environmental Pioneers and Solutions Limited

**Address :** Flat A, 19/F., Chai Wan Industrial Centre Building, 21 Lee Chung Street, Chai Wan, HK.

**Order No. :** Q23300

**Date of receipt :** 11-Dec-12

## Item Tested

**Description :** Sound Level Calibrator

**Manufacturer :** Svantek

**Model :** SV30A

**Serial No. :** 29085

## Test Conditions

**Date of Test :** 3-Jan-13

**Supply Voltage :** --

**Ambient Temperature :** (23 ± 3)°C

**Relative Humidity :** (50 ± 25) %

## Test Specifications

Calibration check.

Ref. Document/Procedure : F21, Z02.

## Test Results

All results were within the IEC 942 Class1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	13535	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	28588	NIM-PRC & SCL-HKSAR
S041	Universal Counter	28347	SCL-HKSAR
S206	Sound Level Meter	16338	SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).  
The test results apply to the above Unit-Under-Test only

**Calibrated by :** 

P. F. Wong

**Approved by :** 

Dorothy Cheuk

Date: 3-Jan-13

This Certificate is issued by:

Hong Kong Calibration Ltd.

Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.

Tel: 2425 8801 Fax: 2425 8646



# Calibration Certificate

Certificate No. 28554

Page 2 of 2 Pages

Results :

## 1. Level Accuracy

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	94.03	± 0.3 dB
114	114.02	

Uncertainty : ± 0.2 dB

## 2. Frequency

UUT Nominal Value	Measured Value	IEC 942 Class 1 Spec.
1 kHz	1.000 kHz	± 2 %

Uncertainty : ± 3.6 x 10<sup>-6</sup>

## 3. Level Stability : 0.0 dB

IEC 942 Class 1 Spec. : ± 0.1 dB

Uncertainty : ± 0.01 dB

## 4. Total Harmonic Distortion : < 0.1 %

IEC 942 Class 1 Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

2. The above measured values are the mean of 3 measurements.

3. The uncertainty claimed is for a confidence probability of not less than 95%.

4. Atmospheric Pressure : 1010 hPa.

----- END -----





# ALS Technichem (HK) Pty Ltd

## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

**CONTACT:** MR ALLEN CHAN  
**CLIENT:** ENVIRONMENTAL PIONEERS & SOLUTIONS LIMITED  
**ADDRESS:** FLAT A, 19/F, CHAI WAN INDUSTRIAL BUILDING,  
20 LEE CHUNG STREET,  
CHAI WAN,  
HONG KONG

**WORK ORDER:** HK1302895  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 01/02/2013  
**DATE OF ISSUE:** 15/02/2013

### COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.  
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Conductivity, Dissolved Oxygen, pH, Temperature and Turbidity  
Description: WATER QUALITY MULTI-METER  
Brand Name: TOA DKK  
Model No.: WMS-24  
Serial No.: 685940  
Equipment No.: --  
Date of Calibration: 08 February, 2013

### NOTES

This is the Final Report and supersedes any preliminary report with this batch number.  
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

### ISSUING LABORATORY: HONG KONG

#### Address

ALS Technichem (HK) Pty Ltd  
11/F Chung Shun Knitting Centre  
1-3 Wing Yip Street  
Kwai Chung  
HONG KONG

**Phone:** 852-2610 1044  
**Fax:** 852-2610 2021  
**Email:** [hongkong@alsglobal.com](mailto:hongkong@alsglobal.com)

  
Mr. Chan Kwok Fai, Godfrey  
Laboratory Manager - Hong Kong

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Page 1 of 2

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ALS TECHNICHEM (HK) PTY LTD An ALS Limited Company

Life Sciences

[www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER

# REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION



**Work Order:** HK1302895  
**Date of Issue:** 15/02/2013  
**Client:** ENVIRONMENTAL PIONEERS & SOLUTIONS LIMITED

**Description:** WATER QUALITY MULTI-METER  
**Brand Name:** TOA DKK  
**Model No.:** WMS-24  
**Serial No.:** 685940  
**Equipment No.:** --

**Date of Calibration:** 08 February, 2013      **Date of next Calibration:** 08 May, 2013

**Parameters:**

**Conductivity**

**Method Ref: APHA (21st edition), 2510B**

Expected Reading (uS/cm)	Displayed Reading (uS/cm )	Tolerance (%)
146.9	143.0	-2.7
6667	7100	6.5
12890	13100	1.6
58670	60400	2.9
Tolerance Limit (±%)		10.0

**Dissolved Oxygen**

**Method Ref: APHA (21st edition), 4500O: G**

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.14	3.07	-0.07
6.20	6.29	0.09
8.54	8.60	0.06
Tolerance Limit (±mg/L)		0.20

**pH Value**

**Method Ref: APHA 21st Ed. 4500H:B**

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.00	0.00
7.0	6.89	-0.11
10.0	9.91	-0.09
Tolerance Limit (±pH unit)		0.20

**Temperature**

**Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.**

Expected Reading (°C )	Displayed Reading (°C )	Tolerance (°C )
10.0	10.3	0.3
22.0	21.3	-0.7
38.0	37.9	-0.1
Tolerance Limit (±°C)		2.0

**Turbidity**

**Method Ref: APHA (21st edition), 2130B**

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.0	--
4	4.3	7.5
40	38.9	-2.8
80	84.4	5.5
400	391.0	-2.3
800	782.5	-2.2
Tolerance Limit (±%)		10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.



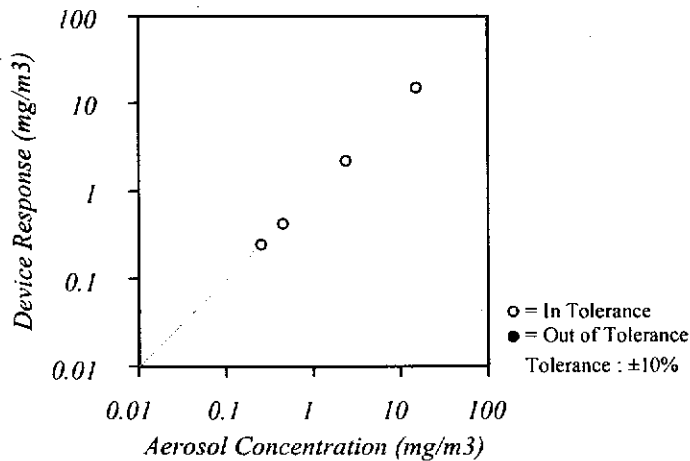
# CERTIFICATE OF CALIBRATION AND TESTING

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

Environment Condition			Model	AM510
Temperature	66.6 (19.2)	°F (°C)	Serial Number	11208034
Relative Humidity	54	%RH		
Barometric Pressure	29.08 (984.8)	inHg (hPa)		

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

Concentration Linearity Plot



System ID: DT1101-01

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

Measurement Variable	System ID	Last Cal	Cal. Due	Measurement Variable	System ID	Last Cal	Cal Due
Photometer	E003433	04-11-12	10-11-12	Flow and temperature	E002371	03-06-12	03-06-13
DC Voltage(Keithley)	E002859	01-18-12	01-18-13	Microbalance	M001324	01-04-11	01-04-13
Barometric Pressure	E003733	02-25-12	02-25-13	Temperature	E002873	11-14-11	11-14-12
Humidity	E002873	11-14-11	11-14-12	Pressure	E003440	08-17-12	08-17-13

Calibrated

Final Function Check

August 27, 2012

Date



# Calibration Certificate

Certificate No. **24181**

Page 1 of 2 Pages

**Customer :** Environmental Pioneers and Solutions Limited

**Address :** Flat A, 19/F., Chai Wan Industrial Centre Building, 21 Lee Chung Street, Chai Wan, HK.

**Order No. :** Q21644

**Date of receipt :** 3-Jul-12

## Item Tested

**Description :** Laser Dust Monitor

**Manufacturer :** SIBATA

**Model :** LD-3B

**Serial No. :** 954254

## Test Conditions

**Date of Test :** 5-Jul-12 ~13-Jul-12

**Supply Voltage :** --

**Ambient Temperature :** (23 ± 3)°C

**Relative Humidity :** (50 ± 25) %

## Test Specifications

Calibration check.

Ref. Document/Procedure : Manufacturer recommended method (gravimetric), Z28.

## Test Results

The results are shown in the attached page(s).

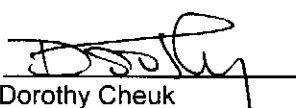
Main Test equipment used:

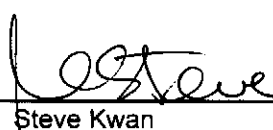
<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S136B	Stop Watch	13184	NIM-PRC
S156	Analytical Balance	00352	NIM-PRC
S201	Std. Test Dust	61291	NIST
S207B	Std. Flowmeter	20588	NIM-PRC

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).

The test results apply to the above Unit-Under-Test only

**Calibrated by :**   
Dorothy Cheuk

**Approved by :**   
Steve Kwan

**Date:** 23-Jul-12



# Calibration Certificate

Certificate No. 24181

Page 2 of 2 Pages

Results :

Applied Value ( $\mu\text{g}/\text{m}^3$ )	UUT Measured Value (K=1.3) ( $\mu\text{g}/\text{m}^3$ ), (cpm)
1225.3	1266.2

- Remarks :
1. UUT : Unit-Under-Test
  2. Uncertainty  $\pm 15\%$ , for a confidence probability of not less than 95%.
  3. The results were the mean of 3 measurements,
  4. ISO 12103-1 A1 respirable standard test dust was used for the calibration.
  5. The K-Factor had been adjusted from 2.0 to 1.3

----- END -----



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

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 17, 2012 Rootsmeter S/N 0438320 Ta (K) - 294  
 Operator Tisch Orifice I.D. - 1483 Pa (mm) - 754.38

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.4140	3.2	2.00
2	NA	NA	1.00	0.9960	6.4	4.00
3	NA	NA	1.00	0.8910	7.9	5.00
4	NA	NA	1.00	0.8510	8.7	5.50
5	NA	NA	1.00	0.7020	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0018	0.7085	1.4185	0.9957	0.7042	0.8829
0.9976	1.0016	2.0061	0.9915	0.9955	1.2486
0.9955	1.1173	2.2429	0.9894	1.1105	1.3959
0.9945	1.1686	2.3524	0.9884	1.1615	1.4641
0.9890	1.4088	2.8371	0.9830	1.4003	1.7657
Qstd slope (m) = 2.02742			Qa slope (m) = 1.26953		
intercept (b) = -0.02027			intercept (b) = -0.01262		
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}

**TSP Sampler Calibration**

**SITE**

Location: **Tai Po Tsai** Date: **February 28, 2013**  
Sampler: **TE-5170 MFC (Serial # : 2039)** Tech: **Sam Wong**

**CONDITIONS**

Barometric Pressure (in Hg):	<b>39.93</b>	Corrected Pressure (mm Hg):	1014
Temperature (deg F):	<b>66</b>	Temperature (deg K):	292
Average Press. (in Hg):	<b>39.93</b>	Corrected Average (mm Hg):	1014
Average Temp. (deg F):	<b>66</b>	Average Temp. (deg K):	292

**CALIBRATION ORIFICE**

Make: **Tisch** Qstd Slope: **2.02742**  
Model: **TE-5025A** Qstd Intercept: **-0.02027**  
Serial#: **1483** Date Certified: **May 17, 2012**

