# Proposed Comprehensive Development at Wo Shang Wai, Yuen Long

## Monthly EM&A Report for Apr 2011 (Rev. B)

May 2011

Report No.: 266567/19/B

Mott MacDonald

Mott MacDonald

Pursuant to Condition 4.5 of Environmental Permit No. EP-311/2008/B,

this Monthly EM&A Report for April 2011 has been reviewed,

certified by Environmental Team Leader (ETL) and verified by the

Independent Environmental Checker (IEC)

Certified by: Florence Yuen

Florence Yuen
Environmental Team Leader (ETL)
Mott MacDonald Hong Kong Ltd.

Date 11 May 2011

Verified by:

David Yeung
Independent Environmental Checker (IEC)
ENVIRON Hong Kong Limited

Date 12 May 2011

# Content


| Chapter | Title | Page |
|---|---|---|
| Executive Summary | | iv |
| 1. | Introduction | 1 |
| 1.1 | Background | 1 |
| 1.2 | Project Organization | 1 |
| 1.3 | Environmental Status in the reporting period | 1 |
| 1.4 | Summary of EM&A Requirements | 1 |
| 2. | Impact Monitoring Methodology | 4 |
| 2.1 | Introduction | 4 |
| 2.2 | Air Quality | 4 |
| 2.3 | Construction Noise | 7 |
| 2.4 | Water Quality | 8 |
| 2.5 | Ecology | 11 |
| 2.6 | Landscape and Visual | 12 |
| 3. | Monitoring Results | 16 |
| 3.1 | Impact Monitoring Schedule | 16 |
| 3.2 | Result of Impact Monitoring | 16 |
| 4. | Ecological Monitoring | 22 |
| 4.1 | Introduction | 22 |
| 4.2 | Monitoring of Birds | 22 |
| 4.3 | Monitoring of Herpetofauna | 22 |
| 4.4 | Monitoring of Dragonfly and Butterfly | 22 |
| 4.5 | Monitoring of Mammal | 22 |
| 4.6 | Management Activities | 23 |
| 4.7 | Summary | 23 |
| 5. | Landscape and Visual | 24 |
| 5.1 | Site Inspection | 24 |
| 5.2 | Construction Phase Audit Summary | 24 |
| 6. | Environmental Site Inspection and Audit | 26 |
| 6.1 | Site Inspection | 26 |
| 6.2 | Advice on the Solid and Liquid Waste Management Status | 26 |
| 6.3 | Status of Environmental Licenses and Permits | 26 |
| 6.4 | Recommended Mitigation Measures | 27 |
| 7. | Report on Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions | 28 |

7.1 Record on Non-compliance of Action and Limit Levels 28
7.2 Record on Environmental Complaints received 29
7.3 Record on Notifications of Summons and Successful Prosecution 29
7.4 Review of reasons for and implications of non-compliance, complaints, summons and prosecutions 30
7.5 Follow-up actions taken 30
7.6 Cumulative statistics for complaints, notifications of summons and successful prosecutions 30

8. Future key Issue 31
8.1 Site Preparatory Works and Construction Works for the Coming Month 31
8.2 Key Issues for the Coming Month 31
8.3 Monitoring Schedule for the Coming Month 31
8.4 Conclusions and Recommendations 32

## Tables

Table 1.1: Summary of Impact EM&A Requirements 2
Table 1.2: Environmental Monitoring and Audit Schedule for April 2011 3
Table 2.1: Air Quality Monitoring Parameters, Frequency and Duration 4
Table 2.2: Air monitoring stations 4
Table 2.3: TSP Monitoring Equipment 5
Table 2.4: Noise Monitoring Parameters, Frequency and Duration 7
Table 2.5: Noise monitoring stations 7
Table 2.6: Noise Monitoring Equipment 8
Table 2.7: Water Quality Monitoring Parameters, Frequency and Duration 9
Table 2.8: Water quality monitoring stations 9
Table 2.9: Water Quality Monitoring Equipments 9
Table 2.10: Analytical Methods applied to Water Quality Samples 9
Table 2.11: Detection Limits for Water Quality Determinants 10
Table 2.12: Summary of Construction Phase Ecological Monitoring for the Wo Shang Wai WRA 11
Table 2.13: Construction and Operation Phase Audit Checklist 13
Table 2.14: Proposed Construction Phase Mitigation Measures 14
Table 2.15: Proposed Operation Phase Mitigation Measures 14
Table 3.1: Summary of 1-hour TSP monitoring results 16
Table 3.2: Summary of 24-hour TSP monitoring results 17
Table 3.3: Summary of Construction noise monitoring results 18
Table 3.4: Summary of Water quality monitoring results 18
Table 5.1: Construction and Operation Phase Audit Summary 24
Table 6.1: Summary of Site Inspections and Recommendations 26
Table 6.2: Status of Environmental Submissions, Licenses and Permits 27
Table 7.1: Summary of exceedances in Water Quality 28
Table 7.2: Statistics for complaints, notifications of summons and successful prosecutions 30
Table 8.1: Tentative Environmental Monitoring and Audit Schedule for May 2011 32

## List of Figures

Figure 1.1 General Layout Plan of the Project Site
Figure 2.1 Locations of Air Quality Monitoring Stations
Figure 2.2 Locations of Noise Monitoring Stations
Figure 2.3 Locations of Water Quality Monitoring Stations

Figure 4.1 Survey Area and Transect Walked

## List of Appendices

Appendix A Project Organization Chart
Appendix B Tentative Construction Programme
Appendix C Action and Limit Levels for Construction Phase
Appendix D Event and Action Plan for Air Quality, Noise and Water Quality
Appendix E Calibration certificates
Appendix F Graphical plots of the monitoring results
Appendix G Weather conditions during the monitoring period
Appendix H Ecological Monitoring conducted
Appendix I Summary of Bird Surveys conducted
Appendix J Summary of Herpetofauna, and Insects Surveys conducted
Appendix K Environmental Mitigation Measures - Implementation Status

# Executive Summary

Mott MacDonald Hong Kong Ltd. ("MMHK") has been commissioned by Heng Shung Construction Co. Ltd. to undertake the Environmental Team (ET) services to carry out environmental monitoring and audit (EM&A) for both pre-construction and construction phases of the Proposed Comprehensive Development at Wo Shang Wai, Yuen Long.

This is the 12th EM&A report submitted under the Condition 4.5 of Environmental Permit No. EP-311/2008/B. This report summarises the findings on EM&A during the period from 1 April to 30 April 2011.

**Exceedance of Action and Limit Levels**

There was no breach of Action or Limit levels for Air Quality (1-hr TSP and 24-hr TSP) and Noise level (as $L_{eq}$) in the reporting month.

Exceedance of pH, DO, turbidity and SS were observed at MP1 to MP6. Exceedances of pH were frequently observed. DO were exceeded several times at MP3 and once at MP4 and MP6. Turbidity and/or SS exceedances were recorded on a few days at MP3, MP4 and MP5. The summary of measured water quality is presented in **Section 3.2.3**.

Investigations have been carried out to identify the causes of exceedance. From investigation, the Contractor has implemented water quality mitigation measures as recommended in the EIA report. With external factors affect the adjacent environments, such as natural variations, pond fish culture activities and algal bloom, the exceedances were considered not due to construction works.

**Implementation of mitigation measures**

Site audits were carried out on 1, 6, 12, 18 and 27 April 2011 to confirm the implementation measures undertaken by the Contractor in the reporting month. The outcomes are presented in **Section 6** and the status of implementation of mitigation measures in the site is shown in **Appendix K**.

**Record of Complaints**

There was no record of complaints received in the reporting month.

**Record of Notification of summons and successful prosecution**

There was no record of Notification of summons and successful prosecution in the reporting month.

**Reporting Changes**

There are no changes to be reported the reporting month.

**Future Key Issues**

The major site works to be commissioned in the coming month include band drain installation, Trial Embankment for Ground Improvement and Site Formation (Filling). Potential environmental impacts due to

the construction activities, including air quality, noise, water quality, ecology and landscape and visual, will be monitored.

Environmental mitigation measures will be implemented on site as recommended and weekly site audits will be carried out to ensure that the environmental conditions are acceptable.

# 1. Introduction

## 1.1 Background

In March 2005, the Project Proponent, Profit Point Enterprises Limited, acquired the development site in Yuen Long at Wo Shang Wai. An Environmental Impact Assessment (EIA) was carried out under the EIA Ordinance (EIAO) since then and the Environmental Permit (EP-311/2008B) for construction of the comprehensive development in Wo Shang Wai was granted by EPD on 29 July 2010. The Project involves the residential development and associated infrastructure and wetland restoration area and linear landscape area. The construction works under the Environmental Permit commenced on 12 May 2010.

Heng Shung Construction Co. Ltd. was commissioned as the Contractor for the Project. Mott MacDonald Hong Kong Ltd. ("MMHK") has been commissioned by Heng Shung Construction Co. Ltd. to undertake the Environmental Team (ET) services to carry out environmental monitoring and audit (EM&A) for both pre-construction and construction phases of the Proposed Comprehensive Development at Wo Shang Wai, Yuen Long.

According to the EP Condition 4.5, the monthly EM&A Report shall be submitted to the Director within 2 weeks after the end of the reporting month. This report summarises the findings during the period from 1 April 2011 to 30 April 2011.

## 1.2 Project Organization

The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are shown in **Appendix A**.

## 1.3 Environmental Status in the reporting period

During the reporting period, construction works of the Project undertaken include:

- Band drain installation;
- Trial Embankment for Ground Improvement; and
- Site formation (Filling)

The Construction Works Programme of the Project is provided in **Appendix B**. The general layout plan of the Project site is shown in **Figure 1.1**.

## 1.4 Summary of EM&A Requirements

The EM&A programme requires environmental monitoring of air quality, noise, water quality, ecology and landscape and visual as specified in the approved EM&A Manual.

A summary of impact EM&A requirements is presented in **Table 1.1**:

Table 1.1: Summary of Impact EM&A Requirements

| Parameters | Descriptions | Locations | Frequencies |
|---|---|---|---|
| Air Quality | 24-Hour TSP | ASR1, ASR2A, ASR3, ASR4 | Once every 6 days |
| | 1-Hour TSP | ASR1, ASR2A, ASR3, ASR4 | 3 times every 6 days |
| Noise | $L_{eq}$, 30min | NSR1, NSR3, NSR5, NSR7 | Weekly |
| Water Quality | Dissolved Oxygen (DO), temperature, pH, suspended solids (SS) and Biological Oxygen Demand (BOD) | MP1 to MP6 | 3 days per week |
| Ecology | Birds | Within the Project Area and Assessment Area of 500m | Weekly |
| | Dragonflies and Butterflies | Within the Project Area and Assessment Area of 500m | Once per month during Mar and Sep to November, and twice per month during Apr to Aug |
| | Herpetofauna | Within the Project Area and Assessment Area of 500m | Once per month during Apr to Nov |
| | Water quality of WRA | Wetland Restoration Area | After filling of WRA with water, monthly for in situ water quality and every size months (end of wet season and end of dry season) for laboratory testing |
| | Site Inspections | Within the Project Area and Assessment Area of 500m | Weekly |
| Landscape and Visual | Auditing of protection of existing trees, the transplanting of existing trees, the creation of new wetland, the planting of new trees and shrubs and other landscape and visual mitigation measures | CM1 to CM10 and OM1 to OM7 within the Project Area | Site inspections once every two weeks during construction phase; once every two months during operational phase |

The Environmental Quality Performance Limits for air quality, noise and water quality are shown in **Appendix C**.

The Event and Action Plan for air quality, noise and water quality are shown in **Appendix D**.

