

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

January 2013

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EXECUTIVE SUMMARY

This is the fifth 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 1st of January 2013 to 31st January 2013. The major site activities in this reporting period were mainly tree retain, transplant and felling, stream course diversion works, soil nail works and ELS works.

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

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

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

Impact monitoring for 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 3 numbers of Limit Level exceedance were recorded in this reporting period. For the non-compliance events, no particular observation of defective site activities causing water contamination was found and the exceedance records were believed to be mainly caused by other construction site activities outside this project site.

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 fifth 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 1st January 2013 to 31st January 2013. This report included the noise monitoring, water quality monitoring, air quality monitoring and regular site inspections for verification of implementation of the mitigation measures as recommended in the Environmental Permit (FEP-02/428/2011/A) (EP), PS and the Contractor's Environmental Management Plan (EMP).

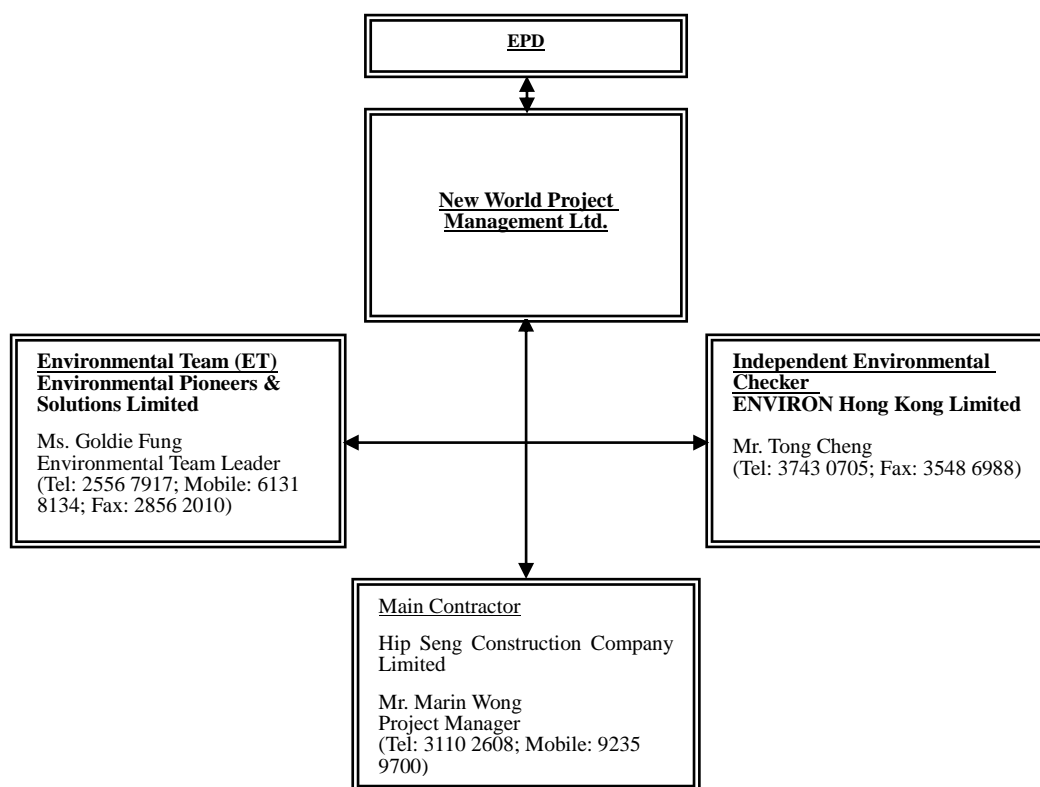
2 Project Information

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

3 Project Organization

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

The Environmental management structure is shown in Fig. 3.1



3.1 Key personal contact information chart

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

4 Construction Stage

4.1 Construction Activities in Reporting Period

Major activities in the reporting period included the followings:

- Tree retain, transplant and felling
- Stream course diversion works
 - Excavation of Box Culvert Area
 - Excavation of Concrete Pipe Area
 - Excavation of Temporary U Channel at Zone B2
 - Concreting Works of Box Culvert
 - Concrete Pipe Installation
 - Concrete Bedding of Concrete Pipe
 - Manhole Construction
 - Concrete Bedding of Temporary U Channel at Zone B2
 - Temporary stream diversion works
- Soil nail works
 - Survey checking and setting out works
 - Excavation of soil nail area
- ELS works
 - Survey checking and setting of monitoring checking point
 - Delivery stockpile outside site

4.2 Construction Activities for Coming Months

Proposed key construction works in the coming month will include:

- Site Clearance for Stream Course Diversion Works
- Excavation at Zone B2 & B3 and Zone Type I Soil Nail Area
- Construction of Manhole S5B, S5A, S5, S4A, S4, S3A1, S2 & Sand Trap at Zone B1
- Box Culvert Construction of outlet, Bay 8 & 12 at Zone A1
- Transplant Trees
- Drilling hole for soil nail
- Soil Nail Construction
- Open Excavation
- Sheet Pile Installation
- Pre-boring work

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 5ms^{-1} or wind with gust exceeding 10ms^{-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	Svantek 949	IEC 651 Type 1	2
	Svantek 955	IEC 804 Type 1	
Acoustical calibrator	Svantek SV30A	IEC 942 Type 1	1
Remarks: Calibration details of the sound level meter and acoustical calibrator are given in Appendix C 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.

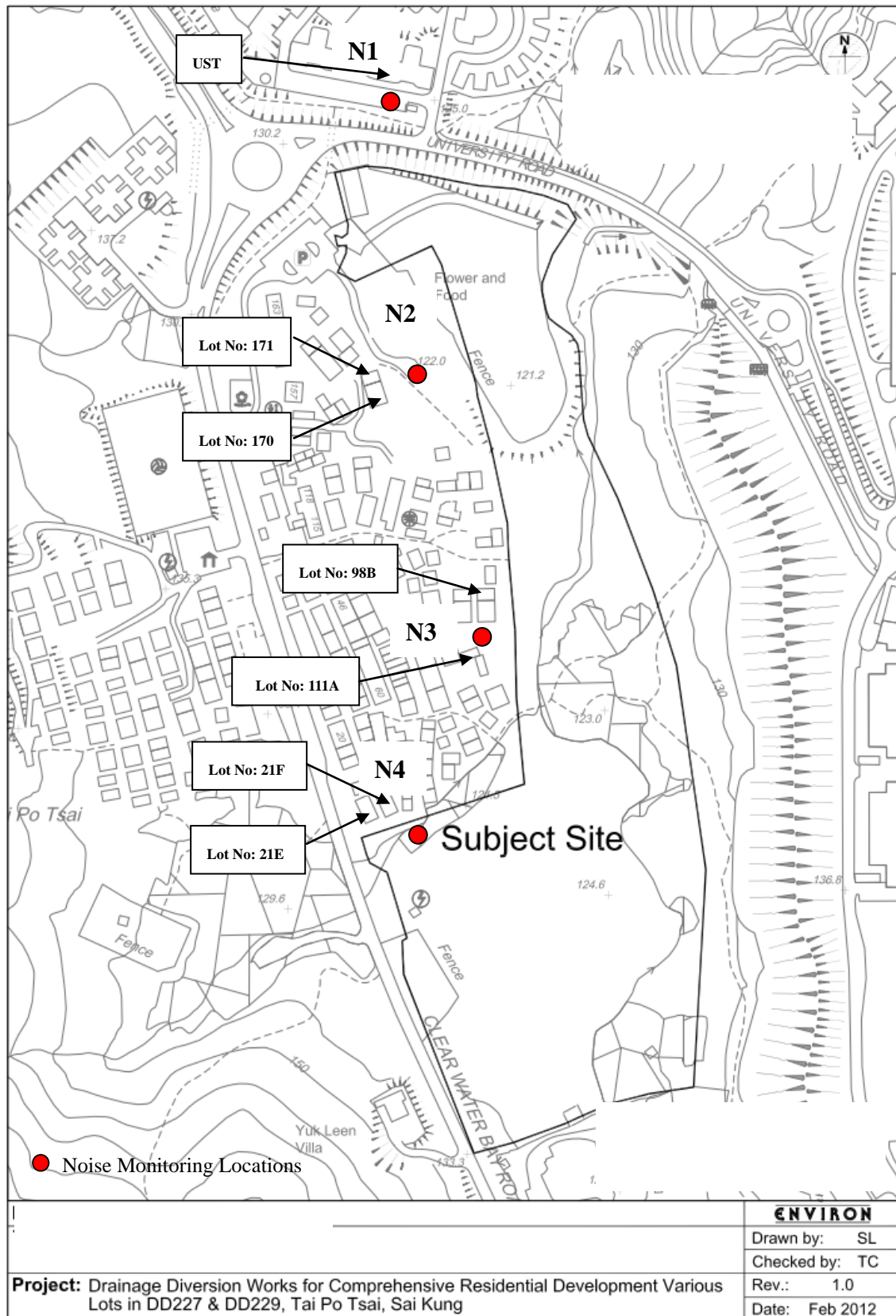


Figure 5.3.1 Impact noise monitoring locations

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 3rd, 9th, 14th, 19th, 25th and 31st of January 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 61.5dB (A) and 67.2dB (A), N2 ranged between 58.9dB (A) and 63.3dB (A), N3 ranged between 60.2dB (A) and 63.1dB (A) and N4 ranged between 61.0dB (A) and 66.7dB (A) were within the limit levels and therefore no exceedance was found.

Location	Parameter	Date	Time	L _{Aeq} dB(A)	Limit dB(A)	Exceedance	Weather
*N1	Leq30min	3-Jan-13	14:02	61.5	75	N	Overcast
*N1	Leq30min	9-Jan-13	13:29	63.5	75	N	Cloudy
*N1	Leq30min	14-Jan-13	13:40	64.9	75	N	Cloudy
*N1	Leq30min	19-Jan-13	13:37	67.2	75	N	Cloudy
*N1	Leq30min	25-Jan-13	13:45	66.3	75	N	Sunny
*N1	Leq30min	31-Jan-13	13:42	64.1	75	N	Cloudy
*N2	Leq30min	3-Jan-13	11:30	59.8	75	N	Overcast
*N2	Leq30min	9-Jan-13	14:02	58.9	75	N	Cloudy
*N2	Leq30min	14-Jan-13	13:02	61.7	75	N	Cloudy
*N2	Leq30min	19-Jan-13	13:02	63.3	75	N	Cloudy
*N2	Leq30min	25-Jan-13	13:08	61.2	75	N	Sunny
*N2	Leq30min	31-Jan-13	13:08	60.2	75	N	Cloudy
*N3	Leq30min	3-Jan-13	9:53	63.0	75	N	Overcast
*N3	Leq30min	9-Jan-13	10:17	60.2	75	N	Cloudy
*N3	Leq30min	14-Jan-13	10:01	62.8	75	N	Cloudy
*N3	Leq30min	19-Jan-13	9:42	63.1	75	N	Cloudy
*N3	Leq30min	25-Jan-13	10:35	62.1	75	N	Sunny
*N3	Leq30min	31-Jan-13	10:26	60.4	75	N	Cloudy

N4	Leq30min	3-Jan-13	10:27	61.0	75	N	Overcast
N4	Leq30min	9-Jan-13	10:51	61.1	75	N	Cloudy
N4	Leq30min	14-Jan-13	10:37	66.7	75	N	Cloudy
N4	Leq30min	19-Jan-13	10:15	62.1	75	N	Cloudy
N4	Leq30min	25-Jan-13	10:01	65.5	75	N	Sunny
N4	Leq30min	31-Jan-13	9:50	64.7	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.

Table 5.6.1 Action and Limit Levels for Construction Noise at All Sensitive Receivers		
Time Period	Action	Limit
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"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform ER, IEC and Contractor. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET. 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice. 2. Amend working methods if appropriate.

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

Noise monitoring schedule is proposed to be carried out on 6th, 14th, 20th and 26th of February 2013.

6 Water Monitoring

6.1 Water Quality Monitoring Parameters and Methodology

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

6.2 Monitoring Equipment

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

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

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

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

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

Since water depths for all monitoring stations were less than 0.5m during the impact measurement period, only mid-depth level was monitored. The monitoring parameters and measurement methods of water quality monitoring are summarized in Table 6.2.1.

Table 6.2.1 – Water Quality Monitoring Parameters and Measurement Methods	
Parameter	Measurement Method
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.

Table 6.3.1 – Water Quality Monitoring Locations		
Monitoring Station	Coordinates	
	Easting	Northing
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 2nd, 4th, 8th, 10th, 11th, 12th, 14th, 15th, 17th, 19th, 22nd, 24th, 26th, 29th and 31st of January 2013.

6.5 Monitoring Results and Interpretation

Water quality monitoring was carried out fifteen 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 3 numbers of Limit Level exceedance (Turbidity & SS) were record in this reporting period as shown in table 6.5.2. ET has arranged site investigations for the abnormal incidents on 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 other construction activities of other project site. Therefore, the exceedances 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	20.7	2.1	7.89	10.56	119.3	3.71
W2	20.7	8.9	7.63	9.74	110.8	5.71

Table 6.5.2 3 numbers of Limit Level exceedance during the reporting month

Date	Location	Parameter		Interpretations
		Turbidity (NTU)	SS (mg/l)	
10/1/2013	W1	1.0	2.0	Exceedances were caused by other construction activities
	W2	47.0	26.0	
11/1/2013	W1	0.4	8.0	Exceedances were caused by other construction activities
	W2	20.0	6.0	
12/1/2013	W1	1.8	3.0	Exceedances were caused by other construction activities
	W2	19.0	4.0	

6.6 Action and Limit Level for Water Quality

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

Total 3 numbers of Limit Level exceedance were recorded during the reporting period. The repeated measurements were carried out on the 11th, 12th & 14th Jan 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 relate to the project.

Table 6.6.1 Action and Limit Levels for Water Quality at All Monitoring Stations		
Parameters	Action	Limit
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

Table 6.6.2 Action and Limit Levels for Water Quality at All Monitoring Stations		
Parameters	Monitoring Stations	
	W2	
	Action Level	Limit Level
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
ACTION LEVEL				
Exceedance for one sample day	<ol style="list-style-type: none"> 1. Repeat in-site measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform IEC and Contractor. 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC and Contractor. 6. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC on the proposed mitigation measures. 2. Make agreement on mitigation measures to be implemented. 3. Assess effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET, IEC and propose mitigation measures to IEC and ER. 6. Implement the agreed mitigation measures.