**CALIBRATIONS**

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
1	12.00	2.004	60.0	70.03	Slope = 32.8352 Intercept = 3.6722 Corr. coeff.= 0.9981 # of Observations: 5
2	10.00	1.831	54.0	63.03	
3	8.40	1.679	50.0	58.36	
4	5.40	1.348	42.0	49.02	
5	3.20	1.040	32.0	37.35	

Calculations

$$Qstd = 1/m[\text{sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$
$$IC = I[\text{sqrt}(Pa/Pstd)(Tstd/Ta)]$$

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

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

**TSP Sampler Calibration**

**SITE**

Location: **Tai Po Tsai** Date: **February 28, 2013**  
 Sampler: **TE-5170 MFC (Serial # : 1959)** Tech: **Sam Wong**

**CONDITIONS**

Barometric Pressure (in Hg):	<b>39.93</b>	Corrected Pressure (mm Hg):	1014
Temperature (deg F):	<b>66</b>	Temperature (deg K):	292
Average Press. (in Hg):	<b>39.93</b>	Corrected Average (mm Hg):	1014
Average Temp. (deg F):	<b>66</b>	Average Temp. (deg K):	292

**CALIBRATION ORIFICE**

Make:	<b>Tisch</b>	Qstd Slope:	<b>2.02742</b>
Model:	<b>TE-5025A</b>	Qstd Intercept:	<b>-0.02027</b>
Serial#:	<b>1483</b>	Date Certified:	<b>May 17, 2012</b>

**CALIBRATIONS**

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
<b>1</b>	<b>12.40</b>	2.037	<b>60.0</b>	70.03	Slope = 32.1558 Intercept = 3.9958 Corr. coeff.= 0.9989 # of Observations: 5
<b>2</b>	<b>10.40</b>	1.867	<b>54.0</b>	63.03	
<b>3</b>	<b>8.40</b>	1.679	<b>50.0</b>	58.36	
<b>4</b>	<b>5.20</b>	1.323	<b>40.0</b>	46.69	
<b>5</b>	<b>3.20</b>	1.040	<b>32.0</b>	37.35	

Calculations

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd) (Tstd/Ta)) - b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd) (Tstd/Ta)]$$

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

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





**TSP Sampler Calibration**

**SITE**

Location: **Tai Po Tsai** Date: **February 28, 2013**  
 Sampler: **TE-5170 MFC (Serial # : 2040)** Tech: **Sam Wong**

**CONDITIONS**

Barometric Pressure (in Hg):	<b>39.93</b>	Corrected Pressure (mm Hg):	1014
Temperature (deg F):	<b>66</b>	Temperature (deg K):	292
Average Press. (in Hg):	<b>39.93</b>	Corrected Average (mm Hg):	1014
Average Temp. (deg F):	<b>66</b>	Average Temp. (deg K):	292

**CALIBRATION ORIFICE**

Make:	<b>Tisch</b>	Qstd Slope:	<b>2.02742</b>
Model:	<b>TE-5025A</b>	Qstd Intercept:	<b>-0.02027</b>
Serial#:	<b>1483</b>	Date Certified:	<b>May 17, 2012</b>

**CALIBRATIONS**

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
<b>1</b>	<b>12.20</b>	2.021	<b>58.0</b>	67.70	Slope = 31.0733 Intercept = 5.6647 Corr. coeff.= 0.9980 # of Observations: 5
<b>2</b>	<b>10.20</b>	1.849	<b>54.0</b>	63.03	
<b>3</b>	<b>8.20</b>	1.659	<b>50.0</b>	58.36	
<b>4</b>	<b>5.40</b>	1.348	<b>41.0</b>	47.86	
<b>5</b>	<b>3.20</b>	1.040	<b>32.0</b>	37.35	

Calculations

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd) (Tstd/Ta)) - b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd) (Tstd/Ta)]$$

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

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

# **Appendix D**

## Construction Noise Monitoring Data

**大成環境科技拓展有限公司**  
**Environmental Pioneers and Solutions Limited**

**Noise Monitoring Data Sheet**

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		4/3/2013	4/3/2013	4/3/2013	4/3/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		13:00	11:20	9:18	10:20
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, North	<5, North	<5, North	<5, North
Measurement Results	L <sub>eq</sub> (dB(A))	62.5	60.8	64.5	63.4
	L <sub>10</sub> (dB(A))	65.9	62.7	65.9	64.8
	L <sub>90</sub> (dB(A))	56.8	58.2	60.1	55.9
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

Signature

Date

Prepared by: Lai Chi Hang



4/3/2013

**大成環境科技拓展有限公司**  
**Environmental Pioneers and Solutions Limited**

**Noise Monitoring Data Sheet**

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		9/3/2013	9/3/2013	9/3/2013	9/3/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		13:15	11:00	9:30	10:20
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, Northeast	<5, Northeast	<5, Northeast	<5, Northeast
Measurement Results	L <sub>eq</sub> (dB(A))	60.4	60.8	63.1	64.7
	L <sub>10</sub> (dB(A))	62.5	62.2	64.7	66.2
	L <sub>90</sub> (dB(A))	57.3	56.9	59.8	59.6
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

Signature

Date

Prepared by: Lai Chi Hang



9/3/2013

**大成環境科技拓展有限公司**  
**Environmental Pioneers and Solutions Limited**

**Noise Monitoring Data Sheet**

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		15/3/2013	15/3/2013	15/3/2013	15/3/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		13:07	11:30	10:00	10:45
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, East	<5, East	<5, East	<5, East
Measurement Results	L <sub>eq</sub> (dB(A))	63.1	60.7	63.8	66.8
	L <sub>10</sub> (dB(A))	64.9	62.3	65.4	69.1
	L <sub>90</sub> (dB(A))	59.2	57.8	60.1	60.4
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

Signature

Date

Prepared by: Lai Chi Hang



15/3/2013

**大成環境科技拓展有限公司**  
**Environmental Pioneers and Solutions Limited**

**Noise Monitoring Data Sheet**

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		21/3/2013	21/3/2013	21/3/2013	21/3/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		13:20	14:00	10:30	11:15
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, Northeast	<5, Northeast	<5, Northeast	<5, Northeast
Measurement Results	L <sub>eq</sub> (dB(A))	62.8	64.1	60.8	63.1
	L <sub>10</sub> (dB(A))	64.5	65.7	62.5	65.2
	L <sub>90</sub> (dB(A))	57.2	56.8	55.3	56.9
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

Signature

Date

Prepared by: Lai Chi Hang



21/3/2013

**大成環境科技拓展有限公司**  
**Environmental Pioneers and Solutions Limited**

**Noise Monitoring Data Sheet**

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		27/3/2013	27/3/2013	27/3/2013	27/3/2013
Weather Condition		Sunny	Sunny	Sunny	Sunny
Measurement Start Time (hh:mm)		13:45	13:08	10:35	10:01
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, East	<5, East	<5, East	<5, Northeast
Measurement Results	L <sub>eq</sub> (dB(A))	61.8	65.3	64.0	65.6
	L <sub>10</sub> (dB(A))	63.5	66.9	66.2	67.2
	L <sub>90</sub> (dB(A))	58.1	57.3	58.1	59.4
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

Signature

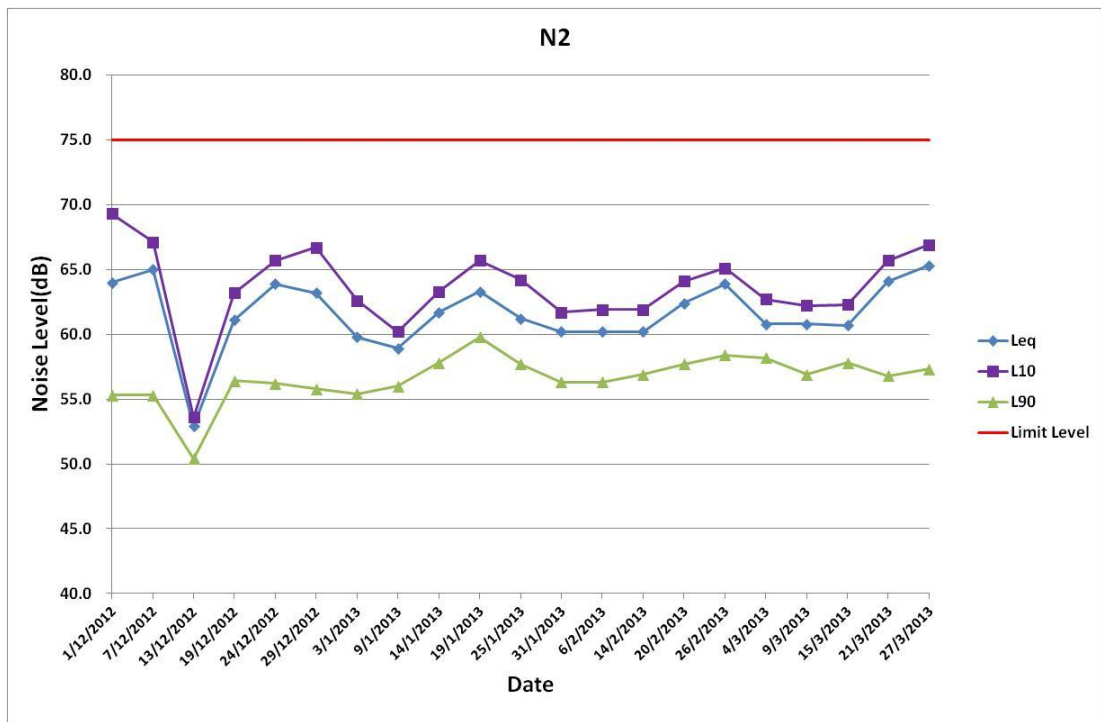
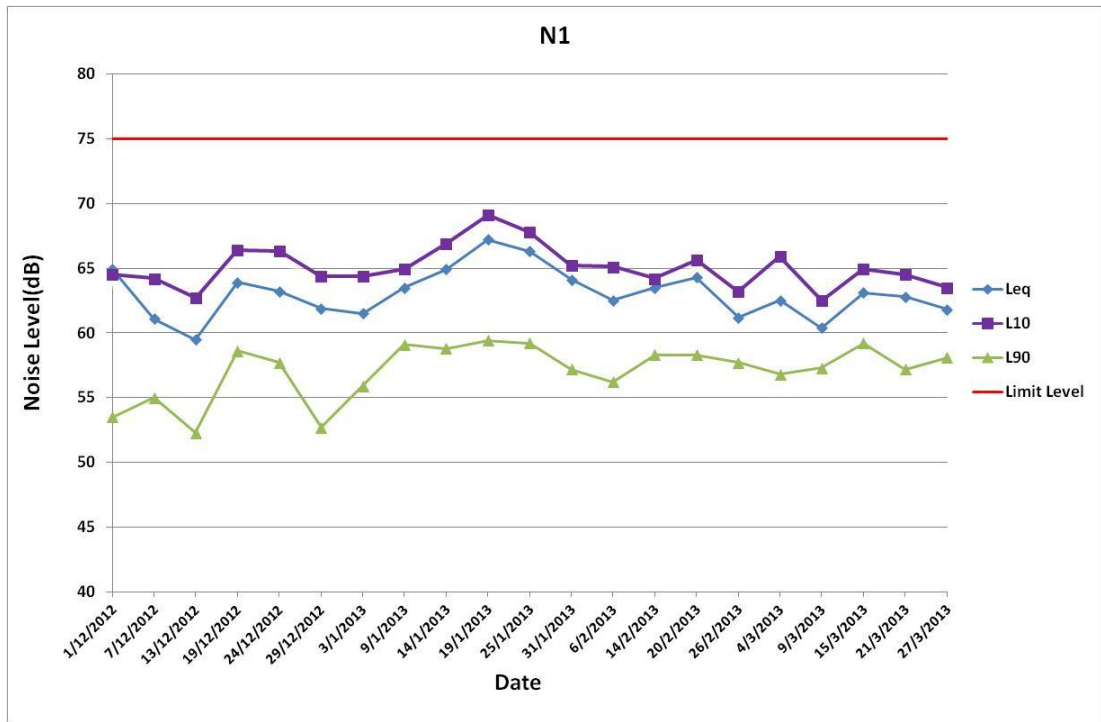
Date

