

**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**

**August 2013**

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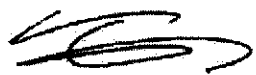
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## **EXECUTIVE SUMMARY**

This is the twelfth 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 August 2013 to 31<sup>st</sup> of August 2013. The major site activities in this reporting period were mainly construction of manhole and sand trap at Zone B & M and construction of 1200mm channel from ST1 to villager.

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 construction noise and 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 7 numbers of exceedance were recorded in this reporting period. For the non-compliance events, it was believed that the exceedances record at W2 were caused by adverse weather and natural fluctuation, since the records of SS and Turbidity at control station has been recorded relatively high. Therefore, the exceedance records at W2 were unlikely to be related to this project.

There was no complaint, notification of any summons and successful prosecutions against the project received during the reporting period.

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 twelfth 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> of August 2013 to 31<sup>st</sup> of August 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).

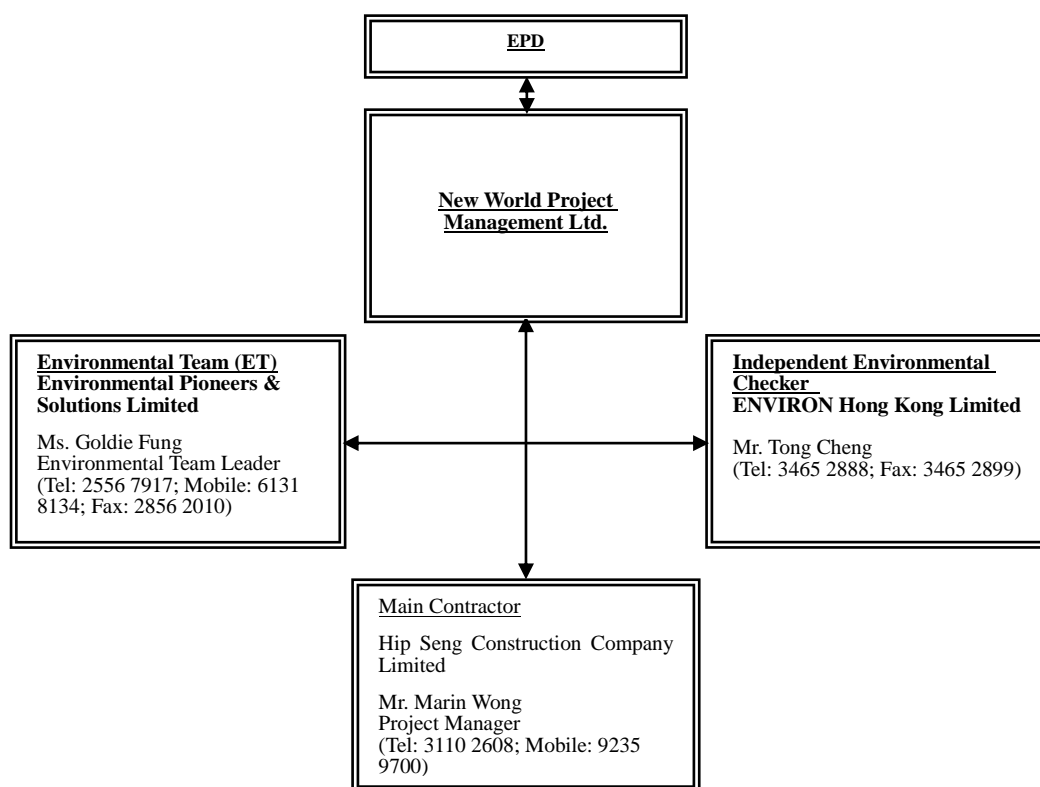
## **2 Project Information**

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 completed by September 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:

- Construction of manhole and sand trap at Zone B & M
- Construction of 1200mm channel from ST1 to villager

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

Proposed key construction works in the coming month will include:

- Construction of manhole and sand trap at Zone B & M
- Construction of 1200mm channel from ST1 to villager
- Backfilling works at Zone B & M

### **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 & S/N: 27302	IEC 651 Type 1 IEC 804 Type 1	1
Acoustical calibrator	BSWA CA111 & S/N: 490239	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.

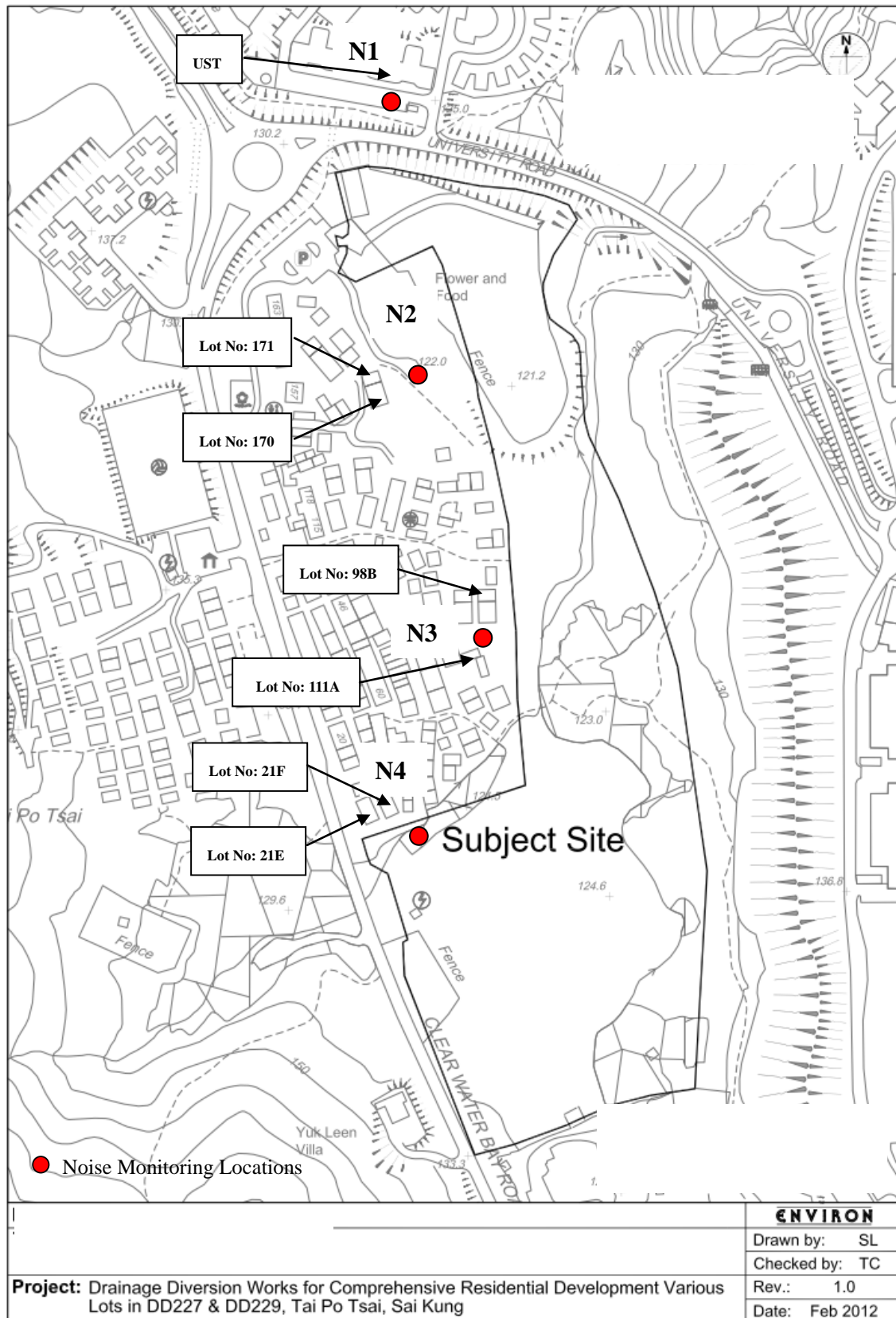


Figure 5.3.1 Impact noise monitoring locations

## 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 2<sup>nd</sup>, 8<sup>th</sup>, 15<sup>th</sup>, 20<sup>th</sup>, 26<sup>th</sup> and 31<sup>st</sup> of August 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 63.2dB (A) and 68.1dB (A), N2 ranged between 61.9dB (A) and 73.7dB (A), N3 ranged between 57.0dB (A) and 66.2dB (A) and N4 ranged between 62.0dB (A) and 71.2dB (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	2-Aug-13	14:18	68.1	75	N	Cloudy
*N1	Leq30min	8-Aug-13	10:25	66.0	75	N	Sunny
*N1	Leq30min	15-Aug-13	9:02	66.3	75	N	Cloudy
*N1	Leq30min	20-Aug-13	9:00	64.4	75	N	Sunny
*N1	Leq30min	26-Aug-13	9:03	63.2	75	N	Sunny
*N1	Leq30min	31-Aug-13	9:10	63.7	75	N	Cloudy
*N2	Leq30min	2-Aug-13	14:53	65.3	75	N	Cloudy
*N2	Leq30min	8-Aug-13	11:05	73.7	75	N	Sunny
*N2	Leq30min	15-Aug-13	9:38	64.1	75	N	Cloudy
*N2	Leq30min	20-Aug-13	9:38	64.1	75	N	Sunny
*N2	Leq30min	26-Aug-13	9:41	63.4	75	N	Sunny
*N2	Leq30min	31-Aug-13	9:45	61.9	75	N	Cloudy
*N3	Leq30min	2-Aug-13	15:29	64.7	75	N	Cloudy
*N3	Leq30min	8-Aug-13	13:05	57.0	75	N	Sunny
*N3	Leq30min	15-Aug-13	10:14	66.2	75	N	Cloudy
*N3	Leq30min	20-Aug-13	10:15	65.9	75	N	Sunny
*N3	Leq30min	26-Aug-13	10:16	65.0	75	N	Sunny
*N3	Leq30min	31-Aug-13	10:22	64.9	75	N	Cloudy

N4	Leq30min	2-Aug-13	16:08	69.3	75	N	Cloudy
N4	Leq30min	8-Aug-13	13:52	68.7	75	N	Sunny
N4	Leq30min	15-Aug-13	10:51	68.1	75	N	Cloudy
N4	Leq30min	20-Aug-13	10:52	62.0	75	N	Sunny
N4	Leq30min	26-Aug-13	10:53	71.2	75	N	Sunny
N4	Leq30min	31-Aug-13	11:00	63.3	75	N	Cloudy

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

Remarks: Raw datasheet for noise monitoring are 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.

There was no exceedance recorded in the reporting period.

<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</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</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			

### **5.7 Monitoring Schedule for the next reporting period**

Noise monitoring schedule is proposed to be carried out on 5<sup>th</sup>, 11<sup>th</sup>, 17<sup>th</sup>, 23<sup>rd</sup> and 27<sup>th</sup> of September 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. 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 1<sup>st</sup>, 3<sup>rd</sup>, 6<sup>th</sup>, 8<sup>th</sup>, 10<sup>th</sup>, 13<sup>th</sup>, 15<sup>th</sup>, 17<sup>th</sup>, 20<sup>th</sup>, 22<sup>nd</sup>, 24<sup>th</sup>, 27<sup>th</sup>, 29<sup>th</sup> and 31<sup>st</sup> of August 2013.

For the exceedances, the repeated measurements were carried out on 2<sup>nd</sup> and 26<sup>th</sup> of August 2013.

## 6.5 Monitoring Results and Interpretation

Water quality monitoring was carried out fourteen 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 were 7 numbers of exceedance (Turbidity & SS) were recorded in this reporting period as shown in Table 6.5.2. ET has arranged site investigations for the abnormal incidents on the same day and found that no construction activities had been carried out at the river bed. It was believed that the exceedances of water quality were not affected by the construction activities. According to the site investigation, we believed that the exceedance records at W2 were caused by adverse weather and natural fluctuation. Therefore, the exceedance records at W2 were unlikely to be related to this project.