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

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

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

6.7 Monitoring Schedule for Next Reporting Period

Water quality monitoring schedule is proposed to be carried out on 2nd, 5th, 7th, 9th, 14th, 16th, 19th, 21st, 23rd, 26th and 28th of February 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	SIBATA/LD-3B	1-hr TSP	2
High Volume Sampler	TE-5025A	24-hrs TSP	4

7.3 Monitoring Locations

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

Table 7.3.1 Air Quality Monitoring Locations

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

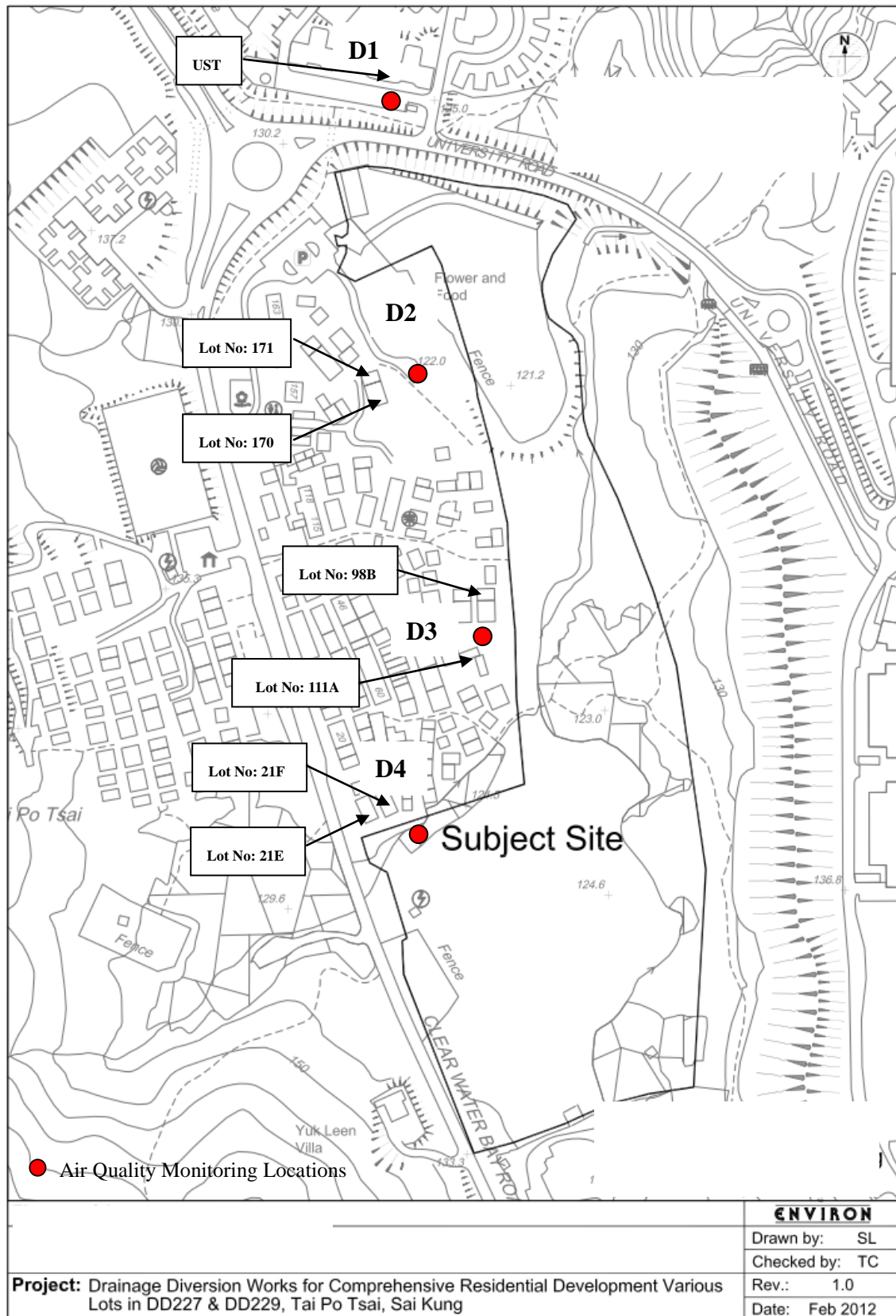


Figure 7.3.1 Air Quality Monitoring Locations

7.4 Monitoring Frequency

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

Monitoring was carried out on 3rd, 9th, 14th, 19th, 25th and 31st of January 2013.

7.5 Monitoring Results and Interpretation

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

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

Location	Range (µg/m ³) (Min – Max)	Average (µg/m ³)
D1	66-134	98.2
D2	52-134	87.6
D3	61-147	116.9
D4	77-143	103.3

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

Location	Range (µg/m ³) (Min – Max)	Average (µg/m ³)
D1	78.5-107.9	96.7
D2	69.5-102.0	88.9
D3	79.6-108.2	93.9
D4	86.5-130.9	101.3

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

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

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

1-hr TSP and 24-hrs TSP monitoring schedule is proposed to be carried out on 6th, 14th, 20th and 26th of February 2013.

8 Ecology

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

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

9 Action Taken in Event of Exceedance

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

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

For water quality monitoring, total 3 numbers of Limit Level exceedance (Turbidity & SS) were record in this reporting month in accordance with the established level. ET has arranged site investigations for the exceedance on 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 other construction activities of other project site. Therefore, the exceedances 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'000m3)	(in'000m3)	(in'000m3)	(in'000m3)	(in'000m3)	(in'000m3)	(in'000kg)	(in'000kg)	(in'000kg)	(in'000kg)	(in'000kg)
Year 2012	3.9	0	0	0	3.9	0	0	0	0	0	36.66
Jan 2013	26.44	0	0	0	26.44	0	0	0	0	0	0
Total	3.9	0	0	0	30.34	0	0	0	0	0	36.66
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'000m3)	(in'000m3)	(in'000m3)	(in'000m3)	(in'000m3)	(in'000m3)	(in'000kg)	(in'000kg)	(in'000kg)	(in'000kg)	(in'000kg)
	348000	1000	108000	0	239000	0	0	0	0	0	240

11 Status of Permits and Licenses

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

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

12 Compliant Log

There was 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
Total	0	0	0	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 2nd, 10th, 19th, 23rd and 31st of January 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
12, 19 & 24 Dec 12 2 Jan 13	Reminder	Boulder breaking activities were observed.	Contractor was reminded that noise barriers should be provided adequately and located properly.	Boulder breaking activities have been completed.	10 Jan 13	N/A
24 Dec 12	Observation	Damaged tarpaulin sheets were observed.	Contractor was reminded to replace the tarpaulin sheets and covered	Damaged tarpaulin sheets were replaced by contractor.	2 Jan 13	N/A

Date	Findings	Identification	Advice from ET	Action taken	Closing date	Remarks
			properly.			
2, 10 & 19 Jan 13	Observation	Open stockpile was not covered with tarpaulin sheets.	Contractor was reminded to provide the tarpaulin sheets for dust suppression.	Open stockpile was covered with tarpaulin sheets.	23 Jan 13	N/A
23 & 31 Jan 13	Observation	Haul road was dry and dusty.	Contractor was reminded that routine water spraying should be implemented for dust suppression.	To be followed during next reporting period.	N/A	N/A

13.2 Compliance with Legal and Contractual Requirement

There was no non-compliance recorded for the month of January 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.

Conclusions

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

Regular site meetings and inspection audits led by the seniors for discussing site environmental matters were held among Contractor and the ET on weekly basis. Also monthly site meeting and inspection audits with the above parties and IEC were carried out on 23rd Jan 2013.

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

Impact monitoring for water quality was conducted. Total 3 numbers of Limit Level 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 other construction activities of other project site. 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

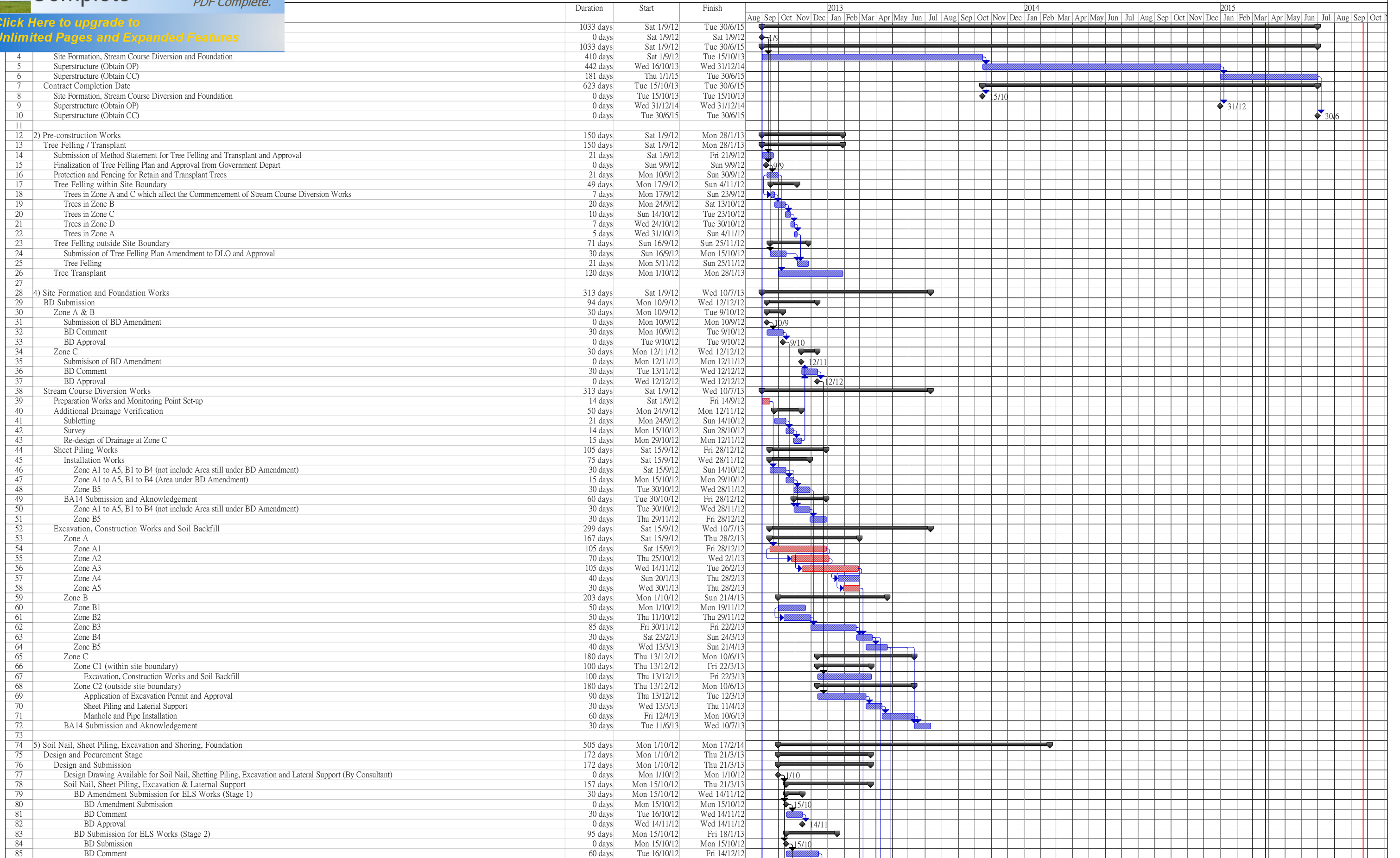


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Outline Works Programme

Updated: 27 Sept 2012
Rev. 1



Hip Seng Construction Co., Ltd.

- Task Summary Inactive Task
- Milestone Critical Inactive Task
- Inactive Milestone
- Manual Task
- Manual Summary Rollup
- Manual Summary
- Start-only
- Duration-only
- Finish-only

* All public holidays are excluded

Appendix B

Key Personal Contact Information Chart

Key Personal Contact Information Chart

Organization Name	Role	Name	Telephone	Fax Number
ENVIRON Hong Kong Limited	Independent Environmental Checker (IEC)	Mr. Tong Cheng	3743 0705	3548 6988
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. 21290

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. : Q20468

Date of receipt : 2-Mar-12

Item Tested

Description : Sound Level Calibrator

Manufacturer : Svantek

Model : SV30A

Serial No. : 7908

Test Conditions

Date of Test : 5-Mar-12

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : F21, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.

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

Main Test equipment used:


<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	13535	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	15136	NIM-PRC & SCL-HKSAR
S041	Universal Counter	15610	SCL-HKSAR
S206	Sound Level Meter	16338	SCL-HKSAR

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

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

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

Calibrated by : 
P. F. Wong

Approved by : 
Dorothy Cheuk

Date: 7-Mar-12



Calibration Certificate

Certificate No. 21290

Page 2 of 2 Pages

Results :

1. Level Accuracy

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	94.10	± 0.3 dB
114	114.18	

Uncertainty : ± 0.1 dB

2. Frequency

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

Uncertainty : ± 3.6 x 10⁻⁶

3. Level Stability : 0.0 dB

IEC 942 Class 1 Spec. : ± 0.1 dB

Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 0.8 %

IEC 942 Class 1 Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

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

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

4. Atmospheric Pressure : 1001 hPa.

----- END -----



Calibration Certificate

Certificate No. **21289**

Page 1 of 3 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. : Q20468

Date of receipt : 2-Mar-12

Item Tested

Description : Digital Sound Level Meter

Manufacturer : SVAN

Model : 949

Serial No. : 8571

Test Conditions

Date of Test : 5-Mar-12

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 651 Type 1 & IEC 804 Type 1 specification after adjustment.