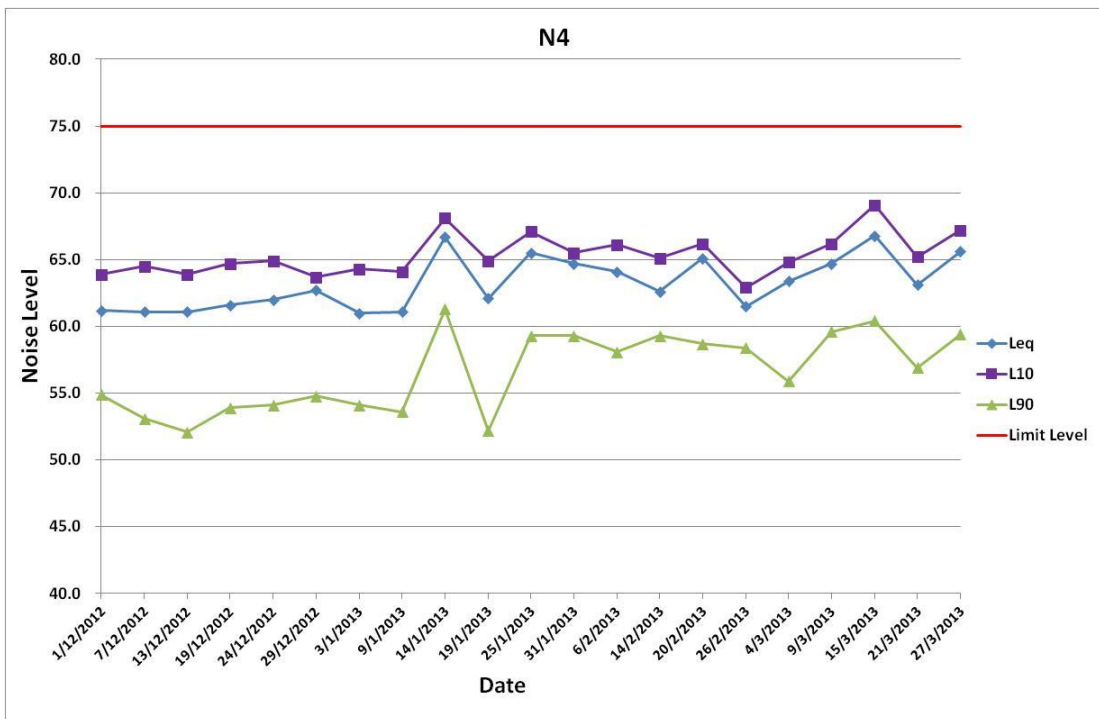
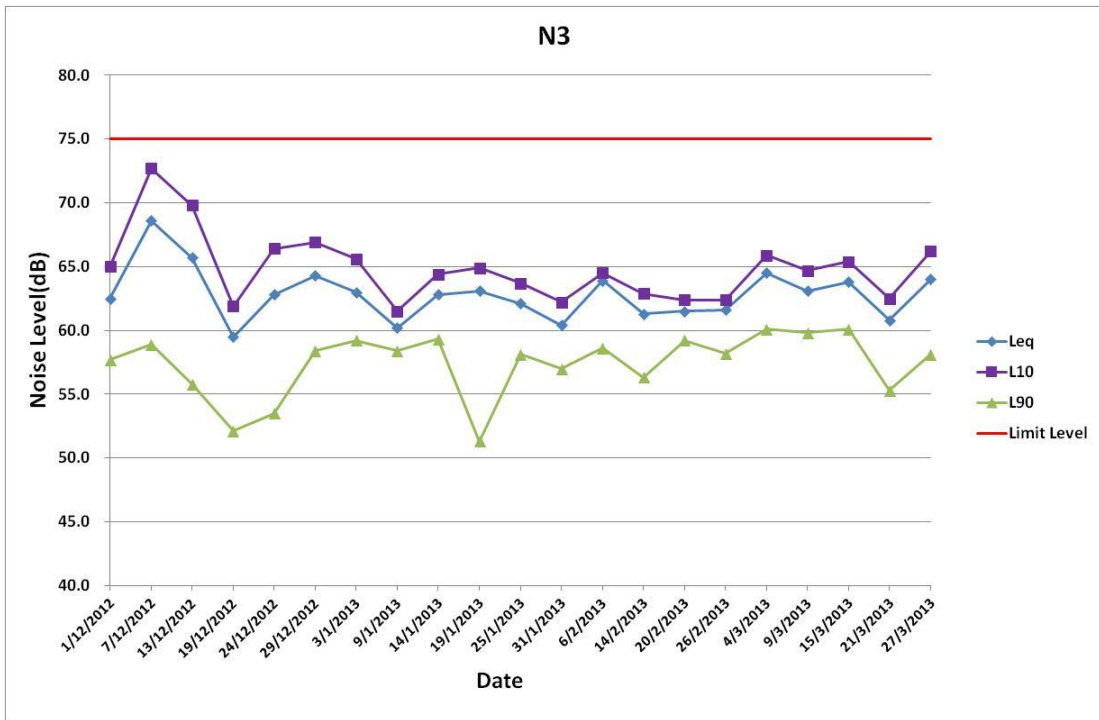
Prepared by: Andy Tsang



27/3/2013







# **Appendix E**

## Water Quality Monitoring Data

**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**

Date of Sampling : 2/3/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.23	7.69
Temperature (°C)	22.1	22.3
Turbidity (NTU)	4.3	3.5
DO (mg/L)	9.76	8.32
DO Saturation (%)	116%	101%
Suspended Solids (mg/L)	5.0	5.0

Remark or Observation : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name

Signature

Date

Prepared By : Tsang King Yeun



2/3/2013

**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**

Date of Sampling : 5/3/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	11:00	11:30
Water Depth (m)	<1	<1
pH value	8.21	7.60
Temperature (°C)	21.8	21.9
Turbidity (NTU)	2.8	5.6
DO (mg/L)	7.83	7.16
DO Saturation (%)	95%	90%
Suspended Solids (mg/L)	4.0	3.0

Remark or Observation : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name

Signature

Date

Prepared By : Tsang King Yeun



5/3/2013

**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**

Date of Sampling : 7/3/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.17	7.89
Temperature (°C)	21.4	22.1
Turbidity (NTU)	4.30	5.9
DO (mg/L)	7.78	7.30
DO Saturation (%)	95%	85%
Suspended Solids (mg/L)	4.0	3.0

Remark or Observation : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name

Signature

Date

Prepared By : Tsang King Yeun



7/3/2013

**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**

Date of Sampling : 9/3/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.89	8.00
Temperature (°C)	22.3	22.5
Turbidity (NTU)	4.7	4.2
DO (mg/L)	8.78	8.45
DO Saturation (%)	101%	95%
Suspended Solids (mg/L)	8.0	2.0

Remark or Observation : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name

Signature

Date

Prepared By : Tsang King Yeun



9/3/2013

**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**

Date of Sampling : 12/3/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.89	8.12
Temperature (°C)	22.3	22.8
Turbidity (NTU)	1.5	3.0
DO (mg/L)	7.96	7.78
DO Saturation (%)	92%	88%
Suspended Solids (mg/L)	4.0	3.0

Remark or Observation : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name

Signature

Date

Prepared By : Tsang King Yeun



12/3/2013



**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**

Date of Sampling : 14/3/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.31	8.10
Temperature (°C)	24.5	23.4
Turbidity (NTU)	3.7	4.7
DO (mg/L)	7.78	8.74
DO Saturation (%)	95%	85%
Suspended Solids (mg/L)	5.0	3.0

Remark or Observation : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name

Signature

Date

Prepared By : Tsang King Yeun



14/3/2013

**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**

Date of Sampling : 16/3/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.96	7.94
Temperature (°C)	22.2	22.3
Turbidity (NTU)	4.8	5.0
DO (mg/L)	7.89	7.24
DO Saturation (%)	95%	85%
Suspended Solids (mg/L)	6.0	6.0

Remark or Observation : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name

Signature

Date

Prepared By : Tsang King Yeun



16/3/2013

**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**

Date of Sampling : 19/3/2013

Weather : Rainy

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.21	7.86
Temperature (°C)	22	21.33
Turbidity (NTU)	2.5	3.7
DO (mg/L)	9.84	8.65
DO Saturation (%)	110%	96%
Suspended Solids (mg/L)	16.0	16.0

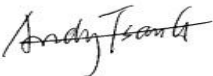
Remark or Observation : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name

Signature

Date

Prepared By : Tsang King Yeun



19/3/2013

**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**

Date of Sampling : 21/3/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.23	8.18
Temperature (°C)	21.8	22.2
Turbidity (NTU)	4.5	2.3
DO (mg/L)	7.56	6.78
DO Saturation (%)	81%	75%
Suspended Solids (mg/L)	15.0	15.0

Remark or Observation : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name

Signature

Date

Prepared By : Tsang King Yeun



21/3/2013

**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**


Date of Sampling : 23/3/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.10	8.16
Temperature (°C)	22.4	22.2
Turbidity (NTU)	4.2	2.0
DO (mg/L)	8.81	6.78
DO Saturation (%)	100%	75%
Suspended Solids (mg/L)	11.0	11.0

Remark or Observation : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Name**                      **Signature**                      **Date**

Prepared By : Tsang King Yeun                                            23/3/2013


**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**

Date of Sampling : 26/3/2013

Weather : Rainy

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.11	7.84
Temperature (°C)	22.1	22.2
Turbidity (NTU)	2.5	3.4
DO (mg/L)	7.78	8.56
DO Saturation (%)	78%	85%
Suspended Solids (mg/L)	8.0	9.0

Remark or Observation : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

<u>Name</u>	<u>Signature</u>	<u>Date</u>
Prepared By : <u>Tsang King Yeun</u>	<u></u>	<u>26/3/2013</u>

**Environmental Pioneers & Solutions Limited**  
**Water Quality Monitoring - Summary of On-Site Measurement Results**

Date of Sampling : 28/3/2013

Weather : Rainy

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.68	7.92
Temperature (°C)	22.1	22.2
Turbidity (NTU)	6.0	5.8
DO (mg/L)	8.79	8.99
DO Saturation (%)	100%	103%
Suspended Solids (mg/L)	65.0	65.0

Remark or Observation : Turbid water was observed at W1 and W2  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Name

Signature

Date

Prepared By : Tsang King Yeun

*Tsang King Yeun*

28/3/2013



### CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1305763
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@epsil.com.hk	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 04-MAR-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 13-MAR-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

#### General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 08-MAR-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1305763**

Sample(s) were received in an ambient condition.

Water sample(s) analysed and reported on an as received basis.

**This report may not be reproduced except with prior written approval from the testing laboratory.**

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the Electronic Transactions Ordinance of Hong Kong, Chapter 553, Section 6.

Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

A Campbell Brothers Limited Company





**Analytical Results**

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[28-FEB-2013]	[28-FEB-2013]	[02-MAR-2013]	[02-MAR-2013]	
Compound	CAS Number	LOR	Unit		HK1305763-001	HK1305763-002	HK1305763-003	HK1305763-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		4	3	5	5	



**Laboratory Duplicate (DUP) Report**

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2761218)</b>								
HK1305505-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	96	97	1.0
HK1305603-002	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	12	13	8.6
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2763855)</b>								
HK1305716-007	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	22	22	0.0
HK1305929-013	Anonymous	EA025: Suspended Solids (SS)	----	1	mg/L	2	3	0.0

**Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report**

Matrix: WATER			Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2761218)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	100	----	85	115	----	----
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2763855)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	85.5	----	85	115	----	----

**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report**

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



### CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1306205
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@eps1.com.hk	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 07-MAR-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 18-MAR-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

#### General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 13-MAR-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1306205**

Sample(s) were picked up from client by ALS Technichem (HK) staff in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

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**Analytical Results**

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[05-MAR-2013]	[05-MAR-2013]	[07-MAR-2013]	[07-MAR-2013]	
Compound	CAS Number	LOR	Unit		HK1306205-001	HK1306205-002	HK1306205-003	HK1306205-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		4	3	4	3	



**Laboratory Duplicate (DUP) Report**

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2770523)</b>								
HK1306191-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	112	117	4.0
HK1306297-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	9	8	0.0

**Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report**

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2770523)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	98.0	----	85	115	----	----

**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report**

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



### CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1306660
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@eps1.com.hk	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 12-MAR-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 21-MAR-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

#### General Comments

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Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1306660**

Sample(s) were picked up from client by ALS Technichem (HK) staff in an ambient condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

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**Analytical Results**

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[09-MAR-2013]	[09-MAR-2013]	[12-MAR-2013]	[12-MAR-2013]	
Compound	CAS Number	LOR	Unit		HK1306660-001	HK1306660-002	HK1306660-003	HK1306660-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		8	<2	4	3	



**Laboratory Duplicate (DUP) Report**

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2777643)</b>								
HK1306628-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	2	3	0.0
HK1306708-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	8	7	16.7
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2780114)</b>								
HK1306602-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	510	502	1.8
HK1306660-004	W2	EA025: Suspended Solids (SS)	----	2	mg/L	3	4	37.5

**Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report**

Matrix: WATER			Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2777643)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	92.5	----	85	115	----	----
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2780114)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	99.5	----	85	115	----	----

**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report**

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.





### CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1307238
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@eps1.com.hk	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 18-MAR-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 27-MAR-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

#### General Comments

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Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1307238**

Sample(s) were received in an ambient condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

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**Analytical Results**

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[14-MAR-2013]	[14-MAR-2013]	[16-MAR-2013]	[16-MAR-2013]	
Compound	CAS Number	LOR	Unit		HK1307238-001	HK1307238-002	HK1307238-003	HK1307238-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		5	3	6	6	



**Laboratory Duplicate (DUP) Report**

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2791852)</b>								
HK1307214-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	10	9	0.0
HK1307238-002	W2	EA025: Suspended Solids (SS)	----	2	mg/L	3	5	42.7

**Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report**

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2791852)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	104	----	85	115	----	----

**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report**

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



### CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1307671
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@eps1.com.hk	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 21-MAR-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 02-APR-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

#### General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 27-MAR-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1307671**

Sample(s) were received in an ambient condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

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**Analytical Results**

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[19-MAR-2013]	[19-MAR-2013]	[21-MAR-2013]	[21-MAR-2013]	
Compound	CAS Number	LOR	Unit		HK1307671-001	HK1307671-002	HK1307671-003	HK1307671-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		16	16	15	15	



**Laboratory Duplicate (DUP) Report**

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2794076)</b>								
HK1307595-002	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1307749-003	Anonymous	EA025: Suspended Solids (SS)	----	2.0	mg/L	<2.0	<2.0	0.0

**Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report**

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2794076)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	89.5	----	85	115	----	----

**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report**

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



### CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1308124
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@eps1.com.hk	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 26-MAR-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 08-APR-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

#### General Comments

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Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1308124**

Sample(s) were picked up from client by ALS Technichem (HK) staff in an ambient condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

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**Analytical Results**

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[23-MAR-2013]	[23-MAR-2013]	[26-MAR-2013]	[26-MAR-2013]	
Compound	CAS Number	LOR	Unit		HK1308124-001	HK1308124-002	HK1308124-003	HK1308124-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		11	11	8	9	





**Laboratory Duplicate (DUP) Report**

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2806324)</b>								
HK1308063-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1308129-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	2	4	35.6

**Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report**

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2806324)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	98.5	----	85	115	----	----

**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report**

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



### CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Fung Lim Chee, Richard	Work Order	: HK1308615
Address	: FLAT A, 19/F, CHAI WAN INDUSTRIAL CENTRE BUILDING, 20 LEE CHUNG STREET, CHAI WAN HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: allenchan@epsil.com.hk	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 28-MAR-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 10-APR-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 2
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 2
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

#### General Comments

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Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1308615**

Sample(s) were picked up from client by ALS Technichem (HK) staff in an ambient condition.

Water sample(s) analysed and reported on an as received basis.

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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong

Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

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**Analytical Results**

Sub-Matrix: WATER

				Client sample ID	W1	W2		
				Client sampling date / time	[28-MAR-2013]	[28-MAR-2013]		
Compound	CAS Number	LOR	Unit		HK1308615-001	HK1308615-002		
<b>EA/ED: Physical and Aggregate Properties</b>								
EA025: Suspended Solids (SS)	----	2	mg/L		65	65		



**Laboratory Duplicate (DUP) Report**

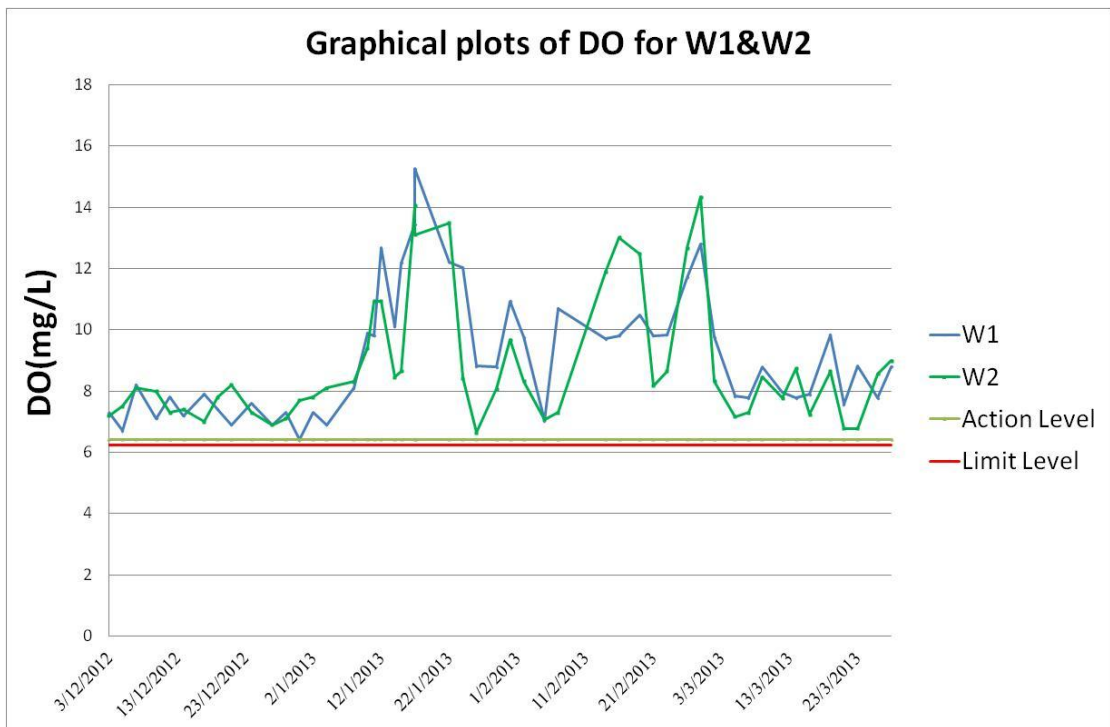
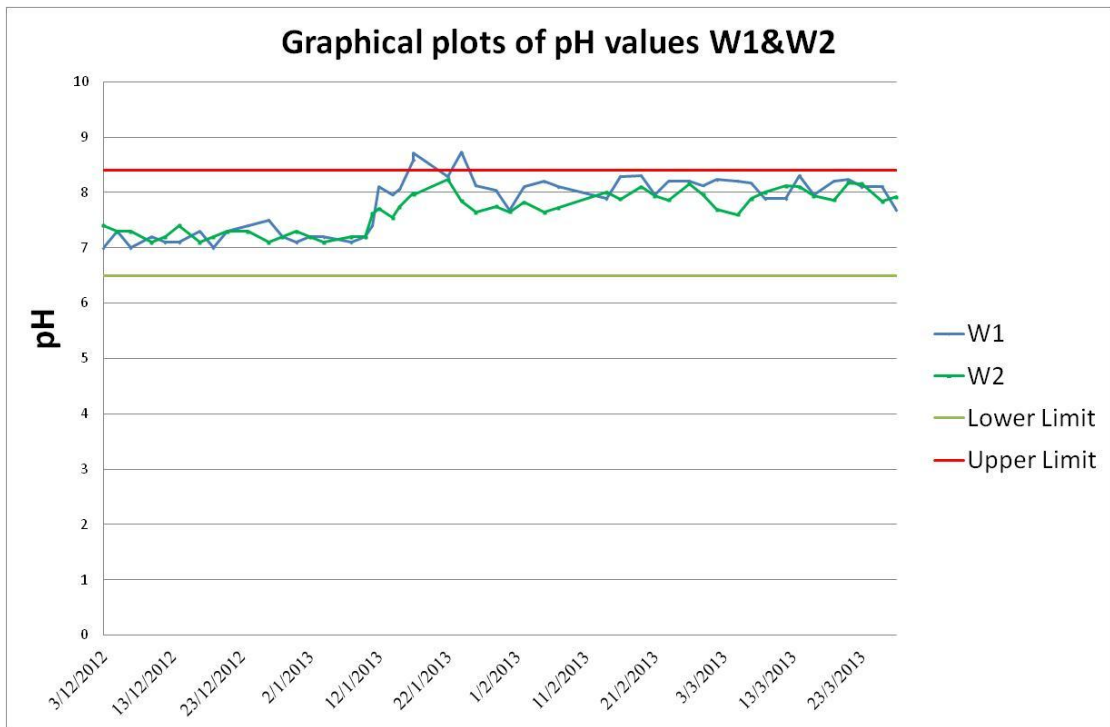
Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2809980)</b>								
HK1308602-007	Anonymous	EA025: Suspended Solids (SS)	----	0.5	mg/L	161	163	1.2
HK1308620-001	Anonymous	EA025: Suspended Solids (SS)	----	0.5	mg/L	3.5	3.3	5.8