	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	29.8	7.9	8.05	8.01	88.8	15.86
W2	29.7	8.3	8.11	7.9	87.1	14.50

Table 6.5.2 7 numbers of exceedance during the reporting month

Date	Location	Parameter				Interpretations
		Turbidity (NTU)	Exceedance	SS (mg/l)	Exceedance	
1/8/2013	W1	17.2	N/A	N/A	N/A	Exceedance was caused by adverse weather
	W2	18.2	Limit level	N/A	N/A	
13/8/2013	W1	15.2	N/A	N/A	N/A	Exceedance was caused by adverse weather
	W2	16.7	Limit level	N/A	N/A	
24/8/2013	W1	23.5	N/A	63.0	N/A	Exceedance was caused by adverse weather
	W2	20.8	Limit level	32.0	Limit level	
27/8/2013	W1	N/A	N/A	21.0	N/A	Exceedance was caused by adverse weather
	W2	N/A	N/A	25.0	Limit level	
29/8/2013	W1	N/A	N/A	21.0	N/A	Exceedance was caused by natural fluctuation
	W2	N/A	N/A	24.0	Limit level	
31/8/2013	W1	18.9	Limit level	N/A	N/A	Exceedance was caused by adverse weather
	W2	20.1	Limit level	N/A	N/A	

## 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.

Total 7 numbers of exceedance were recorded during the reporting period. The repeated measurements were carried out on the 2<sup>nd</sup> and 26<sup>th</sup> of August 2013. And, the site inspection for the exceedance was carried out at the same day. We found that the exceedances of water quality at W2 were not to be related to the project.



<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>
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<b>LIMIT LEVEL</b>				
Exceedance for one sampling day	<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 Contractor's working methods;</li> <li>5. Discuss mitigation measures with IEC, ER and Contractor.</li> <li>6. Ensure mitigation measures are implemented.</li> <li>7. Increase the monitoring frequency to daily until no exceedance of Limit level.</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, ET and Contractor on the proposed mitigation measures.</li> <li>2. Request Contractor to critically review the working methods.</li> <li>3. Make agreement on the mitigation measures to be implemented.</li> <li>4. Assess the 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, IEC and ER and propose mitigation measures to IEC and ER within three working days.</li> <li>6. Implement the agreed mitigation measures.</li> </ol>
Exceedance for more than on consecutive	<ol style="list-style-type: none"> <li>1. Repeat in-situ measurements to confirm findings.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET and Contractor on the</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with IEC, ET and Contractor</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER and confirm notification</li> </ol>

<p>sampling days</p>	<ol style="list-style-type: none"> <li>2. Identify source(s) of impact.</li> <li>3. Inform EPD, 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, ER and Contractor.</li> <li>6. Ensure mitigation measures are implemented.</li> <li>7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</li> </ol>	<p>mitigation measures.</p> <ol style="list-style-type: none"> <li>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly.</li> <li>3. Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<p>on the proposed mitigation measures.</p> <ol style="list-style-type: none"> <li>2. Request Contractor to critically review the working methods.</li> <li>3. Make agreement on the mitigation measures to be implemented.</li> <li>4. Assess the effectiveness of the implemented mitigation measures.</li> <li>5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the work until</li> </ol>	<p>of the non-compliance in writing.</p> <ol style="list-style-type: none"> <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 ER and propose mitigation measures to IEC and ER within three working days.</li> <li>6. Implement the agreed mitigation measures.</li> <li>7. As directed by the ER, to slow down or to stop all or part of the work or construction activities.</li> </ol>
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			no exceedanc e of Limit Level.	
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### **6.7 Monitoring Schedule for Next Reporting Period**

Water quality monitoring schedule is proposed to be carried out on 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, 10<sup>th</sup>, 12<sup>th</sup>, 14<sup>th</sup>, 17<sup>th</sup>, 19<sup>th</sup>, 21<sup>st</sup>, 24<sup>th</sup>, 26<sup>th</sup> and 28<sup>th</sup> of September 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	4
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



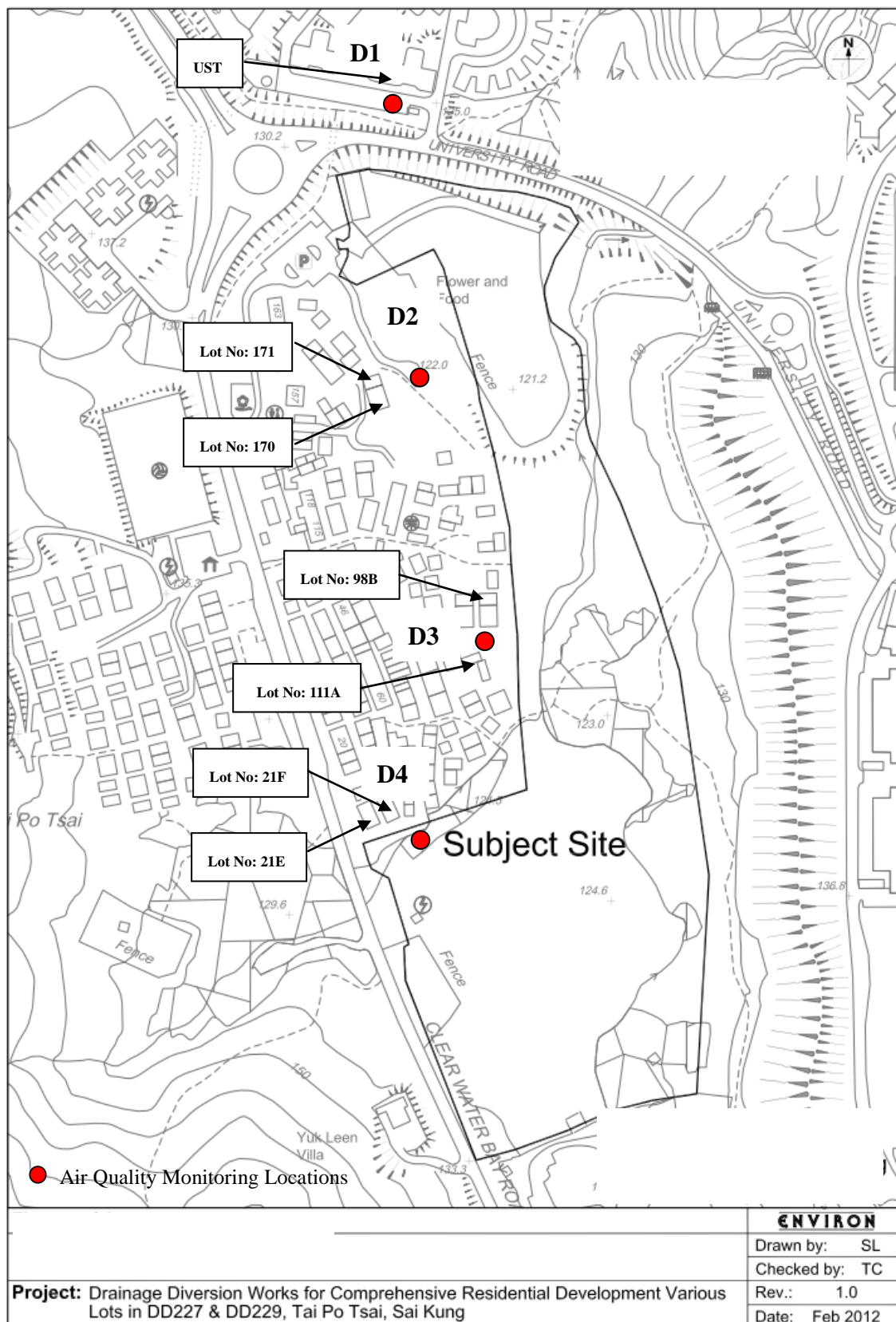


Figure 7.3.1 Air Quality Monitoring Locations

## 7.4 Monitoring Frequency

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

1-Hr TSP monitoring was carried out on 2<sup>nd</sup>, 8<sup>th</sup>, 15<sup>th</sup>, 20<sup>th</sup>, 26<sup>th</sup> and 31<sup>st</sup> of August 2013.

1-Hr TSP monitoring on 14<sup>th</sup> August 2013 was postponed to 15<sup>th</sup> August 2013, since typhoon signal No. 8 was recorded on 14<sup>th</sup> August 2013.

24-Hrs TSP monitoring was carried out on 2<sup>nd</sup>, 8<sup>th</sup>, 14<sup>th</sup>, 20<sup>th</sup> and 26<sup>th</sup> of August 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 ( $\mu\text{g}/\text{m}^3$ ) (Min – Max)	Average ( $\mu\text{g}/\text{m}^3$ )
D1	12-67	38.3
D2	8-58	32.5
D3	9-64	34.2
D4	23-130	60.7

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

Location	Range ( $\mu\text{g}/\text{m}^3$ ) (Min – Max)	Average ( $\mu\text{g}/\text{m}^3$ )
D1	15.1-52.6	33.7
D2	21.0-57.4	31.1
D3	13.7-82.5	40.3
D4	26.5-87.1	54.0

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>Identify source, investigate the cause s of exceedance and propose remedial measures.</li> <li>Inform ER , IEC and Contractor.</li> <li>Repeat measurement to confirm finding.</li> <li>Increase monitoring frequency to daily.</li> </ol>	<ol style="list-style-type: none"> <li>Check monitoring data submitted by ET.</li> <li>Check Contractor’s working method.</li> </ol>	<ol style="list-style-type: none"> <li>Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>Rectify any unacceptable practice.</li> <li>Amend working methods if appropriate.</li> </ol>
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>Identify source, investigate the causes of exceedance and propose remedial measures.</li> <li>Inform IEC and Contractor.</li> <li>Repeat measurements</li> </ol>	<ol style="list-style-type: none"> <li>Checking monitoring data submitted by ET.</li> <li>Check Contractor’s working method.</li> <li>Discuss with ET and Contractor on Possible</li> </ol>	<ol style="list-style-type: none"> <li>Confirm receipt of notification of failure in writing.</li> <li>Notify Contractor .</li> <li>Ensure remedial measures properly</li> </ol>	<ol style="list-style-type: none"> <li>Submit proposals for remedial actions to IEC within three working days of notification.</li> <li>Implement the agreed proposals.</li> <li>Amend</li> </ol>

	<p>to confirm findings</p> <p>4. Increase monitoring frequency to daily.</p> <p>5. Discuss with IEC and Contractor on remedial actions.</p> <p>6. If exceedance continues, arrange meeting with IEC and ER</p> <p>7. If exceedance stops, cease additional monitoring.</p>	<p>remedial measures.</p> <p>4. Advise the ER on the effectiveness of the proposed remedial measures.</p> <p>5. Supervisor implementation of remedial measures.</p>	<p>implemented</p>	<p>proposal if appropriate.</p>
<b>LIMIT LEVEL</b>				
Exceedance for one sample	<p>1. Identify source, investigate the causes of exceedance and propose remedial measures.</p> <p>2. Inform ER, Contractor and EPD.</p> <p>3. Repeat measurement to confirm finding.</p> <p>4. Increase</p>	<p>1. Checking monitoring data submitted by ET.</p> <p>2. Check Contractor's working method</p> <p>3. Discuss with ET and Contractor on possible remedial measures</p> <p>4. Advise the</p>	<p>1. Confirm receipt of notification of failure in writing.</p> <p>2. Notify Contractor.</p> <p>3. Ensure remedial measures properly implemented.</p>	<p>1. Take immediate action to avoid further exceedance.</p> <p>2. Submit proposals for remedial actions to IEC within three working days of notification.</p> <p>3. Implement the agreed proposals.</p>

	<p>monitoring frequency to daily.</p> <p>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the result.</p>	<p>ER on the effectiveness of the proposed remedial measures.</p> <p>5. Supervisor implementation of remedial measures.</p>		<p>4. Amend proposal if appropriate.</p>
<p>Exceedance for two or more consecutive samples</p>	<p>1. Identify source, investigate the causes of exceedance and propose remedial measures.</p> <p>2. Notify IEC, ER, Contractor and EPD.</p> <p>3. Repeat measurement to confirm findings.</p> <p>4. Increase monitoring frequency to daily.</p> <p>5. Carry out analysis of Contractor's working procedures to determine possible</p>	<p>1. Discuss amongst ER, ET and Contractor on the potential remedial actions.</p> <p>2. Reviews Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.</p> <p>3. Supervisor the implement</p>	<p>1. Confirm receipt of notification of failure in writing.</p> <p>2. Notify Contractor.</p> <p>3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented.</p> <p>4. Ensure remedial measures properly implement</p>	<p>1. Take immediate action to avoid further exceedance.</p> <p>2. Submit proposals for remedial actions to IEC within three working days of notification.</p> <p>3. Implement the agreed proposals</p> <p>4. Resubmit proposals if problem still not under control.</p> <p>5. Stop the relevant portion of</p>

	mitigation to be implemented.	ation of remedial measures.	ed.	works as
	6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken.		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.	determined by the ER until the exceedance is abated
	7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.			
	8. If exceedance stops, cease additional monitoring			

### 7.7 Monitoring Schedule for Next Reporting Period

1-hr TSP and 24-hrs TSP monitoring schedule is proposed to be carried out on 5<sup>th</sup>, 11<sup>th</sup>, 17<sup>th</sup>, 23<sup>rd</sup> and 27<sup>th</sup> of September 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. The tree protection zone has enough space to prevent the construction activities to damage the trees.