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

Main Test equipment used:

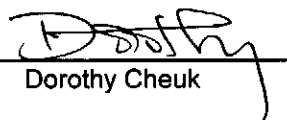
<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S017A	Multi-Function Generator	07279	SCL-HKSAR
S024	Sound Level Calibrator	15136	NIM-PRC & SCL-HKSAR

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: 7-Mar-12

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. 21289

Page 2 of 3 Pages

Results :

1. SPL Accuracy

Level Range	UUT Setting			Applied Value (dB)	UUT Reading (dB)	
	Octave Filter	Weight	Response		Before adjust	After adjust
105 dB	OFF	A	Fast	94.0	*92.0	94.0
			Slow		--	94.0
		C	Fast		--	94.0
130 dB	OFF	A	Fast	94.0	--	94.0
			Slow		--	94.0
		C	Fast		--	94.0
	OFF	A	Fast	114.0	--	114.1
			Slow		--	114.1
		C	Fast		--	114.1

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (inside Primary)
130	114.0	114.0	0.0	± 0.7 dB
	104.0	104.0	0.0	
	94.0	94.0 (Ref.)	--	
105	84.0	84.0	0.0	
	74.0	74.0	0.0	
	64.0	64.0	0.0	
	54.0	54.0	0.0	

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 21289

Page 3 of 3 Pages

3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
130	84.0	84.0	0.0	± 0.4 dB
	94.0	94.0 (Ref.)	0.0	
	95.0	95.0	0.0	± 0.2 dB

Uncertainty : ± 0.1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-40.4	- 39.4 dB, ± 1.5 dB
63 Hz	-27.2	- 26.2 dB, ± 1.5 dB
125 Hz	-17.0	- 16.1 dB, ± 1 dB
250 Hz	-9.4	- 8.6 dB, ± 1 dB
500 Hz	-2.6	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref)	0 dB, ± 1 dB
2 kHz	+1.8	+ 1.2 dB, ± 1 dB
4 kHz	+1.8	+ 1.0 dB, ± 1 dB
8 kHz	-0.4	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	-6.3	- 6.6 dB, + 3 dB ~ -∞

Uncertainty : ± 0.1 dB

5. Time Averaging

Applied Burst duty Factor	Applied Leq. Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	50.0	--	--
1/10	50.0	50.2	± 0.5 dB
1/10 ²	50.0	49.8	
1/10 ³	50.0	50.1	± 1.0 dB
1/10 ⁴	50.0	49.9	

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test

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

3. Atmospheric Pressure : 1 001 hPa.

4. *Out of specification.

----- END -----

FACTORY CALIBRATION DATA OF THE SVAN 955 No. 27301

with preamplifier SVANTEK type SV12L No. 25734 and microphone ACO type 7052E No. 49607

1. CALIBRATION (electrical)

LEVEL METER; Characteristic: Z; $f_{sm}=1000\text{Hz}$

Nominal result [dB]	Indication [dB]	Error [dB]
114.0	114.0	0.0

2. CALIBRATION* (acoustical)

LEVEL METER; Range: High; Reference frequency: 1000Hz; Sound Pressure Level: 113.89 dB.

Characteristic	Correct value [dB]	Indication [dB]	Error [dB]
Z	113.63	113.56	-0.07
A	113.63	113.58	-0.05
C	113.63	113.58	-0.05

Calibration measured with the microphone ACO type 7052E No. 49607. Calibration factor: 1.16 dB.

3. LINEARITY TEST* (electrical)

LEVEL METER; Characteristic: A; $f_{sm}=31.5\text{ Hz}$

Nominal result [dB]	25.0	26.0	28.0	30.0	40.0	60.0	80.0	98.0
Error [dB]	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0

LEVEL METER; Characteristic: A; $f_{sm}=1000\text{ Hz}$

Nominal result [dB]	25.0	26.0	28.0	30.0	40.0	60.0	80.0	100.0	120.0	138.0
Error [dB]	0.1	0.1	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0

LEVEL METER; Characteristic: A; $f_{sm}=8000\text{ Hz}$

Nominal result [dB]	25.0	26.0	28.0	30.0	40.0	60.0	80.0	100.0	120.0	137.0
Error [dB]	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0

4. TONEBURST RESPONSE* (electrical)

LEVEL METER; Characteristic: A; $f_{sm}=4000\text{ Hz}$; Burst duration: 2s;

Steady level nominal result = 135dB

Result	Detector	Duration [ms]	1000	500	200	100	50	20	10	5	2	1	0.5	0.25
MAX	Fast	Indication [dB]	135.0	134.9	134.0	132.4	130.2	126.7	123.8	120.9	117.0	113.9	110.9	107.9
		Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.1
	Slow	Indication [dB]	132.9	130.9	127.5	124.7	121.8	117.9	114.9	111.9	107.9	-	-	-
		Error [dB]	-0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-	-	-
SEL	-	Indication [dB]	135.0	132.0	128.0	125.0	122.0	118.0	115.0	112.0	108.0	104.9	101.9	98.9
		Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1

Steady level nominal result = 55dB

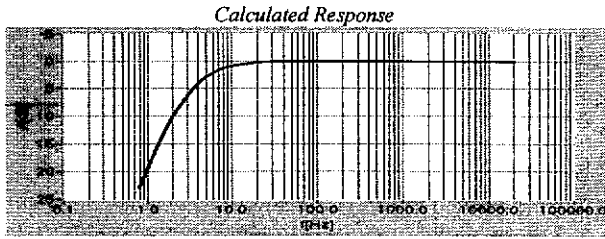
Result	Detector	Duration [ms]	1000	500	200	100	50	20	10	5	2
MAX	Fast	Indication [dB]	55.0	54.9	54.0	52.4	50.1	46.7	43.8	40.9	36.9
		Error [dB]	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	-0.1
	Slow	Indication [dB]	52.9	50.8	47.4	44.6	41.7	37.8	34.8	31.9	27.8
		Error [dB]	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.2
SEL	-	Indication [dB]	55.0	51.9	48.0	45.0	42.0	38.0	35.0	32.0	28.0
		Error [dB]	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Steady level nominal result = 35dB

Result	Detector	Duration [ms]	1000	500	200
MAX	Fast	Indication [dB]	35.0	34.9	34.0
		Error [dB]	0.0	-0.0	0.0
	Slow	Indication [dB]	32.9	30.8	27.4
		Error [dB]	-0.1	-0.1	-0.2
SEL	-	Indication [dB]	35.0	32.0	28.1
		Error [dB]	0.0	0.0	0.1

5. FREQUENCY RESPONSE* (electrical)

LEVEL METER; Characteristic: Z; Nominal result (1kHz)=135 dB;



Measured Response (f-frequency, A-attenuation)

f [Hz]	A [dB]	f [Hz]	A [dB]	f [Hz]	A [dB]
10	0.9	63	0.0	4000	0.0
12.5	0.6	125	0.0	8000	0.1
16	0.4	250	0.0	16000	0.0
20	0.3	500	0.0	20000	0.2
25	0.2	1000	0.0		
31.5	0.1	2000	0.0		

All frequencies are nominal center values for the 1/3 octave band

6. INTERNAL NOISE LEVEL* (electrical - compensated)

LEVEL METER; Backlight – off; Calibration factor: 0dB

Characteristic	Z	A	C
Indication [dB]	≤ 25	≤ 14	≤ 15

* measured with preamplifier SVANTEK type SV12L No. 25734.

7. INTERNAL NOISE LEVEL (acoustical - compensated)

LEVEL METER; Range: LOW; Backlight – off

Characteristic	A
Indication [dB]	<15

Noise measured in special chamber, with reference microphone G.R.A.S type 40AN No. 73421

ENVIRONMENTAL CONDITIONS

Temperature	Relative humidity	Ambient pressure
24.2 °C	14 %	1027 hPa

TEST EQUIPMENT

Item	Manufacturer	Model	Serial no.	Description
1.	SVANTEK	SVAN 401	87	Signal generator
2.	SVANTEK	SVAN 912A	6120	Sound & Vibration Analyser
3.	KEITHLEY	2000	0910165	Digital multimeter
4.	SVANTEK	SV30A	5369	Acoustic calibrator
5.	SVANTEK	ST02	-	Microphone equivalent electrical impedance (18pF)

CONFORMITY & TEST DECLARATION

1. Herewith Svantek company declares that this instrument has been calibrated and tested in compliance with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass them.
2. The acoustic calibration was performed using the Sound Calibrator and is traceable to the GUM (Central Office of Measures) reference standard - sound level calibrator type 4231 No 2292773.
3. The information appearing on this sheet has been compiled specifically for this instrument. This form is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.
4. This calibration sheet shall not be reproduced except in full, without written permission of the SVANTEK Ltd.

Calibration specialist: Anna Talecka 

Test date: 2012-01-31



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR ALLEN CHAN
CLIENT: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD
ADDRESS: FLAT 19A, CHAI WAN INDUSTRIAL CENTRE BUILDING,
20 LEE CHUNG STREET,
CHAI WAN,
HONG KONG.
PROJECT: --

WORK ORDER: HK1230632
LABORATORY: HONG KONG
DATE RECEIVED: 19/11/2012
DATE OF ISSUE: 20/11/2012

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Conductivity, Dissolved Oxygen, pH, Temperature and Turbidity
Description: Multi-meter
Brand Name: TOA-DKK
Model No.: WMS-24
Serial No.: 682337
Equipment No.: --
Date of Calibration: 20 November, 2012

NOTES

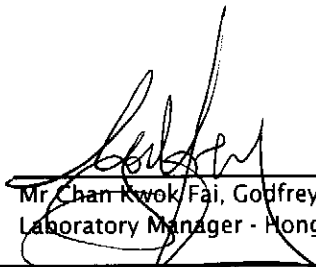
This is the Final Report and supersedes any preliminary report with this batch number. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

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


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

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Page 1 of 3

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1230632
Date of Issue: 20/11/2012
Client: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD



Description: Multi-meter
Brand Name: TOA-DKK
Model No.: WMS-24
Serial No.: 682337
Equipment No.: --

Date of Calibration: 20 November, 2012 **Date of next Calibration:** 20 February, 2013

Parameters:

Conductivity

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

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	152.0	3.5
6667	7030	5.4
12890	13600	5.5
58670	60400	2.9
Tolerance Limit (%)		10.0

Dissolved Oxygen

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.83	4.82	-0.01
6.76	6.65	-0.11
8.89	8.79	-0.10
Tolerance Limit (±mg/L)		0.20

pH Value

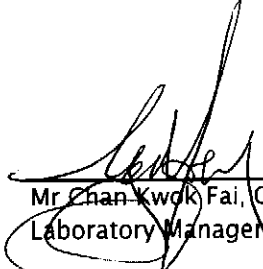
Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.01	0.01
7.0	7.02	0.02
10.0	10.07	0.07
Tolerance Limit (±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)
15.5	15.7	0.2
24.0	24.2	0.2
42.0	40.0	-2.0
Tolerance Limit (°C)		2.0


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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1230632
Date of Issue: 20/11/2012
Client: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD



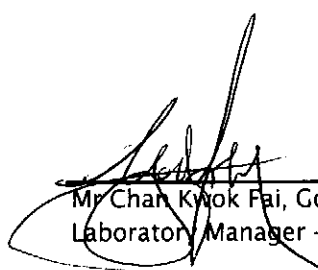
Description: Multi-meter
Brand Name: TOA-DKK
Model No.: WMS-24
Serial No.: 682337
Equipment No.: --
Date of Calibration: 20 November, 2012 **Date of next Calibration:** 20 February, 2013

Parameters:

Turbidity

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

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.0	--
4	3.8	-5.0
40	40.1	0.3
80	76.7	-4.1
400	392.6	-1.8
800	732.7	-8.4
	Tolerance Limit (±%)	10.0


Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong



Calibration Certificate

Certificate No. **28204**

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. : Q23005

Date of receipt : 28-Nov-12

Item Tested

Description : Laser Dust Monitor

Manufacturer : SIBATA

Model : LD-3B

Serial No. : 1Z5633

Test Conditions

Date of Test : 11-Dec-12 ~ 13-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

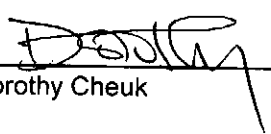
The results are shown in the attached page(s).

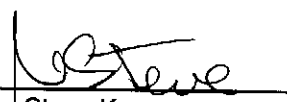
Main Test equipment used:

<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

Date: 19-Dec-12

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 8901 Fax: 2425 8646



Calibration Certificate

Certificate No. 28204

Page 2 of 2 Pages

Results :

Applied Value ($\mu\text{g}/\text{m}^3$)	UUT Measured Value ($K=1.0$) ($\mu\text{g}/\text{m}^3$), (cpm)
3192	3210

- 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 2.8

----- END -----



Calibration Certificate

Certificate No. **24181**

Page 1 of 2 Pages

Customer : Environmental Pioneers and Solutions Limited

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

Order No. : Q21644

Date of receipt : 3-Jul-12

Item Tested

Description : Laser Dust Monitor

Manufacturer : SIBATA

Model : LD-3B

Serial No. : 954254

Test Conditions

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

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

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

Test Results

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

Main Test equipment used:

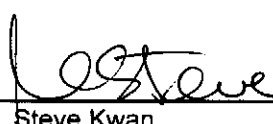
<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S136B	Stop Watch	13184	NIM-PRC
S156	Analytical Balance	00352	NIM-PRC
S201	Std. Test Dust	61291	NIST
S207B	Std. Flowmeter	20588	NIM-PRC

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

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

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

Calibrated by : 
Dorothy Cheuk

Approved by : 
Steve Kwan

Date: 23-Jul-12



Calibration Certificate

Certificate No. 24181

Page 2 of 2 Pages

Results :

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

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

----- END -----



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE.
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 513.467.9009 FAX
 WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

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

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

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0018	0.7085	1.4185	0.9957	0.7042	0.8829
0.9976	1.0016	2.0061	0.9915	0.9955	1.2486
0.9955	1.1173	2.2429	0.9894	1.1105	1.3959
0.9945	1.1686	2.3524	0.9884	1.1615	1.4641
0.9890	1.4088	2.8371	0.9830	1.4003	1.7657
Qstd slope (m) = 2.02742			Qa slope (m) = 1.26953		
intercept (b) = -0.02027			intercept (b) = -0.01262		
coefficient (r) = 0.99996			coefficient (r) = 0.99996		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

$$Qstd = Vstd/Time$$

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

$$Qa = Va/Time$$

For subsequent flow rate calculations:

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

$$Qa = 1/m\{[\text{SQRT} H2O(Ta/Pa)] - b\}$$

TSP Sampler Calibration

SITE

Location: **Tai Po Tsai** Date: **December 31, 2012**
Sampler: **TE-5170 MFC (Serial # : 2039)** Tech: **Sam Wong**

CONDITIONS

Barometric Pressure (in Hg):	40.28	Corrected Pressure (mm Hg):	1023
Temperature (deg F):	48	Temperature (deg K):	282
Average Press. (in Hg):	40.28	Corrected Average (mm Hg):	1023
Average Temp. (deg F):	48	Average Temp. (deg K):	282

CALIBRATION ORIFICE

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

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
1	11.90	2.040	59.0	70.38	Slope = 33.4033
2	10.20	1.889	54.0	64.42	Intercept = 1.7899
3	8.00	1.674	48.0	57.26	Corr. coeff.= 0.9991
4	5.20	1.352	40.0	47.72	
5	3.20	1.063	31.0	36.98	# of Observations: 5

Calculations

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

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

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

TSP Sampler Calibration

SITE

Location: **Tai Po Tsai** Date: **December 31, 2012**
 Sampler: **TE-5170 MFC (Serial # : 1959)** Tech: **Sam Wong**

CONDITIONS

Barometric Pressure (in Hg):	40.28	Corrected Pressure (mm Hg):	1023
Temperature (deg F):	48	Temperature (deg K):	282
Average Press. (in Hg):	40.28	Corrected Average (mm Hg):	1023
Average Temp. (deg F):	48	Average Temp. (deg K):	282

CALIBRATION ORIFICE

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

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
1	12.40	2.082	60.0	71.58	Slope = 34.8414 Intercept = -1.8511 Corr. coeff.= 0.9984
2	10.60	1.926	54.0	64.42	
3	8.20	1.695	48.0	57.26	
4	5.40	1.377	38.0	45.33	
5	3.40	1.095	31.0	36.98	
					# of Observations: 5

Calculations

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

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

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

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

TSP Sampler Calibration

SITE

Location: **Tai Po Tsai** Date: **December 31, 2012**
 Sampler: **TE-5170 MFC (Serial # : 2042)** Tech: **Sam Wong**

CONDITIONS

Barometric Pressure (in Hg):	40.28	Corrected Pressure (mm Hg):	1023
Temperature (deg F):	48	Temperature (deg K):	282
Average Press. (in Hg):	40.28	Corrected Average (mm Hg):	1023
Average Temp. (deg F):	48	Average Temp. (deg K):	282

CALIBRATION ORIFICE

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

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
1	12.40	2.082	58.0	69.19	Slope = 32.6158
2	10.20	1.889	52.0	62.03	Intercept = 0.7018
3	8.00	1.674	46.0	54.88	Corr. coeff.= 0.9994
4	5.40	1.377	38.0	45.33	
5	3.20	1.063	30.0	35.79	# of Observations: 5

Calculations

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

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

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

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

TSP Sampler Calibration

SITE

Location: **Tai Po Tsai** Date: **December 31, 2012**
 Sampler: **TE-5170 MFC (Serial # : 2040)** Tech: **Sam Wong**

CONDITIONS

Barometric Pressure (in Hg): **40.28** Corrected Pressure (mm Hg): **1023**
 Temperature (deg F): **48** Temperature (deg K): **282**
 Average Press. (in Hg): **40.28** Corrected Average (mm Hg): **1023**
 Average Temp. (deg F): **48** Average Temp. (deg K): **282**

CALIBRATION ORIFICE

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

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
1	12.20	2.065	57.0	68.00	Slope = 30.4947 Intercept = 4.8672 Corr. coeff.= 0.9996 # of Observations: 5
2	10.20	1.889	52.0	62.03	
3	8.00	1.674	47.0	56.07	
4	5.20	1.352	39.0	46.53	
5	3.20	1.063	31.0	36.98	

Calculations

$Q_{std} = 1/m[\text{sqrt}(H_2O(P_a/P_{std}))(T_{std}/T_a)] - b]$
 $IC = I[\text{sqrt}(P_a/P_{std})(T_{std}/T_a)]$

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

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

Appendix D

Construction Noise Monitoring Data

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

Noise Monitoring Data Sheet

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		3/1/2013	3/1/2013	3/1/2013	3/1/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		14:02	11:30	9:53	10:27
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, North	<5, North	<5, North	<5, North
Measurement Results	L _{eq} (dB(A))	61.5	59.8	63.0	61.0
	L ₁₀ (dB(A))	64.4	62.6	65.6	64.3
	L ₉₀ (dB(A))	55.9	55.4	59.2	54.1
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



3/1/2013

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

Noise Monitoring Data Sheet

Monitoring Location		N1	N2	N3	N4
Monitoring Method		Freefield	Freefield	Freefield	Façade
Date of Monitoring		9/1/2013	9/1/2013	9/1/2013	9/1/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		13:29	14:02	10:17	10:51
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, Northeast	<5, Northeast	<5, Northeast	<5, Northeast
Measurement Results	L _{eq} (dB(A))	63.5	58.9	60.2	61.1
	L ₁₀ (dB(A))	64.9	60.2	61.5	64.1
	L ₉₀ (dB(A))	59.1	56.0	58.4	53.6
Major Construction Noise Source(s) During Monitoring		Nil	Nil	Nil	Nil
Other Noise Source(s) During Monitoring		Background noise	Background noise	Background noise	Background noise Traffic noise

Name

Signature

Date

Prepared by: Lai Chi Hang



9/1/2013

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		14/1/2013	14/1/2013	14/1/2013	14/1/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		13:40	13:02	10:01	10:37
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 _{eq} (dB(A))	64.9	61.7	62.8	66.7
	L ₁₀ (dB(A))	66.9	63.3	64.4	68.1
	L ₉₀ (dB(A))	58.8	57.8	59.3	61.3
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



14/1/2013

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		19/1/2013	19/1/2013	19/1/2013	19/1/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		13:37	13:02	9:42	10:15
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, Northeast	<5, Northeast	<5, Northeast	<5, Northeast
Measurement Results	L _{eq} (dB(A))	67.2	63.3	63.1	62.1
	L ₁₀ (dB(A))	69.1	65.7	64.9	64.9
	L ₉₀ (dB(A))	59.4	59.8	51.3	52.2
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



19/1/2013

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		25/1/2013	25/1/2013	25/1/2013	25/1/2013
Weather Condition		Sunny	Sunny	Sunny	Sunny
Measurement Start Time (hh:mm)		13:45	13:08	10:35	10:01
Measurement Time Length (mins)		30 mins		30 mins	
SLM Model & S/N		SVAN 955		SVAN 955	
Wind Speed (m/s)		<5, East	<5, East	<5, East	<5, Northeast
Measurement Results	L _{eq} (dB(A))	66.3	61.2	62.1	65.5
	L ₁₀ (dB(A))	67.8	64.2	63.7	67.1
	L ₉₀ (dB(A))	59.2	57.7	58.1	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: Andy Tsang



25/1/2013

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		31/1/2013	31/1/2013	31/1/2013	31/1/2013
Weather Condition		Cloudy	Cloudy	Cloudy	Cloudy
Measurement Start Time (hh:mm)		13:42	13:08	10:26	9:50
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 _{eq} (dB(A))	64.1	60.2	60.4	64.7
	L ₁₀ (dB(A))	65.2	61.7	62.2	65.5
	L ₉₀ (dB(A))	57.2	56.3	57.0	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

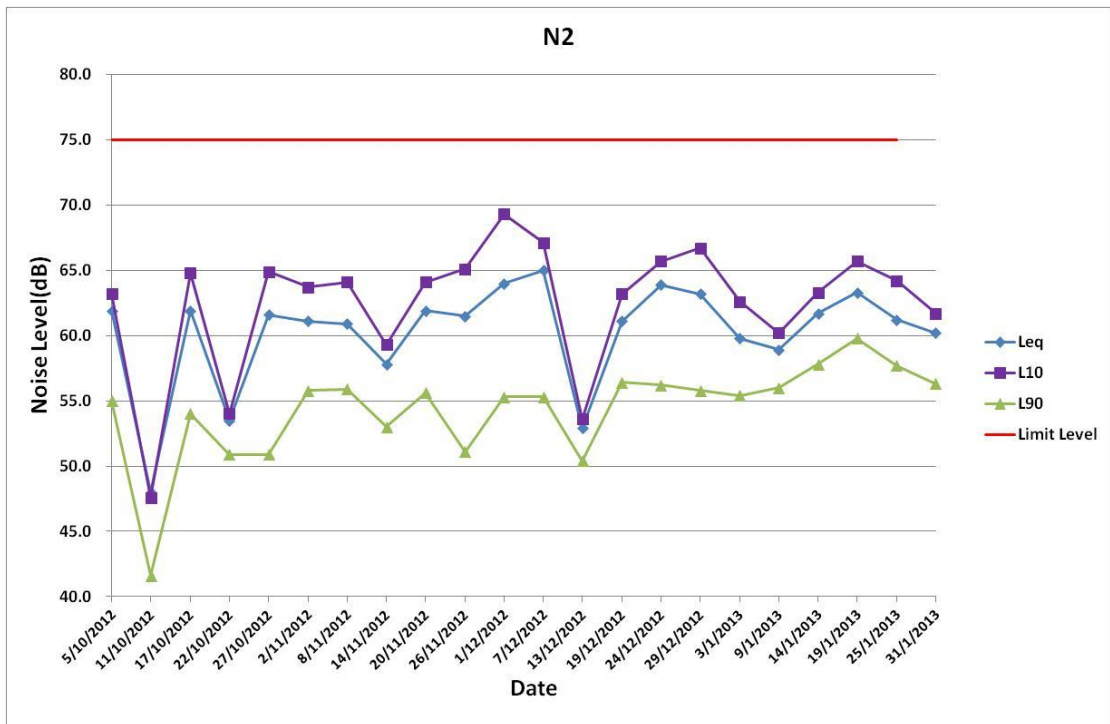
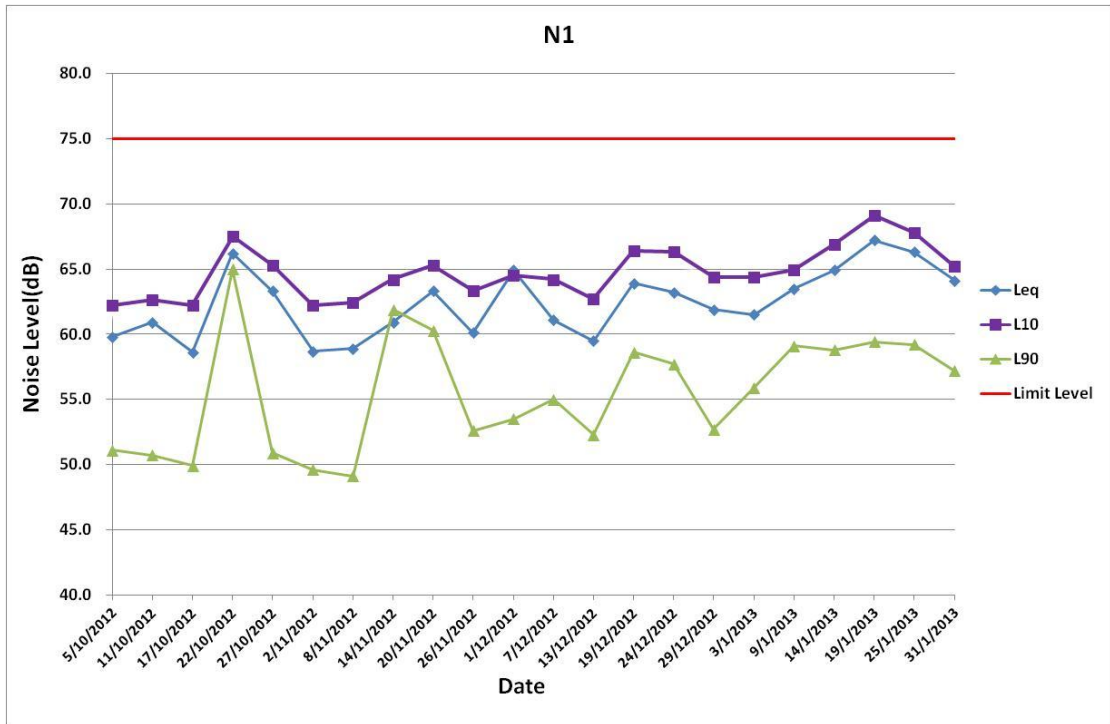
Signature