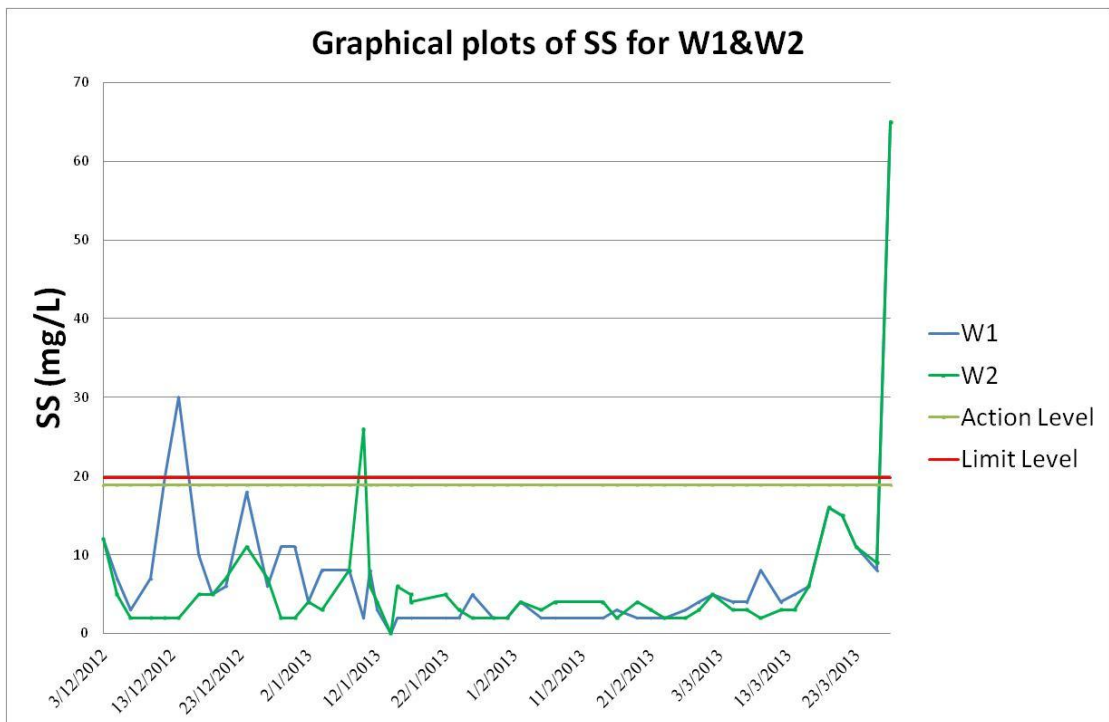
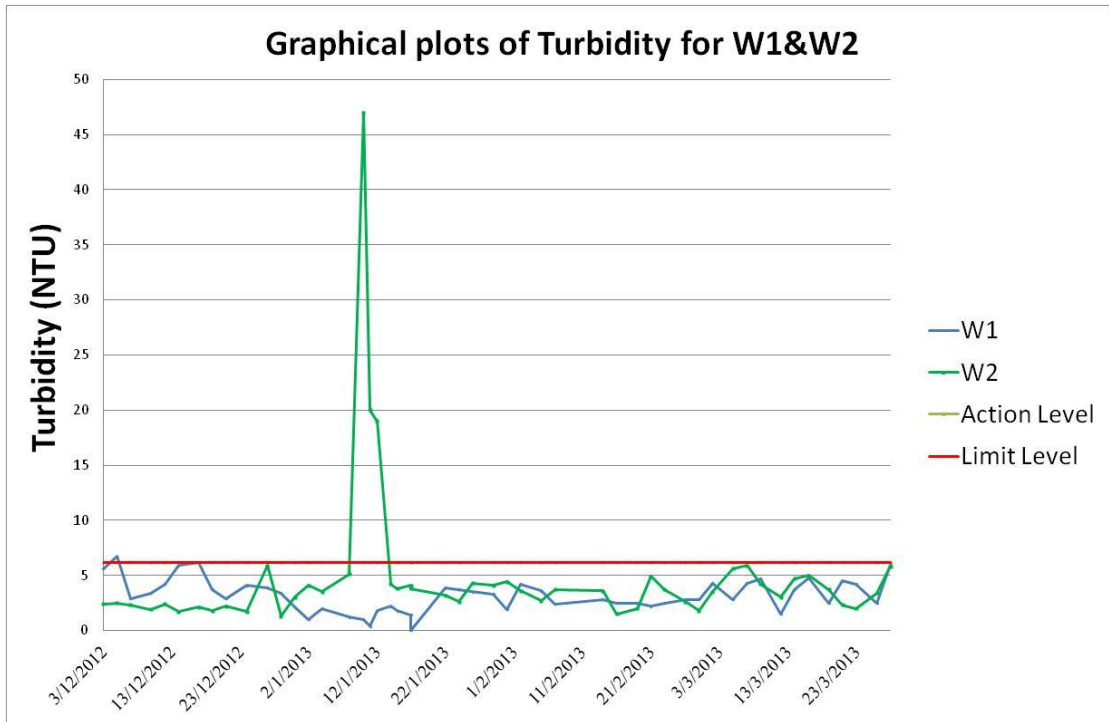
**Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report**

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 2809980)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	104	----	85	115	----	----

**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report**

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.





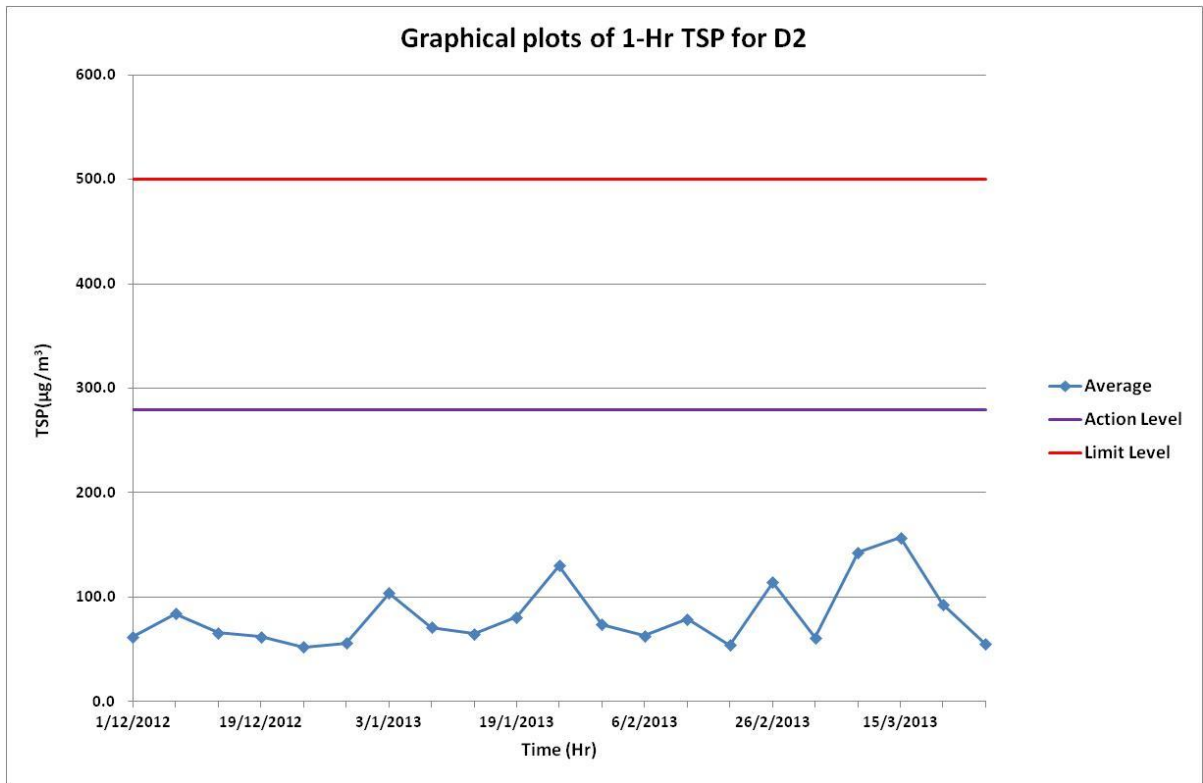
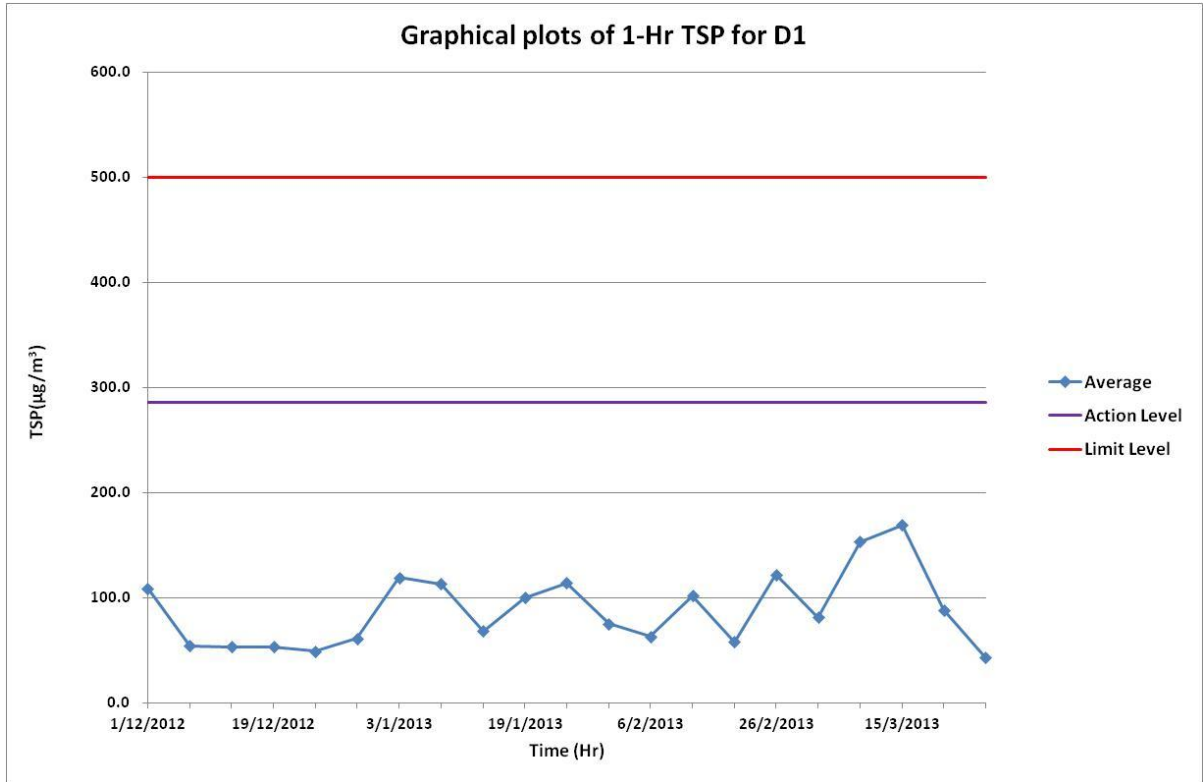
# **Appendix F**