The monitoring schedule for the reporting month is shown in **Table 1.2** below:

Table 1.2: Environmental Monitoring and Audit Schedule for April 2011

**Environmental Monitoring and Audit Schedule for Apr 2011**

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|
| | | | | | 1<br>Water<br>* | 2 |
| 3 | 4<br>Water<br>Bird<br>24-hr TSP<br>1-hr TSP<br>Noise Monitoring | 5<br>Ching Ming Festival | 6<br>Water<br>Herpetofauna<br>* | 7 | 8<br>Water<br>24-hr TSP<br>1-hr TSP | 9 |
| 10 | 11<br>Water | 12<br>* | 13<br>Water | 14<br>24-hr TSP<br>1-hr TSP<br>Noise Monitoring<br>Dragonfly & Butterfly<br>@ | 15<br>Water<br>Bird | 16 |
| 17 | 18<br>Water<br>Herpetofauna<br>* | 19 | 20<br>Water<br>Bird<br>24-hr TSP<br>1-hr TSP<br>Noise Monitoring | 21<br>Dragonfly & Butterfly | 22<br>Good Friday | 23<br>The day following Good Friday |
| 24 | 25<br>Easter Monday | 26<br>Water<br>Bird<br>24-hr TSP<br>1-hr TSP<br>Noise Monitoring | 27<br>* | 28<br>Water | 29<br>24-hr TSP<br>1-hr TSP | 30<br>Water |

Air Quality Monitoring (1-hr)
Air Quality Monitoring (24-hr)
Noise Monitoring
Water Quakity Monitoring
* Site Audit by Mott MacDonald (MM)
@ Report Submission (EM&A Report)

Bird Survey
Insect Survey
Herpetofauna Survey

# 2. Impact Monitoring Methodology

## 2.1 Introduction

For air quality, construction noise and water quality, ecology, landscape and visual monitoring methodology, including the monitoring locations, monitoring equipments used, monitoring parameters, and frequency and duration etc., are detailed in this Chapter.

## 2.2 Air Quality

### 2.2.1 Monitoring Parameters, Frequency and Duration

In accordance with the EM&A Manual, 1-hour and 24-hour TSP levels monitoring are to be conducted during the construction phase. **Table 2.1** summarizes the monitoring parameters, frequency and duration of air quality monitoring.

Table 2.1: Air Quality Monitoring Parameters, Frequency and Duration

| Monitoring Stations | Parameter | Frequency and Duration |
|---|---|---|
| ASR1, ASR2A, ASR3 & ASR4 | 24-hour TSP | At least once in every six-days |
| | 1-hour TSP | 3 times every six-days |

### 2.2.2 Monitoring Locations

The 4 air quality monitoring stations were established in the EM&A manual and were slightly adjusted during the baseline monitoring phase. Locations of the agreed air quality monitoring stations are listed in **Table 2.2** and as shown in **Figure 2.1**.

Table 2.2: Air monitoring stations

| Monitoring Stations | Locations |
|---|---|
| ASR1 | Works Site Boundary |
| ASR2A | At the rooftop of refuse collection point, which is located at the southwest of the project area |
| ASR3 | At the commercial centre at Palm Springs, which is located at the south of the project area |
| ASR4 | Works Site Boundary |

### 2.2.3 Monitoring Equipments

Continuous 24-hour TSP air quality monitoring is conducted using High Volume Sampler (HVS) (Model: GMWS-2310 Accu-vol). The HVS meets all the requirements of the EM&A Manual. Portable direct reading dust meters were used to carry out the 1-hour TSP monitoring. **Table 2.3** summarizes the equipment used in the impact air quality monitoring.

Table 2.3: TSP Monitoring Equipment

| Equipment | Model |
|---|---|
| **24-hr TSP monitoring** | |
| High Volume Sampler | GMWS 2310 Accu-vol |
| Calibrator | GMW 25 |
| **1-hr TSP monitoring** | |
| Portable direct reading dust meter | AM510 SidePak Personal Aerosol Monitor |

### 2.2.4 Monitoring Methodology

24-hour TSP Monitoring

**Installation**

The HVS was installed in the vicinity of the air sensitive receiver. The following criteria were considered in the installation of the HVS.

- A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
- The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
- A minimum of 2 meters separation from walls, parapets and penthouse was required for rooftop sampler.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnace or incinerator flues or building vent were nearby.
- Airflow around the sampler was unrestricted.
- The sampler has been more than 20 metres from any drip line.
- Permission was obtained to set up the samplers and to obtain access to the monitoring stations.
- A secured supply of electricity is needed to operate the samplers.

**Preparation of Filter Papers**

- Glass fibre filters, were labelled and sufficient filters that were clean and without pinholes were selected.
- All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 ℃ and not variable by more than ±3 ℃ with relative humidity (RH) < 50% and was not variable by more than ±5 %. A convenient working RH was 40%.

**Field Monitoring**

- The power supply was checked to ensure the HVS works properly.
- The filter holder and the area surrounding the filter were cleaned.

- The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
- The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
- The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges.
- The shelter lid was closed and was secured with the aluminium strip.
- The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
- A new flow rate record sheet was set into the flow recorder.
- The flow rate of the HVS was checked and adjusted at around 1.1 $m^3$/min. The range specified in the EM&A Manual was between 0.6-1.7 $m^3$/min.
- The programmable timer was set for a sampling period of 24 hrs + 1 hr, and the starting time, weather condition and the filter number were recorded.
- The initial elapsed time was recorded.
- At the end of sampling, the sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
- It was then placed in a clean plastic envelope and sealed.
- All monitoring information was recorded on a standard data sheet.
- Filters were sent to a HOKLAS accredited laboratory for analysis.

**Maintenance and Calibration**

- The HVS and its accessories are maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- HVSs were calibrated at 2-month intervals.
- Calibration records for HVSs are shown in **Appendix E**.

1-hour TSP Monitoring

**Field Monitoring**

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

- Set POWER to "ON", push BATTERY button, make sure that the meter's indicator is in the range with a red line and allow the instrument to stand for about 3 minutes (Then, the air sampling inlet has been capped).
- Push the knob at MEASURE position.
- Push "O-ADJ" button. (Then meter's indication is 0).
- Push the knob at SENSI ADJ position and set the meter's indication to S value described on the Test Report using the trimmer for SENSI ADJ.
- Pull out the knob and return it to MEASURE position.

- Push “START” button.

**Maintenance and Calibration**

- The 1-hour dust meter would be checked at 3-month intervals and calibrated at 1-year intervals throughout all stages of the air quality monitoring.
- Calibration records for direct dust meters are shown in **Appendix E**.

## 2.3 Construction Noise

### 2.3.1 Monitoring Parameters, Frequency and Duration

Following the requirements in the EM&A Manual for noise, noise monitoring has to be carried out during the construction phase. Continuous noise monitoring for the A-weighted levels $L_{eq}$, $L_{10}$ and $L_{90}$ is undertaken once per every week.

**Table 2.4** summarizes the monitoring parameters, frequency and duration of air quality monitoring.

Table 2.4: Noise Monitoring Parameters, Frequency and Duration

| Monitoring Stations | Parameter | Frequency and Duration |
|---|---|---|
| NSR1, NSR3, NSR5, NSR7 | $L_{eq}$, $L_{90}$ & $L_{10}$ | Once every week |

### 2.3.2 Monitoring Locations

The 4 noise quality monitoring stations were established in the EM&A manual and were slightly adjusted during the baseline monitoring phase. Locations of the agreed noise quality monitoring stations are listed in **Table 2.5** and as shown in **Figure 2.2**.

Table 2.5: Noise monitoring stations

| Monitoring Stations | Locations | Type of measurement |
|---|---|---|
| NSR1 | Noise monitoring equipment was set up near the boundary wall at Palm Springs. | Free-field |
| NSR3 | The monitoring station was located next to the guard house at Palm Springs. | Facade |
| NSR5 | The monitoring station was located within the work site boundary. | Free-field |
| NSR7 | The monitoring station was located near the boundary wall of the house of Mai Po San Tsuen. | Free-field |

### 2.3.3 Monitoring Equipments

Integrating Sound Level Meter will be used for noise monitoring. It is a Type 1 sound level meter capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level ($L_{eq}$) and percentile sound pressure level ($L_x$). They comply with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). **Table 2.6** summarizes the noise monitoring equipment model being used.

Table 2.6: Noise Monitoring Equipment

| Monitoring locations | Equipment Model | |
|---|---|---|
| | Integrating Sound Level Meter | Calibrator |
| NSR1 | Rion NL-31 | Rion NC-74 |
| NSR3 | | |
| NSR5 | | |
| NSR7 | | |

### 2.3.4 Monitoring Methodology

**Field Monitoring**

- The Sound Level Meter was set on a tripod at a height of at least 1.2 m above the ground.
- Façade and free-field measurements were made at the monitoring locations.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting: A
  - time weighting: Fast
  - time measurement: 30 minutes intervals (between 0700 and 1900)
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1 kHz. If the difference in the calibration level before and after measurement was more than 1 dB, the measurement would be considered invalid has to be repeated after re-calibration or repair of the equipment.
- During the monitoring period, the $L_{eq}$, $L_{10}$ and $L_{90}$ were recorded. In addition, any site observations and noise sources were recorded on a standard record sheet.

**Maintenance and Calibration**

- The microphone head of the sound level meter and calibrator is cleaned with soft cloth at quarterly intervals.
- The meter and calibrator are sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.
- Calibration records are shown in **Appendix E**.

## 2.4 Water Quality

### 2.4.1 Monitoring Parameters, Frequency and Duration

In accordance with the requirements in the EM&A Manual for water quality, water quality parameters including Dissolved Oxygen (DO), temperature, pH, turbidity, suspended solids (SS) and Biochemical Oxygen Demand (BOD) have to be monitored at designated monitoring stations during construction of the Project. DO, temperature and pH were measured in-situ whereas SS and BOD were analysed in a laboratory. The measurements should be taken at all designated monitoring stations, 3 days per week. The

interval between any two sets of monitoring was not less than 36 hours. **Table 2.7** summarizes the monitoring parameters, frequency and duration of water quality monitoring.

Table 2.7: Water Quality Monitoring Parameters, Frequency and Duration

| Monitoring Stations | Parameter | Frequency and Duration |
|---|---|---|
| MP1, MP2, MP3, MP4, MP5 & MP6 | DO, temperature, pH, SS, turbidity, BOD | Three days every week |

### 2.4.2 Monitoring Locations

The 6 water quality monitoring stations were established in the EM&A manual. Locations of the agreed water quality monitoring stations are listed in **Table 2.8** and as shown in **Figure 2.3**.

Table 2.8: Water quality monitoring stations

| Monitoring Stations | Easting | Northing |
|---|---|---|
| MP1 | 838 730.50 | 822 862.25 |
| MP2 | 838 933.26 | 823 247.41 |
| MP3 | 839 107.17 | 823 596.84 |
| MP4 | 839 286.14 | 823 638.55 |
| MP5 | 839 134.35 | 823 722.99 |
| MP6 | 839 063.02 | 823 842.25 |

### 2.4.3 Monitoring Equipments

The Water Quality Monitoring Equipments and Analytical Methods applied to Water Quality Samples are given in **Table 2.9** and **Table 2.10** respectively. Details of which are discussed below.

Table 2.9: Water Quality Monitoring Equipments

| Equipment | Model | Equipment /Serial Number |
|---|---|---|
| Dissolved oxygen, temperature & pH Measuring Meter | YSI Professional Plus | 10D101566 |
| Turbidimeter | Hach 2100Q | 09120C000514 |
| Global Positioning System (GPS) | Garmin eTrex Vista | ENO 007 |

Table 2.10: Analytical Methods applied to Water Quality Samples

| Determinant, unit | Standard Method |
|---|---|
| Total Suspended Solids, mg/L | In house method based on APHA 2540D; ALS Method Code: EA-025 |
| Biochemical Oxygen Demand (BOD), mg/L | In house method based on APHA 5210B; ALS Method Code: EP-030 |

All in-situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use.

Dissolved Oxygen (DO), temperature and pH measuring equipment

A portable, weatherproof multiparameter instrument YSI 556 MPS was used in the monitoring. It can be capable for measuring dissolved oxygen (DO), pH, and temperature simultaneously with the following limits:

- a dissolved oxygen level in the range of 0-50 mg/L and 0-500 % saturation;
- a temperature of -5 to 45 degree Celsius; and
- pH value of 0-14 with 0.1 as the base unit.

Turbidity Measurement Instrument

Portable and weatherproof turbidity meter (HACH model 2100P) was used during impact monitoring. It has a photoelectric sensor capable of measuring turbidity between 0-1000 NTU. Response of the sensor was checked with certified standard turbidity solutions before the start of measurement.

Global Positioning System

A hand-held GPS navigator (Garmin eTrex Vista) was used to identify the designated monitoring stations prior to water sampling.

Suspended Solids and BOD Measurements (Sample Containers and Storage)

Water samples for SS analysis were stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4$^{o}$C without being frozen), delivered to the laboratory, and analysed as soon as possible after collection. Analysis was carried out in a HOKLAS accredited laboratory.

**Detection Limit**

The limits of detection for the in-situ and laboratory measurements are shown in **Table 2.11**.