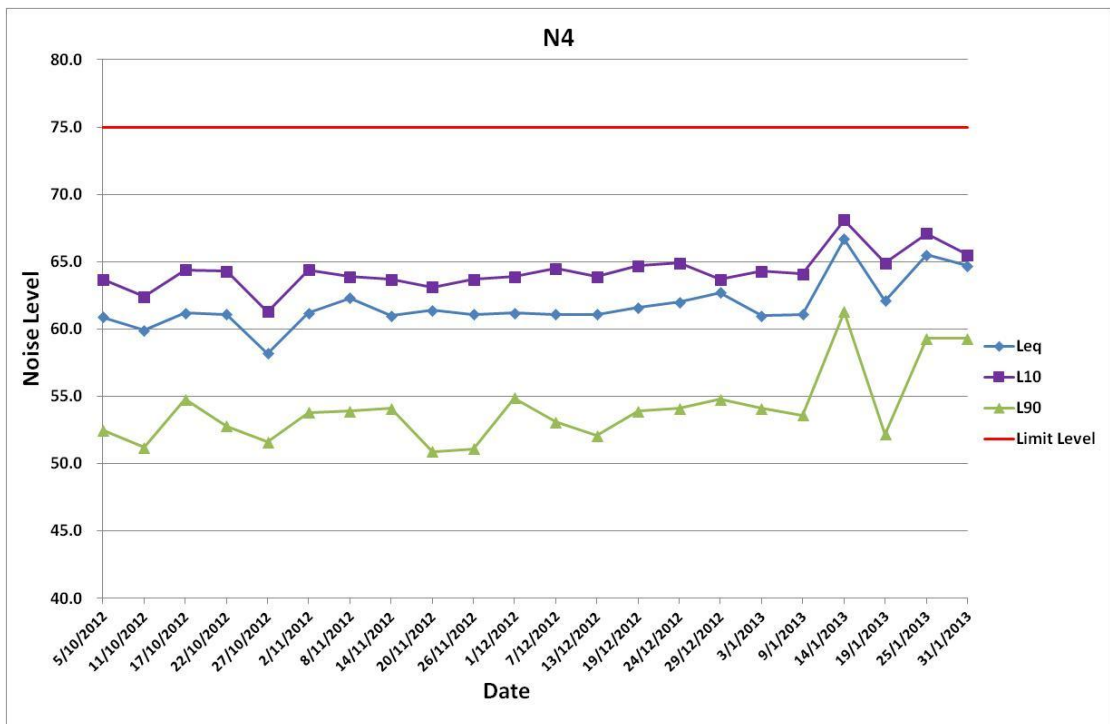
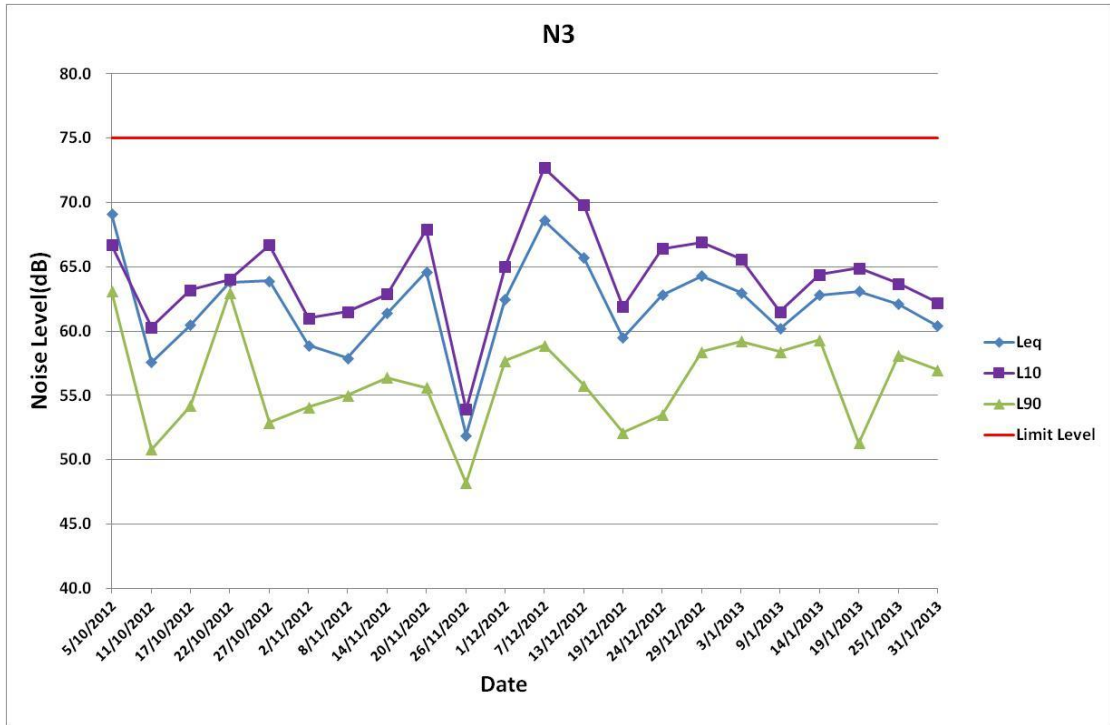
Date

Prepared by: Andy Tsang



31/1/2013





Appendix E

Water Quality Monitoring Data

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

Date of Sampling : 2/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.20	7.20
Temperature (°C)	20.1	20.1
Turbidity (NTU)	1.0	4.1
DO (mg/L)	7.30	7.80
DO Saturation (%)	85%	90%
Suspended Solids (mg/L)	4.0	4.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



2/1/2013

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

Date of Sampling : 4/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	11:00	11:30
Water Depth (m)	<1	<1
pH value	7.20	7.10
Temperature (°C)	19.2	19.2
Turbidity (NTU)	2.0	3.5
DO (mg/L)	6.90	8.10
DO Saturation (%)	75%	92%
Suspended Solids (mg/L)	8.0	3.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



4/1/2013


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

Date of Sampling : 8/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.10	7.20
Temperature (°C)	20.3	20.1
Turbidity (NTU)	1.20	5.1
DO (mg/L)	8.10	8.30
DO Saturation (%)	90%	95%
Suspended Solids (mg/L)	8.0	8.0

Remark or Observation : _____

<u>Name</u>	<u>Signature</u>	<u>Date</u>
Prepared By : <u>Tsang King Yeun</u>	<u></u>	<u>8/1/2013</u>

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

Date of Sampling : 10/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.20	7.20
Temperature (°C)	19.5	19.5
Turbidity (NTU)	1.0	47.0
DO (mg/L)	9.90	9.40
DO Saturation (%)	101%	100%
Suspended Solids (mg/L)	2.0	26.0

Remark or Observation : Turbid water was observed at W2

During the site inspection, it was found that the muddy water outside the site boundary was
entering into the project site and caused the exceedance at W2

Name

Signature

Date

Prepared By : Tsang King Yeun



10/1/2013

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

Date of Sampling : 11/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.40	7.62
Temperature (°C)	20.1	21.2
Turbidity (NTU)	0.4	20.0
DO (mg/L)	9.80	10.94
DO Saturation (%)	100%	114%
Suspended Solids (mg/L)	8.0	6.0

Remark or Observation : Turbid water was observed at W2


During the site inspection, it was found that the muddy water outside the site boundary was
entering into the project site and caused the exceedance at W2

Name

Signature

Date

Prepared By : Tsang King Yeun



11/1/2013

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

Date of Sampling : 12/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.10	7.71
Temperature (°C)	19.79	19.16
Turbidity (NTU)	1.8	19.0
DO (mg/L)	12.67	10.94
DO Saturation (%)	143%	122%
Suspended Solids (mg/L)	3.0	4.0

Remark or Observation : Turbid water was observed at W2

During the site inspection, it was found that the muddy water outside the site boundary was
entering into the project site and caused the exceedance at W2

Name

Signature

Date

Prepared By : Tsang King Yeun



12/1/2013

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

Date of Sampling : 14/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	7.96	7.54
Temperature (°C)	19.6	18.9
Turbidity (NTU)	2.2	4.2
DO (mg/L)	10.10	8.45
DO Saturation (%)	113%	94%
Suspended Solids (mg/L)	N/A	N/A

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



14/1/2013

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

Date of Sampling : 15/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.06	7.74
Temperature (°C)	19.38	18.83
Turbidity (NTU)	1.8	3.8
DO (mg/L)	12.19	8.65
DO Saturation (%)	136%	96%
Suspended Solids (mg/L)	2.0	6.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



15/1/2013

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

Date of Sampling : 17/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.59	7.99
Temperature (°C)	20.3	19.96
Turbidity (NTU)	1.4	4.1
DO (mg/L)	13.44	14.05
DO Saturation (%)	153%	159%
Suspended Solids (mg/L)	2.0	5.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



17/1/2013

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

Date of Sampling : 19/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.71	7.96
Temperature (°C)	19.99	20.22
Turbidity (NTU)	3.6	3.8
DO (mg/L)	15.26	13.11
DO Saturation (%)	173%	149%
Suspended Solids (mg/L)	2.0	4.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



19/1/2013

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

Date of Sampling : 22/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.28	8.23
Temperature (°C)	24.13	24.2
Turbidity (NTU)	3.9	3.2
DO (mg/L)	12.21	13.49
DO Saturation (%)	148%	164%
Suspended Solids (mg/L)	2.0	5.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



22/1/2013

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


Date of Sampling : 24/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.73	7.85
Temperature (°C)	22.53	23.18
Turbidity (NTU)	3.7	2.6
DO (mg/L)	12.04	8.43
DO Saturation (%)	143%	101%
Suspended Solids (mg/L)	2.0	3.0

Remark or Observation : _____

Name **Signature** **Date**

Prepared By : Tsang King Yeun  24/1/2013


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

Date of Sampling : 26/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.13	7.64
Temperature (°C)	21.43	21.86
Turbidity (NTU)	3.5	4.3
DO (mg/L)	8.81	6.64
DO Saturation (%)	98%	78%
Suspended Solids (mg/L)	5.0	2.0

Remark or Observation : _____

<u>Name</u>	<u>Signature</u>	<u>Date</u>
Prepared By : <u>Tsang King Yeun</u>		<u>26/1/2013</u>

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

Date of Sampling : 29/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	10:00	10:30
Water Depth (m)	<1	<1
pH value	8.04	7.75
Temperature (°C)	22.4	22.48
Turbidity (NTU)	3.3	4.1
DO (mg/L)	8.78	8.07
DO Saturation (%)	104%	95%
Suspended Solids (mg/L)	2.0	2.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



29/1/2013

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

Date of Sampling : 31/1/2013

Weather : Sunny

Monitoring Location	W1	W2
Time (hhmm)	13:00	13:30
Water Depth (m)	<1	<1
pH value	7.68	7.65
Temperature (°C)	22.0	22.29
Turbidity (NTU)	1.9	4.4
DO (mg/L)	10.93	9.67
DO Saturation (%)	128%	114%
Suspended Solids (mg/L)	2.0	2.0

Remark or Observation : _____

Name

Signature

Date

Prepared By : Tsang King Yeun



31/1/2013



CERTIFICATE OF ANALYSIS

Client	: ENVIRONMENTAL PIONEERS & SOLUTIONS LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR ALLEN CHAN	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1300341
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	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 04-JAN-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 15-JAN-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: 11-JAN-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: **HK1300341**

Sample(s) were received in an ambient condition.

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

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

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

Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics

ALS Laboratory Group

Trading Name: ALS Technichem (HK) Pty Ltd

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

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

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Analytical Results

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[02-JAN-2013]	[02-JAN-2013]	[04-JAN-2013]	[04-JAN-2013]	
Compound	CAS Number	LOR	Unit		HK1300341-001	HK1300341-002	HK1300341-003	HK1300341-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		4	4	8	3	



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2679322)								
HK1300211-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	59	61	2.3
HK1300276-006	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	67	65	3.6
EA/ED: Physical and Aggregate Properties (QC Lot: 2681238)								
HK1300319-005	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	35	35	0.0
HK1300353-002	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	42	41	4.0

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
EA/ED: Physical and Aggregate Properties (QC Lot: 2679322)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	108	----	88	110	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 2681238)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	102	----	88	110	----	----

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	: Chan Kwok Fai, Godfrey	Work Order	: HK1300963
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	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 10-JAN-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 21-JAN-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: 15-JAN-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: **HK1300963**

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	[08-JAN-2013]	[08-JAN-2013]	[10-JAN-2013]	[10-JAN-2013]	
Compound	CAS Number	LOR	Unit		HK1300963-001	HK1300963-002	HK1300963-003	HK1300963-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		8	8	<2	26	



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 (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2684889)								
HK1300873-003	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	7	6	19.3
HK1301014-001	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
EA/ED: Physical and Aggregate Properties (QC Lot: 2684889)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	99.0	----	88	110	----	----

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	: Chan Kwok Fai, Godfrey	Work Order	: HK1301245
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	: Godfrey.Chan@alsglobal.com		
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: TAI PO TSAI	Quote number	: ----	Date Samples Received	: 14-JAN-2013
Order number	: ----			Issue Date	: 22-JAN-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: 18-JAN-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: **HK1301245**

Sample(s) were received 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	[11-JAN-2013]	[11-JAN-2013]	[12-JAN-2013]	[12-JAN-2013]	
Compound	CAS Number	LOR	Unit		HK1301245-001	HK1301245-002	HK1301245-003	HK1301245-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		8	6	3	4	



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 (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2689870)								
HK1301210-009	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1301225-009	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	4	5	21.3

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
EA/ED: Physical and Aggregate Properties (QC Lot: 2689870)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	97.5	----	88	110	----	----

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	: Chan Kwok Fai, Godfrey	Work Order	: HK1301624
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	Amendment	: 1
E-mail	: allenchan@eps1.com.hk	E-mail	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 17-JAN-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 14-FEB-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: 22-JAN-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: **HK1301624**

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	[15-FEB-2013]	[15-FEB-2013]	[17-JAN-2013]	[17-JAN-2013]	
Compound	CAS Number	LOR	Unit		HK1301624-001	HK1301624-002	HK1301624-003	HK1301624-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		<2	6	<2	5	



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2693356)								
HK1301505-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1301729-001	Anonymous	EA025: Suspended Solids (SS)	----	2.0	mg/L	3.1	2.9	8.9
EA/ED: Physical and Aggregate Properties (QC Lot: 2695157)								
HK1301604-021	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	14	14	0.0
HK1301765-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	9	11	14.5

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

Matrix: WATER				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 2693356)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	97.5	----	88	110	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 2695157)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	104	----	88	110	----	----

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	: Chan Kwok Fai, Godfrey	Work Order	: HK1302076
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	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 22-JAN-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 31-JAN-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

General Comments

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

Specific comments for Work Order: **HK1302076**

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	[19-JAN-2013]	[19-JAN-2013]	[22-JAN-2013]	[22-JAN-2013]	
Compound	CAS Number	LOR	Unit		HK1302076-001	HK1302076-002	HK1302076-003	HK1302076-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		2	4	2	5	



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2701428)								
HK1302021-010	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	3	4	0.0
HK1302021-020	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	4	4	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2704347)								
HK1302027-021	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	3	3	0.0
HK1302076-003	W1	EA025: Suspended Solids (SS)	----	2	mg/L	2	3	0.0

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

Matrix: WATER			Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 2701428)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	95.5	----	88	110	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 2704347)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	101	----	88	110	----	----

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	: Chan Kwok Fai, Godfrey	Work Order	: HK1302393
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	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 28-JAN-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 05-FEB-2013
Facsimile	: ----	Facsimile	: +852 2610 2021	No. of samples received	: 4
Project	: TAI PO TSAI	Quote number	: ----	No. of samples analysed	: 4
Order number	: ----				
C-O-C number	: ----				
Site	: ----				

General Comments

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

Specific comments for Work Order: **HK1302393**

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

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Analytical Results

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[24-JAN-2013]	[24-JAN-2013]	[26-JAN-2013]	[26-JAN-2013]	
Compound	CAS Number	LOR	Unit		HK1302393-001	HK1302393-002	HK1302393-003	HK1302393-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		<2	3	5	<2	