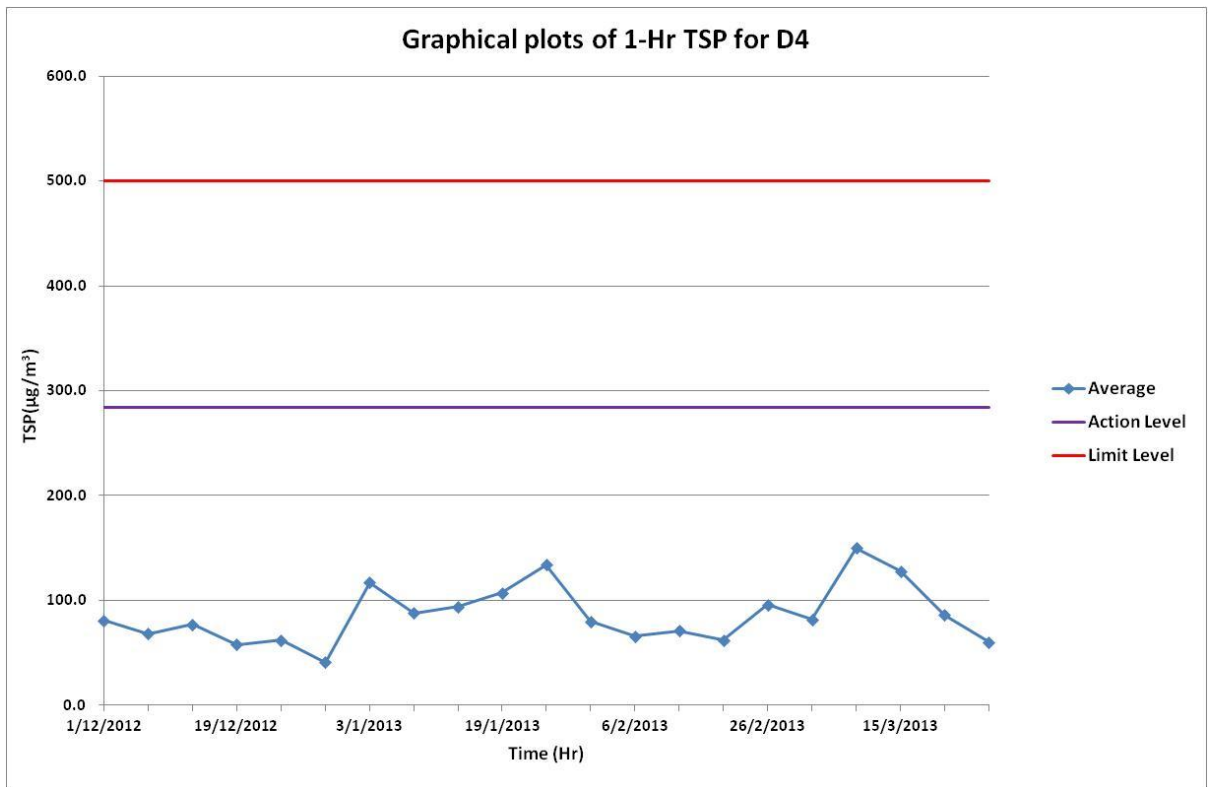
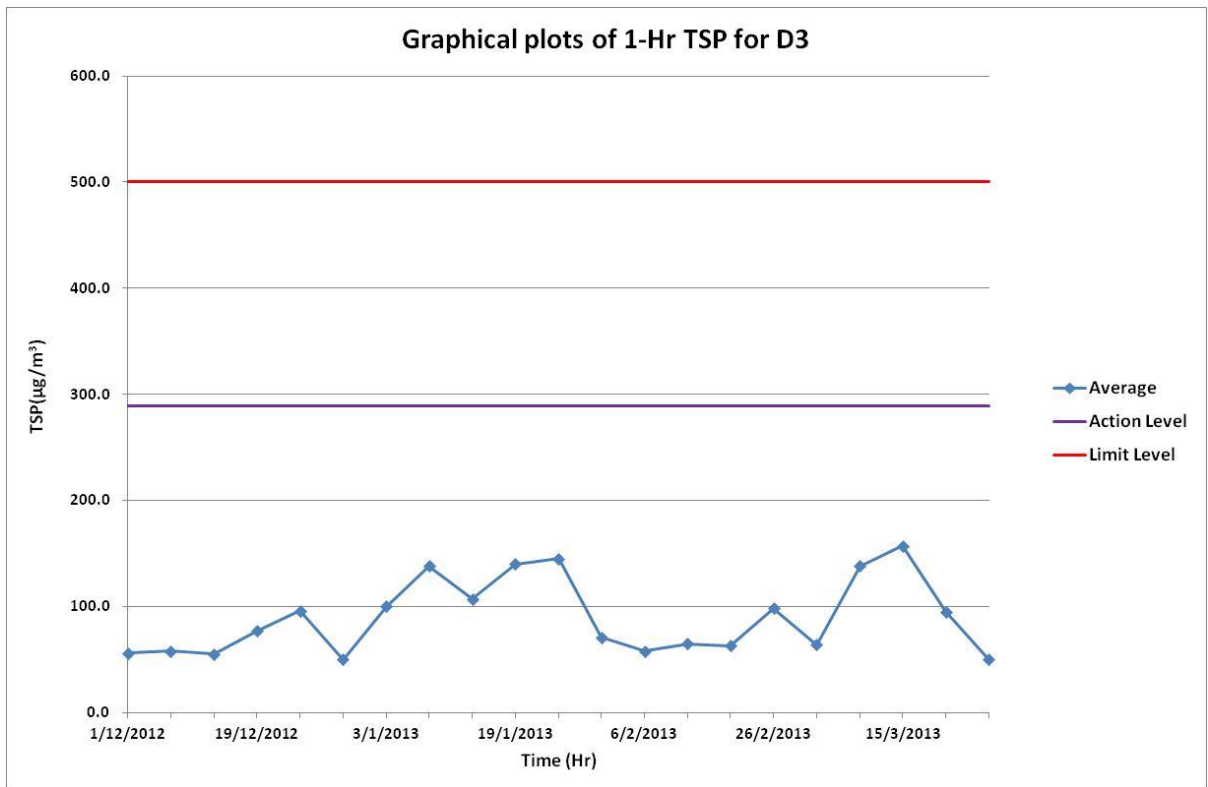
## **Air Quality Monitoring Data**

1-Hr TSP Monitoring Results

		Locations											
		D1			D2			D3			D4		
Date	Duration	Start Time	TSP Level (ug/m3)	Average (ug/m3)	Start Time	TSP Level (ug/m3)	Average (ug/m3)	Start Time	TSP Level (ug/m3)	Average (ug/m3)	Start Time	TSP Level (ug/m3)	Average (ug/m3)
4/3/2013	1 Hour	13:35	77	81	13:07	67	61	10:04	61	64	9:58	73	82
		14:35	78		14:07	61		11:04	65		10:58	91	
		15:35	87		15:07	56		12:04	65		11:58	83	
9/3/2013	1 Hour	13:15	169	153	10:12	141	143	13:20	136	138	10:17	153	150
		14:15	138		11:12	148		14:20	142		11:17	154	
		15:15	153		12:12	139		15:20	136		12:17	142	
15/3/2013	1 Hour	13:53	161	169	14:00	152	157	10:51	156	157	10:57	124	128
		14:53	164		15:00	150		11:51	147		11:57	121	
		15:53	182		16:00	170		12:51	169		12:57	140	
21/3/2013	1 Hour	9:28	86	88	13:03	98	93	13:14	102	95	10:00	82	86
		10:28	77		14:03	90		14:14	91		11:00	77	
		11:28	102		15:03	90		15:14	91		12:00	98	
27/3/2013	1 Hour	9:24	43	43	13:01	53	55	9:07	58	50	13:15	65	60
		10:24	38		14:01	63		10:07	47		14:15	61	
		11:24	47		15:01	49		11:07	44		15:15	53	







D1 24-Hrs TSP Monitoring Results

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m <sup>3</sup> )	TSP Concentration (µg/m <sup>3</sup> )	Weather
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
04/03/13	204534	2.8823	3.0130	0.1307	1121.37	1145.41	24.04	42	42	42.0	1715.46	76.1896	Sunny
09/03/13	204538	2.8947	3.0285	0.1338	1145.41	1169.42	24.01	42	42	42.0	1713.32	78.0942	Sunny
15/03/13	102510	2.7786	2.9550	0.1764	1169.42	1193.48	24.06	42	42	42.0	1716.88	102.7443	Fine
21/03/13	102514	2.7417	2.8664	0.1247	1202.41	1226.47	24.06	42	42	42.0	1716.88	72.6316	Cloudy
27/03/13	102518	2.7712	2.8358	0.0646	1226.47	1250.51	24.04	42	42	42.0	1715.46	37.6576	Rainy

D2 24-Hrs TSP Monitoring Results

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m <sup>3</sup> )	TSP Concentration (µg/m <sup>3</sup> )	Weather
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
04/03/13	204535	2.8859	2.9931	0.1072	1430.73	1454.76	24.03	42	42	42.0	1714.74	62.5166	Sunny
09/03/13	204539	2.8956	3.0647	0.1691	1454.76	1478.81	24.05	42	42	42.0	1716.17	98.5333	Sunny
15/03/13	102511	2.7612	2.9062	0.1450	1478.81	1502.91	24.10	42	42	42.0	1719.74	84.3151	Fine
21/03/13	102515	2.7615	2.8578	0.0963	1535.09	1559.17	24.08	42	42	42.0	1718.31	56.0434	Cloudy
27/03/13	102519	2.7385	2.7961	0.0576	1559.17	1583.21	24.04	42	42	42.0	1715.46	33.5771	Rainy

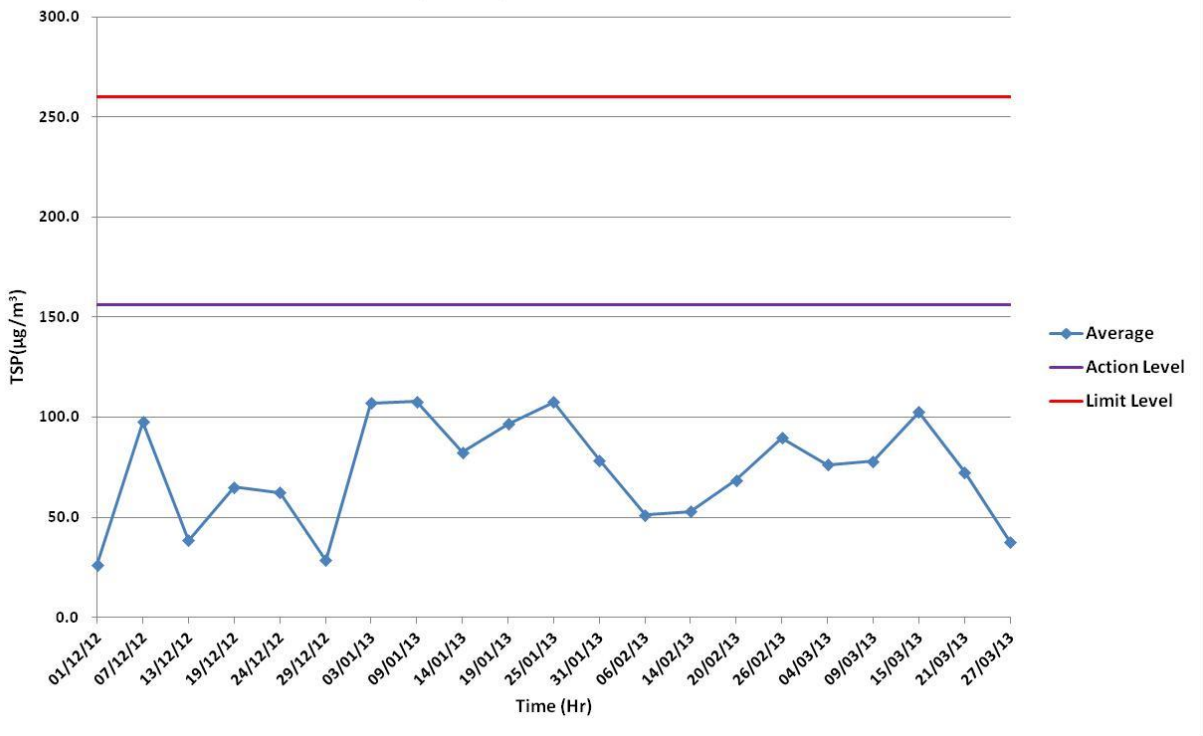
D3 24-Hrs TSP Monitoring Results

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m <sup>3</sup> )	TSP Concentration (µg/m <sup>3</sup> )	Weather
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
04/03/13	204536	2.8820	3.0133	0.1313	1459.75	1483.81	24.06	42	42	42.0	1716.88	76.4757	Sunny
09/03/13	204540	2.9021	3.0037	0.1016	1483.81	1507.86	24.05	42	42	42.0	1716.17	59.2016	Sunny
15/03/13	102512	2.7722	2.9411	0.1689	1507.86	1531.86	24.00	42	42	42.0	1712.60	98.6218	Fine
21/03/13	102516	2.7613	2.8692	0.1079	1574.37	1598.42	24.05	42	42	42.0	1716.17	62.8725	Cloudy
27/03/13	102520	2.7525	2.8181	0.0656	1598.42	1622.46	24.04	42	42	42.0	1715.46	38.2405	Rainy