Table 2.11: Detection Limits for Water Quality Determinants

| Determinant | Limit of Detection |
|---|---|
| Dissolved Oxygen | 0.1 mg/L |
| Temperature | 0.1 degree Celsius |
| pH | 0.01 unit |
| Turbidity | 0.1 NTU |
| Suspended Solids | 1 mg/L |
| BOD | 2 mg/L |

### 2.4.4 Monitoring Methodology

In situ measurement

All pH meters, DO/ temperature meters had been checked and calibrated prior to use. Standard buffer solution of at least 2 pH levels (either pH 4 and pH 7 or pH 7 and pH 10) had been used for calibration of the instrument before and after use.

DO meters had been calibrated by a laboratory accredited under HOKLAS or any other international accreditation scheme, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes had been checked with certified standard solutions before each use. Wet bulb calibrations for all DO meters had been carried out before measurement at each monitoring location. For the on site calibration of field equipment, BS 127:1993, "Guide to field and on-site test methods for the analysis of waters" had been observed.

Measurements shall be at 3 water depths, namely, 1m below water surface, mid-depth and 1m above stream bed/pond bed, except where the water depth less that 6m, the mid-depth station maybe omitted. Should the water depth be less than 3m, only the mid-depth station will be monitored.

Replicates in-situ measurements and samples collected from each independent monitoring event are required for all parameters to ensure a robust statistically interpretable dataset.

Water Samples Preparation and Analysis

For collection of water sampling within the water courses, a 500ml clean plastic beaker was used. After collection, the water samples were stored in high-density polythene bottles. The sample container was rinsed with a portion of the water sample. The water sample was then transferred to the container, labelled with a unique sample ID and sealed with a screw cap. The water samples were stored in a cool box maintained at 4$^{o}$C. The water samples were then delivered to a local HOKLAS-accredited laboratory (ALS) on the same day for analysis.

The testing methods of testing parameters as recommended by EIA or required by EPD, with the QA/QC results are in accordance with the requirement of HOKLAS or international accredited scheme.

The calibration certificates for equipments used for in-situ monitoring of water quality are attached in **Appendix E**.

## 2.5 Ecology

### 2.5.1 Monitoring Parameters, Frequency and Duration

Target species and certain other fauna will be monitored within the Project Area and Assessment Area during the wetland and residential construction phase. This will be important to ensure that any unexpected events or impacts either on- or off-site are quickly identified so that remedial action can be taken. The groups to be monitored and frequency of monitoring are shown in **Table 2.12**.

Table 2.12: Summary of Construction Phase Ecological Monitoring for the Wo Shang Wai WRA

| | Construction Phase Ecological Monitoring |
|---|---|
| Birds | Weekly (including Assessment Area). |
| Dragonflies and Butterflies | Once per month during March and September to November, and twice per month during April to August. |
| Herpetofauna | Once per month during April to November. |
| Water Quality | After filling of WRA with water, monthly for *in situ* water quality and every six months (end of the wet season and end of the dry season) for laboratory testing. |
| Site Inspections | Weekly. |

### 2.5.2 Monitoring Locations and Methodology

Ecological monitoring locations during construction phase are shown in **Figure 4.1** and the methodology for ecological monitoring is detailed in **Section 4**.

## 2.6 Landscape and Visual

### 2.6.1 Monitoring Parameters, Frequency and Duration

All measures undertaken by both the Contractor and the specialist Landscape Sub-Contractor during the construction phase and first year of the operational phase shall be audited by a Registered Landscape Architect, as a member of the ET, on a regular basis to ensure compliance with the intended aims of the measures. Site inspections should be undertaken at least once every two weeks throughout the construction period and once every two months during the operational phase.

The broad scope of audit is detailed below but should also be undertaken with reference to the more specific checklist provided in **Table 2.13** below. Operational phase auditing will be restricted to the last 12 months of the establishment works of the landscaping proposals and thus only the items below concerning this period are relevant to the operational phase.

- The extent of the agreed works area should be regularly checked during the construction phase. Any trespass by the Contractor outside the limit of the works, including any damage to existing trees and woodland shall be noted;
- The progress of the engineering works should be regularly reviewed on site to identify the earliest practical opportunities for the landscape works to be undertaken;
- All existing vegetation, streams and other features within the study area which are not directly affected by the works are retained and protected;
- The methods of protecting existing vegetation proposed by the Contractor are acceptable and enforced;
- Preparation, lifting transport and re-planting operations for any transplanted trees;
- The layout, design and construction of buildings conforms to requirements specified in the EIA report;
- All landscaping works are carried out in accordance with the EIA recommendations and with specifications;
- The planting of new trees, shrubs, groundcover, climbers, grasses and other plans, together with the replanting of any transplanted trees are carried out properly and within the right season;
- All necessary horticultural operations and replacement planting are undertaken throughout the Establishment Period to ensure the healthy establishment and growth of both transplanted trees and all newly establishment plants.

Table 2.13: Construction and Operation Phase Audit Checklist

| Area of Works | Items to be Monitored |
|---|---|
| Works Area | Check the extent of the Works to ensure that the Works Area is not exceeded |
| Protection of all trees and woodland blocks to be retained | Identification and demarcation of trees / vegetation to be retained, erection of physical protection (e.g. fencing), monitoring against possible incursion, physical damage, fire, pollution, surface erosion, etc. |
| Streams | Ensure no run-off into existing streams |
| Clearance of existing vegetation | Identification and demarcation of trees / vegetation to be cleared, checking of extent of works to minimize damage, monitoring of adjacent areas against possible incursion, physical damage, fire, pollution, surface erosion, etc. |
| Transplanting of trees | Identification and demarcation of trees / vegetation to be transplanted, monitoring of extent of pruning / lifting works to minimize damage, timing of operations implementation of all stages of preparatory and translocation works, and maintenance of transplanted vegetation, etc. |
| Topsoil stripping | Ensuring existing topsoil is stripped and stored under recognized good practice and is hydroseeded and regularly turned to prevent anaerobic conditions |
| New buildings | Ensure that building finishes accord with mitigation proposals with regard to colour and albedo. |
| Boundaries | Ensuring hoarding are erected as required |
| Noise Barrier | Ensure noise barrier design accords with the mitigation proposals with regard to location, materials and finishes. |
| Night-time lighting | Ensuring night-time lighting is directional, hooded and shielded away from VSRs |
| Plant supply | Monitoring of operations relating to the supply of specialist plant material (including the collecting, germination and growth of plants from seed) to ensure that plants will be available in time to be used within the construction works. |
| Landscape and wetland treatments generally | Check that wetland, and hard / soft landscape designs conform to intent of mitigation measures and agreed designs |
| Soiling, planting, etc. | Monitoring of implementation and maintenance of soiling and planting works against possible incursion, physical damage, fire, pollution, surface erosion, etc. |
| Establishment Works | Monitoring of implementation of maintenance operation during Establishment Period |

### 2.6.2 Monitoring Locations

The monitoring locations should check against the mitigation measures proposed under the approved Environmental Impact Assessment, which are summarised as follows:

Table 2.14: Proposed Construction Phase Mitigation Measures

| ID No. | Landscape and Visual Mitigation Measure |
|---|---|
| CM1 | The construction area and contractor's temporary works areas should be minimised to avoid impacts on adjacent landscape. |
| CM2 | Screening of construction works by hoardings/noise barriers around Works area in visually unobtrusive colours, to screen Works. |
| CM3 | Reduction of construction period to practical minimum. |
| CM4 | Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where the soil material meets acceptable criteria and where practical. The Contract Specification shall include storage and reuse of topsoil as appropriate. |
| CM5 | Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone). |
| CM6 | Advance screen planting to noise barriers. |
| CM7 | Control night-time lighting and glare by hooding all lights. |
| CM8 | Ensure no run-off into streams adjacent to Project Area. |
| CM9 | Protection of existing trees on boundary of project area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at S16 and Tree Removal Application stage). |
| CM10 | Trees unavoidably affected by the works shall be transplanted where practical. Trees should be transplanted straight to their destinations and not held in a nursery. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, if applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme. |

Table 2.15: Proposed Operation Phase Mitigation Measures

| ID No. | Landscape Mitigation Measure |
|---|---|
| OM1 | Compensatory Tree Planting for all felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006. |
| OM2 | A continuous belt of screen planting along southern perimeter of project area with fast growing tree species. At least 450 trees capable of reaching a height > 10m within 10 years should be planted. Planting of the belt of trees shall be carried out as advance works ahead of other site formation and building works. |
| OM3 | Maximise soft landscape and amenity water bodies in residential areas of the development. Approximately 750 of trees (of Heavy Standard size) should be planted. Where space permits, roadside berms should be created. Street trees should be of species that reach a mature height of no less than 15m. |
| OM4 | Maximise freshwater habitat wetland creation consistent with achieving other parameters. Min 4.74 ha to be provided. Wetlands must have natural edge profiles with >1m wide emergent zone. No access to the wetland by residents and all wetlands must be screened from residential development by a continuous tree screen at interface with residential development or earth mounding such that disturbance is minimised. Implementation of the wetland shall be carried out as advance works. |
| OM5 | Use appropriate (visually unobtrusive and non-reflective) building materials and colours in built structures. |
| OM6 | During detailed design, refine building layout to create a min 10m wide gap between |

| ID No. | Landscape Mitigation Measure |
|---|---|
| | buildings north of Wo Shang Wai pond and also two min 10m wide gaps in the row of buildings adjacent to Royal Palms. |
| OM7 | Streetscape elements (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the local context, and minimises potential negative landscape and visual impacts. Lighting units should be directional and minimise unnecessary light spill. |

# 3. Monitoring Results

## 3.1 Impact Monitoring Schedule

Impact monitoring for air quality (dust), noise and water quality due to the construction work were undertaken during the reporting month in compliance with the EM&A manual in the reporting period. Regular site inspections were carried out on 1, 6, 12, 18 and 27 April 2011 in the reporting month to assess the compliance with environmental requirements.

## 3.2 Result of Impact Monitoring

### 3.2.1 Air Quality Monitoring

#### 3.2.1.1 1-hr TSP

Results of 1-hour TSP at the four monitoring locations are summarised in **Table 3.1**. Graphical plots of the monitoring results are shown in **Appendix F**.

Table 3.1: Summary of 1-hour TSP monitoring results

| Monitoring Date | Start Time | 1-hr TSP (μg/m³) | | | Range (μg/m³) | Action Level (μg/m³) | Limit Level (μg/m³) |
|---|---|---|---|---|---|---|---|
| | | 1st Result | 2nd Result | 3rd Result | | | |
| **ASR1** | | | | | | | |
| 4-Apr-11 | 9:01 | 188 | 179 | 173 | 78 - 189 | 378 | 500 |
| 8-Apr-11 | 9:06 | 125 | 133 | 128 | | | |
| 14-Apr-11 | 9:06 | 78 | 86 | 84 | | | |
| 20-Apr-11 | 8:57 | 118 | 121 | 122 | | | |
| 26-Apr-11 | 8:58 | 107 | 115 | 117 | | | |
| 29-Apr-11 | 9:06 | 189 | 181 | 175 | | | |
| **ASR2A** | | | | | | | |
| 4-Apr-11 | 13:13 | 175 | 168 | 177 | 78 - 186 | 357 | 500 |
| 8-Apr-11 | 13:16 | 128 | 121 | 117 | | | |
| 14-Apr-11 | 12:58 | 78 | 83 | 86 | | | |
| 20-Apr-11 | 13:13 | 104 | 102 | 109 | | | |
| 26-Apr-11 | 13:13 | 105 | 97 | 90 | | | |
| 29-Apr-11 | 13:16 | 186 | 178 | 172 | | | |
| **ASR3** | | | | | | | |
| 4-Apr-11 | 12:59 | 182 | 173 | 176 | 75 - 182 | 358 | 500 |
| 8-Apr-11 | 13:04 | 122 | 114 | 120 | | | |
| 14-Apr-11 | 12:48 | 83 | 79 | 75 | | | |
| 20-Apr-11 | 13:00 | 107 | 111 | 117 | | | |
| 26-Apr-11 | 13:00 | 102 | 98 | 96 | | | |
| 29-Apr-11 | 13:02 | 179 | 172 | 163 | | | |
| **ASR4** | | | | | | | |
| 4-Apr-11 | 8:53 | 189 | 182 | 175 | 88 - 196 | 372 | 500 |
| 8-Apr-11 | 8:55 | 130 | 122 | 131 | | | |
| 14-Apr-11 | 8:59 | 89 | 94 | 88 | | | |
| 20-Apr-11 | 8:49 | 116 | 120 | 122 | | | |
| 26-Apr-11 | 8:47 | 102 | 108 | 114 | | | |
| 29-Apr-11 | 8:49 | 196 | 190 | 183 | | | |

#### 3.2.1.2 24-hr TSP

Results of 24-hour TSP at the four monitoring locations are summarised in **Table 3.2**. Graphical plots of the monitoring results are shown in **Appendix F**.