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 noise and air measurements recorded; therefore, no actions were taken.

For water quality monitoring, total 7 numbers of exceedance (Turbidity & SS) were record in this reporting month in accordance with the established level. ET has arranged site investigations for the exceedance on the same day and found that no construction activities had been carried out at the river bed. It was believed that the exceedances of water quality were not affected by the construction activities. According to the site investigation, we believed that the exceedance records at W2 were caused by adverse weather and natural fluctuation. Therefore, the exceedance records at W2 were unlikely to be related to this project.



## **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
March 13	55.30	0	0	0	55.30	0	0	0	0	0	6.77
April 13	23.40	0	0	0	23.40	0	0	0	0	0	0
May 13	13.50	0	0	0	13.50	0	0	0	0	0	7.6
June 13	4.09	0	0	0	4.09	0	9.66	0	0	0	4.63
July 13	3.05	0	0	0	3.05	0	0	0	0	0	0.009
Aug 13	3.50	0	0	0	3.50	0	0	0	0	0	99
Total	222.13	0	0	0	222.13	0	9.66	0	0	0	118.06
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	7016348	16 Nov 2012			Valid
Notification Pursuant to Section 3(1) of The Air Pollution Control (Construction Dust) Regulation	349519	4 Sep 2012			Valid

## 12 Compliant Log

There was no formal complaint received during the reporting period. Therefore, no 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
April 2013	0	0	0	0
May 2013	0	0	0	0
June 2013	0	0	0	0
July 2013	0	0	0	0
August 2013	0	0	0	0
Total	1	0	1	0

## 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 2<sup>nd</sup>, 8<sup>th</sup>, 15<sup>th</sup>, 20<sup>th</sup> and 26<sup>th</sup> of August 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 13.1.

Table 13.1 Summary results of site inspections findings

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
2, 8, 15, 20 & 26 August 2013	No major environmental deficiency was observed.	N/A	N/A	N/A	N/A	N/A

### 13.2 Compliance with Legal and Contractual Requirement

There was no non-compliance recorded for the month of August 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**

Construction of manhole and sand trap at Zone B & M and construction of 1200mm channel from ST1 to Villager 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 27<sup>th</sup> August 2013.

No exceedance was recorded for Noise and Air during the reporting period.

Impact monitoring for water quality was conducted. Total 7 numbers of exceedance were recorded in this reporting period. For the non-compliance events, ET has arranged site investigation for the abnormal incidents on the same day and found that no construction activities had been carried out at the river bed and could disturb the water quality. It was believed that the exceedances of water quality were not affected by construction activities. According to the site investigation, we believed that the exceedance records at W2 were affected by adverse weather and natural fluctuation. Therefore, the exceedances records at W2 were unlikely to be related to this project.

Also, there was no notification of summons, formal prosecution or complaints being recorded during the reporting period.

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



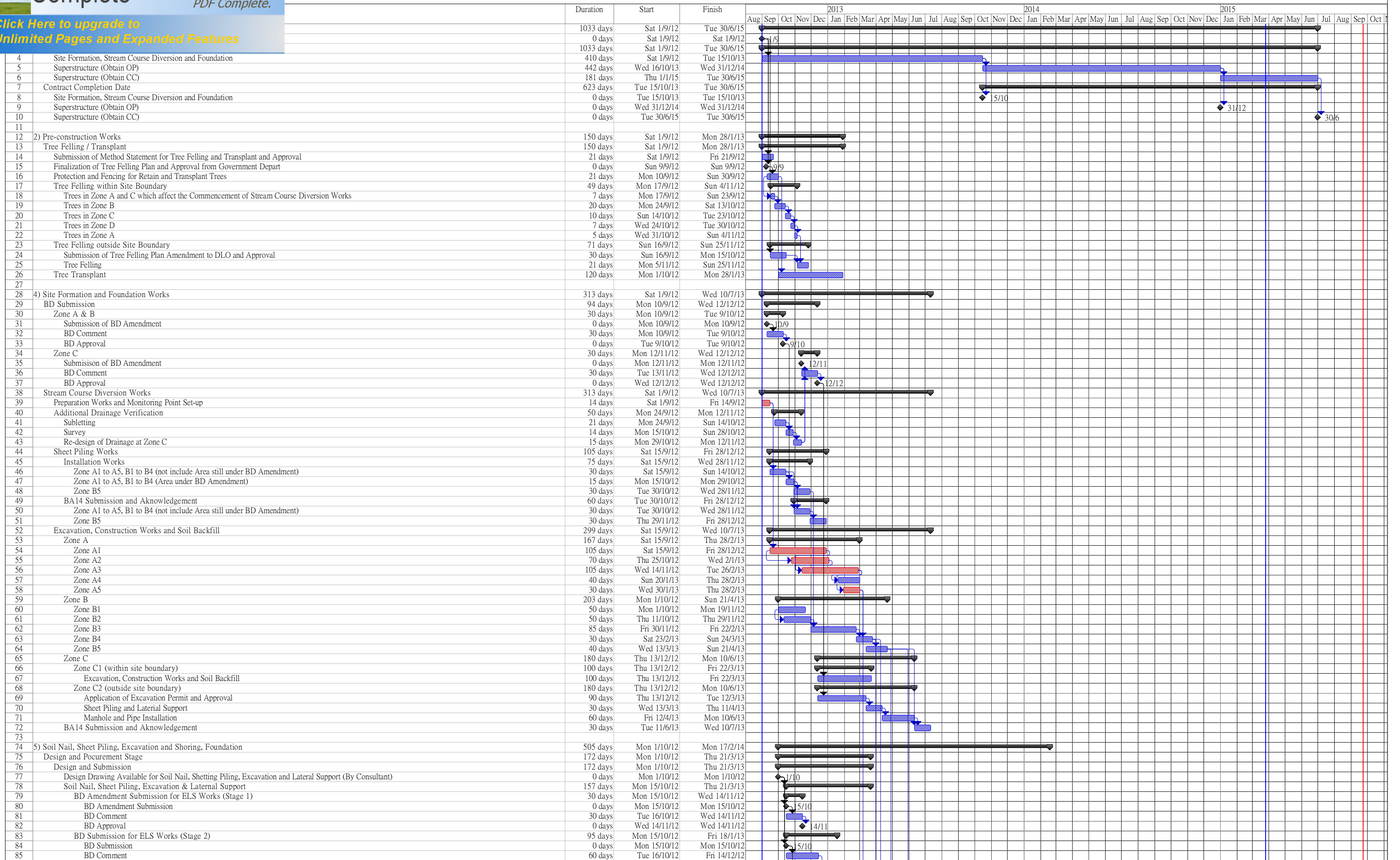


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# Outline Works Programme

Updated: 27 Sept 2012  
Rev. 1



Hip Seng Construction Co., Ltd.

Task: [Blue bar] Summary; [Grey bar] Inactive Task; [Green bar] Inactive Milestone; [Red bar] Manual Task; [Light blue bar] Manual Summary Rollup; [Dark blue bar] Start-only; [Black bar] Finish-only

Milestone: [Diamond] Critical; [Red bar] Inactive Task; [White bar] Inactive Summary; [Grey bar] Inactive Milestone; [White bar] Duration-only; [Light blue bar] Manual Summary

\* All public holidays are excluded













# **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

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. 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 Chart

BSWA TECH

BSWA-IV-C021-03-0048A

**Sound Calibrator model** ..... CA111

**Serial Number** ..... 490239

**Appearance** ..... OK

**Power Supply** ..... 1.5V LR6 (AA battery) x2

**Sound Pressure Level** ..... 94.03 / 114.03 dB

**Frequency** ..... 1000.3 / 1000.3 Hz

**TND (@1000Hz)** ..... 0.35 / 0.72 %

*Copying and using select parts, or tampering with this document without the permission of BSWA is forbidden!*

## BSWA Technology Ltd.

[www.bswa-tech.com](http://www.bswa-tech.com)

This equipment was calibrated at the following ambient conditions:

**Temperature:** ..... 20 ..... °C

**Humidity:** ..... 30 ..... %RH

**Pressure:** ..... 1025 ..... hPa

This equipment is qualified!

C. P. g

**Calibrated**

2013-3-11

**Date**







# 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:** HK1319308  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 17/07/2013  
**DATE OF ISSUE:** 24/07/2013

### 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  
Equipment Type: MULTIMETER  
Brand Name: TOA DKK  
Model No.: WMS-24  
Serial No.: 682337  
Equipment No.: --  
Date of Calibration: 24 July, 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. Fung Lim Chee, Richard  
General Manager  
Greater China & Hong Kong

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Page 1 of 2

# REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION



**Work Order:** HK1319308  
**Date of Issue:** 24/07/2013  
**Client:** ENVIRONMENTAL PIONEERS & SOLUTIONS LIMITED

**Description:** MULTIMETER  
**Brand Name:** TOA DKK  
**Model No.:** WMS-24  
**Serial No.:** 682337  
**Equipment No.:** --  
**Date of Calibration:** 24 July, 2013

**Date of next Calibration:** 24 October, 2013

**Parameters:**

**Conductivity**

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

Expected Reading (uS/cm)	Displayed Reading (uS/cm )	Tolerance (%)
146.9	140	-4.7
6667	7100	6.5
12890	13800	7.1
58670	61300	4.5
Tolerance Limit (±%)		10.0

**Dissolved Oxygen**

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.92	4.76	-0.16
6.09	5.93	-0.16
7.59	7.60	0.01
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	4.09	0.09
7.0	7.13	0.13
10.0	10.15	0.15
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 )
10.5	10.8	0.3
22.0	22.0	0.0
39.5	39.8	0.3
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	43.2	8.0
80	85.9	7.4
400	422.0	5.5
800	868.1	8.5
Tolerance Limit (±%)		10.0

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

  
 Mr. Fung Lim Chee, Richard  
 General Manager  
 Greater China & Hong Kong

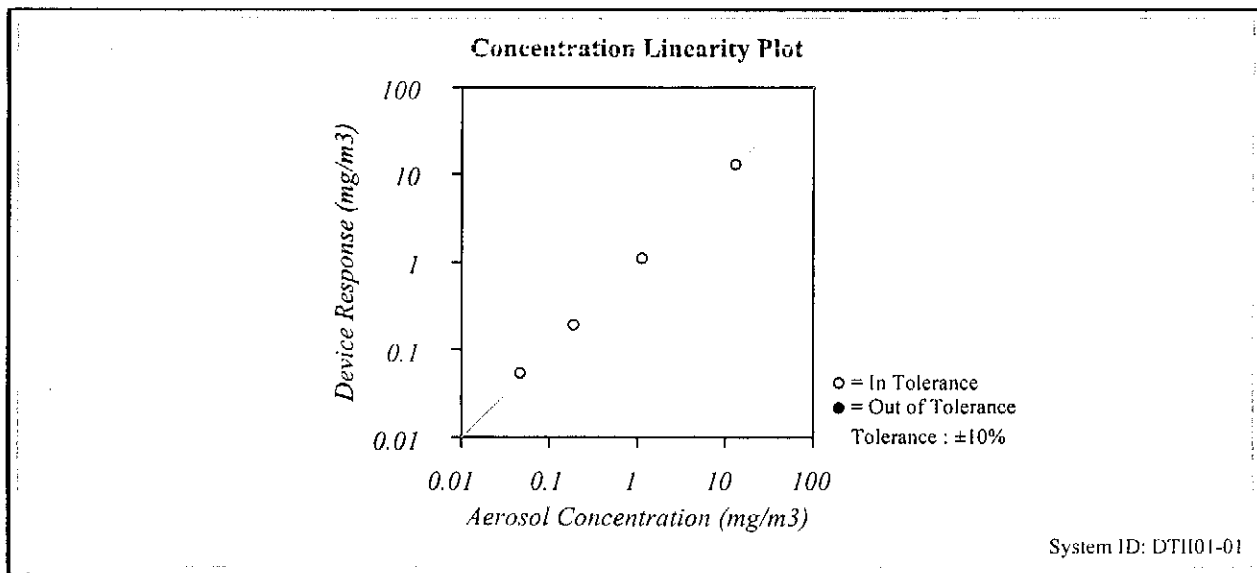


# CERTIFICATE OF CALIBRATION AND TESTING

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	<b>AM510</b>
Temperature	68.5 (20.3)	°F (°C)		
Relative Humidity	22	%RH	Serial Number	<b>11304034</b>
Barometric Pressure	28.95 (980.4)	inHg (hPa)		