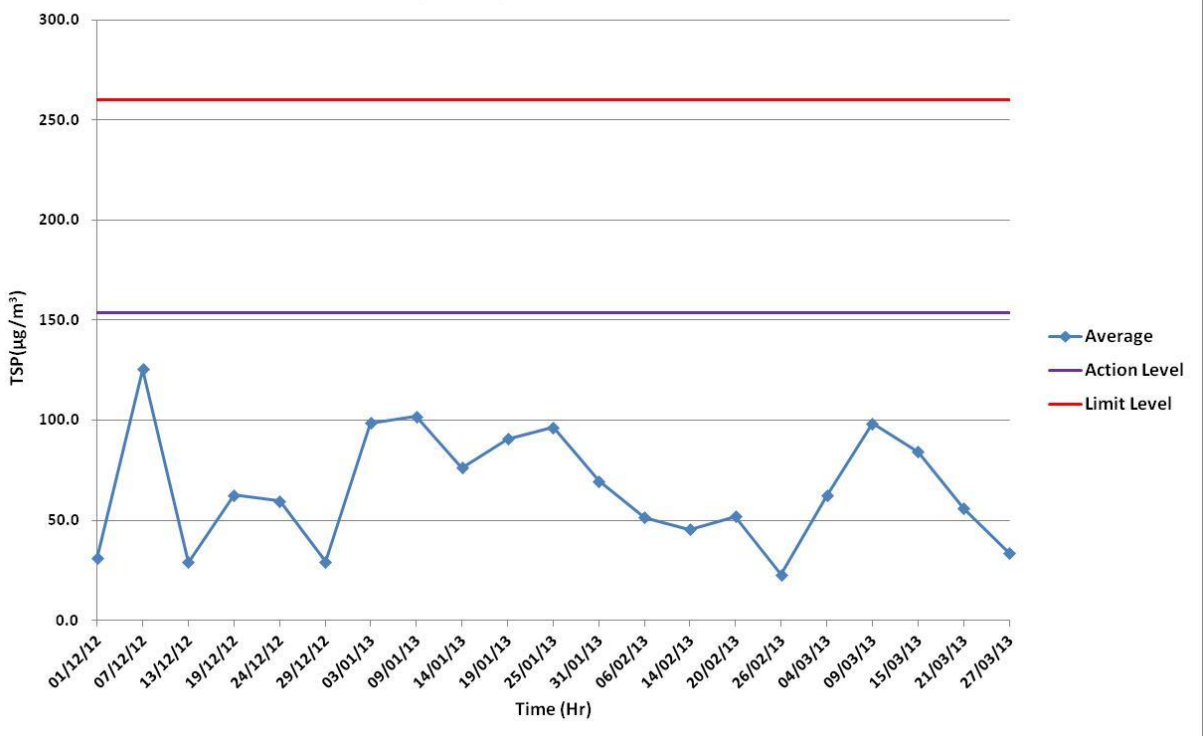
D4 24-Hrs TSP Monitoring Results

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m <sup>3</sup> )	TSP Concentration (µg/m <sup>3</sup> )	Weather
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
04/03/13	204537	2.9056	3.0489	0.1433	1450.73	1474.74	24.01	42	42	42.0	1713.32	83.6390	Sunny
09/03/13	204541	2.8767	3.0142	0.1375	1474.74	1498.76	24.02	42	42	42.0	1714.03	80.2203	Sunny
15/03/13	102513	2.7536	2.9423	0.1887	1498.76	1522.85	24.09	42	42	42.0	1719.02	109.7715	Fine
21/03/13	102517	2.7501	2.8768	0.1267	1531.37	1555.45	24.08	42	42	42.0	1718.31	73.7352	Cloudy
27/03/13	102521	2.7532	2.8114	0.0582	1555.45	1579.53	24.08	42	42	42.0	1718.31	33.8705	Rainy

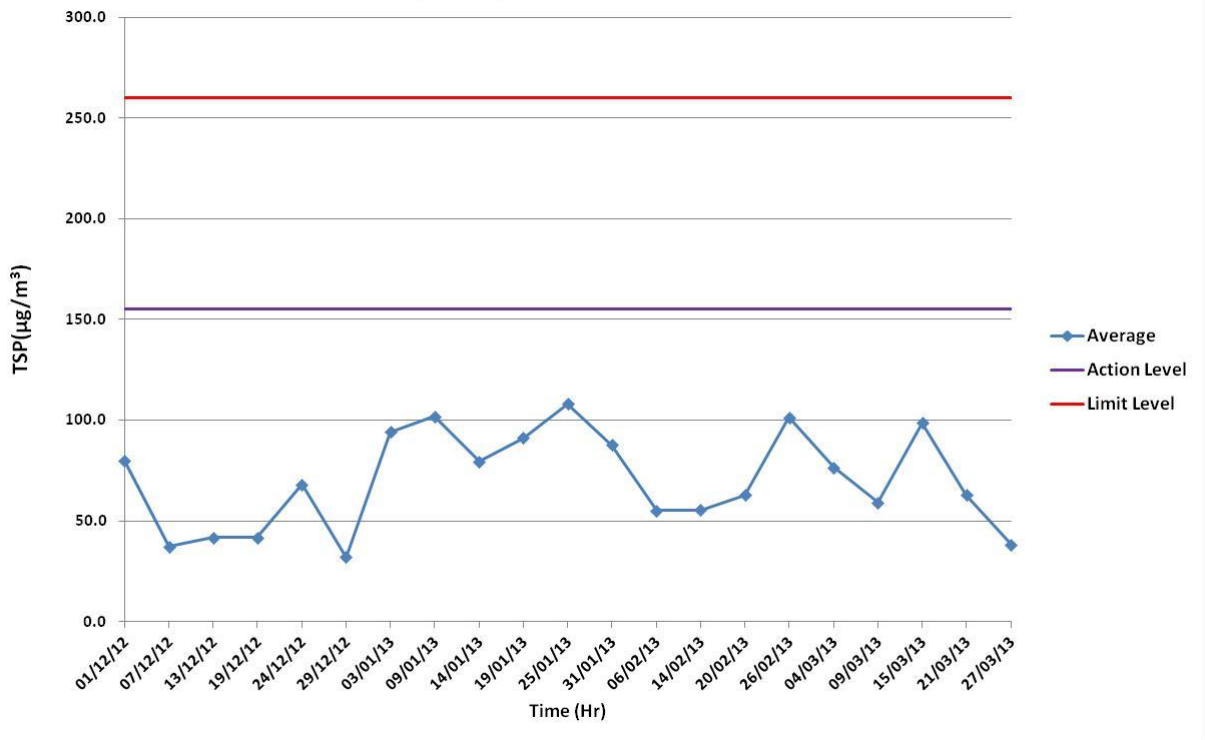
Graphical plots of 24-Hrs TSP for D1



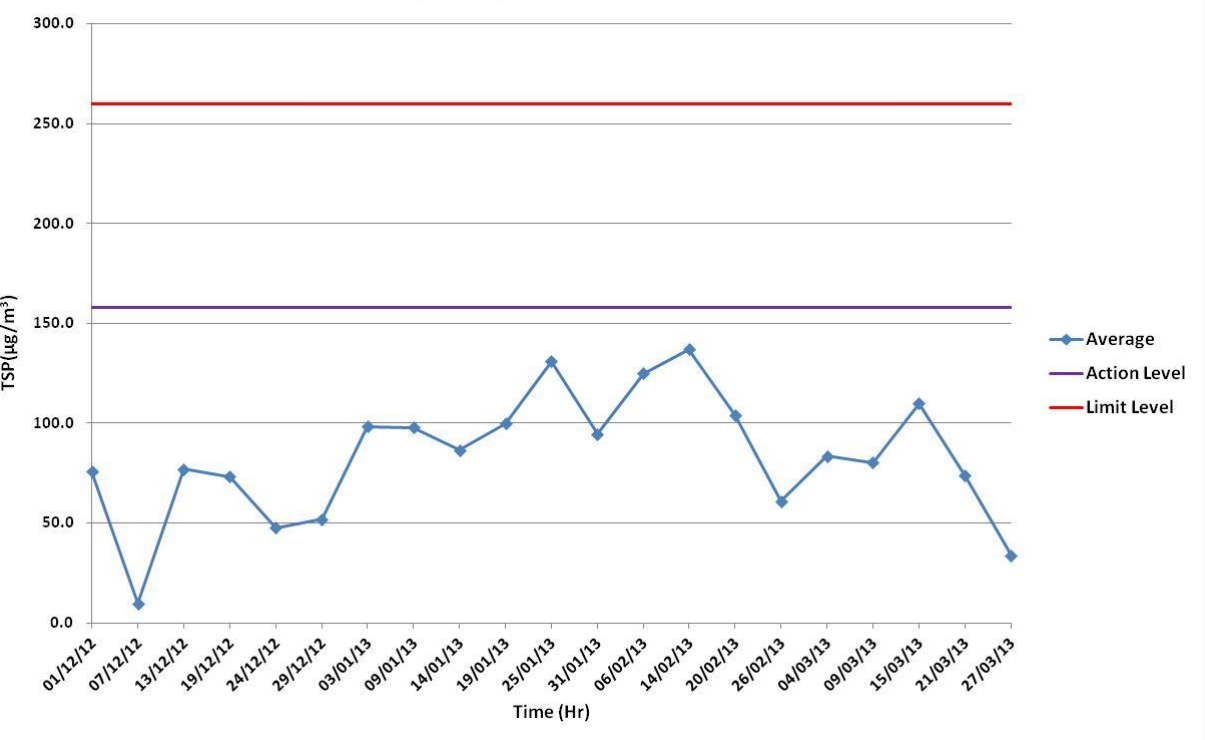
Graphical plots of 24-Hrs TSP for D2



Graphical plots of 24-Hrs TSP for D3



Graphical plots of 24-Hrs TSP for D4



# **Appendix G**

## Complaint Report



**Environmental Pioneers & Solutions Ltd**

**大成環境科技拓展有限公司**

豐盛創建集團附屬公司 *Subsidiary of FSE Engg Group*  
豐盛創建企業成員 *Member of Fung Seng Enterprises*

Our ref. no.: 00013/13/KFRC0383/1A11

8<sup>th</sup> April 2013

To: Distribution List

Dear Sirs or Madams,

**Drainage Diversion Works for the Comprehensive Residential Development  
at Various Lots in DD227 & DD229,  
Tai Po Tsai, Sai Kung**

**Complaint Investigation Report and Log**

Based on the complaint incident received from EPD with details of:

EPD complaint ref.: EP3/N08/RE/00004294-13  
Date received: 28<sup>th</sup> March 2013  
Description: Complaint was referred by EPD that a resident complained against noise and dust nuisance arisen from construction activities

Enclosed please find the complaint investigation report and log sheets of the incident as for your record.