Table 3.2: Summary of 24-hour TSP monitoring results

| Monitoring Date | Monitoring Results (µg/m$^3$) | Range (µg/m$^3$) | Action Level (µg/m$^3$) | Limit Level (µg/m$^3$) |
|---|---|---|---|---|
| **ASR1** | | | | |
| 4-Apr-11 | 105 | 80 - 105 | 226 | 260 |
| 8-Apr-11 | 87 | | | |
| 14-Apr-11 | 80 | | | |
| 20-Apr-11 | 101 | | | |
| 26-Apr-11 | 89 | | | |
| 29-Apr-11 | 98 | | | |
| **ASR2A** | | | | |
| 4-Apr-11 | 87 | 81 - 99 | 213 | 260 |
| 8-Apr-11 | 81 | | | |
| 14-Apr-11 | 89 | | | |
| 20-Apr-11 | 95 | | | |
| 26-Apr-11 | 99 | | | |
| 29-Apr-11 | 91 | | | |
| **ASR3** | | | | |
| 4-Apr-11 | 94 | 72 - 111 | 205 | 260 |
| 8-Apr-11 | 72 | | | |
| 14-Apr-11 | 101 | | | |
| 20-Apr-11 | 111 | | | |
| 26-Apr-11 | 96 | | | |
| 29-Apr-11 | 86 | | | |
| **ASR4** | | | | |
| 4-Apr-11 | 94 | 81 - 112 | 237 | 260 |
| 8-Apr-11 | 81 | | | |
| 14-Apr-11 | 98 | | | |
| 20-Apr-11 | 102 | | | |
| 26-Apr-11 | 112 | | | |
| 29-Apr-11 | 94 | | | |

No exceedance of 1-hour and 24-hour TSP (Action or Limit Level) was recorded in the reporting period.

The weather conditions in the reporting period are provided in **Appendix G**.

### 3.2.2 Construction Noise Monitoring

The construction noise monitoring results are summarized in **Table 3.3**. Graphical plots of the monitoring data are shown in **Appendix F**.

Table 3.3: Summary of Construction noise monitoring results

| Monitoring Date | Start Time | Mean & Range of Noise Levels, dB(A) | | | Limit Level for $L_{eq}$ (dB) |
|---|---|---|---|---|---|
| | | $L_{eq}$ | $L_{10}$ | $L_{90}$ | |
| **NSR1** | | | | | > 75 |
| 4-Apr-11 | 13:20 | 56 | 60 | 44 | |
| 14-Apr-11 | 13:03 | 56 | 59 | 44 | |
| 20-Apr-11 | 13:18 | 55 | 57 | 46 | |
| 26-Apr-11 | 13:18 | 55 | 57 | 46 | |
| **NSR3** | | | | | |
| 4-Apr-11 | 14:02 | 46 | 48 | 44 | |
| 14-Apr-11 | 13:50 | 50 | 52 | 45 | |
| 20-Apr-11 | 13:58 | 48 | 49 | 44 | |
| 26-Apr-11 | 13:57 | 47 | 49 | 40 | |
| **NSR5** | | | | | |
| 4-Apr-11 | 8:58 | 52 | 54 | 49 | |
| 14-Apr-11 | 9:03 | 52 | 54 | 47 | |
| 20-Apr-11 | 8:54 | 52 | 54 | 50 | |
| 26-Apr-11 | 8:55 | 55 | 57 | 46 | |
| **NSR7** | | | | | |
| 4-Apr-11 | 9:31 | 65 | 68 | 61 | |
| 14-Apr-11 | 10:01 | 65 | 68 | 61 | |
| 20-Apr-11 | 9:35 | 66 | 69 | 63 | |
| 26-Apr-11 | 9:40 | 65 | 69 | 61 | |

No exceedance (Action/Limit Level) of construction noise was recorded in the reporting period.

### 3.2.3 Water Quality Monitoring

The water quality monitoring results are summarized in **Table 3.4**. Graphical plots of the monitoring data are shown in **Appendix F**.

Table 3.4: Summary of Water quality monitoring results

| Monitoring Date | Temp (°C) | pH | Dissolved Oxygen (mg/L) | DOS (%) | Turbidity (NT) | BOD (mg/L) | Suspended Solids (mg/L) |
|---|---|---|---|---|---|---|---|
| **MP1** | | | | | | | |
| 1/4/2011 | 18.3 | **7.7** | 9.0 | 93.7 | 14.6 | 5.5 | 11.5 |
| 4/4/2011 | 22.2 | **7.9** | 4.4 | 49.7 | 41.8 | 9.5 | 41 |
| 6/4/2011 | 22.4 | **7.8** | 7.3 | 75.4 | 19.5 | 9 | 13.5 |
| 8/4/2011 | 25.3 | **7.9** | 10.5 | 128.5 | 12.0 | 6.5 | 12 |
| 11/4/2011 | 26.4 | **7.8** | 9.2 | 97.3 | 7.5 | 3.5 | 7.5 |
| 13/4/2011 | 24.6 | **7.7** | 9.0 | 95.5 | 9.7 | 10 | 7 |
| 15/4/2011 | 27.1 | 7.5 | 9.6 | 122.4 | 50.0 | 15.5 | 61 |
| 18/4/2011 | 27.9 | 7.5 | 9.0 | 114.2 | 42.0 | 12 | 27.5 |
| 20/4/2011 | 26.0 | 7.4 | 10.0 | 93.9 | 40.3 | 8 | 35.5 |
| 26/4/2011 | 25.5 | **7.8** | 6.3 | 76.5 | 91.3 | 5 | 108 |
| 28/4/2011 | 22.3 | **7.7** | 6.8 | 69.7 | 12.6 | 4 | 9.5 |
| 30/4/2011 | 24.8 | 7.4 | 2.7 | 32.9 | 35.7 | 5 | 37 |
| Action Level | - | <5.5 or >7.5 | <1.23 | - | >173 | - | >231 |
| Limit Level | - | <4.0 or >8.0 | <1.17 | - | >177 | - | >299 |
| | | | | | | | |

| Monitoring Date | Temp (°C) | pH | Dissolved Oxygen (mg/L) | DOS (%) | Turbidity (NT) | BOD (mg/L) | Suspended Solids (mg/L) |
|---|---|---|---|---|---|---|---|
| **MP2** | | | | | | | |
| 1/4/2011 | 17.9 | **7.8** | 8.9 | 91.8 | 16.4 | 4.5 | 13 |
| 4/4/2011 | 22.3 | **8.0** | 4.4 | 50.3 | 36.7 | 9 | 41 |
| 6/4/2011 | 22.6 | **7.9** | 7.7 | 79.9 | 17.5 | 10 | 12 |
| 8/4/2011 | 25.3 | **8.1** | 10.4 | 127.3 | 11.1 | 5.5 | 12.5 |
| 11/4/2011 | 26.2 | **7.7** | 9.1 | 95.7 | 7.2 | 12 | 9.5 |
| 13/4/2011 | 25.0 | **7.9** | 9.1 | 96.0 | 8.4 | 4.5 | 8 |
| 15/4/2011 | 27.9 | 7.4 | 9.6 | 124.5 | 42.6 | 17.5 | 49.5 |
| 18/4/2011 | 27.1 | **7.6** | 8.8 | 110.4 | 44.0 | 12 | 31 |
| 20/4/2011 | 26.3 | 7.5 | 9.9 | 91.7 | 41.0 | 8.5 | 31 |
| 26/4/2011 | 24.7 | **7.7** | 6.5 | 77.3 | 37.7 | 5 | 35.5 |
| 28/4/2011 | 22.8 | **7.6** | 7.4 | 76.5 | 14.8 | 4 | 10 |
| 30/4/2011 | 24.0 | **7.6** | 2.4 | 28.0 | 31.0 | 4.5 | 33 |
| Action Level | - | <5.5 or >7.5 | <1.04 | - | >132 | - | >170 |
| Limit Level | - | <4.0 or >8.0 | <0.89 | - | >163 | - | >209 |
| | | | | | | | |
| **MP3** | | | | | | | |
| 1/4/2011 | 17.5 | 7.5 | **6.0** | 61.8 | 24.5 | 8 | 22.5 |
| 4/4/2011 | 22.1 | **7.9** | **4.7** | 53.7 | 36.1 | 9.5 | 29.5 |
| 6/4/2011 | 22.2 | **7.6** | **5.8** | 60.7 | **67.0** | 20 | **104.5** |
| 8/4/2011 | 24.0 | **8.1** | 10.3 | 123.0 | 29.2 | 8.5 | 26.5 |
| 11/4/2011 | 25.1 | **7.9** | 9.2 | 97.3 | 24.8 | 8 | 22.5 |
| 13/4/2011 | 25.3 | **7.9** | 8.0 | 87.0 | 25.7 | 7 | 22.5 |
| 15/4/2011 | 28.3 | **7.7** | 9.8 | 127.0 | 52.1 | 10 | 64 |
| 18/4/2011 | 27.4 | **7.7** | 8.4 | 105.4 | 40.2 | 8 | 38.5 |
| 20/4/2011 | 25.9 | **7.8** | 10.1 | 95.2 | 46.8 | 8 | 38 |
| 26/4/2011 | 25.7 | **7.6** | **5.6** | 68.4 | 42.3 | 10 | 40 |
| 28/4/2011 | 22.1 | **7.6** | 8.7 | 84.2 | 41.1 | 8 | 36 |
| 30/4/2011 | 25.6 | 7.5 | **5.8** | 70.4 | 41.1 | 10 | 33 |
| Action Level | - | <5.5 or >7.5 | <6.85 | - | >64 | - | >65 |
| Limit Level | - | <4.0 or >8.0 | <6.65 | - | >67 | - | >66 |
| | | | | | | | |
| **MP4** | | | | | | | |
| 1/4/2011 | 18.1 | 7.5 | 5.8 | 58.2 | 20.7 | 2 | 14 |
| 4/4/2011 | 20.9 | 7.4 | 7.5 | 84.6 | **60.8** | 11 | **66.5** |
| 6/4/2011 | 21.2 | 7.4 | 7.6 | 78.4 | 17.6 | 4 | 15 |
| 8/4/2011 | 26.8 | 7.5 | 9.4 | 119.6 | 26.3 | 4 | 20 |
| 11/4/2011 | 27.3 | 7.4 | 9.0 | 95.3 | 34.8 | 8 | 30 |
| 13/4/2011 | 25.7 | 7.4 | 9.0 | 95.5 | 46.4 | 5 | 37.5 |
| 15/4/2011 | 28.5 | **7.6** | 8.8 | 115.6 | 35.7 | 12.5 | 40.5 |
| 18/4/2011 | 27.9 | **7.6** | 8.0 | 100.8 | 42.0 | 12 | 42.5 |
| 20/4/2011 | 26.1 | **7.7** | 8.0 | 75.8 | 32.3 | 7 | 26.5 |
| 26/4/2011 | 26.6 | **8.0** | 23.3 | 297.4 | 40.5 | 21 | **52.5** |
| 28/4/2011 | 23.1 | **7.7** | 8.6 | 80.3 | 42.3 | 10.5 | 48.5 |
| 30/4/2011 | 25.1 | 7.3 | **2.5** | 29.7 | 45.6 | 25 | **63** |
| Action Level | - | <5.5 or >7.5 | <3.91 | - | >60 | - | >50 |
| Limit Level | - | <4.0 or >8.0 | <3.82 | - | >64 | - | >53 |
| | | | | | | | |
| **MP5** | | | | | | | |
| 1/4/2011 | 18.4 | **7.6** | 6.6 | 70.0 | 40.5 | 3 | 41 |
| 4/4/2011 | 21.9 | 7.4 | 4.4 | 51.7 | 56.1 | 12 | 64 |
| 6/4/2011 | 21.6 | 7.4 | 6.5 | 69.3 | 24.0 | 3.5 | 28 |