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



*TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass 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	04-12-13	10-12-13	Flowmeter	E003520	02-28-13	02-28-14
DC Voltage(Keithley)	E002859	01-03-13	01-03-14	Microbalance	M001324	01-04-13	01-04-15
Barometric Pressure	E003733	03-12-13	03-12-14	Temperature	E002873	11-08-12	11-08-13
Humidity	E002873	11-08-12	11-08-13	Pressure	E003440	08-17-12	08-17-13

Bee Vang

\_\_\_\_\_  
Calibrated

Final Function Check

April 24, 2013

\_\_\_\_\_  
Date

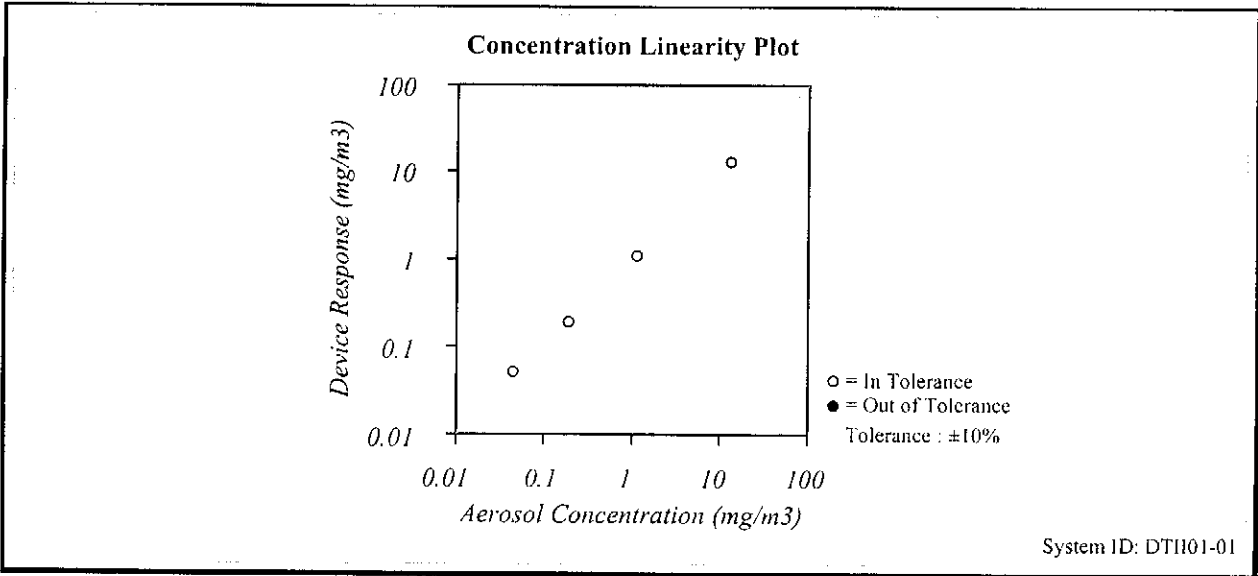


# CERTIFICATE OF CALIBRATION AND TESTING

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

Environment Condition			Model	AM510
Temperature	73.8 (23.2)	°F (°C)	Serial Number	11304037
Relative Humidity	27	%RH		
Barometric Pressure	28.99 (981.7)	inHg (hPa)		

<input checked="" type="checkbox"/> As I left	<input checked="" type="checkbox"/> In Tolerance
<input type="checkbox"/> As Found	<input type="checkbox"/> Out of Tolerance



*TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass 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	04-12-13	10-12-13	Flowmeter	E003520	02-28-13	02-28-14
DC Voltage(Keithley)	E002859	01-03-13	01-03-14	Microbalance	M001324	01-04-13	01-04-15
Barometric Pressure	E003733	03-12-13	03-12-14	Temperature	E002873	11-08-12	11-08-13
Humidity	E002873	11-08-12	11-08-13	Pressure	E003440	08-17-12	08-17-13

*Jacques Cohen*  
Calibrated

Final Function Check

April 26, 2013  
Date





# Calibration Certificate

Certificate No. **28552**

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. :** Q23328

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

## Item Tested

**Description :** Laser Dust Monitor

**Manufacturer :** SIBATA

**Model :** LD-3B

**Serial No. :** 095027

## Test Conditions

**Date of Test :** 18-Dec-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	26077	NIM-PRC
S156	Analytical Balance	27964	NIM-PRC
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

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 9801 Fax: 2425 8646

**Date:** 19-Dec-12



# Calibration Certificate

Certificate No. **28552**

Page 2 of 2 Pages

Results :

Applied Value ( $\mu\text{g}/\text{m}^3$ )	UUT Measured Value (K=1.9) ( $\mu\text{g}/\text{m}^3$ ), (cpm)
695.2	694.6

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 1.0 to 1.9

----- 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 - Apr 09, 2013 Roots-meter S/N 0438320 Ta (K) - 296  
 Operator Tisch Orifice I.D. - 1941 Pa (mm) - 751.84

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORIFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4710	3.3	2.00
2	NA	NA	1.00	1.0370	6.4	4.00
3	NA	NA	1.00	0.9270	7.9	5.00
4	NA	NA	1.00	0.8840	8.8	5.50
5	NA	NA	1.00	0.7300	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9916	0.6741	1.4113	0.9956	0.6768	0.8874
0.9874	0.9521	1.9959	0.9914	0.9560	1.2549
0.9854	1.0630	2.2315	0.9894	1.0673	1.4030
0.9843	1.1134	2.3405	0.9883	1.1180	1.4715
0.9790	1.3410	2.8227	0.9829	1.3465	1.7747
Qstd slope (m) = 2.11662			Qa slope (m) = 1.32539		
intercept (b) = -0.01714			intercept (b) = -0.01078		
coefficient (r) = 0.99999			coefficient (r) = 0.99999		
y axis = $\text{SQRT}[\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta})]$			y axis = $\text{SQRT}[\text{H}_2\text{O}(\text{Ta}/\text{Pa})]$		

CALCULATIONS

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

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

For subsequent flow rate calculations:

$Q_{std} = 1/m \{ [\text{SQRT}(\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta}))] - b \}$   
 $Q_a = 1/m \{ [\text{SQRT}(\text{H}_2\text{O}(\text{Ta}/\text{Pa}))] - b \}$











# **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		2/8/2013	2/8/2013	2/8/2013	2/8/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		14:18	14:53	15:29	16:08
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, Southeast	<5, Southeast	<5, Southeast	<5, Southeast
Measurement Results	L <sub>eq</sub> (dB(A))	68.1	65.3	64.7	69.3
	L <sub>10</sub> (dB(A))	69.5	66.1	71.0	71.5
	L <sub>90</sub> (dB(A))	64.6	64.1	61.1	66.8
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



2/8/2013

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		8/8/2013	8/8/2013	8/8/2013	8/8/2013
Weather Condition		Sunny	Sunny	Sunny	Sunny
Measurement Start Time (hh:mm)		10:25	11:05	13:05	13:52
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, South	<5, South	<5, South	<5, South
Measurement Results	L <sub>eq</sub> (dB(A))	66.0	73.7	57.0	68.7
	L <sub>10</sub> (dB(A))	67.7	74.9	59.1	69.3
	L <sub>90</sub> (dB(A))	63.0	63.6	51.2	64.8
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



8/8/2013

**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		15/8/2013	15/8/2013	15/8/2013	15/8/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		9:02	9:38	10:14	10:51
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, North	<5, Northeast	<5, Southwest	<5, North
Measurement Results	L <sub>eq</sub> (dB(A))	66.3	64.1	66.2	68.1
	L <sub>10</sub> (dB(A))	67.7	67.1	67.3	69.5
	L <sub>90</sub> (dB(A))	62.7	57.5	63.6	66.4
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



15/8/2013



**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		20/8/2013	20/8/2013	20/8/2013	20/8/2013
Weather Condition		Sunny	Sunny	Sunny	Sunny
Measurement Start Time (hh:mm)		9:00	9:38	10:15	10:52
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, South	<5, South	<5, South	<5, South
Measurement Results	L <sub>eq</sub> (dB(A))	64.4	64.1	65.9	62.0
	L <sub>10</sub> (dB(A))	66.9	66.8	67.3	63.5
	L <sub>90</sub> (dB(A))	59.2	54.8	64.2	60.1
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



20/8/2013

**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		26/8/2013	26/8/2013	26/8/2013	26/8/2013
Weather Condition		Sunny	Sunny	Sunny	Sunny
Measurement Start Time (hh:mm)		9:03	9:41	10:16	10:53
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))	63.2	63.4	65.0	71.2
	L <sub>10</sub> (dB(A))	65.8	67.4	65.7	75.9
	L <sub>90</sub> (dB(A))	58.1	55.4	60.3	61.7
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



26/8/2013

**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		31/8/2013	31/8/2013	31/8/2013	31/8/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		9:10	9:45	10:22	11:00
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))	63.7	61.9	64.9	63.3
	L <sub>10</sub> (dB(A))	65.8	63.1	67.1	66.2
	L <sub>90</sub> (dB(A))	58.9	55.2	62.1	59.3
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

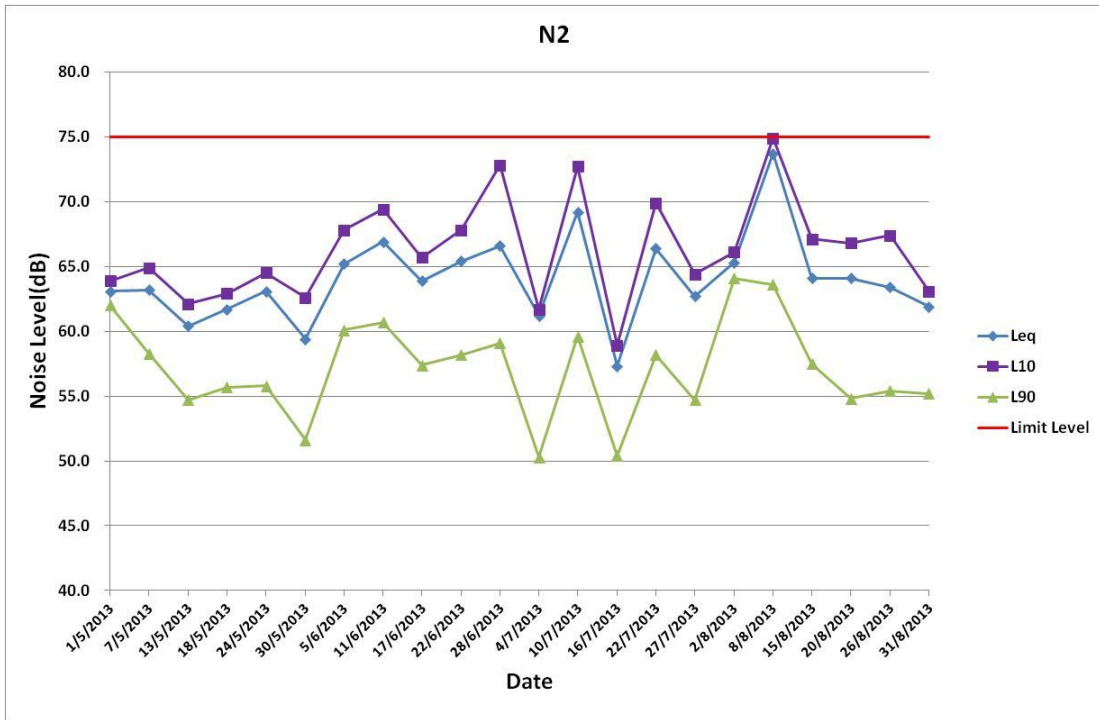
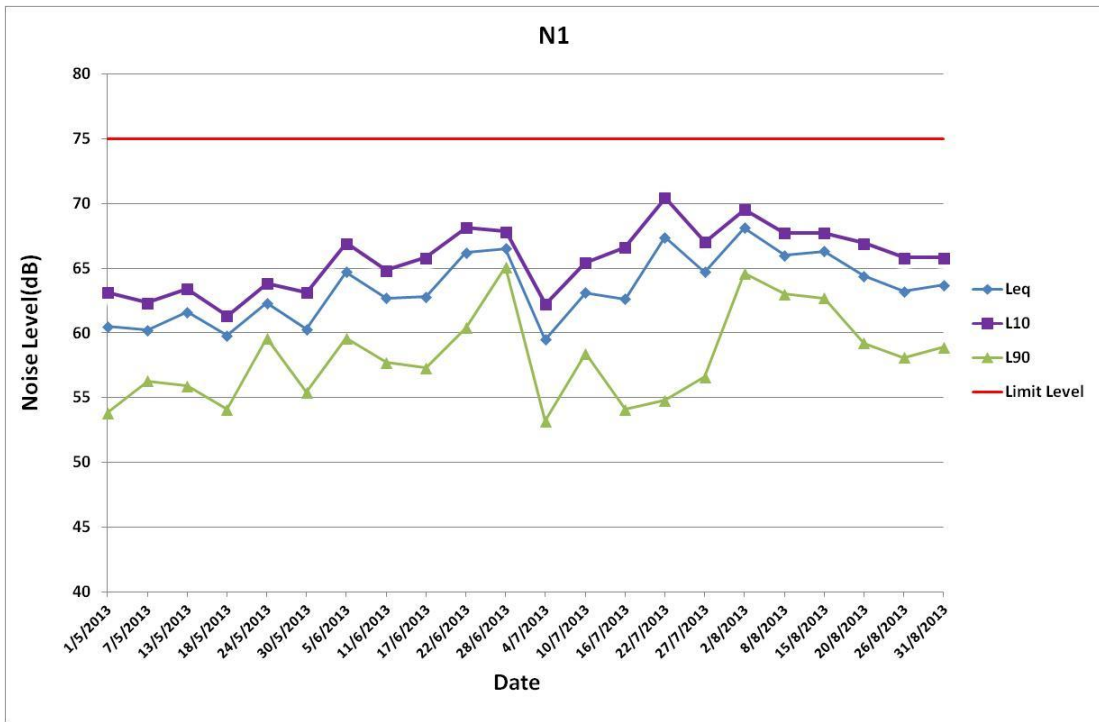
Signature