Yours faithfully,

Goldie Fung  
ET leader

Environmental Pioneers and Solutions Limited

c.c. IEC/ENVIRON (Mr. Tong Cheng)  
Hip Seng Project Manager (Mr. Martin Wong)  
Hip Seng Environmental Engineer (Mr. Raymond Lee)



**Drainage Diversion Works for the Comprehensive Residential Development at Various Lots in DD227 & DD229, Tai Po Tsai, Sai Kung**

**Report for Complaint/ Concern**

**Our Ref.: 00013/13/KFRC0383/1A11**

**EPD complaint ref.: EP3/N08/RE/00004294-13**

**Sheet: 1 of 2**

**RECIPIENT**

Name: Hip Seng Construction Co. Ltd,

Details: Complaint was referred by EPD that a resident complained against noise and dust nuisance arisen from construction activities

Received Date: 28<sup>th</sup> March 2013

Received Time: N/A

**COMPLAINANT / Concern**

Name: N/A

Tel: N/A

Address: N/A

**COMPLAINT**

Noise Air quality/Dust Water Odour Environment Traffic/Pedestrian Safety  
Others

Event Date and Time: 28 February 2013

**INVESTIGATION RESULTS, RECOMMENDATIONS & MITIGATION MEASURES**

1. A complaint was received on 28 February 2013 regarding the complaint on air and noise pollution at Various Lots in DD227 & DD229, Tai Po Tsai, Sai Kung. Environmental Team (ET) has received the formal complaint letter (EPD complaint ref.: EP3/N08/RE/00004294-13) issued by EPD on 28 March 2013.
2. The major construction activities on 28<sup>th</sup> Feb 2013 included drainage diversion works and transportation of excavated materials
3. ET has conducted a site investigation on 2<sup>nd</sup> April 2013 with representatives from IEC and Contractor to resolve the concern.
4. Findings from the investigation showed the major noise and dust source was the excavation, soil nail works and sheet piling works. Proper mitigation measures on dust and noise impact (i.e. routine water spraying, warping up of steel chain with plastic materials and noise barriers) were observed during the investigation (**Fig. 1- Fig. 4**).
5. According to the Action & Limit Level Criteria for Noise Quality, it will be considered as Action Level when one documented complaint is received. ET reviewed the routine noise monitoring results recorded on 26<sup>th</sup> Feb 2013, 4<sup>th</sup> March 2013 and 2<sup>nd</sup> April 2013 and the repeated measurement was conducted on 3<sup>rd</sup> April 2013. No exceedance of Limit Level (i.e.: >75 dB) was found for all measurements. The detailed monitoring data is shown in **Table 1**.
6. For the air quality, ET reviewed the routine air quality monitoring results recorded on 26<sup>th</sup> Feb 2013 and 4<sup>th</sup> March 2013. No exceedance of Action & Limit Level was found for all measurements. The routine monitoring data is shown in **Table 2**. Besides, the air quality monitoring data on 2<sup>nd</sup> April 2013 will be presented in the coming Monthly EM&A Report accordingly.

7. According to the monitoring data and the investigation, no adverse environmental impact was observed. The proper mitigation measures were implemented by the contractor.
8. Contractor was reminded to maintain proper practices for noise and dust mitigation measures, such as the administrative planning and public liaison, to minimize adverse impact to the vicinity sensitive receivers. Other noise minimization features by means of insulation or screening should be regularly reviewed and maintained to ensure they are in good condition and functional.

Signature:



Goldie Fung, ET Leader

Date: 8-4-2013

COMPLAINT / CONCERN LOG

Ref: 00013/13/KFRC0383/1A11

Log Ref	Event Date/Location	Complainant/ Date of Contact	Details of Complaint	Investigation/Mitigation Action	File Closed
<p>Our REF: 00013/13/KFR C0383/1A11</p> <p>EPD complaint ref.: EP3/N08/RE/0 0004294-13</p>	<p>N/A</p> <p>Various Lots in DD227 &amp; DD229, Tai Po Tsai, Sai Kung</p>	<p>A Complaint was referred by EPD on 28<sup>th</sup> March 2013.</p>	<p>Complaint was referred by EPD that a resident complained against noise and dust nuisance arisen from construction activities at Various Lots in DD227 &amp; DD229, Tai Po Tsai, Sai Kung</p>	<p>A complaint was received on 28 February 2013 regarding the complaint on air and noise pollution at Various Lots in DD227 &amp; DD229, Tai Po Tsai, Sai Kung. Environmental Team (ET) has received the formal complaint letter (EPD complaint ref.: EP3/N08/RE/00004294-13) issued by EPD on 28 March 2013</p> <ol style="list-style-type: none"> <li>1. The major construction activities on 28<sup>th</sup> Feb 2013 included drainage diversion works and transportation of excavated materials.</li> <li>2. ET has conducted a site investigation on 2<sup>nd</sup> April 2013 with representatives from IEC and Contractor to resolve the concern.</li> <li>3. Findings from the investigation showed the major noise and dust source was the excavation, soil nail works and sheet piling works. Proper mitigation measures on dust and noise impact (i.e. routine water spraying, warping up of steel chain with plastic materials and noise barriers) were observed during the investigation (<b>Fig 1- Fig. 4</b>).</li> <li>4. ET reviewed the routine noise monitoring results recorded on 26<sup>th</sup> Feb 2013, 4<sup>th</sup> March 2013 and 2<sup>nd</sup> April 2013 and the repeated measurement was conducted on 3<sup>rd</sup> April 2013. No exceedance of limit level (i.e.: &gt;75 dB) was found for all measurements. The detailed monitoring data is shown in <b>Table 1</b>.</li> </ol>	<p>Yes</p>

				<p>5. For the air quality, ET reviewed the routine air quality monitoring results recorded on 26<sup>th</sup> Feb 2013 and 4<sup>th</sup> March 2013. No exceedance of Action &amp; Limit Level was found for all measurements. The routine monitoring data is shown in Table 2. Besides, the air quality monitoring data on 2<sup>nd</sup> April 2013 will be presented in the coming Monthly EM&amp;A Report accordingly</p> <p>6. According to the site investigation and the monitoring data, no adverse environmental impact was observed. The proper mitigation measures were implemented by the contractor</p> <p>7. Contractor was reminded to maintain proper practices and noise and dust mitigation measures, such as the administrative planning and public liaison, to minimize adverse impact to the vicinity sensitive receivers. Other noise minimization features by means of insulation or screening should be regularly reviewed and maintained to ensure they are in good condition and functional.</p>	
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Filed by Environmental Team Leader:



Date: 8<sup>th</sup> April 2013

Fig.1 – sheet piling activity was wrapped up with plastic material to minimize noise generation.



Fig. 2 –The noise barriers were provided for soil nail activities to minimize the noise impact.



Fig.3 –Water spraying was provided by frontline staff for dust suppression.



Fig.4 –Water spraying was provided by frontline staff for dust suppression.



**Table 1** Noise Monitoring Data

Date	N1-Noise Level (dB(A))			N2-Noise Level (dB(A))			N3-Noise Level (dB(A))			N4-Noise Level (dB(A))			Limit Level
	Leq	L <sub>10</sub>	L <sub>90</sub>	Leq	L <sub>10</sub>	L <sub>90</sub>	Leq	L <sub>10</sub>	L <sub>90</sub>	Leq	L <sub>10</sub>	L <sub>90</sub>	
26/2/2013	61.2	63.2	57.7	63.9	65.1	58.4	61.6	62.4	58.2	61.5	62.9	58.4	75.0
4/3/2013	62.5	65.9	56.8	60.8	62.7	58.2	64.5	65.9	60.1	63.4	64.8	55.9	75.0
2/4/2013	63.0	68.0	59.3	60.3	64.3	57.7	64.6	70.5	58.8	62.6	67.9	57.8	75.0
3/4/2013.	62.1	65.9	58.6	58.4	62.7	55.9	62.4	67.9	59.8	62.6	68.2	58.5	75.0

**Table 2** Air Quality Monitoring Data

1 Hr - TSP

		Locations											
		D1			D2			D3			D4		
Date	Duration	Start Time	TSP Level (ug/m3)	Average (ug/m3)	Start Time	TSP Level (ug/m3)	Average (ug/m3)	Start Time	TSP Level (ug/m3)	Average (ug/m3)	Start Time	TSP Level (ug/m3)	Average (ug/m3)
26/2/2013	1 Hour	8:30	113	122	12:36	117	114	12:00	104	98	8:40	90	96
		9:30	141		13:36	107		13:00	100		9:40	92	
		10:30	113		14:36	119		14:00	91		10:40	105	
4/3/2013	1 Hour	13:35	77	81	13:07	67	61	10:04	61	64	9:58	73	82
		14:35	78		14:07	61		11:04	65		10:58	91	
		15:35	87		15:07	56		12:04	65		11:58	83	

Action and Limit Levels for 1-hr TSP at All Monitoring Stations			
Monitoring Station	Monitoring Frequency	Action Level	Limit Level
D1	1-hr	285.6 µg/m <sup>3</sup>	500 µg/m <sup>3</sup>
D2		279.4 µg/m <sup>3</sup>	500 µg/m <sup>3</sup>
D3		289.4 µg/m <sup>3</sup>	500 µg/m <sup>3</sup>
D4		284.3 µg/m <sup>3</sup>	500 µg/m <sup>3</sup>



## D1 24 Hrs - TSP

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m <sup>3</sup> )	TSP Concentration (µg/m <sup>3</sup> )	Weather	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate					
26/02/13	204530	2.8960	3.0498	0.1538	1097.36	1121.37	24.01	42	42	42.0	1713.32	89.7674	Sunny	156.4	260
4/3/2013	204534	2.8823	3.030	0.1307	1121.37	1145.41	24.04	42	42	42.0	1715.46	76.1896	Sunny		

## D2 24 Hrs – TSP

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m <sup>3</sup> )	TSP Concentration (µg/m <sup>3</sup> )	Weather	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate					
26/02/13	204531	2.9027	2.9421	0.0394	1406.68	1430.73	24.05	42	42	42.0	1716.17	22.9581	Sunny	153.8	260
4/3/2013	204535	2.8859	2.9931	0.1072	1430.73	1454.76	24.03	42	42	42.0	1714.74	62.5166	Sunny		

D3 24 Hrs – TSP

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m <sup>3</sup> )	TSP Concentration (µg/m <sup>3</sup> )	Weather	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate					
26/02/13	204532	2.8994	3.0731	0.1737	1435.73	1459.75	24.02	42	42	42.0	1714.03	101.3401	Sunny	155.2	260
4/3/2013	204536	2.8820	3.0133	0.1313	1459.75	1483.81	24.06	42	42	42.0	1716.88	76.4757	Sunny		

D4 24 Hrs – TSP

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m <sup>3</sup> )	TSP Concentration (µg/m <sup>3</sup> )	Weather	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate					
26/02/13	204533	2.8701	2.9745	0.1044	1426.71	1450.73	24.02	42	42	42.0	1714.03	60.9091	Sunny	158.0	260
4/3/2013	204537	2.9056	3.0489	0.1433	1450.73	1474.74	24.01	42	42	42.0	1713.32	83.6390	Sunny		