| Monitoring Date | Temp (°C) | pH | Dissolved Oxygen (mg/L) | DOS (%) | Turbidity (NT) | BOD (mg/L) | Suspended Solids (mg/L) |
|---|---|---|---|---|---|---|---|
| 8/4/2011 | 27.1 | **7.6** | 10.1 | 128.8 | 36.2 | 6 | 30 |
| 11/4/2011 | 27.6 | 7.5 | 9.8 | 103.7 | 36.9 | 5 | 33.5 |
| 13/4/2011 | 26.0 | 7.5 | 8.8 | 92.5 | 50.6 | 5 | 50 |
| 15/4/2011 | 28.6 | **7.8** | 8.4 | 109.8 | 42.0 | 9 | 49.5 |
| 18/4/2011 | 27.3 | **7.7** | 7.9 | 99.6 | 42.3 | 7 | 31 |
| 20/4/2011 | 26.3 | **7.6** | 9.6 | 91.5 | 24.1 | 3 | 18.5 |
| 26/4/2011 | 26.1 | **7.8** | 17.2 | 219.3 | 30.1 | 4.5 | 28.5 |
| 28/4/2011 | 23.5 | 7.5 | 8.2 | 77.0 | 39.4 | 9.5 | 49 |
| 30/4/2011 | 25.9 | 7.5 | 8.3 | 103.7 | **82.7** | 17.5 | 66 |
| Action Level | - | <5.5 or >7.5 | <4.13 | - | >81 | - | >66 |
| Limit Level | - | <4.0 or >8.0 | <3.87 | - | >84 | - | >69 |
| | | | | | | | |
| **MP6** | | | | | | | |
| 1/4/2011 | 18.5 | 7.5 | 6.1 | 65.6 | 46.6 | <2 | 45 |
| 4/4/2011 | 21.6 | 7.3 | **3.4** | 39.6 | 42.6 | 2.5 | 31 |
| 6/4/2011 | 21.8 | 7.4 | 5.5 | 56.0 | 34.0 | 2.5 | 25.5 |
| 8/4/2011 | 25.4 | 7.5 | 7.9 | 98.6 | 51.9 | 5.5 | 52.5 |
| 11/4/2011 | 26.4 | 7.5 | 8.9 | 93.9 | 33.6 | 4 | 30 |
| 13/4/2011 | 25.2 | **7.6** | 9.3 | 98.3 | 47.0 | 6 | 47.5 |
| 15/4/2011 | 28.3 | **7.7** | 8.1 | 106.3 | 24.4 | 3 | 17 |
| 18/4/2011 | 27.5 | **7.8** | 9.4 | 116.9 | 41.4 | 7.5 | 26 |
| 20/4/2011 | 27.0 | 7.4 | 9.7 | 93.1 | 24.3 | 1 | 15.5 |
| 26/4/2011 | 26.1 | 7.3 | 8.7 | 110.3 | 54.7 | 4 | 50 |
| 28/4/2011 | 22.9 | **7.6** | 7.6 | 73.0 | 52.5 | 7 | 46 |
| 30/4/2011 | 25.6 | 7.3 | 5.1 | 63.2 | 65.7 | 5.5 | 60 |
| Action Level | - | <5.5 or >7.5 | <4.61 | - | >94 | - | >75 |
| Limit Level | - | <4.0 or >8.0 | <4.52 | - | >96 | - | >75 |

Notes:

Values **Bold** indicate Action Level exceedance.

Values **Underlined and Bold** indicate Limit Level exceedance.

Exceedance of pH, DO, turbidity and SS were observed at MP1 to MP6. Exceedances of pH were frequently observed. DO were exceeded several times at MP3 and once at MP4 and MP6. Turbidity and/or SS exceedances were recorded on a few days at MP3, MP4 and MP5.

The Event and Action Plan in **Appendix D** was followed under these cases of exceedances.

From investigation, construction activities during the period of exceedance included mainly band drain installation, trial embankment for ground improvement and site formation (filling). It was observed that the Contractor has implemented water quality mitigation measures as recommended in the EIA report, including the provision of temporary drainage facility and associated treatment facility. Sand bags are in place in the temporary drainage channel to enhance the desilting efficiency. The Contractor further enhanced the water quality mitigation measures by erecting several segments of rock bunds at the discharge outlet to avoid site runoff draining directly to the northern ditches.

There was no direct discharge from the site to the ditch where MP1 and MP2 are located, so the exceedances were not considered to be related to the construction activities. For MP4 to MP6, pH was slightly exceeded during the period. Considered the similar pH to MP1 and MP2, the exceedance was considered not related to the project. The exceedances of pH could be due to natural variations.

The fish pond near the site (represented by MP3) was being separated from the construction site by the WRA since November 2010, so the exceedances were not considered to be related to the construction activities. The exceedances of pH could be due to natural variations as the levels were similar to other stations while exceedances of DO, turbidity and SS MP3 maybe due to external factors such as pond fish culture activities which were out of the control of the project.

On 4 April 2011, both turbidity and SS were exceeded at MP4. It was noted that only small amount of site runoff was generated during the period and that there was no turbidity or SS exceedance at MP5 and MP6, which are located closer to the discharge outlet of the site, on the same day. It was therefore concluded that the exceedance was not caused by the project and the cause of exceedance was unknown.

The limit level of DO was exceeded at MP4 on 30 Apr 2011. Action level and limit level of SS were exceeded at MP4 on 26 and 30 Apr 2011 respectively. The action level of turbidity was exceeded at MP5 on 30 Apr 2011. On 26 Apr 2011, green water was observed at the ditch near MP4 and MP5 and this was sign of algal bloom. Under sunlight, photosynthesis dominates and DO increases. As algae grows further and dies, it causes increase in suspended solid and a decrease in DO in the water. The unusually high DO were recorded on 26 Apri2011 at MP4 (23.3 mg/L) and MP5 (17.2 mg/L) confirmed that there was algal bloom in the ditch. The growth and death of algae increased turbidity and SS in the water, causing exceedances at MP4 and MP5. On the other hand, the dying of algae later on has resulted in a decrease in DO and caused an exceedance at MP4 on 30 Apr 2011. Moreover, since there was only small amount of site discharge during the period, the exceedance was not considered to be related to the project.

Due to the reasons above, it was concluded that the exceedances were not related to the construction activities in the project.

# 4. Ecological Monitoring

## 4.1 Introduction

This report documents surveys conducted in the Survey Area between 1 April and 30 April 2011. The Wetland Restoration Area (hereafter WRA) is also surveyed as the area is accessible and site formation works for WRA has been completed. The updated survey transect is provided in **Figure 4.1**. Dates and ecological surveys conducted during this period are summarised in **Appendix H**.

## 4.2 Monitoring of Birds

Monitoring was undertaken following the survey methodology in the EM&A Manual. In addition, low intensity monitoring of the WRA was undertaken (on a monthly basis) to monitor faunal usage of the newly formed cells; monitoring intensity will follow that outlined in the EM&A Manual at the completion of the WRA. A transect was followed in the bird surveys (see **Figure 4.1**). All bird species of conservation importance and/or wetland dependent were identified and enumerated. Flying birds were not recorded unless they were foraging and associated with the habitat (such as swifts). Further, notable bird observations during other surveys were also recorded.

Bird surveys were conducted on a weekly basis. A total of 32 bird species of conservation importance and/or wetland-dependence were recorded within 500 m of the Project Site while 17 bird species were recorded in the WRA. Of the 17 species recorded within the WRA, 13 of them were species of conservation importance and/or wetland-dependent species. A summary of survey data is provided in **Appendix I**.

Approximately 3-5 pairs of Little Ringed Plovers were recorded breeding in the WRA at Cell 2 and 3.

Species and numbers recorded in this survey period are typical of fish pond areas in April indicating that birds in the area are not presently being adversely affected by the construction of the WRA.

## 4.3 Monitoring of Herpetofauna

Two night time herpetofauna surveys were conducted in the period. A total of three amphibian species and a single reptile species were recorded in the survey area, while one of these amphibian species was recorded in the WRA. All species recorded are very common and widespread in northwestern Hong Kong. A summary of the survey findings is provided in **Appendix J**.

## 4.4 Monitoring of Dragonfly and Butterfly

Monitoring of dragonflies and butterflies was conducted on a monthly basis. A total of seven dragonfly species and four butterfly species were recorded in the survey, of which five dragonfly and three butterfly species were recorded in the WRA. All these species recorded are not of conservation concern. A summary of the survey findings is provided in **Appendix J**.

## 4.5 Monitoring of Mammal

Monitoring of mammals was conducted concurrently with other surveys. No mammals were recorded in the survey period. A summary of the survey findings is provided in **Appendix J**.

## 4.6 Management Activities

Soft landscape contractor was appointed in April 2011. The contractor, Yee Sun Gardens Limited, has commenced ground preparation work, which comprised largely of weeding and general site maintenance such as removal of rubbish.

## 4.7 Summary

Ecological monitoring during April 2011 was carried out following the survey methodology and frequency outlined in the EM&A Manual.

A total of 32 bird species, 7 dragonfly species, 4 butterfly species, 3 amphibian and 1 reptile species were recorded in the survey area. Survey findings indicate that the ponds within the Survey Area supported numbers and diversity of wetland-dependent birds and other species of conservation importance typical of fish pond areas in early wet season.

17 bird species, 5 dragonfly species, 3 butterfly species and 1 amphibian species were recorded in the WRA. These findings indicate that the WRA is already supporting wetland-dependent birds and other species of conservation importance.

# 5. Landscape and Visual

## 5.1 Site Inspection

The EM&A programme for Landscape and Visual impact due to the construction commenced in May 2010 and was continued during the reporting period. Site inspections on Landscape and Visual impact were carried out on 8 and 26 April 2011 to confirm the implementation of mitigation measures at construction stage.

## 5.2 Construction Phase Audit Summary

The audit was undertaken with references to the specific checklists provided in **Tables 2.13 – 2.15** and audit results are summarized as below:

Table 5.1: Construction and Operation Phase Audit Summary

| Area of Works | Items to be Monitored |
|---|---|
| Works Area | The boundaries of the works area have been established on site in accordance with the contract documents and approved plans (EP), and the limit of current heavy construction activity is now confined to within the site hoardings (North side of the site / access road) and the noise barriers (other sides of the site). Minor works such as horticultural maintenance of the planting and transplanted trees, and boundary fence repair was proceeding along the Royal Palms - Palm Springs boundary.<br><br>No construction works were observed to have exceeded the site boundaries. Moreover, no construction was carried out at the wetland restoration area after 15 November 2010. |
| Protection of all trees and woodland blocks to be retained | Trees to be retained within the site, located northeast boundary alongside wetland restoration area, have been identified and protected by temporary protective fencing. |
| Streams | The works site is encircled by a berm to intercept surface water and prevent it from washing off into any of the neighboring sites. Surface water is collected within the site in a temporary drainage channel. Gravels beds and barriers have been installed to filter site runoff, sedimentation tanks provided to enable primary treatment before discharge to mains drains. |
| Clearance of existing vegetation | Site clearance was completed prior to the commencement of construction. |
| Transplanting of trees | Tree transplanting has been completed, with the trees relocated to various points within the planting strip along the southern boundary of the site, outside the noise barrier. The trees continue to re-establish well. |
| Topsoil stripping | Suitable pond bund and pond bottom material which had been excavated and stockpiled from the original site, has now all been re-used in the formation of the wetland restoration areas.<br><br>Active dust suppression measures are still being adopted along internal site access tracks. |
| New buildings | No new permanent buildings have yet been constructed on site. |

| | |
|---|---|
| Boundaries | Hoardings have been erected along most of the boundaries of the site. Installation of new screen fence between the future residential sites and the constructed wetland restoration areas is complete. Fence has been being painted green to match with the surrounding vegetated environment. |
| Noise Barrier | Noise barriers have been installed along the southern and western boundaries of the site in accordance with the contract requirements. Their design complies with the mitigation requirements, with upper 6 to 7m portion of the barrier being made from a translucent material with green tinted (to match with the environment). Supporting GMS structure, likewise, has been painted green. |
| Night-time lighting | No night-time works were reported to have been carried out during the monitoring period |
| Landscape and wetland treatments | Continuous belt of screen planting along the southern and western boundaries of the site has been completed. The formation, soiling and water control structures for all four of the wetland restoration areas has been completed. Rain water has partially filled some wetland cells. The clumps of *Phragmites australis* reeds from the original site have been successively translocated to the edge of the cells in wetland restoration area.<br><br>No construction was carried out at the wetland restoration area after 15 November 2010. |
| Soiling | The soiling for the advance planting strip has been completed. A block edge has been added to the edge of planting bed to prevent soil erosion. The soil placement and grading for each of the wetland restoration areas had been completed. |
| Plant supply | The plant material used for the Advance Planting Strip along the southern and western boundaries of the site are all common species and came from commercial sources. Details of the procurement of special plant material for the wetland areas are to be provided in wet season 2011, when nursery supplies become available. |
| Planting | The total numbers of trees that will reach a minimum of 10m in the advance planting strip meet the contract requirements. The tree species are all from the approved list. This planting should achieve the required screening effect.<br><br>Dead planted trees (*Eucalyptus*) should be replaced and the health of condition of the replacement trees should be monitored closely.<br><br>Understorey planting in poor health was observed in some areas along advance planting strip. Replacement or repairing works should be carried for these planting of poor health. |
| Establishment Works | The advance planting, the compensatory planting and the transplanted trees have not yet been hand over for maintenance, the planting works are under supervision onsite to ensure that the requirements of the approved planting proposal are met. The advance planting is currently being maintained by the landscape sub-contractor. |

# 6. Environmental Site Inspection and Audit

## 6.1 Site Inspection

The ET had carried out construction phase weekly site inspections on 1, 6, 12, 18 and 27 April 2011. All observations have been recorded in the site inspection checklist and passed to the Contractor together with the appropriate recommended mitigation measures where necessary. The key observations from site inspections and associated recommendations are summarized in **Table 6.1**.