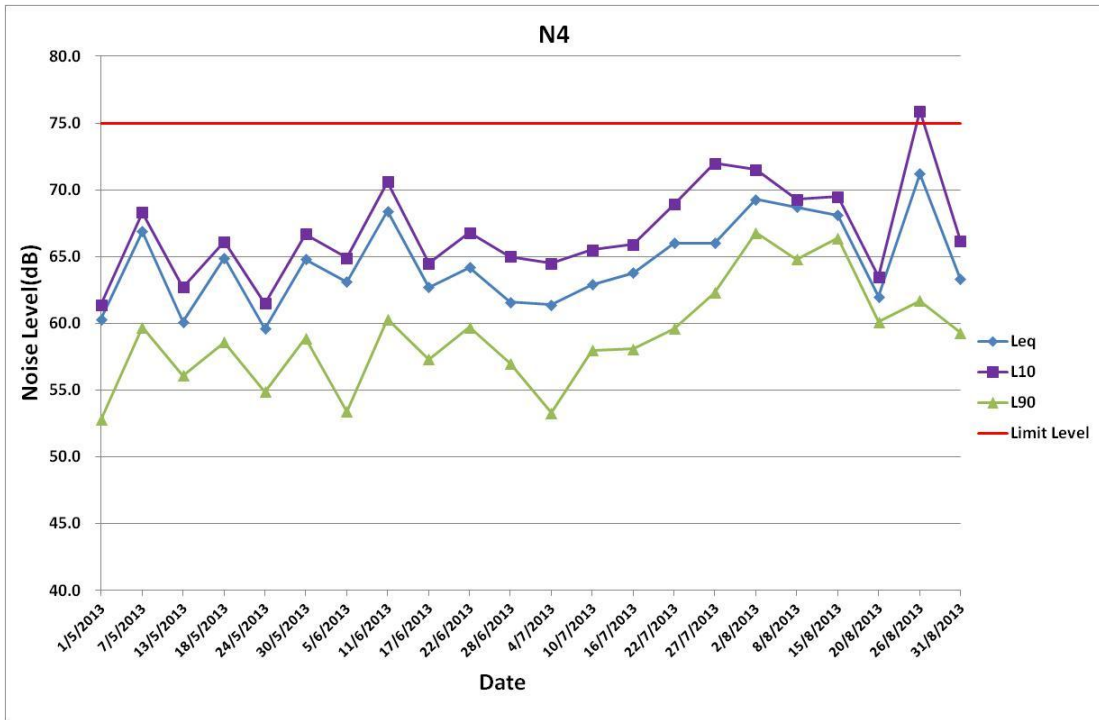
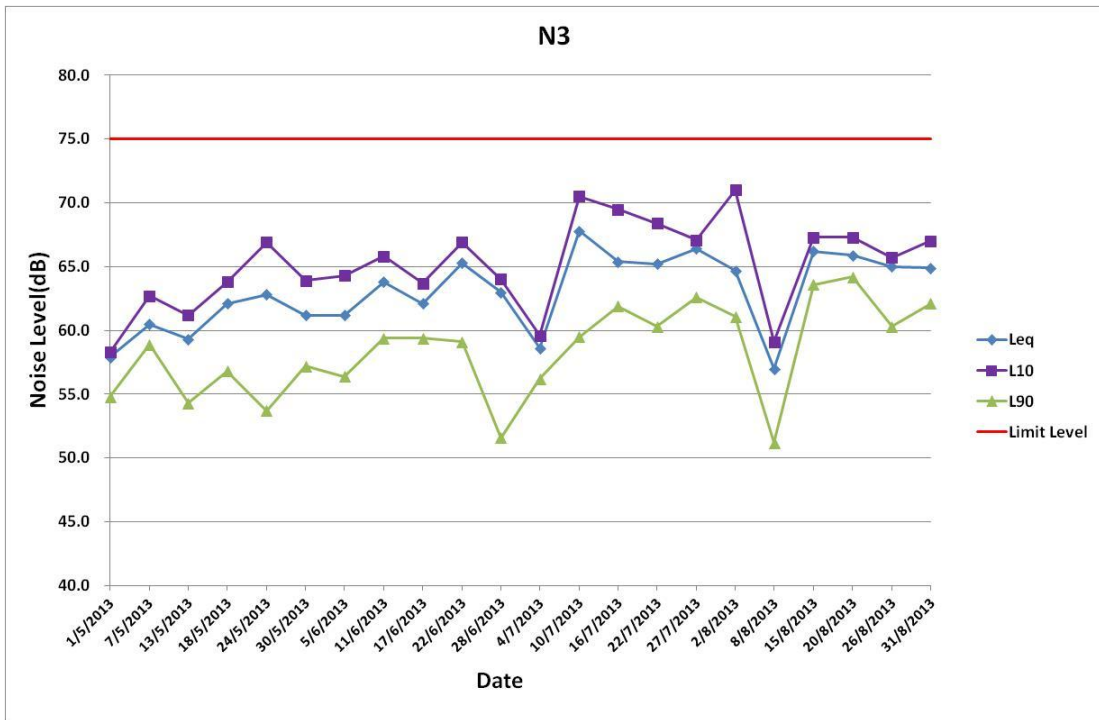
Date

Prepared by: Lai Chi Hang



31/8/2013





# **Appendix E**

## Water Quality Monitoring Data

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

Date of Sampling : 1/8/2013

Weather : Cloudy

Monitoring Location	W1	W2
Time (hhmm)	13:00	13:30
Water Depth (m)	<1	<1
pH value	8.21	8.25
Temperature (°C)	30.8	30.1
Turbidity (NTU)	17.2	18.2
DO (mg/L)	7.88	7.23
DO Saturation (%)	85%	78%
Suspended Solids (mg/L)	16.0	12.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

1/8/2013

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

Date of Sampling : 2/8/2013

Weather : Cloudy

Monitoring Location	W1	W2
Time (hhmm)	14:00	14:35
Water Depth (m)	<1	<1
pH value	7.90	8.10
Temperature (°C)	29.4	29.5
Turbidity (NTU)	5.3	5.2
DO (mg/L)	8.07	7.92
DO Saturation (%)	86%	83%
Suspended Solids (mg/L)	N/A	N/A

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

2/8/2013



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

Date of Sampling : 3/8/2013

Weather : Rainy

Monitoring Location	W1	W2
Time (hhmm)	13:00	13:30
Water Depth (m)	<1	<1
pH value	8.16	7.89
Temperature (°C)	30.3	29.9
Turbidity (NTU)	5.1	4.9
DO (mg/L)	8.23	7.89
DO Saturation (%)	93%	88%
Suspended Solids (mg/L)	16.0	15.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

3/8/2013

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

Date of Sampling : 6/8/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	16:00	16:30
Water Depth (m)	<1	<1
pH value	8.16	7.97
Temperature (°C)	30.5	30.1
Turbidity (NTU)	5.3	5.4
DO (mg/L)	7.88	7.73
DO Saturation (%)	80%	80%
Suspended Solids (mg/L)	13.0	14.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

6/8/2013

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

Date of Sampling : 8/8/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	13:00	13:30
Water Depth (m)	<1	<1
pH value	7.87	8.10
Temperature (°C)	30.1	30.4
Turbidity (NTU)	4.5	5.0
DO (mg/L)	8.16	7.88
DO Saturation (%)	92%	85%
Suspended Solids (mg/L)	7.0	6.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

8/8/2013

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

Date of Sampling : 10/8/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	13:00	13:30
Water Depth (m)	<1	<1
pH value	8.13	8.16
Temperature (°C)	30.5	30.8
Turbidity (NTU)	3.9	4.5
DO (mg/L)	7.86	7.85
DO Saturation (%)	85%	85%
Suspended Solids (mg/L)	2.0	3.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

10/8/2013

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

Date of Sampling : 13/8/2013

Weather : Rainy

Monitoring Location	W1	W2
Time (hhmm)	16:00	16:30
Water Depth (m)	<1	<1
pH value	7.91	8.03
Temperature (°C)	29.1	29.3
Turbidity (NTU)	15.2	16.7
DO (mg/L)	8.31	8.23
DO Saturation (%)	100%	98%
Suspended Solids (mg/L)	6.0	8.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

13/8/2013

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

Date of Sampling : 15/8/2013

Weather : Cloudy

Monitoring Location	W1	W2
Time (hhmm)	13:00	13:30
Water Depth (m)	<1	<1
pH value	8.16	8.23
Temperature (°C)	29.3	29.5
Turbidity (NTU)	3.5	4.5
DO (mg/L)	7.88	7.89
DO Saturation (%)	86%	85%
Suspended Solids (mg/L)	7.0	6.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

15/8/2013

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

Date of Sampling : 17/8/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	13:00	13:30
Water Depth (m)	<1	<1
pH value	7.87	8.13
Temperature (°C)	29.5	29.3
Turbidity (NTU)	4.8	3.5
DO (mg/L)	7.86	8.38
DO Saturation (%)	85%	90%
Suspended Solids (mg/L)	15.0	15.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

17/8/2013

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

Date of Sampling : 20/8/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	16:00	16:30
Water Depth (m)	<1	<1
pH value	8.13	8.23
Temperature (°C)	29.7	29.9
Turbidity (NTU)	3.6	3.3
DO (mg/L)	7.81	7.86
DO Saturation (%)	88%	85%
Suspended Solids (mg/L)	14.0	16.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

20/8/2013



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

Date of Sampling : 22/8/2013

Weather : Rainy

Monitoring Location	W1	W2
Time (hhmm)	13:00	13:30
Water Depth (m)	<1	<1
pH value	8.25	8.10
Temperature (°C)	29.7	29.5
Turbidity (NTU)	5.8	6.0
DO (mg/L)	7.55	7.68
DO Saturation (%)	82%	85%
Suspended Solids (mg/L)	13.0	18.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

22/8/2013

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

Date of Sampling : 24/8/2013

Weather : Rainy

Monitoring Location	W1	W2
Time (hhmm)	13:00	13:30
Water Depth (m)	<1	<1
pH value	7.96	8.12
Temperature (°C)	28.8	28.9
Turbidity (NTU)	23.5	20.8
DO (mg/L)	8.25	8.13
DO Saturation (%)	105%	100%
Suspended Solids (mg/L)	63.0	32.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

24/8/2013

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

Date of Sampling : 26/8/2013

Weather : Cloudy

Monitoring Location	W1	W2
Time (hhmm)	14:00	14:30
Water Depth (m)	<1	<1
pH value	8.01	7.98
Temperature (°C)	29.7	29.1
Turbidity (NTU)	5.7	4.5
DO (mg/L)	7.87	7.94
DO Saturation (%)	76%	78%
Suspended Solids (mg/L)	N/A	N/A

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

26/8/2013

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

Date of Sampling : 27/8/2013

Weather : Cloudy

Monitoring Location	W1	W2
Time (hhmm)	13:00	13:30
Water Depth (m)	<1	<1
pH value	8.23	8.36
Temperature (°C)	30.1	30.5
Turbidity (NTU)	5.0	5.8
DO (mg/L)	8.10	7.79
DO Saturation (%)	90%	85%
Suspended Solids (mg/L)	21.0	25.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

27/8/2013

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

Date of Sampling : 29/8/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	16:00	16:30
Water Depth (m)	<1	<1
pH value	7.88	8.13
Temperature (°C)	30.5	30.6
Turbidity (NTU)	4.7	5.0
DO (mg/L)	8.21	7.73
DO Saturation (%)	90%	88%
Suspended Solids (mg/L)	21.0	24.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

29/8/2013

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

Date of Sampling : 31/8/2013

Weather : Cloudy

Monitoring Location	W1	W2
Time (hhmm)	11:00	11:30
Water Depth (m)	<1	<1
pH value	8.03	7.91
Temperature (°C)	28.1	28.4
Turbidity (NTU)	18.9	20.1
DO (mg/L)	8.25	8.33
DO Saturation (%)	98%	101%
Suspended Solids (mg/L)	8.0	9.0

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

Name

Signature

Date

Prepared By : Lau Kai Chung

Lau Kai Chung

31/8/2013



### 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	: HK1320739
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	: 01-AUG-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 09-AUG-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: 05-AUG-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: **HK1320739**

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.