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 (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2705321)								
HK1302333-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	203	208	2.4
HK1302393-002	W2	EA025: Suspended Solids (SS)	----	2	mg/L	3	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
EA/ED: Physical and Aggregate Properties (QC Lot: 2705321)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	96.0	----	88	110	----	----

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	: Chan Kwok Fai, Godfrey	Work Order	: HK1302855
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	: Godfrey.Chan@alsglobal.com	Date Samples Received	: 31-JAN-2013
Telephone	: +852 2558 7699	Telephone	: +852 2610 1044	Issue Date	: 14-FEB-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: 07-FEB-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: **HK1302855**

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

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Analytical Results

Sub-Matrix: WATER

				Client sample ID	W1	W2	W1	W2	
				Client sampling date / time	[29-JAN-2013]	[29-JAN-2013]	[31-JAN-2013]	[31-JAN-2013]	
Compound	CAS Number	LOR	Unit		HK1302855-001	HK1302855-002	HK1302855-003	HK1302855-004	
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		<2	2	<2	2	



Laboratory Duplicate (DUP) Report

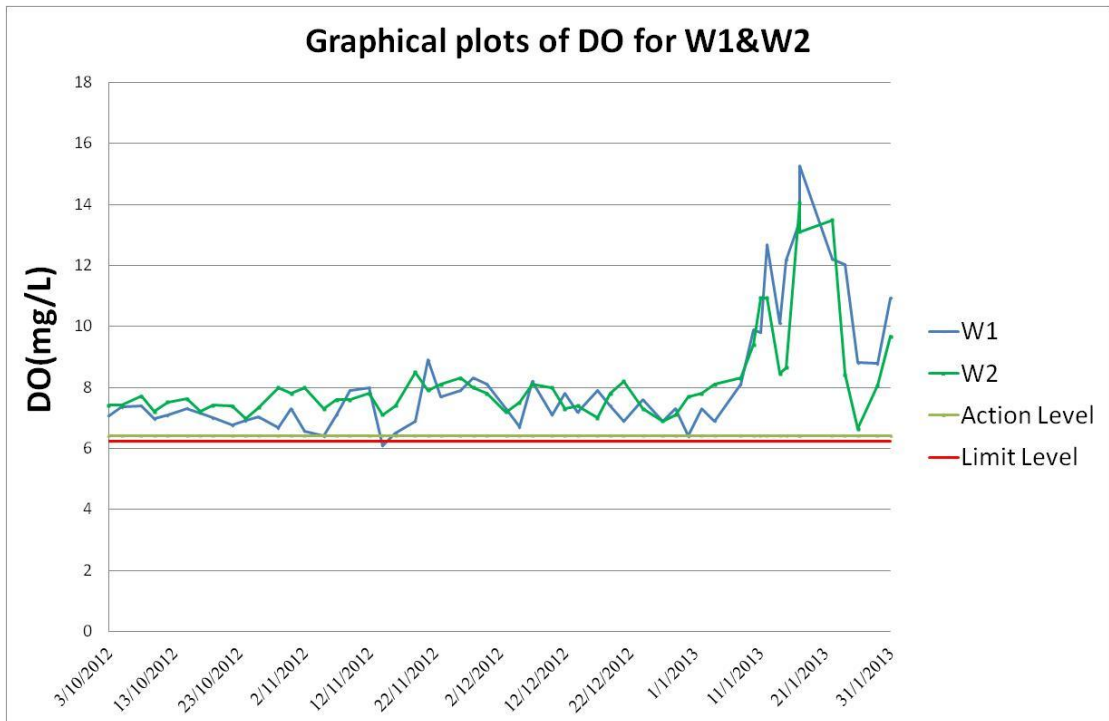
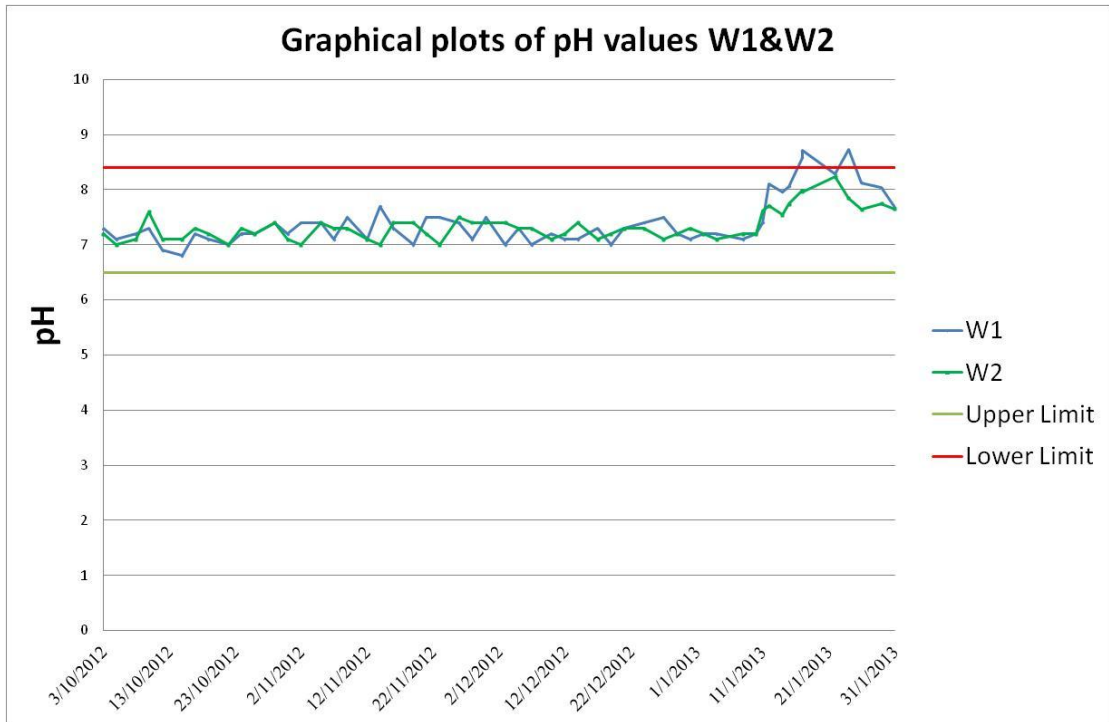
Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2713645)								
HK1302803-019	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	5	6	25.3
HK1302856-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	9	7	18.9
EA/ED: Physical and Aggregate Properties (QC Lot: 2718659)								
HK1302852-019	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	8	9	0.0
HK1302870-003	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	11	12	0.0

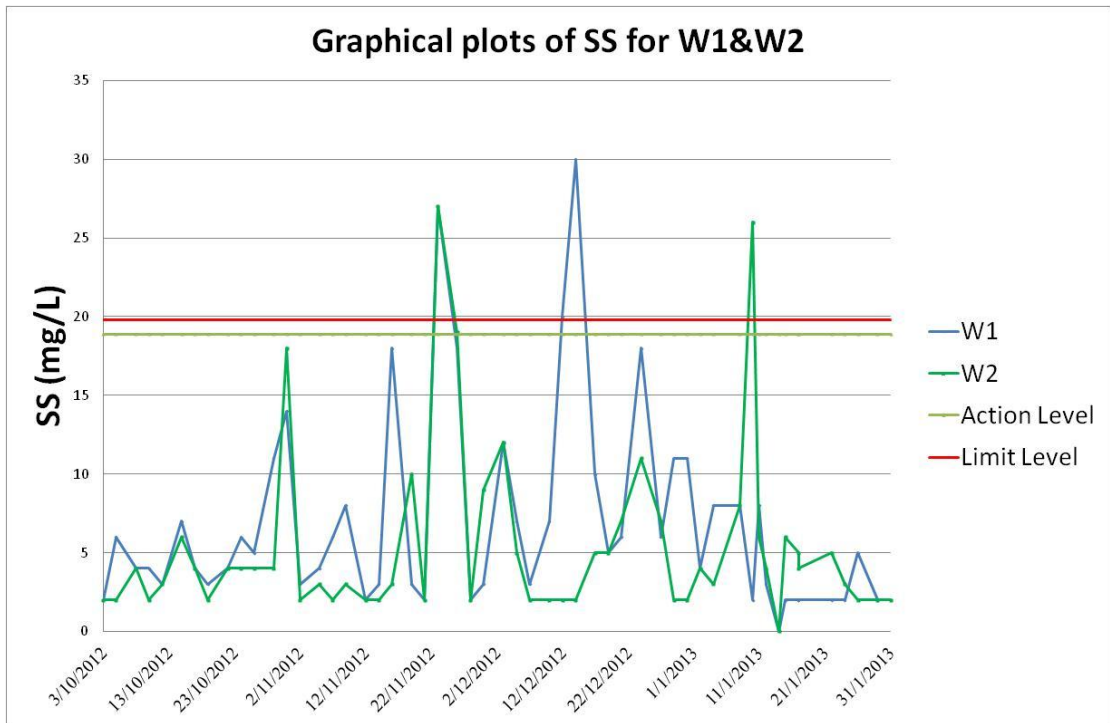
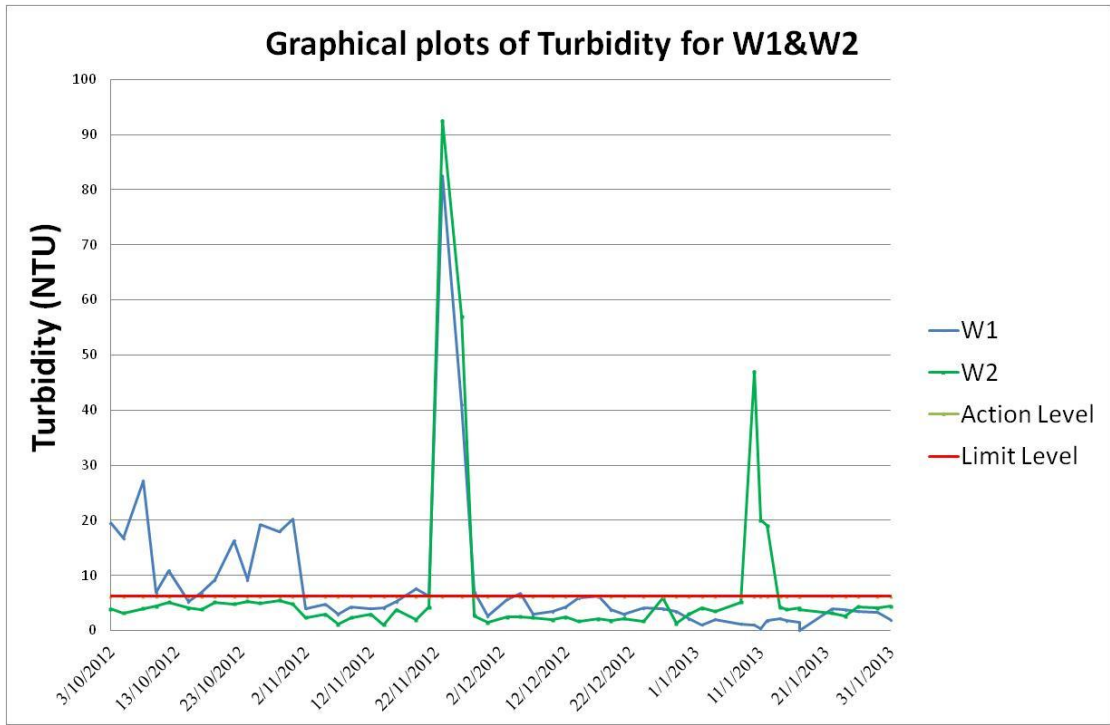
Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

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
EA/ED: Physical and Aggregate Properties (QC Lot: 2713645)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	96.0	----	88	110	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 2718659)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	99.0	----	85	115	----	----