Table 6.1: Summary of Site Inspections and Recommendations

| Key Observations | ET Recommendation | Contractor's Responses / Action(s) Undertaken | Close-out (Date) |
|---|---|---|---|
| Low relative humidity recorded and dry condition on site | To provide frequent water spraying | Agreed and action taken | 12 Apr 2011 |
| Large stockpiles in the site | To provide impervious sheeting to the slopes of the large stockpiles to reduce dust emission | Agreed and action taken | 18 Apr 2011 |
| Water accumulation in the site after heavy rain the day before | To clear the large water ponds by removing the water accumulated or filling by soil | Agreed and action taken | 27 Apr 2011 |
| Chemical bottles placed on the ground | To provide drip trays to contain the chemical bottles or remove the bottles | Agreed and action taken | 5 May 2011 |
| Diesel generator in use without drip tray | To provide drip tray for the diesel generator | Agreed and action taken | 5 May 2011 |
| Some tarpaulins for stockpiles have been weathered out | To make good the tarpaulin for better dust prevention | Agreed and action to be taken | On-going |

## 6.2 Advice on the Solid and Liquid Waste Management Status

The Contractor has been registered as a chemical waste producer for the Project. Construction and demolition (C&D) material sorting was carried out on site. A sufficient number of receptacles were available for general refuse collection.

As advised by the Contractor, 0 tonnes of C&D material were generated on site during the period. No metals was generated and collected by registered recycling collector. No paper cardboard packing and plastic were generated on site and collected by registered recycling collector. No chemical waste was generated and collected by licensed chemical waste collector. 1.5 tonnes of other types of wastes (e.g. general refuse) was generated on site and disposed of at public landfill facility at NENT.

The Contractor is advised to maintain on site waste sorting and recording system and maximize reuse/recycling of C&D wastes.

## 6.3 Status of Environmental Licenses and Permits

The environmental permits, licenses, and/or notifications on environmental protection for this Project which were valid during the period is summarised in **Table 6.2**.

Table 6.2: Status of Environmental Submissions, Licenses and Permits

| Statutory Reference | Description | Permit /Reference No. | Status |
|---|---|---|---|
| EIAO | Environmental Permit | EP-311/2008B | Valid |
| APCO | Notification of Construction Work under APCO | 316688 (27 Apr 2010) | Valid |
| WPCO | Discharge License | WT00007442-2010 (2 Nov 2010) | Valid |
| WDO | Registration as Chemical Waste Producer | WPN0000-542-H3083-04 | Valid |
| WDO | Bill Account for disposal | 700945423 | Valid |

Legend: EIAO – Environmental Impact Assessment Ordinance
APCO – Air Pollution Control Ordinance
WPCO – Water Pollution Control Ordinance
WDO – Waste Disposal Ordinance

## 6.4 Recommended Mitigation Measures

The EM&A programme followed the recommended mitigation measures in the EM&A manual. The EM&A requirements as well as the summary of implementation status of the environmental mitigation measures are provided in **Appendix K**. In particular, the following mitigation measures were brought to attention during the site audits:

**Air Quality**

- All stockpiles should be covered by tarpaulin or kept wet by water spraying;
- All vehicles should be washed to remove any dusty materials before leaving the construction sites;
- the portion of road leading the construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials;
- During the dry season, sufficient water spraying should be provided at haul road to reduce dust emission; and
- Ensure proper functioning of the wheel wash facility.

**Noise**

- Mobile plant should be sited as far away from NSRs as possible;
- Plant known to emit noise strongly in one direction should be orientated to direct noise away from the NSRs; and
- The construction activities should be better scheduled to reduce noise nuisance.

**Water Quality**

- Water accumulated in the site (including water inside drip trays) should be cleared frequently;
- Ensure proper functioning of the wastewater treatment facility; and
- Silt and debris should be removed from the temporary drainage channel regularly.

**Waste management**

- Reuse the excavated materials as far as practical to reduce the amount of waste disposal;
- Ensure drip trays are provided for chemical containers to prevent leakage or soil contamination;
- All plants and vehicles should be properly maintained to prevent oil leakage;
- Oil stains on soil should be cleared by disposal of contaminated soil; and

# 7. Report on Non-compliance, Complaints, Notifications of Summons and Successful Prosecutions

## 7.1 Record on Non-compliance of Action and Limit Levels

There is no breach of Action or Limit Levels for Air Quality and Noise monitoring in the reporting month.

Exceedance of pH, DO, turbidity and SS were observed at MP1 to MP6. Exceedances of pH were frequently observed. DO were exceeded several times at MP3 and once at MP4 and MP6. Turbidity and/or SS exceedances were recorded on a few days at MP3, MP4 and MP5.

Table 7.1: Summary of exceedances in Water Quality

| Monitoring Date | pH | Dissolved Oxygen (mg/L) | Turbidity (NT) | Suspended Solids (mg/L) |
|---|---|---|---|---|
| **MP1** | | | | |
| 1/4/2011 | **7.7** | 9.0 | 14.6 | 11.5 |
| 4/4/2011 | **7.9** | 4.4 | 41.8 | 41 |
| 6/4/2011 | **7.8** | 7.3 | 19.5 | 13.5 |
| 8/4/2011 | **7.9** | 10.5 | 12.0 | 12 |
| 11/4/2011 | **7.8** | 9.2 | 7.5 | 7.5 |
| 13/4/2011 | **7.7** | 9.0 | 9.7 | 7 |
| 26/4/2011 | **7.8** | 6.3 | 91.3 | 108 |
| 28/4/2011 | **7.7** | 6.8 | 12.6 | 9.5 |
| Action Level | <5.5 or >7.5 | <1.23 | >173 | >231 |
| Limit Level | <4.0 or >8.0 | <1.17 | >177 | >299 |
| | | | | |
| **MP2** | | | | |
| 1/4/2011 | **7.8** | 8.9 | 16.4 | 13 |
| 4/4/2011 | **8.0** | 4.4 | 36.7 | 41 |
| 6/4/2011 | **7.9** | 7.7 | 17.5 | 12 |
| 8/4/2011 | **8.1** | 10.4 | 11.1 | 12.5 |
| 11/4/2011 | **7.7** | 9.1 | 7.2 | 9.5 |
| 13/4/2011 | **7.9** | 9.1 | 8.4 | 8 |
| 18/4/2011 | **7.6** | 8.8 | 44.0 | 31 |
| 26/4/2011 | **7.7** | 6.5 | 37.7 | 35.5 |
| 28/4/2011 | **7.6** | 7.4 | 14.8 | 10 |
| 30/4/2011 | **7.6** | 2.4 | 31.0 | 33 |
| Action Level | <5.5 or >7.5 | <1.04 | >132 | >170 |
| Limit Level | <4.0 or >8.0 | <0.89 | >163 | >209 |
| | | | | |
| **MP3** | | | | |
| 1/4/2011 | 7.5 | **6.0** | 24.5 | 22.5 |
| 4/4/2011 | **7.9** | **4.7** | 36.1 | 29.5 |
| 6/4/2011 | **7.6** | **5.8** | **67.0** | **104.5** |
| 8/4/2011 | **8.1** | 10.3 | 29.2 | 26.5 |
| 11/4/2011 | **7.9** | 9.2 | 24.8 | 22.5 |
| 13/4/2011 | **7.9** | 8.0 | 25.7 | 22.5 |
| 15/4/2011 | **7.7** | 9.8 | 52.1 | 64 |
| 18/4/2011 | **7.7** | 8.4 | 40.2 | 38.5 |
| 20/4/2011 | **7.8** | 10.1 | 46.8 | 38 |
| 26/4/2011 | **7.6** | **5.6** | 42.3 | 40 |

| Monitoring Date | pH | Dissolved Oxygen (mg/L) | Turbidity (NT) | Suspended Solids (mg/L) |
|---|---|---|---|---|
| 28/4/2011 | **7.6** | 8.7 | 41.1 | 36 |
| 30/4/2011 | 7.5 | **5.8** | 41.1 | 33 |
| Action Level | <5.5 or >7.5 | <6.85 | >64 | >65 |
| Limit Level | <4.0 or >8.0 | <6.65 | >67 | >66 |
| | | | | |
| **MP4** | | | | |
| 4/4/2011 | 7.4 | 7.5 | **60.8** | **66.5** |
| 15/4/2011 | **7.6** | 8.8 | 35.7 | 40.5 |
| 18/4/2011 | **7.6** | 8.0 | 42.0 | 42.5 |
| 20/4/2011 | **7.7** | 8.0 | 32.3 | 26.5 |
| 26/4/2011 | **8.0** | 23.3 | 40.5 | **52.5** |
| 28/4/2011 | **7.7** | 8.6 | 42.3 | 48.5 |
| 30/4/2011 | 7.3 | **2.5** | 45.6 | **63** |
| Action Level | <5.5 or >7.5 | <3.91 | >60 | >50 |
| Limit Level | <4.0 or >8.0 | <3.82 | >64 | >53 |
| | | | | |
| **MP5** | | | | |
| 1/4/2011 | **7.6** | 6.6 | 40.5 | 41 |
| 8/4/2011 | **7.6** | 10.1 | 36.2 | 30 |
| 15/4/2011 | **7.8** | 8.4 | 42.0 | 49.5 |
| 18/4/2011 | **7.7** | 7.9 | 42.3 | 31 |
| 20/4/2011 | **7.6** | 9.6 | 24.1 | 18.5 |
| 26/4/2011 | **7.8** | 17.2 | 30.1 | 28.5 |
| 30/4/2011 | 7.5 | 8.3 | **82.7** | 66 |
| Action Level | <5.5 or >7.5 | <4.13 | >81 | >66 |
| Limit Level | <4.0 or >8.0 | <3.87 | >84 | >69 |
| | | | | |
| **MP6** | | | | |
| 4/4/2011 | 7.3 | **3.4** | 42.6 | 31 |
| 13/4/2011 | **7.6** | 9.3 | 47.0 | 47.5 |
| 15/4/2011 | **7.7** | 8.1 | 24.4 | 17 |
| 18/4/2011 | **7.8** | 9.4 | 41.4 | 26 |
| 28/4/2011 | **7.6** | 7.6 | 52.5 | 46 |
| Action Level | <5.5 or >7.5 | <4.61 | >94 | >75 |
| Limit Level | <4.0 or >8.0 | <4.52 | >96 | >75 |

Notes:

Values **Bold** indicate Action Level exceedance.

Values **Underlined and Bold** indicate Limit Level exceedance.

## 7.2 Record on Environmental Complaints received

No environmental complaint was received the reporting month.

## 7.3 Record on Notifications of Summons and Successful Prosecution

No notifications of summons or successful prosecution were received the reporting month.

## 7.4 Review of reasons for and implications of non-compliance, complaints, summons and prosecutions

Investigations have been carried out to identify the causes of exceedance.

From investigation, construction activities during the period of exceedance included mainly band drain installation, trial embankment and site formation (filling). It was observed that the Contractor has implemented water quality mitigation measures as recommended in the EIA report, including the provision of temporary drainage facility and associated treatment facility. Sand bags are in place in the temporary drainage channel to enhance the desilting efficiency. The Contractor further enhanced the water quality mitigation measures by erecting several segments of rock bunds at the discharge outlet to avoid site runoff draining directly to the northern ditches.

With external factors affect the adjacent environments, such as natural variations, pond fish culture activities and algal bloom, the exceedances were considered not due to construction works.