**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	[30-JUL-2013]	[30-JUL-2013]	[01-AUG-2013]	[01-AUG-2013]	
Compound	CAS Number	LOR	Unit	Client sample ID	W1	W2	W1	W2	
				HK1320739-001	HK1320739-002	HK1320739-003	HK1320739-004		
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		32	17	16	12	





**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: 2997532)</b>								
HK1320690-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	8	8	0.0
HK1320739-001	W1	EA025: Suspended Solids (SS)	----	2	mg/L	32	33	3.3

**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: 2997532)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	99.0	----	86	112	----	----

**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	: HK1321120
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	: 06-AUG-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 15-AUG-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-AUG-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: **HK1321120**

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	W1	W2	
				Client sampling date / time	[03-AUG-2013]	[03-AUG-2013]	[06-AUG-2013]	[06-AUG-2013]	
Compound	CAS Number	LOR	Unit		HK1321120-001	HK1321120-002	HK1321120-003	HK1321120-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		16	15	13	14	



**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: 3004335)</b>								
HK1321120-001	W1	EA025: Suspended Solids (SS)	----	2	mg/L	16	17	6.9
HK1321231-002	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	21	20	5.1

**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: 3004335)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	104	----	86	112	----	----

**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	: HK1321781
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		
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: TAI PO TSAI	Quote number	: ----	Date Samples Received	: 12-AUG-2013
Order number	: ----			Issue Date	: 20-AUG-2013
C-O-C number	: ----			No. of samples received	: 4
Site	: ----			No. of samples analysed	: 4

#### 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: 15-AUG-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: **HK1321781**

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

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	[10-AUG-2013]	[10-AUG-2013]	[08-AUG-2013]	[08-AUG-2013]	
Compound	CAS Number	LOR	Unit		HK1321781-001	HK1321781-002	HK1321781-003	HK1321781-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		2	3	7	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: 3014283)</b>								
HK1321740-007	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	21	20	0.0
HK1321765-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 3014286)</b>								
HK1321781-004	W2	EA025: Suspended Solids (SS)	----	2	mg/L	6	7	0.0
HK1321933-010	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	7	7	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: 3014283)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	98.0	----	86	112	----	----
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 3014286)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	95.0	----	86	112	----	----

**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	: HK1322635
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	: 20-AUG-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 28-AUG-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: 21-AUG-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: **HK1322635**

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	[13-AUG-2013]	[13-AUG-2013]	[15-AUG-2013]	[15-AUG-2013]	
Compound	CAS Number	LOR	Unit		HK1322635-001	HK1322635-002	HK1322635-003	HK1322635-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		6	8	7	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: 3023302)</b>								
HK1322586-003	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	70	72	2.1
HK1322612-003	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	7	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: 3023302)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	101	----	86	112	----	----

**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	: HK1323060
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@epsl.com.hk	E-mail	: Richard.Fung@alsglobal.com	Date Samples Received	: 24-AUG-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 03-SEP-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-AUG-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: **HK1323060**

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	[17-AUG-2013]	[17-AUG-2013]	[20-AUG-2013]	[20-AUG-2013]	
Compound	CAS Number	LOR	Unit		HK1323060-001	HK1323060-002	HK1323060-003	HK1323060-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		15	15	14	16	



**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: 3030257)</b>								
HK1322981-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	4	4	0.0
HK1323043-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	5	5	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: 3030257)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	99.5	----	86	112	----	----

**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	: HK1323061
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	: 24-AUG-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 03-SEP-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-AUG-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: **HK1323061**

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	[22-AUG-2013]	[22-AUG-2013]	[24-AUG-2013]	[24-AUG-2013]	
Compound	CAS Number	LOR	Unit		HK1323061-001	HK1323061-002	HK1323061-003	HK1323061-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		13	18	63	32	



**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: 3030257)</b>								
HK1322981-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	4	4	0.0
HK1323043-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	5	5	0.0
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 3030258)</b>								
HK1323061-003	W1	EA025: Suspended Solids (SS)	----	2	mg/L	63	64	2.3
HK1323071-005	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: 3030257)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	99.5	----	86	112	----	----
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 3030258)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	99.0	----	86	112	----	----

**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	: HK1323684
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	: 31-AUG-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 10-SEP-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: 02-SEP-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: **HK1323684**

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	[27-AUG-2013]	[27-AUG-2013]	[29-AUG-2013]	[29-AUG-2013]	
Compound	CAS Number	LOR	Unit		HK1323684-001	HK1323684-002	HK1323684-003	HK1323684-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		21	25	21	24	



**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: 3040905)</b>								
HK1323604-006	Anonymous	EA025: Suspended Solids (SS)	----	2.0	mg/L	5.2	5.9	13.5
HK1323638-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	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: 3040905)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	101	----	86	112	----	----

**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	: HK1324422
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	: 07-SEP-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 17-SEP-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: 10-SEP-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: **HK1324422**

Sample(s) were received in an ambient condition.

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

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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	[31-AUG-2013]	[31-AUG-2013]	[03-SEP-2013]	[03-SEP-2013]	
Compound	CAS Number	LOR	Unit		HK1324422-001	HK1324422-002	HK1324422-003	HK1324422-004	
<b>EA/ED: Physical and Aggregate Properties</b>									
EA025: Suspended Solids (SS)	----	2	mg/L		8	9	8	8	



**Laboratory Duplicate (DUP) Report**

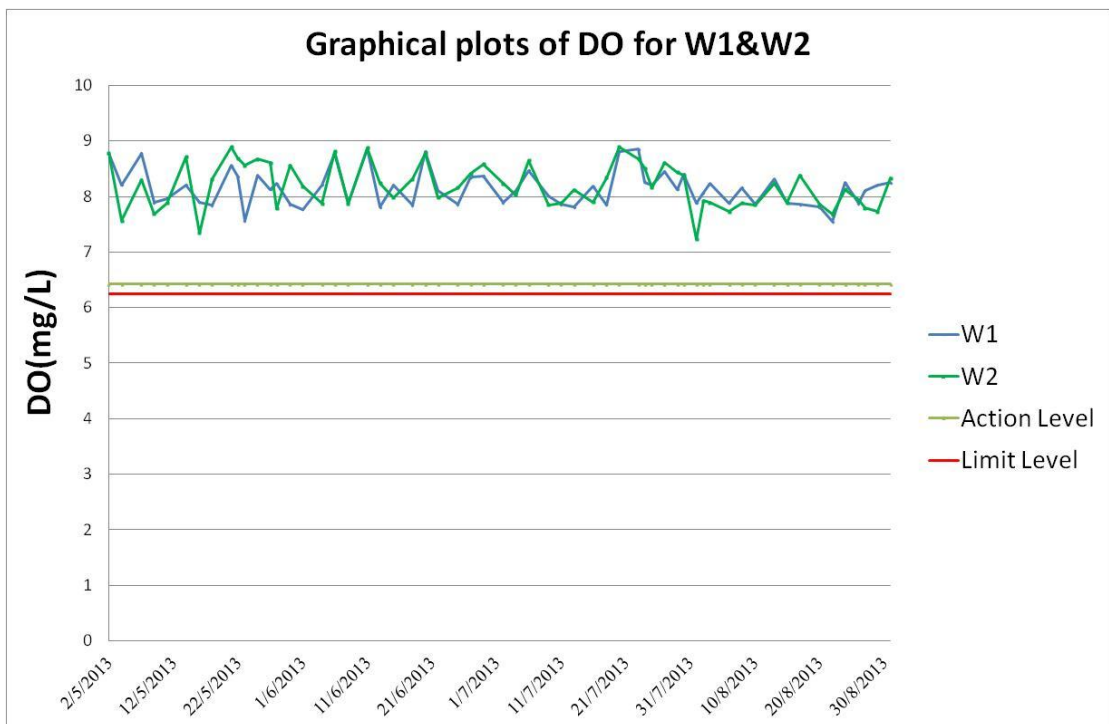
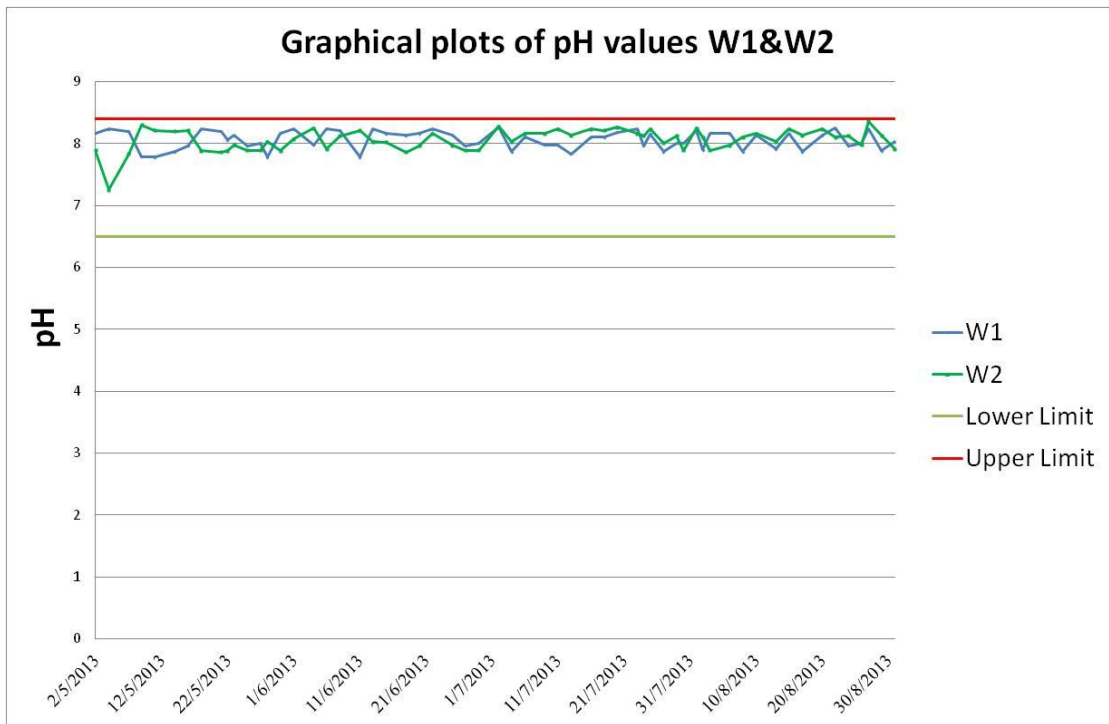
Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
<b>EA/ED: Physical and Aggregate Properties (QC Lot: 3052241)</b>								
HK1324314-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0