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

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



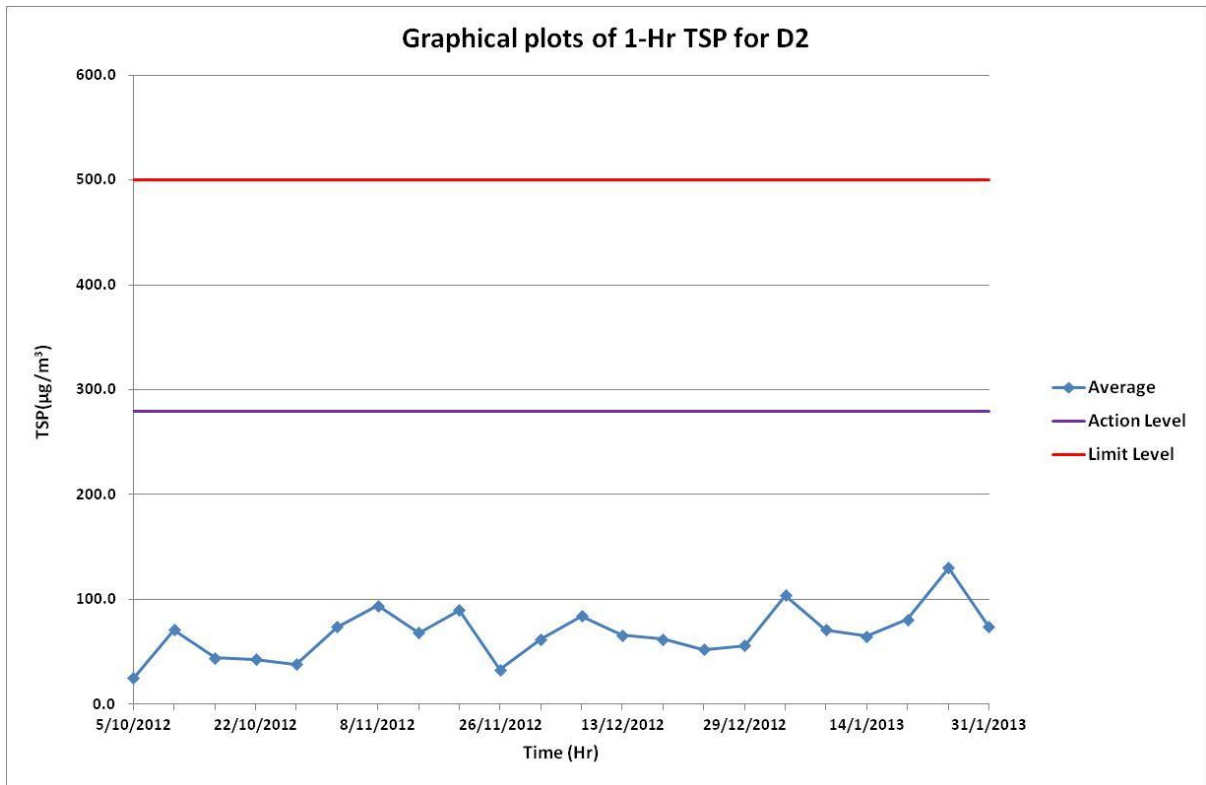
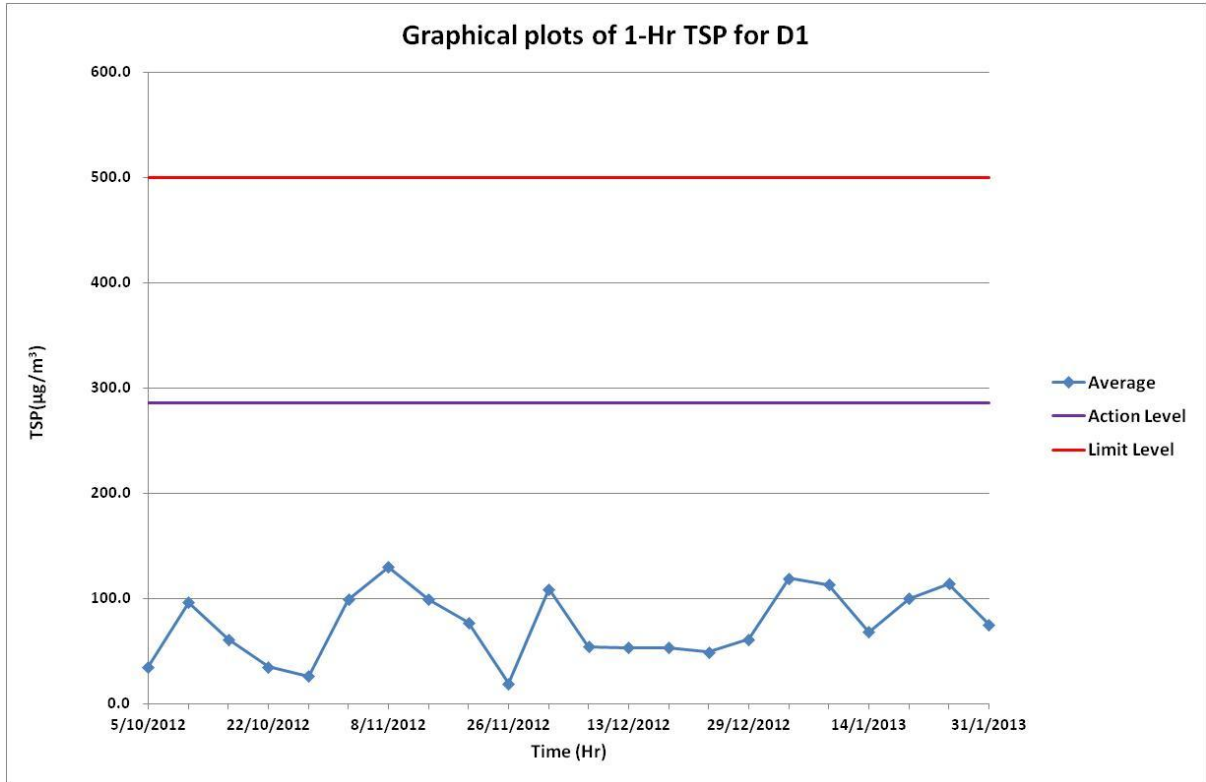


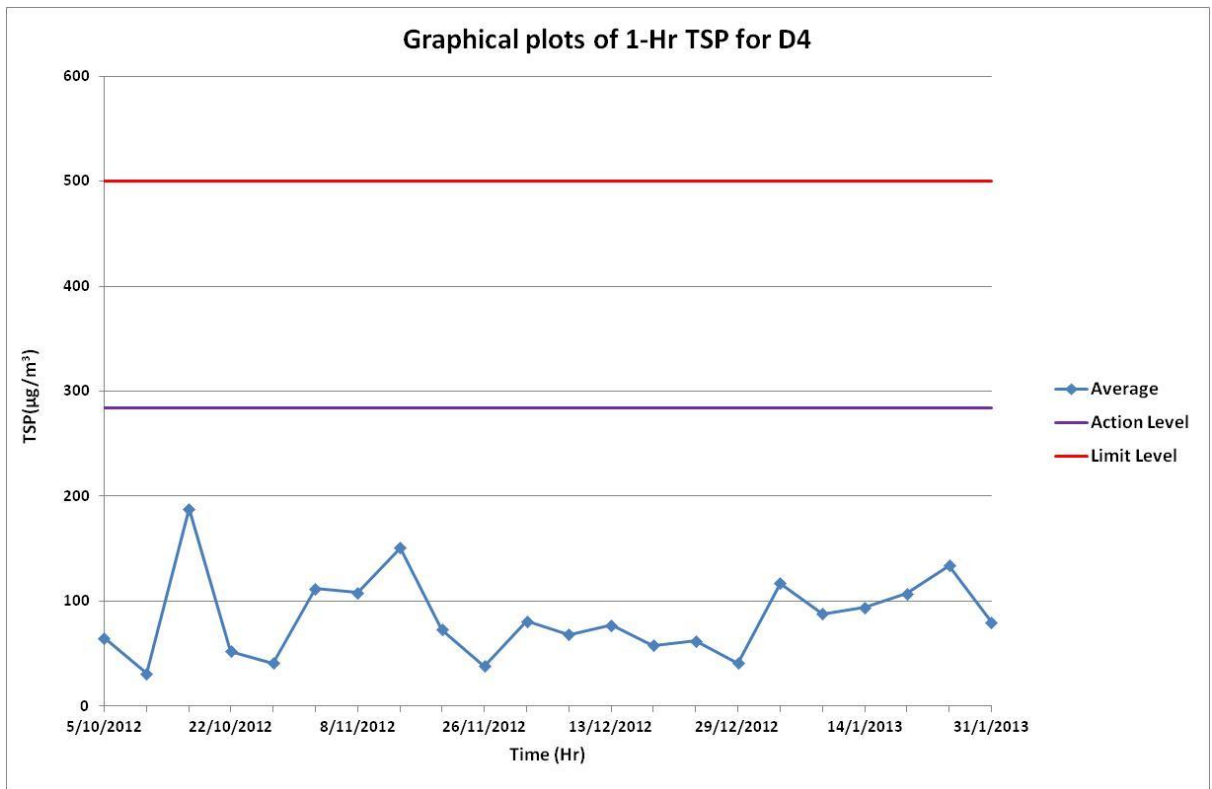
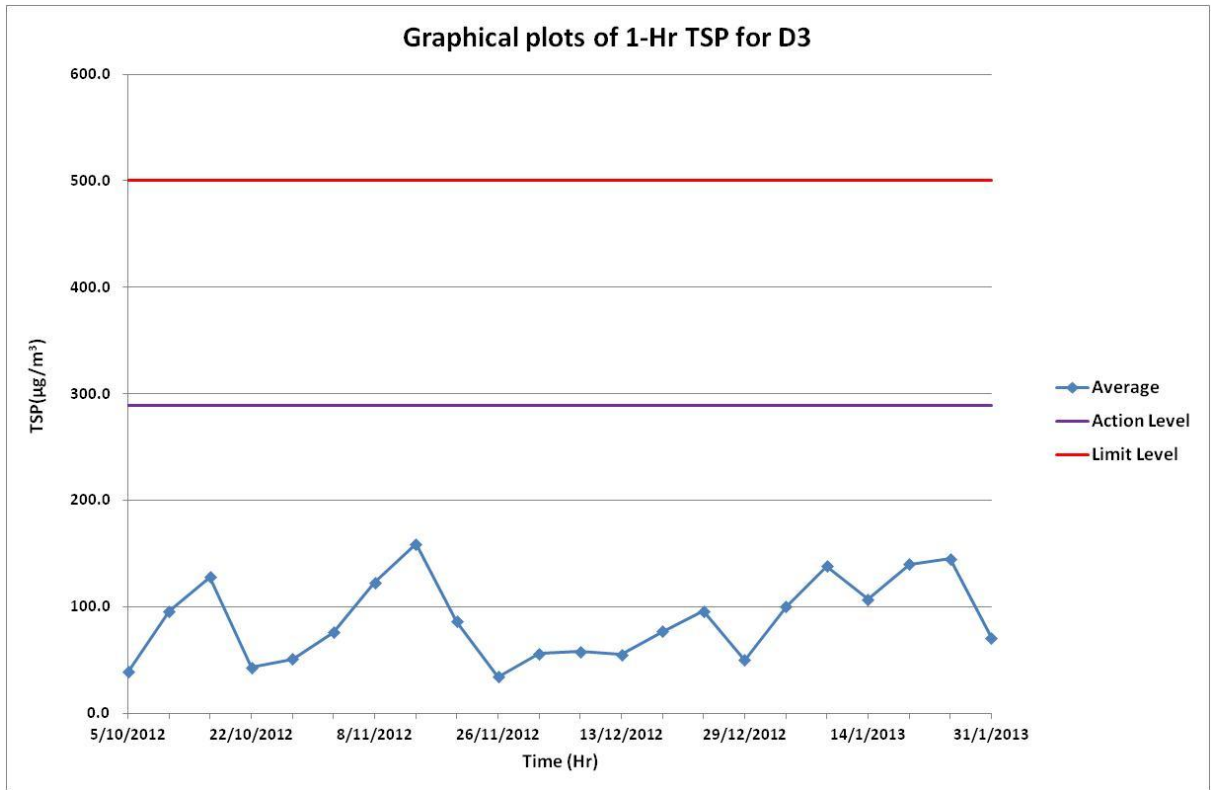
Appendix F

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)
3/1/2013	1 Hour	13:34	114	119	9:01	100	104	8:50	108	100	13:05	122	117
		14:34	121		10:01	106		9:50	100		14:05	113	
		15:34	122		11:01	107		10:50	93		15:05	115	
9/1/2013	1 Hour	9:00	115	113	13:00	72	71	8:45	141	138	8:27	92	88
		10:00	114		14:00	73		9:45	138		9:27	88	
		11:00	111		15:00	67		10:45	134		10:27	85	
14/1/2013	1 Hour	8:30	66	68	11:46	52	65	12:38	103	107	8:31	102	94
		9:30	71		12:46	67		13:38	108		9:31	88	
		10:30	68		13:46	77		14:38	111		10:31	91	
19/1/2013	1 Hour	8:30	104	100	12:36	93	81	12:00	141	140	8:40	122	107
		9:30	103		13:36	82		13:00	139		9:40	101	
		10:30	93		14:36	69		14:00	141		10:40	97	
25/1/2013	1 Hour	13:45	121	114	9:03	131	130	9:01	147	145	13:24	120	134
		14:45	134		10:03	134		10:01	147		14:24	140	
		15:45	86		11:03	125		11:01	142		15:24	143	
31/1/2013	1 Hour	8:59	67	75	13:14	66	74	9:02	72	71	13:00	77	80
		9:59	81		14:14	81		10:02	79		14:00	83	
		10:59	77		15:14	75		11:02	61		15:00	80	





D1 24-Hrs TSP Monitoring Results

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m ³)	TSP Concentration (µg/m ³)	Weather
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
03/01/13	204389	2.7720	2.9561	0.1841	880.98	905.07	24.09	42	42	42.0	1719.02	107.0956	Cloudy
09/01/13	204403	2.7379	2.9231	0.1852	905.07	929.12	24.05	42	42	42.0	1716.17	107.9147	Hazy
14/01/13	204502	2.9262	3.0679	0.1417	929.12	953.19	24.07	42	42	42.0	1717.60	82.4989	Hazy
19/01/13	204506	2.9020	3.0678	0.1658	953.19	977.21	24.02	42	42	42.0	1714.03	96.7311	Hazy
25/01/13	204510	2.8789	3.0631	0.1842	977.21	1001.22	24.01	42	42	42.0	1713.32	107.5108	Hazy
31/01/13	204514	2.8882	3.0230	0.1348	1001.22	1025.27	24.05	42	42	42.0	1716.17	78.5470	Sunny

D2 24-Hrs TSP Monitoring Results

Sampling Date	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m ³)	TSP Concentration (µg/m ³)	Weather
		Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
03/01/13	204390	2.7524	2.9183	0.1659	1190.90	1214.47	23.57	42	42	42.0	1681.92	98.6374	Cloudy
09/01/13	204404	2.7457	2.9203	0.1746	1214.47	1238.47	24.00	42	42	42.0	1712.60	101.9501	Hazy
14/01/13	204503	2.9247	3.0557	0.1310	1238.47	1262.52	24.05	42	42	42.0	1716.17	76.3327	Hazy
19/01/13	204507	2.8885	3.0440	0.1555	1262.52	1286.57	24.05	42	42	42.0	1716.17	90.6087	Hazy
25/01/13	204511	2.8917	3.0571	0.1654	1286.57	1310.59	24.02	42	42	42.0	1714.03	96.4977	Hazy
31/01/13	204515	2.8794	2.9986	0.1192	1310.59	1334.62	24.03	42	42	42.0	1714.74	69.5148	Sunny

D3 24-Hrs TSP Monitoring Results

		Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m ³)	TSP Concentration (µg/m ³)	Weather
Sampling Date	Paper No.	Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
03/01/13	204400	2.7728	2.9346	0.1618	1219.51	1243.56	24.05	42	42	42.0	1716.17	94.2797	Cloudy
09/01/13	204405	2.7091	2.8839	0.1748	1243.56	1267.58	24.02	42	42	42.0	1714.03	101.9819	Hazy
14/01/13	204504	2.9130	3.0495	0.1365	1267.58	1291.61	24.03	42	42	42.0	1714.74	79.6037	Hazy
19/01/13	204508	2.8783	3.0348	0.1565	1291.61	1315.62	24.01	42	42	42.0	1713.32	91.3433	Hazy
25/01/13	204512	2.8954	3.0807	0.1853	1315.62	1339.62	24.00	42	42	42.0	1712.60	108.1979	Hazy
31/01/13	204516	2.8891	3.0397	0.1506	1339.62	1363.64	24.02	42	42	42.0	1714.03	87.8631	Sunny