## 7.5 Follow-up actions taken

As non-compliances have been recorded, the Event and Action Plan has been followed. Although it is considered that the exceedances were not related to the Project, the Contractor was reminded to implement the water quality mitigation measures in accordance with the recommendation stated in Section 5.6.1 – 5.6.4 of the EIA Report as far as practicable and regular spot check would be conducted on the nearby discharge by Contractor and inform ET for investigation.

To cater for the site runoff in wet season, the Contractor has further enhanced the water quality mitigation measures by erecting several segments of rock bunds at the discharge outlet to avoid site runoff draining directly to the northern ditches.

## 7.6 Cumulative statistics for complaints, notifications of summons and successful prosecutions

Cumulative statistics for complaints, notifications of summons and successful prosecutions for the Project account for period starting from the date of commencement of construction (i.e. 12 May 2010) to the end of the reporting month and are summarized in the **Table 7.2** below.

Table 7.2: Statistics for complaints, notifications of summons and successful prosecutions

| Reporting Period | Cumulative Statistics | | |
|---|---|---|---|
| | Complaints | Notifications of summons | Successful prosecutions |
| This reporting month (Apr 2011) | 0 | 0 | 0 |
| From 12 May 2010 to end of the reporting month (Apr 2011) | 1 | 0 | 0 |

# 8. Future key Issue

## 8.1 Site Preparatory Works and Construction Works for the Coming Month

The major site works to be commissioned in the coming month include:

- Band drain installation;
- Trial Embankment for Ground Improvement; and
- Site Formation (Filling)

## 8.2 Key Issues for the Coming Month

Key issues to be considered in the coming month include:

- Generation of dust from activities on-site (esp. stockpiling for Trial Embankment) during dry weather condition;
- Noise impact from operating equipment and machinery on-site;
- Generation of site surface runoffs and wastewater from activities on-site;
- Sorting, recycling, storage and disposal of general refuse and construction waste from activities on-site; and
- Management of chemicals and avoidance of oil spillage on-site and to the drainage.

## 8.3 Monitoring Schedule for the Coming Month

The environmental site inspection and environmental monitoring will be continued in the coming month. Impact monitoring for air, noise, water quality, ecology and landscape and visual in accordance with the approved EM&A Manual has commenced since 12 May 2010. The tentative monitoring schedule for May 2011 is shown in the **Table 8.1**.

Table 8.1: Tentative Environmental Monitoring and Audit Schedule for May 2011

**Tentative Environmental Monitoring and Audit Schedule for May 2011**

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|
| 1 | 2<br>The day following Labour Day | 3<br>Water<br>Bird | 4 | 5<br>Water<br>24-hr TSP<br>1-hr TSP<br>Noise Monitoring * | 6 | 7<br>Water |
| 8 | 9<br>Water<br>Bird | 10<br>The Buddha's Birthday | 11<br>Water<br>Dragonfly & Butterfly<br>Herpetofauna<br>24-hr TSP<br>1-hr TSP<br>Noise Monitoring * | 12 | 13<br>Water<br>@ | 14 |
| 15 | 16<br>Water<br>Bird | 17<br>24-hr TSP<br>1-hr TSP<br>Noise Monitoring | 18<br>Water<br>* | 19 | 20<br>Water | 21 |
| 22 | 23<br>Water<br>Bird<br>24-hr TSP<br>1-hr TSP<br>Noise Monitoring | 24 | 25<br>Water<br>Dragonfly & Butterfly<br>Herpetofauna<br>* | 26 | 27<br>Water<br>24-hr TSP<br>1-hr TSP | 28 |
| 29 | 30<br>Water | 31 | | | | |

Air Quality Monitoring (1-hr)
Air Quality Monitoring (24-hr)
Noise Monitoring
Water Quakity Monitoring
* Site Audit by Mott MacDonald (MM)
@ Report Submission (EM&A Report)

Bird Survey
Insect Survey
Herpetofauna Survey

## 8.4 Conclusions and Recommendations

### 8.4.1 Conclusions

The EM&A programme as recommended in the EM&A manual has been undertaken in the reporting month since 12 May 2010.

Monitoring of Air Quality, Noise, Water Quality, Ecology and Landscape and Visual impacts due to the Project was under way. In particular, the 1-hr TSP, 24-hr TSP, noise level (as $L_{eq}$) and water quality parameters (such as pH, DO and SS) under monitoring have been checked against established Action and Limit levels.

There was no breach of Action and Limit Levels for 1-hr TSP, 24-hr TSP and noise in the reporting month.

Exceedance of pH, DO, turbidity and SS were observed at MP1 to MP6. Exceedances of pH were frequently observed. DO were exceeded several times at MP3 and once at MP4 and MP6. Turbidity and/or SS exceedances were recorded on a few days at MP3, MP4 and MP5. The summary of measured water quality is presented in **Section 3.2.3**.

From investigation, the Contractor has implemented water quality mitigation measures as recommended in the EIA report. With external factors affect the adjacent environments, such as natural variations, pond fish culture activities and algal bloom, the exceedances were considered not due to construction works.

### 8.4.2 Recommendations

With considerations on the construction activities and environment, the following recommendations were provided:

Air Quality

- All stockpiles should be covered by tarpaulin or kept wet by water spraying;
- All vehicles should be washed to remove any dusty materials before leaving the construction sites;
- the portion of road leading the construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials;
- Sufficient water spraying should be provided at haul road to reduce dust emission, especially during dry weather conditions; and
- Ensure proper functioning of the wheel wash facility.

Noise

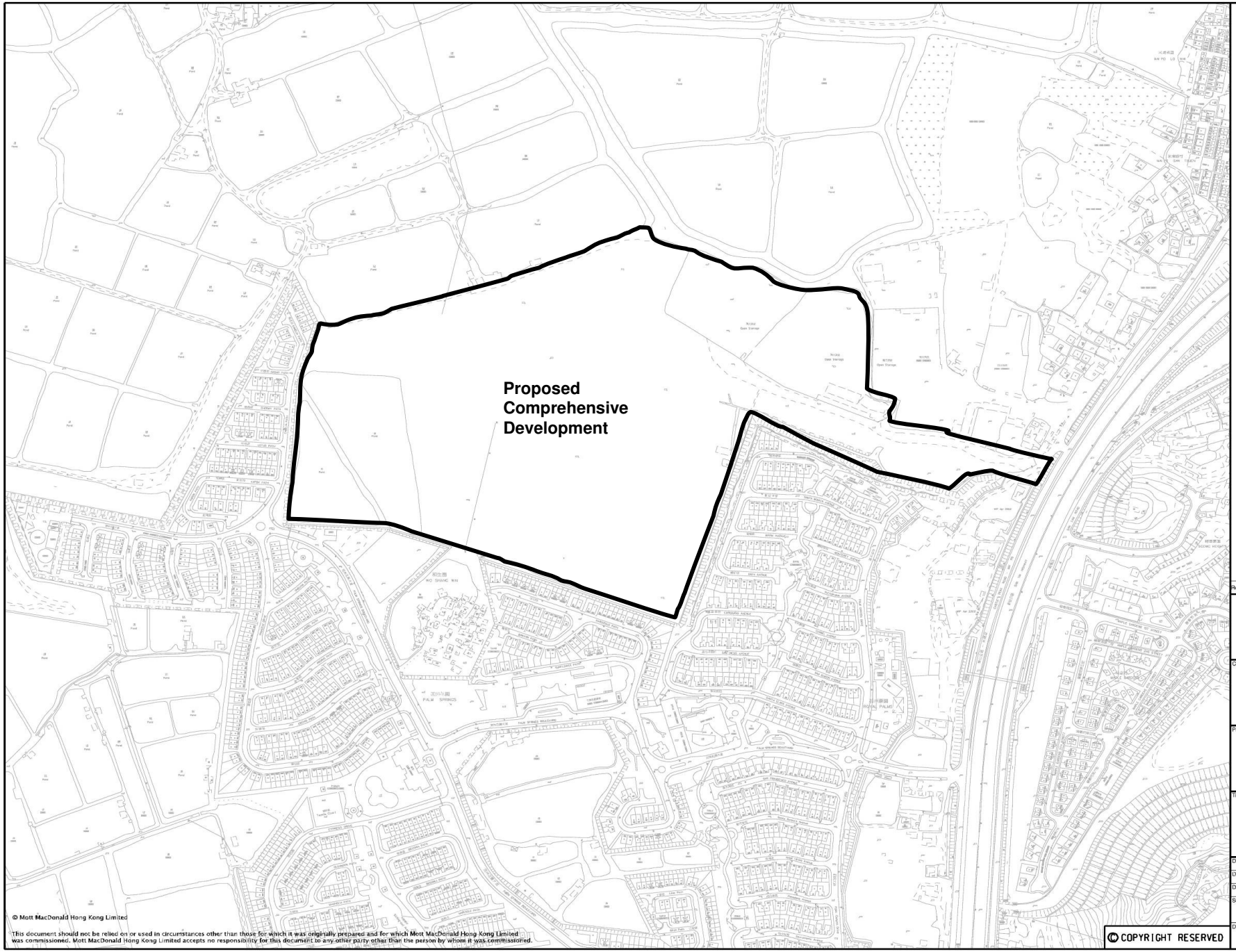
- Mobile plant should be sited as far away from NSRs as possible;
- Plant known to emit noise strongly in one direction should be orientated to direct noise away from the NSRs; and
- The construction activities should be better scheduled to reduce noise nuisance.

Water Quality

- Water accumulated in the site (including water inside drip trays) should be cleared frequently;
- Ensure proper functioning of the wastewater treatment facility; and
- Silt and debris should be removed from the temporary drainage channel regularly.

Waste management

- Reuse the excavated materials as far as practical to reduce the amount of waste disposal;
- Ensure drip trays are provided for chemical containers to prevent leakage or soil contamination;
- All plants and vehicles should be properly maintained to prevent oil leakage;
- Oil stains on soil should be cleared by disposal of contaminated soil;




Legend:

Site Boundary

| Rev | Date | Drawn | Description | Ch'k'd | App'd |
|---|---|---|---|---|---|

Mott MacDonald

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong

Tel 2828 5757
Fax 2827 1823
Web www.mottmac.com.hk

Client

HENG SHUNG CONSTRUCTION CO. LTD

Project

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG

Title

**General Layout Plan of the Project Site**

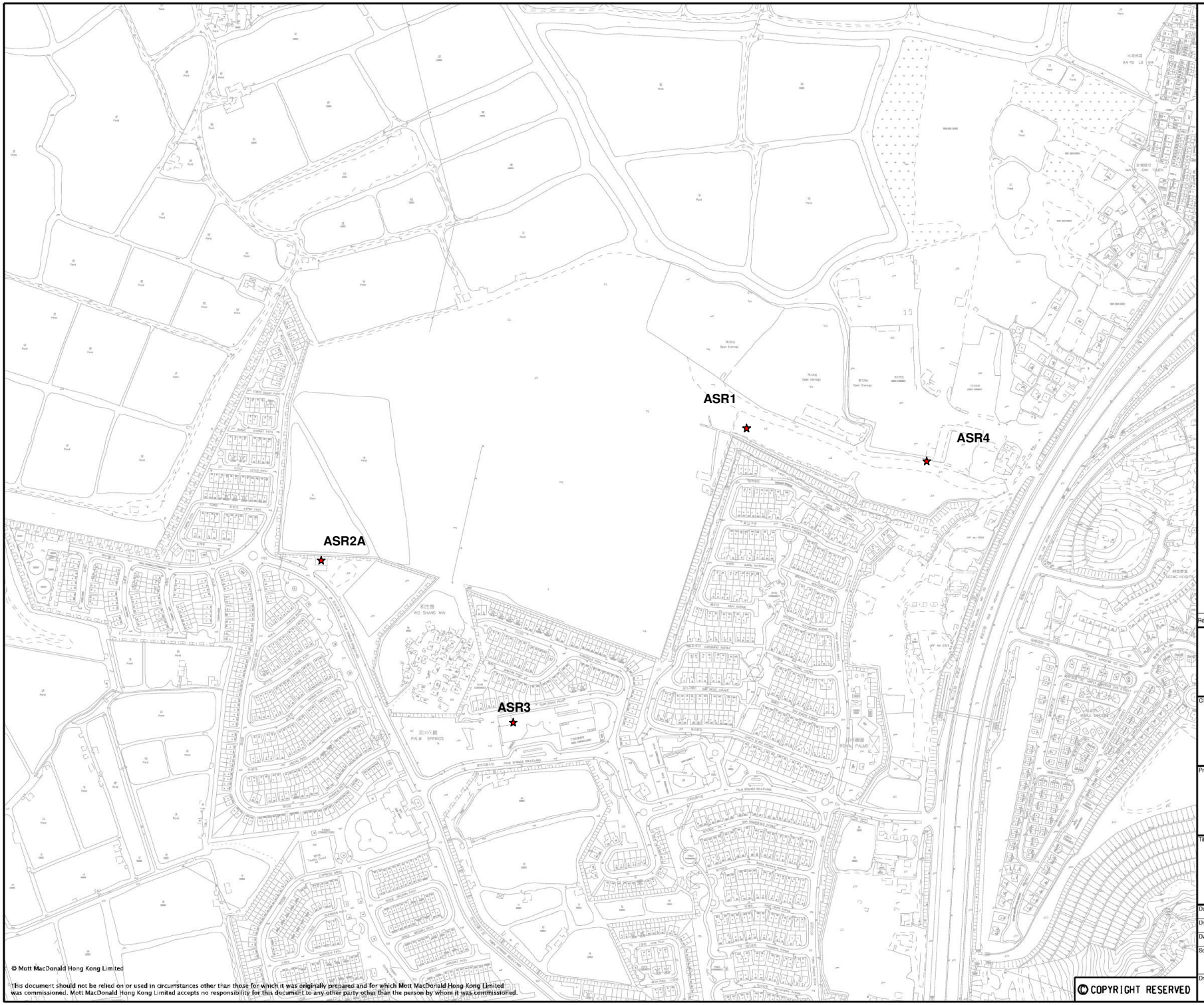
| | | | | | |
|---|---|---|---|---|---|
| Designed | | | Eng.Chk. | | |
| Drawn | | | Coordination | | |
| Dwg.Chk. | | | Approved | | |
| Scale | | Project | | Status | |
| | | CAD File J:\22005\REPORT\ENV\EN&A_manual\080430\BaseMap.dgn | | | |
| Drawing No. | | | | Rev | |