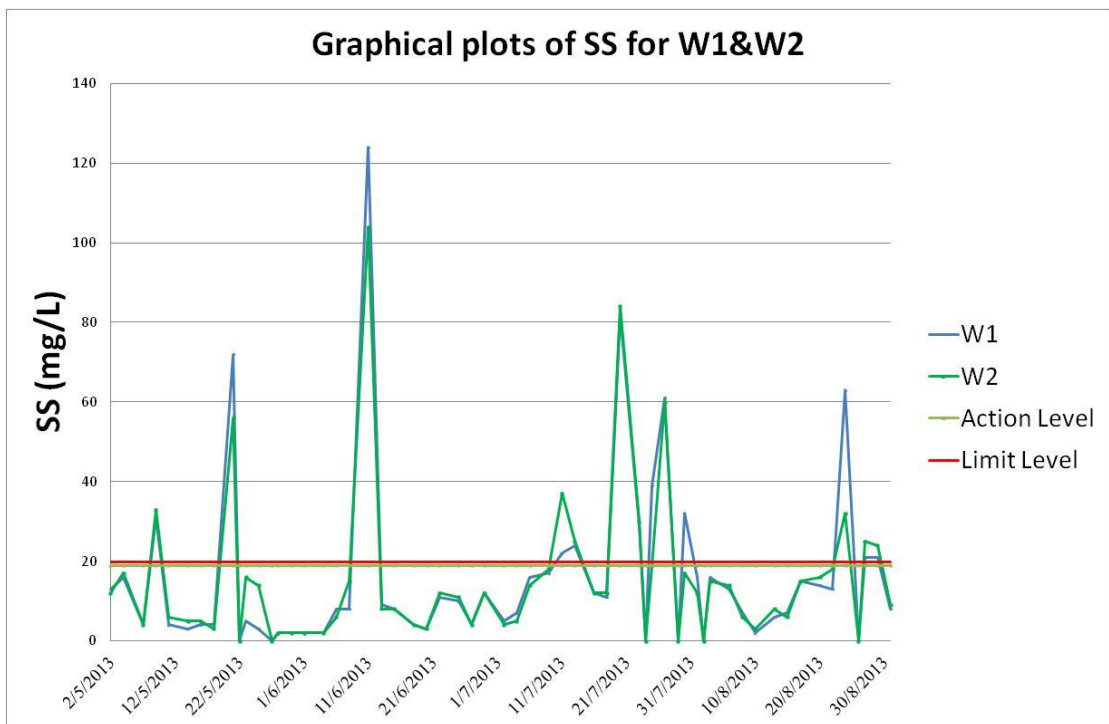
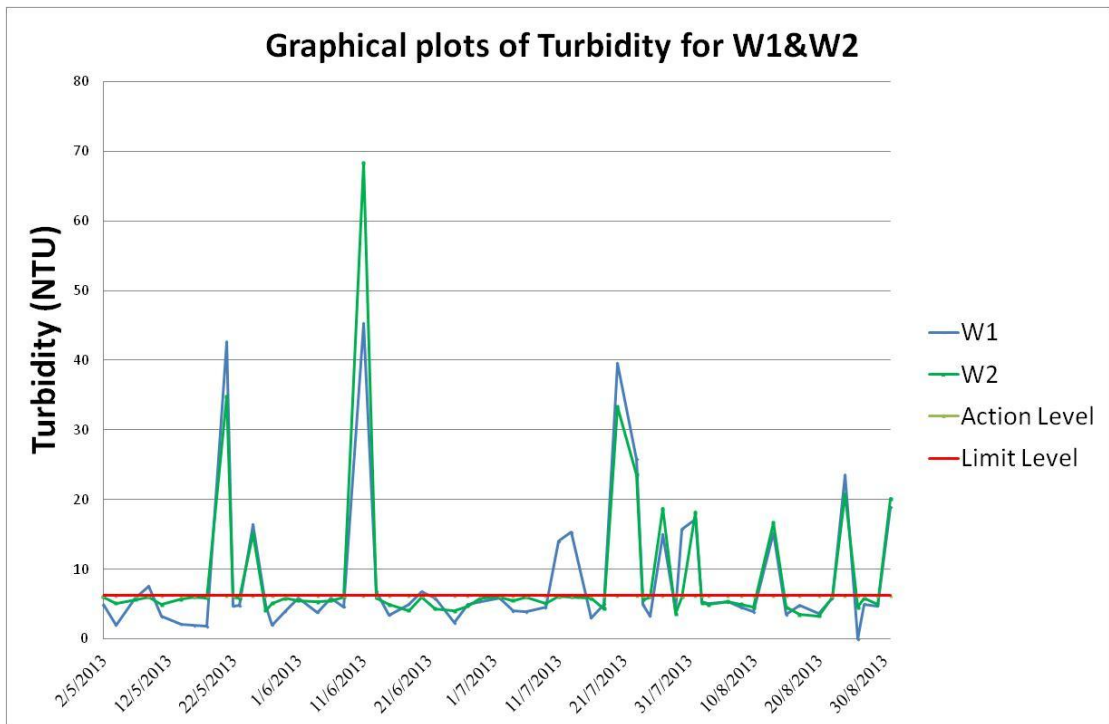
**Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report**

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: 3052241)</b>											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	93.5	----	86	112	----	----

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

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





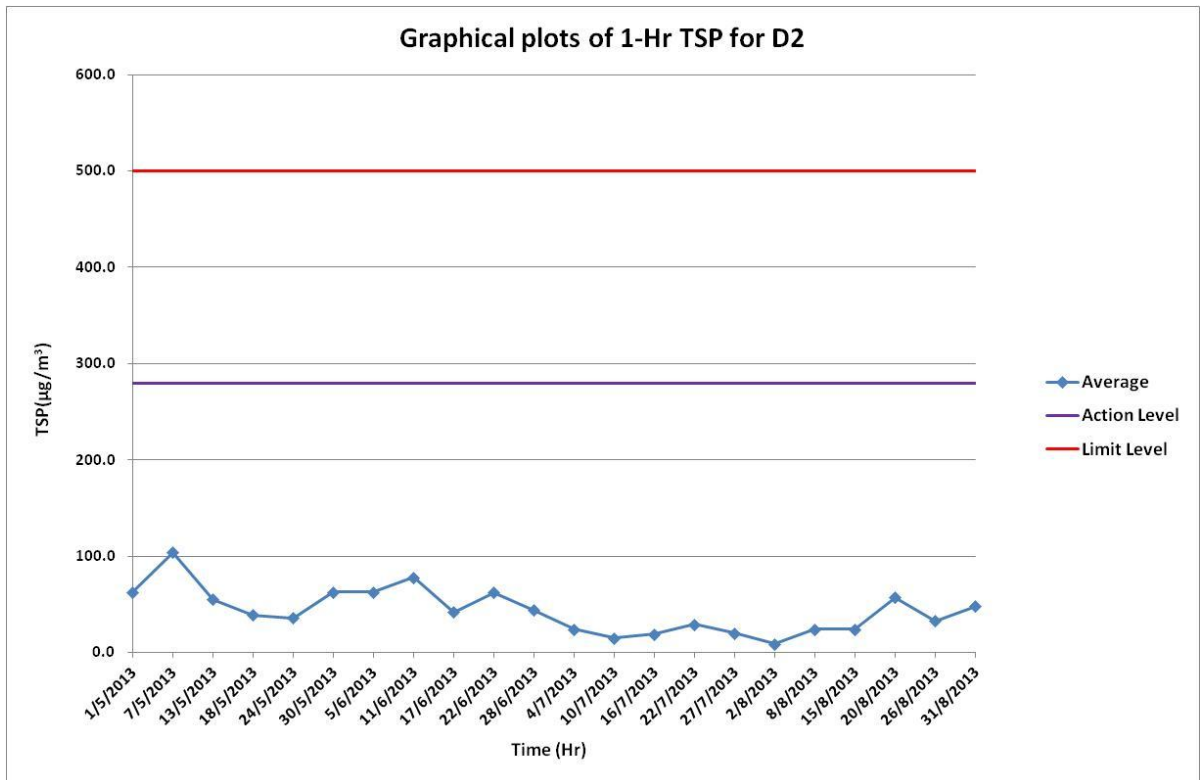
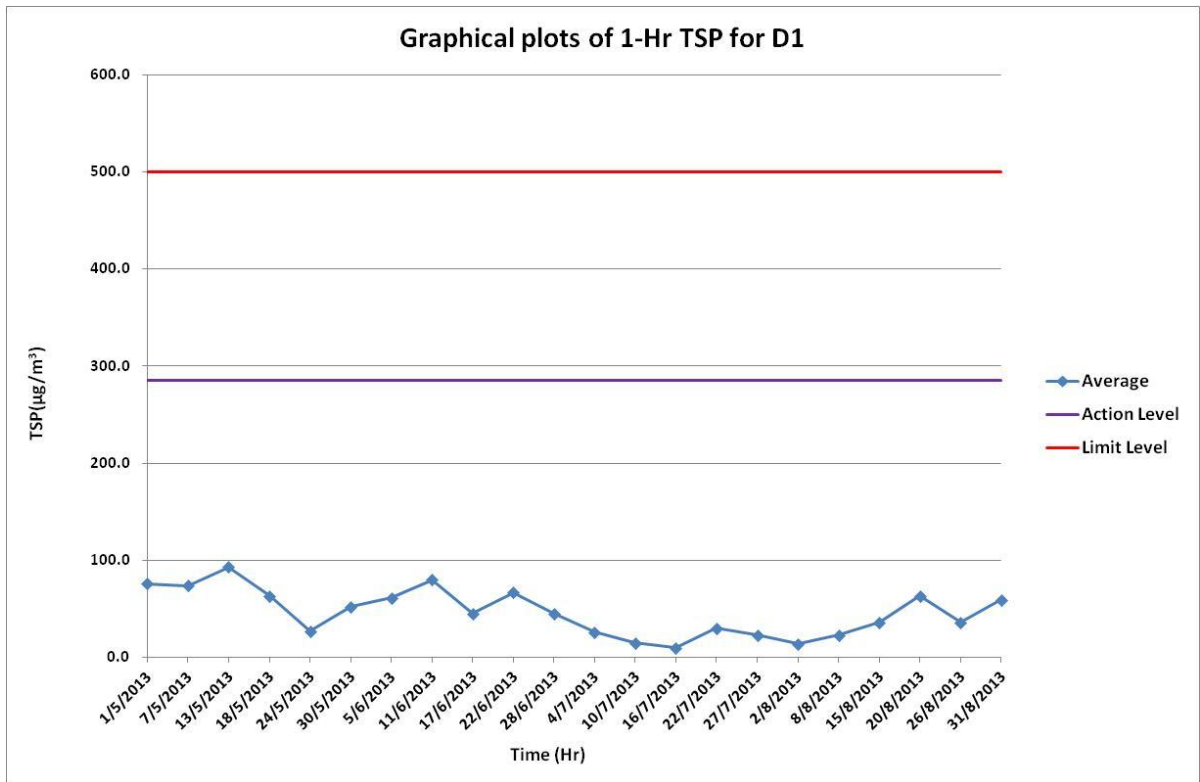