D4 24-Hrs TSP Monitoring Results

		Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Total Volume (m ³)	TSP Concentration (µg/m ³)	Weather
Sampling Date	Paper No.	Initial Wt.	Final Wt.	Wt. of dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate			
03/01/13	204398	2.7676	2.9361	0.1685	1210.47	1234.47	24.00	42	42	42.0	1712.60	98.3883	Cloudy
09/01/13	204406	2.7122	2.8800	0.1678	1234.47	1258.51	24.04	42	42	42.0	1715.46	97.8165	Hazy
14/01/13	204505	2.8879	3.0362	0.1483	1258.51	1282.53	24.02	42	42	42.0	1714.03	86.5212	Hazy
19/01/13	204509	2.8865	3.0574	0.1709	1282.53	1306.54	24.01	42	42	42.0	1713.32	99.7481	Hazy
25/01/13	204513	2.8823	3.1067	0.2244	1306.54	1330.56	24.02	42	42	42.0	1714.03	130.9195	Hazy
31/01/13	204517	2.8920	3.0542	0.1622	1330.56	1354.59	24.03	42	42	42.0	1714.74	94.5914	Sunny



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>	: Chan Kwok Fai, Godfrey	<i>Work Order</i>	: HK1303015
<i>Address</i>	: ROOM 3, 12/F, NEW CITY CENTRE, KWUN TONG, 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>	: Godfrey.Chan@alsglobal.com		
<i>Telephone</i>	: ----	<i>Telephone</i>	: +852 2610 1044		
<i>Facsimile</i>	: ----	<i>Facsimile</i>	: +852 2610 2021		
<i>Project</i>	: ----	<i>Quote number</i>	: ----	<i>Date received</i>	: 03-JAN-2013
<i>Order number</i>	: ----			<i>Date of issue</i>	: 07-FEB-2013
<i>C-O-C number</i>	: ----			<i>No. of samples</i>	- Received : 24
<i>Site</i>	: ----				- Analysed : 24

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1303015 supersedes any previous reports with this reference. The completion date of analysis is 07-FEB-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 HK1303015 :
Sample(s) were received in an ambient condition.
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.

<i>Signatory</i>	<i>Position</i>	<i>Authorised results for:-</i>
Fung Lim Chee, Richard	General Manager	Inorganics

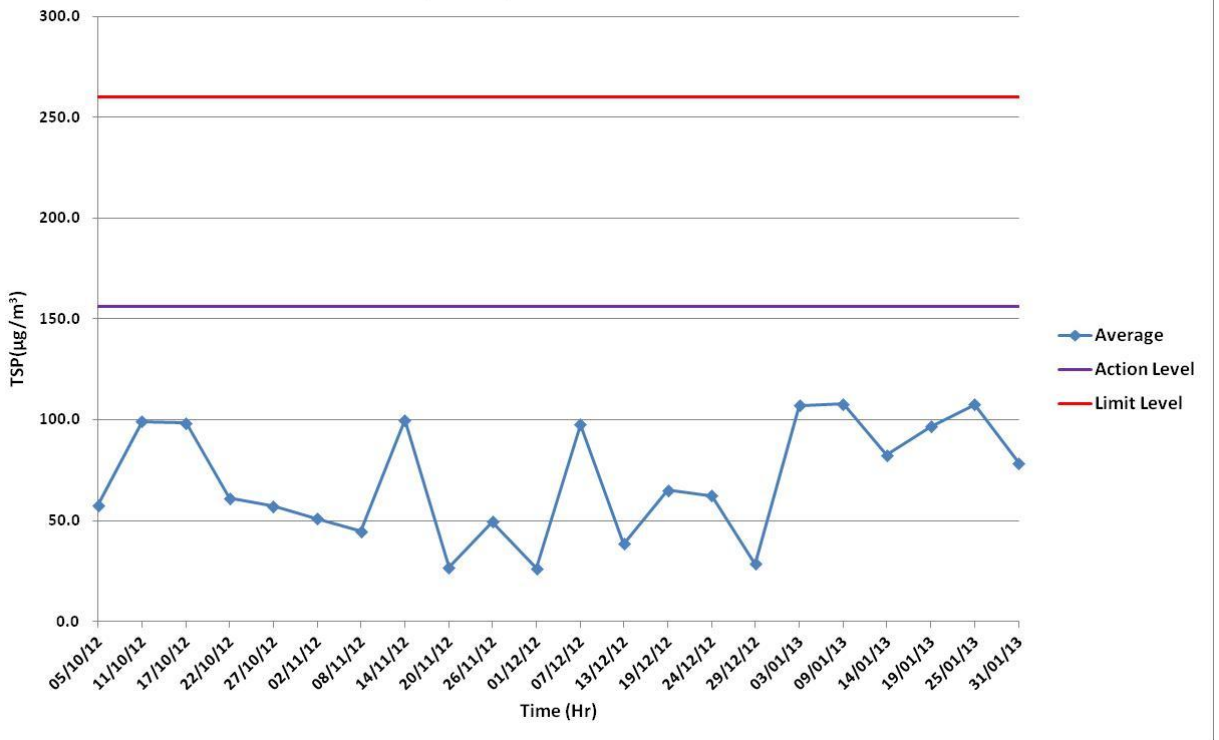


Analytical Results

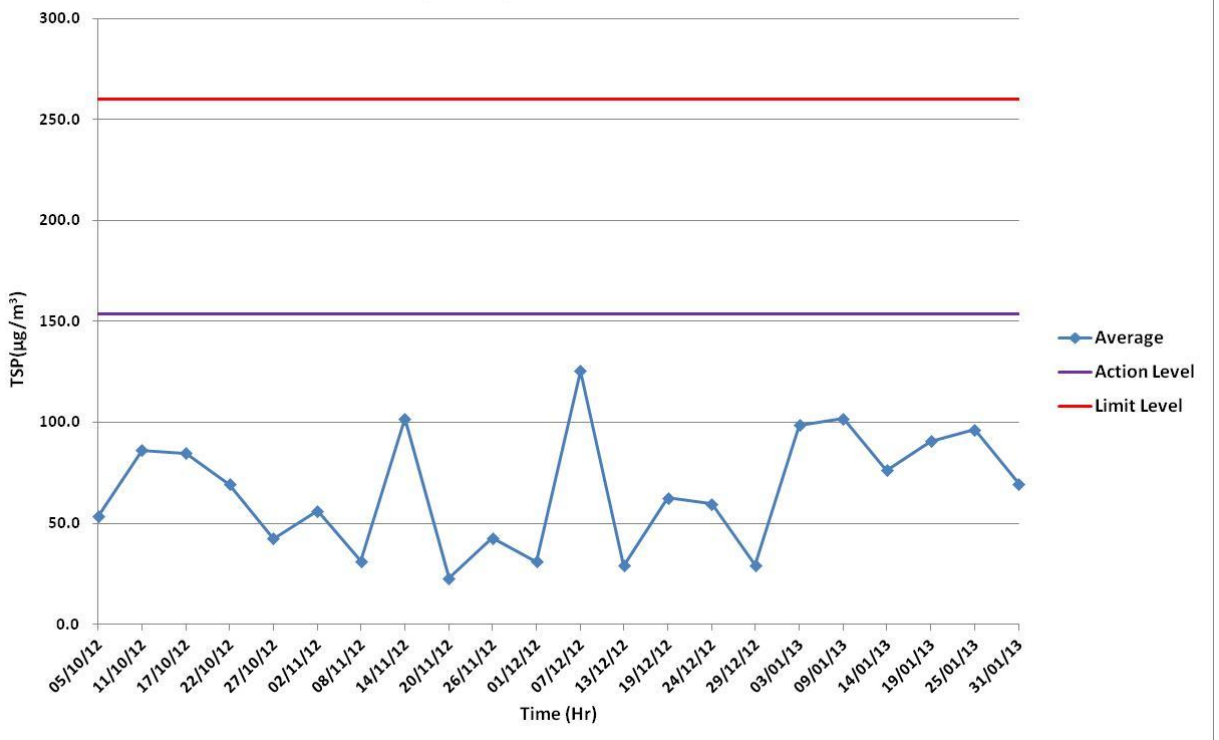
Sub-Matrix: FILTER (TSP/RSP)

			Compound	HK-TSP: Total Suspended Particulates	HK-TSP: Initial Weight	HK-TSP: Final Weight		
			LOR Unit	0.0010 g	0.0010 g	0.0010 g		
Client sample ID	Client sampling date / time	Laboratory sample ID		EA/ED: Physical and Aggregate Properties	EA/ED: Physical and Aggregate Properties	EA/ED: Physical and Aggregate Properties		
204389	[03-JAN-2013]	HK1303015-001		0.1841	2.7720	2.9561		
204390	[03-JAN-2013]	HK1303015-002		0.1669	2.7524	2.9193		
204400	[03-JAN-2013]	HK1303015-003		0.1618	2.7728	2.9346		
204398	[03-JAN-2013]	HK1303015-004		0.1685	2.7676	2.9361		
204403	[09-JAN-2013]	HK1303015-005		0.1852	2.7379	2.9231		
204404	[09-JAN-2013]	HK1303015-006		0.1746	2.7457	2.9203		
204405	[09-JAN-2013]	HK1303015-007		0.1748	2.7091	2.8839		
204406	[09-JAN-2013]	HK1303015-008		0.1678	2.7122	2.8800		
204502	[14-JAN-2013]	HK1303015-009		0.1417	2.9262	3.0679		
204503	[14-JAN-2013]	HK1303015-010		0.1310	2.9247	3.0557		
204504	[14-JAN-2013]	HK1303015-011		0.1365	2.9130	3.0495		
204505	[14-JAN-2013]	HK1303015-012		0.1483	2.8879	3.0362		
204506	[19-JAN-2013]	HK1303015-013		0.1658	2.9020	3.0678		
204507	[19-JAN-2013]	HK1303015-014		0.1555	2.8885	3.0440		
204508	[19-JAN-2013]	HK1303015-015		0.1565	2.8783	3.0348		
204509	[19-JAN-2013]	HK1303015-016		0.1709	2.8865	3.0574		
204510	[25-JAN-2013]	HK1303015-017		0.1842	2.8789	3.0631		
204511	[25-JAN-2013]	HK1303015-018		0.1654	2.8917	3.0571		
204512	[25-JAN-2013]	HK1303015-019		0.1853	2.8954	3.0807		
204513	[25-JAN-2013]	HK1303015-020		0.2244	2.8823	3.1067		
204514	[31-JAN-2013]	HK1303015-021		0.1348	2.8882	3.0230		
204515	[31-JAN-2013]	HK1303015-022		0.1192	2.8794	2.9986		
204516	[31-JAN-2013]	HK1303015-023		0.1506	2.8891	3.0397		
204517	[31-JAN-2013]	HK1303015-024		0.1622	2.8920	3.0542		

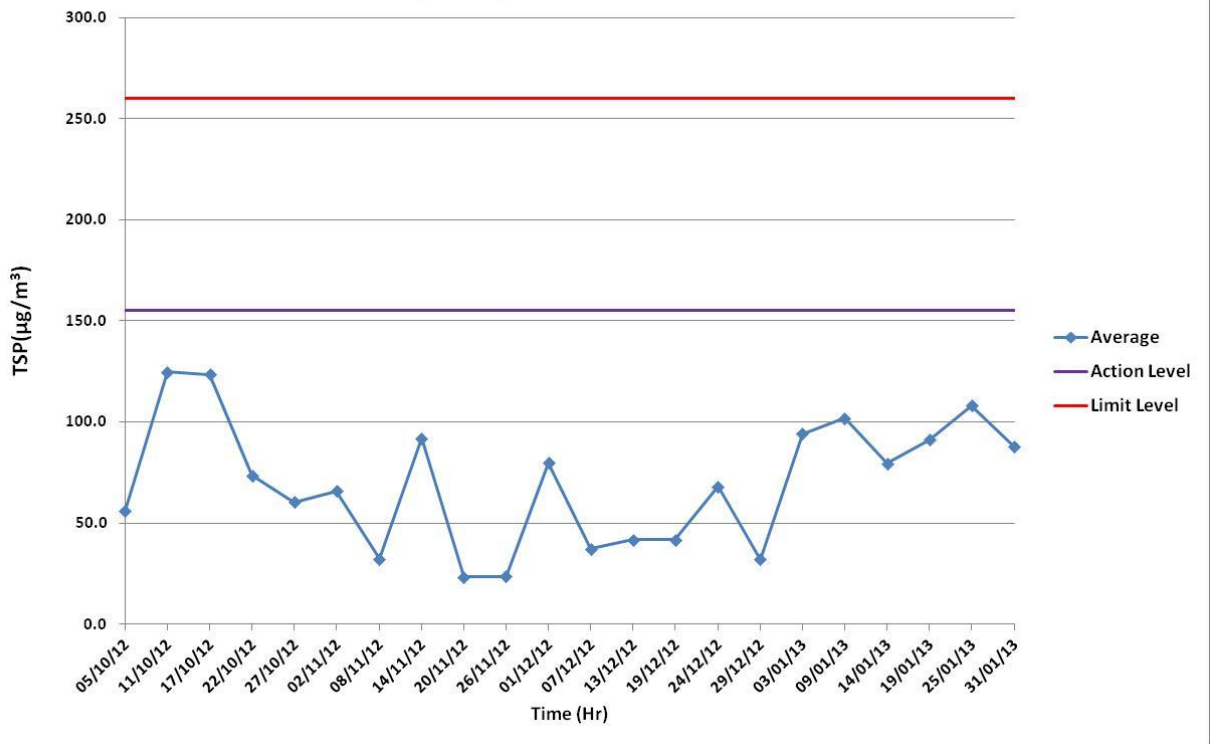
Graphical plots of 24-Hrs TSP for D1



Graphical plots of 24-Hrs TSP for D2



Graphical plots of 24-Hrs TSP for D3



Graphical plots of 24-Hrs TSP for D4