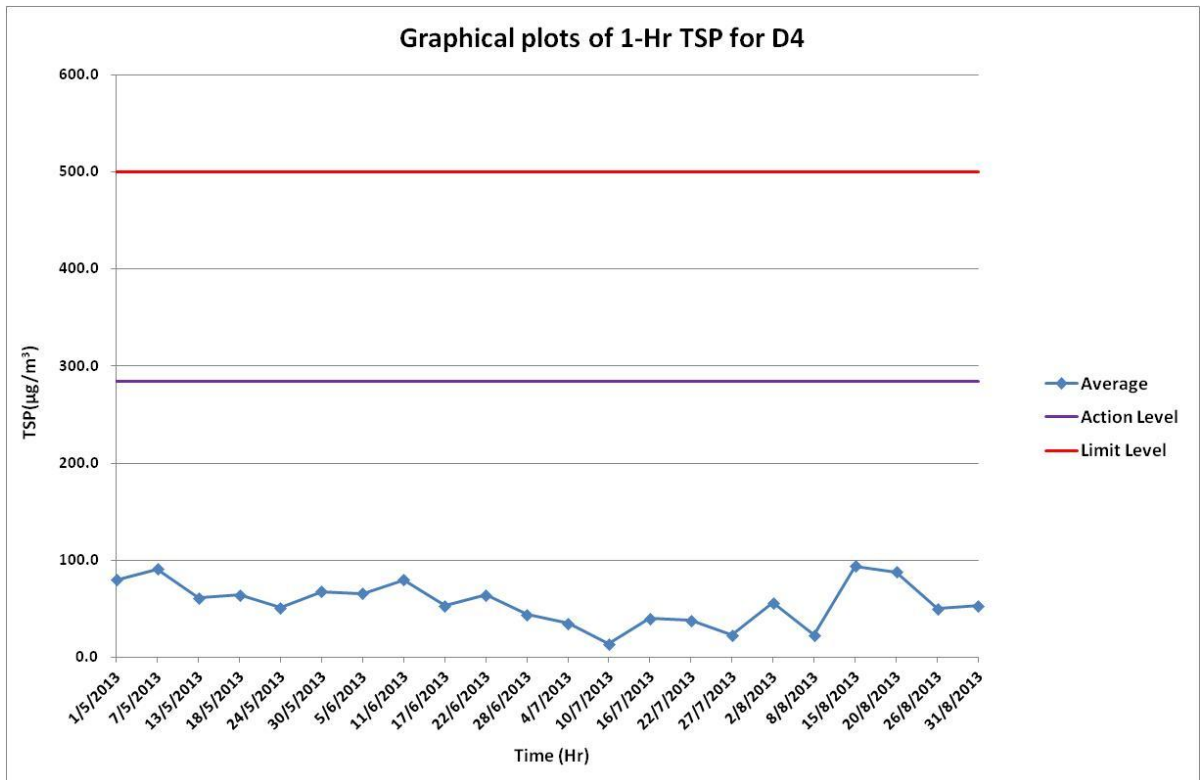
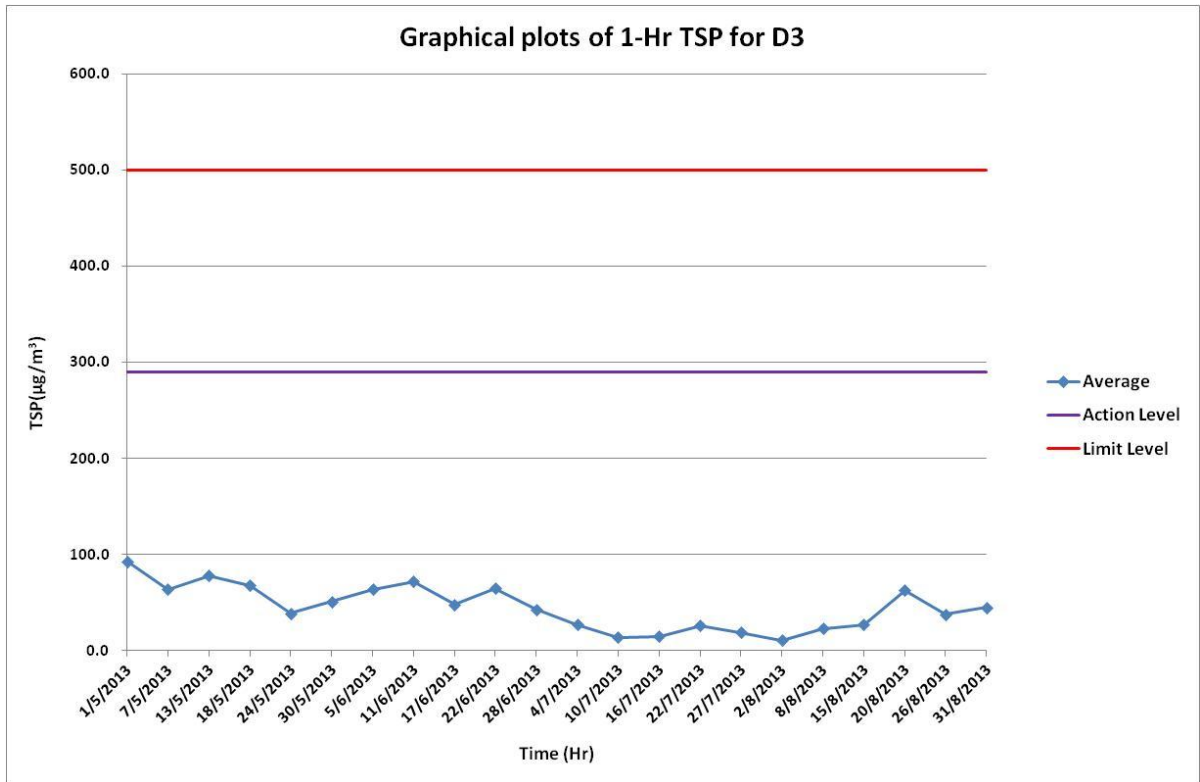
# **Appendix F**

## **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)
2/8/2013	1 Hour	13:38	12	14	13:32	9	9	13:27	9	11	13:20	57	56
		14:38	13		14:32	8		14:27	10		14:20	51	
		15:38	17		15:32	10		15:27	13		15:20	59	
8/8/2013	1 Hour	8:37	24	23	8:34	19	24	8:26	23	23	8:21	23	23
		9:37	23		9:34	26		9:26	23		9:21	23	
		10:37	21		10:34	28		10:26	23		10:21	24	
15/8/2013	1 Hour	8:40	38	36	8:36	19	24	8:29	23	27	8:24	93	94
		9:40	38		9:36	27		9:29	28		9:24	94	
		10:40	33		10:36	26		10:29	29		10:24	94	
20/8/2013	1 Hour	8:47	62	63	8:41	57	57	8:34	61	63	8:28	130	88
		9:47	62		9:41	58		9:34	64		9:28	72	
		10:47	64		10:41	55		10:34	63		10:28	63	
26/8/2013	1 Hour	8:45	37	36	8:40	33	33	8:35	37	38	8:27	48	50
		9:45	35		9:40	32		9:35	35		9:27	57	
		10:45	35		10:40	33		10:35	41		10:27	44	
31/8/2013	1 Hour	8:40	48	59	8:45	45	48	8:53	42	45	9:00	56	53
		9:40	61		9:45	49		9:53	43		10:00	51	
		10:40	67		10:45	51		10:53	49		11:00	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			
02/08/13	205152	3.6704	3.7157	0.0453	1755.19	1779.20	24.01	42	42	42.0	1713.32	26.4400	Cloudy
08/08/13	205157	3.6588	3.7391	0.0803	1779.20	1803.22	24.02	42	42	42.0	1714.03	46.8487	Sunny
14/08/13	205161	3.6573	3.7252	0.0679	1803.22	1827.26	24.04	42	42	42.0	1715.46	39.5813	Rainy
20/08/13	205165	3.6643	3.7546	0.0903	1853.74	1877.78	24.04	42	42	42.0	1715.46	52.6390	Sunny
26/08/13	205169	3.6524	3.6783	0.0259	1877.78	1901.82	24.04	42	42	42.0	1715.46	15.0980	Sunny
31/08/13	205172	3.6609	3.6980	0.0371	1901.82	1925.85	24.03	42	42	42.0	1714.74	21.6359	Cloudy

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			
02/08/13	205153	3.6420	3.6828	0.0408	1542.95	1566.96	24.01	42	42	42.0	1713.32	23.8135	Cloudy
08/08/13	205158	3.6691	3.7103	0.0412	1566.96	1590.98	24.02	42	42	42.0	1714.03	24.0369	Sunny
14/08/13	205162	3.6556	3.7159	0.0603	1641.73	1665.75	24.02	42	42	42.0	1714.03	35.1802	Rainy
20/08/13	205166	3.6581	3.7564	0.0983	1665.75	1689.77	24.02	42	42	42.0	1714.03	57.3502	Sunny
26/08/13	205170	3.6512	3.6950	0.0438	1689.77	1713.78	24.01	42	42	42.0	1713.32	25.5645	Sunny
31/08/13	205173	3.6673	3.7032	0.0359	1713.78	1737.79	24.01	42	42	42.0	1713.32	20.9535	Cloudy

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			
02/08/13	205156	3.6595	3.7331	0.0736	2127.15	2151.18	24.03	42	42	42.0	1714.74	42.9219	Cloudy
08/08/13	205159	3.6613	3.7112	0.0499	2151.18	2175.19	24.01	42	42	42.0	1713.32	29.1248	Sunny
14/08/13	205163	3.6521	3.7263	0.0742	2175.19	2199.22	24.03	42	42	42.0	1714.74	43.2718	Rainy
20/08/13	205167	3.6661	3.7181	0.0520	2199.22	2223.24	24.02	42	42	42.0	1714.03	30.3379	Sunny
26/08/13	205171	3.6784	3.7018	0.0234	2223.24	2247.26	24.02	42	42	42.0	1714.03	13.6520	Sunny
31/08/13	205134	3.7042	3.8456	0.1414	2247.26	2271.29	24.03	42	42	42.0	1714.74	82.4613	Cloudy

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			
02/08/13	205155	3.6477	3.6932	0.0455	2084.29	2108.32	24.03	42	42	42.0	1714.74	26.5346	Cloudy
08/08/13	205160	3.6574	3.8068	0.1494	2364.25	2388.28	24.03	42	42	42.0	1714.74	87.1267	Sunny
14/08/13	205164	3.6668	3.7165	0.0497	2388.28	2412.31	24.03	42	42	42.0	1714.74	28.9839	Rainy
20/08/13	205168	3.6650	3.8039	0.1389	2412.31	2436.34	24.03	42	42	42.0	1714.74	81.0034	Sunny
26/08/13	205154	3.6432	3.7488	0.1056	2436.34	2460.17	23.83	42	42	42.0	1700.47	62.1004	Sunny
31/08/13	205175	3.6640	3.7294	0.0654	2460.17	2484.18	24.01	42	42	42.0	1713.32	38.1716	Cloudy



## CERTIFICATE OF ANALYSIS

<i>Client</i>	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	<i>Laboratory</i>	: ALS Technichem HK Pty Ltd	<i>Page</i>	: 1 of 2
<i>Contact</i>	: MR SAM WONG	<i>Contact</i>	: Fung Lim Chee, Richard	<i>Work Order</i>	: <b>HK1323940</b>
<i>Address</i>	: RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG	<i>Address</i>	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
<i>E-mail</i>	: sam.wong@eno.com.hk	<i>E-mail</i>	: Richard.Fung@alsglobal.com		
<i>Telephone</i>	: +852 22421020	<i>Telephone</i>	: +852 2610 1044		
<i>Facsimile</i>	: +852 27143612	<i>Facsimile</i>	: +852 2610 2021		
<i>Project</i>	: ---	<i>Quote number</i>	: ---	<i>Date received</i>	: <b>02-AUG-2013</b>
<i>Order number</i>	: ---			<i>Date of issue</i>	: <b>06-SEP-2013</b>
<i>C-O-C number</i>	: ---			<i>No. of samples</i>	- <i>Received</i> : <b>24</b>
<i>Site</i>	: ---				- <i>Analysed</i> : <b>24</b>

### Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1323940 supersedes any previous reports with this reference. The completion date of analysis is 05-SEP-2013. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1323940 :  
Sample(s) were received in an ambient condition.  
Sample(s) analysed and reported on an as received basis.

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*Signatory*  
**Fung Lim Chee, Richard**

*Position*  
**General Manager**

*Authorised results for:-*  
**Inorganics**



**Analytical Results**

Sub-Matrix: FILTER (TSP/RSP)

			<i>Compound</i>	<i>HK-TSP: Total Suspended Particulates</i>	<i>HK-TSP: Initial Weight</i>	<i>HK-TSP: Final Weight</i>		
			<i>LOR Unit</i>	0.0010 g	0.0010 g	0.0010 g		
<i>Client sample ID</i>	<i>Client sampling date / time</i>	<i>Laboratory sample ID</i>		EA/ED: Physical and Aggregate Properties	EA/ED: Physical and Aggregate Properties	EA/ED: Physical and Aggregate Properties		
205152	[02-AUG-2013]	HK1323940-001		0.0453	3.6704	3.7157		
205153	[02-AUG-2013]	HK1323940-002		0.0408	3.6420	3.6828		
205155	[02-AUG-2013]	HK1323940-003		0.0455	3.6477	3.6932		
205156	[02-AUG-2013]	HK1323940-004		0.0736	3.6595	3.7331		
205157	[08-AUG-2013]	HK1323940-005		0.0803	3.6588	3.7391		
205158	[08-AUG-2013]	HK1323940-006		0.0412	3.6691	3.7103		
205159	[08-AUG-2013]	HK1323940-007		0.0499	3.6613	3.7112		
205160	[08-AUG-2013]	HK1323940-008		0.1494	3.6574	3.8068		
205161	[14-AUG-2013]	HK1323940-009		0.0679	3.6573	3.7252		
205162	[14-AUG-2013]	HK1323940-010		0.0603	3.6556	3.7159		
205163	[14-AUG-2013]	HK1323940-011		0.0742	3.6521	3.7263		
205164	[14-AUG-2013]	HK1323940-012		0.0497	3.6668	3.7165		
205165	[20-AUG-2013]	HK1323940-013		0.0903	3.6643	3.7546		
205166	[20-AUG-2013]	HK1323940-014		0.0983	3.6581	3.7564		
205167	[20-AUG-2013]	HK1323940-015		0.0520	3.6661	3.7181		
205168	[20-AUG-2013]	HK1323940-016		0.1389	3.6650	3.8039		
205169	[26-AUG-2013]	HK1323940-017		0.0259	3.6524	3.6783		
205170	[26-AUG-2013]	HK1323940-018		0.0438	3.6512	3.6950		
205171	[26-AUG-2013]	HK1323940-019		0.0234	3.6784	3.7018		
205154	[26-AUG-2013]	HK1323940-020		0.1056	3.6432	3.7488		
205172	[31-AUG-2013]	HK1323940-021		0.0371	3.6609	3.6980		
205173	[31-AUG-2013]	HK1323940-022		0.0359	3.6673	3.7032		
205175	[31-AUG-2013]	HK1323940-023		0.0654	3.6640	3.7294		
205134	[31-AUG-2013]	HK1323940-024		0.1414	3.7042	3.8456		