Figure 1.1

© Mott MacDonald Hong Kong Limited

This document should not be relied on or used in circumstances other than those for which it was originally prepared and for which Mott MacDonald Hong Kong Limited was commissioned. Mott MacDonald Hong Kong Limited accepts no responsibility for this document to any other party other than the person by whom it was commissioned.

© COPYRIGHT RESERVED




© Mott MacDonald Hong Kong Limited

This document should not be relied on or used in circumstances other than those for which it was originally prepared and for which Mott MacDonald Hong Kong Limited was commissioned. Mott MacDonald Hong Kong Limited accepts no responsibility for this document to any other party other than the person by whom it was commissioned.

© COPYRIGHT RESERVED

Legend:

★ Indicative Air Quality Monitoring Locations

| Rev | Date | Drawn | Description | Ch'k'd | App'd |
|---|---|---|---|---|---|

Mott MacDonald

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong

Tel 2828 5757
Fax 2827 1823
Web www.mottmac.com.hk

Client

HENG SHUNG CONSTRUCTION CO. LTD

Project

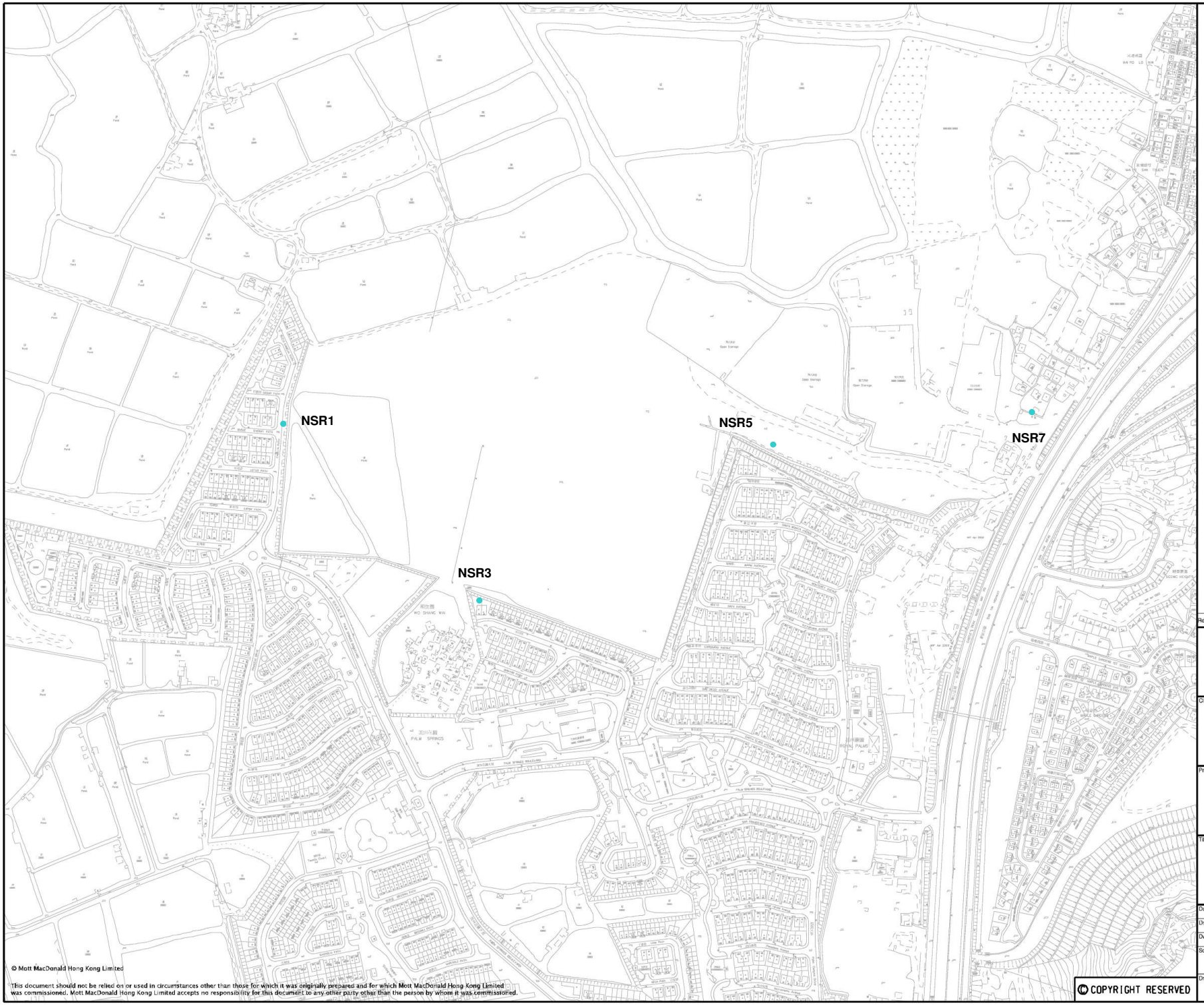
PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG

Title

**Locations of Air Quality Monitoring Stations**

| | | | | | |
|---|---|---|---|---|---|
| Designed | | | Eng.Chk. | | |
| Drawn | | | Coordination | | |
| Dwg.Chk. | | | Approved | | |
| Scale | | Project | | Status | |
| | | CAD File J:\22005\REPORT\ENV\EM&A_manual\0800301\BaseMap.dgn | | | |

Drawing No. Figure 2.1 Rev




© Mott MacDonald Hong Kong Limited

This document should not be relied on or used in circumstances other than those for which it was originally prepared and for which Mott MacDonald Hong Kong Limited was commissioned. Mott MacDonald Hong Kong Limited accepts no responsibility for this document to any other party other than the person by whom it was commissioned.

© COPYRIGHT RESERVED

Legend:

- Indicative Baseline Noise Monitoring Stations

| Rev | Date | Drawn | Description | Ch'k'd | App'd |
|---|---|---|---|---|---|

Mott MacDonald

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong

Tel 2828 5757
Fax 2827 1823
Web www.mottmac.com.hk

Client

HENG SHUNG CONSTRUCTION CO. LTD

Project

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG

Title

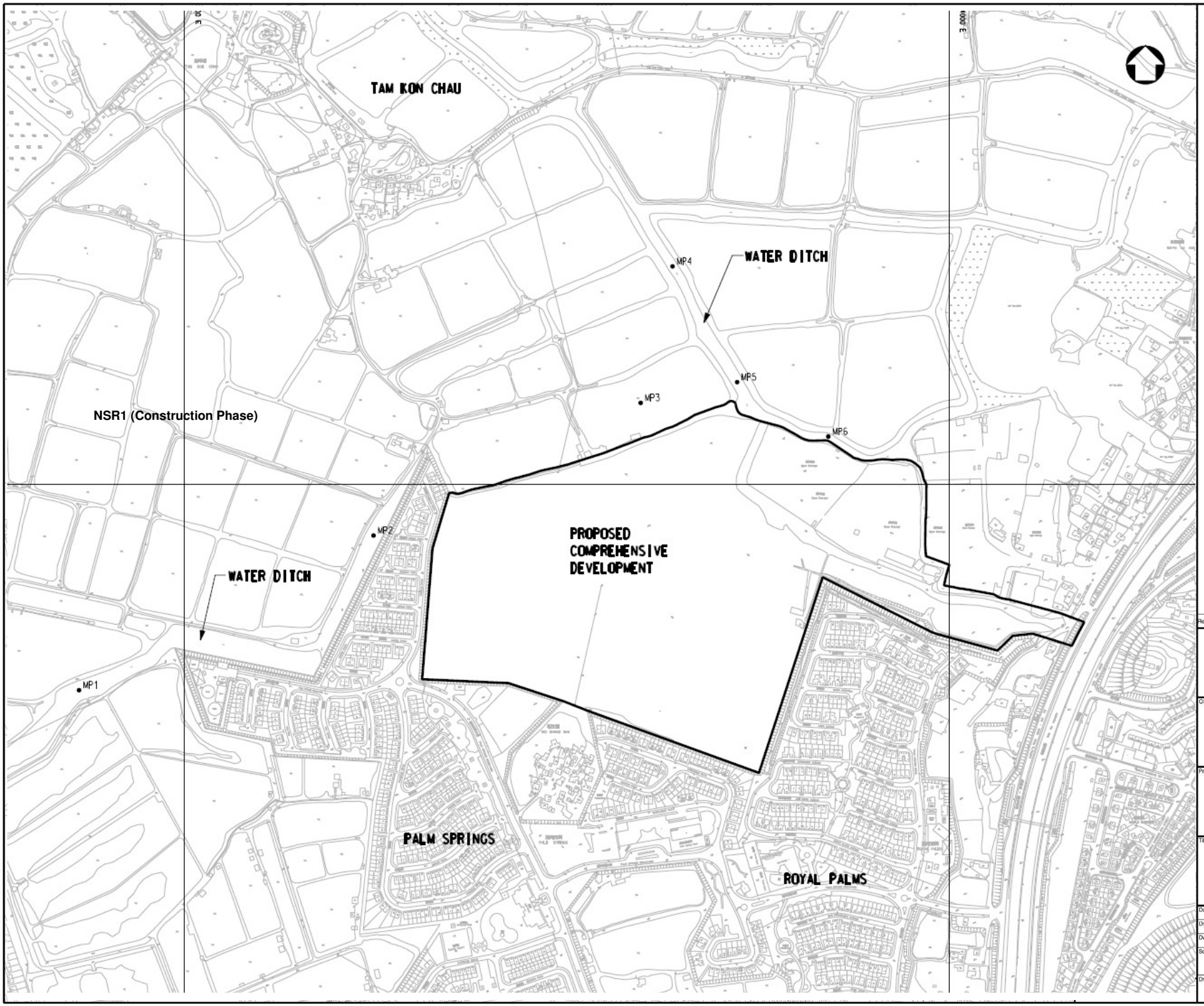
**Locations of Noise Monitoring Stations**

| | | | | | |
|---|---|---|---|---|---|
| Designed | | | Eng.Chk. | | |
| Drawn | | | Coordination | | |
| Dwg.Chk. | | | Approved | | |
| Scale | | Project | | Status | |
| | | CAD File J:\22005\REPORT\ENV\EM&A_manual\0800301\BaseMap.dgn | | | |

Drawing No.

Figure 2.2

Rev




Legend:

- Water Quality Sampling Stations

| Rev | Date | Drawn | Description | Ch'k'd | App'd |
|---|---|---|---|---|---|

Mott MacDonald

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel 2828 5757
Fax 2827 1823
Web www.mottmac.com.hk

Client

HENG SHUNG CONSTRUCTION CO. LTD

Project

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG

Title

**Locations of Water Quality Monitoring Stations**

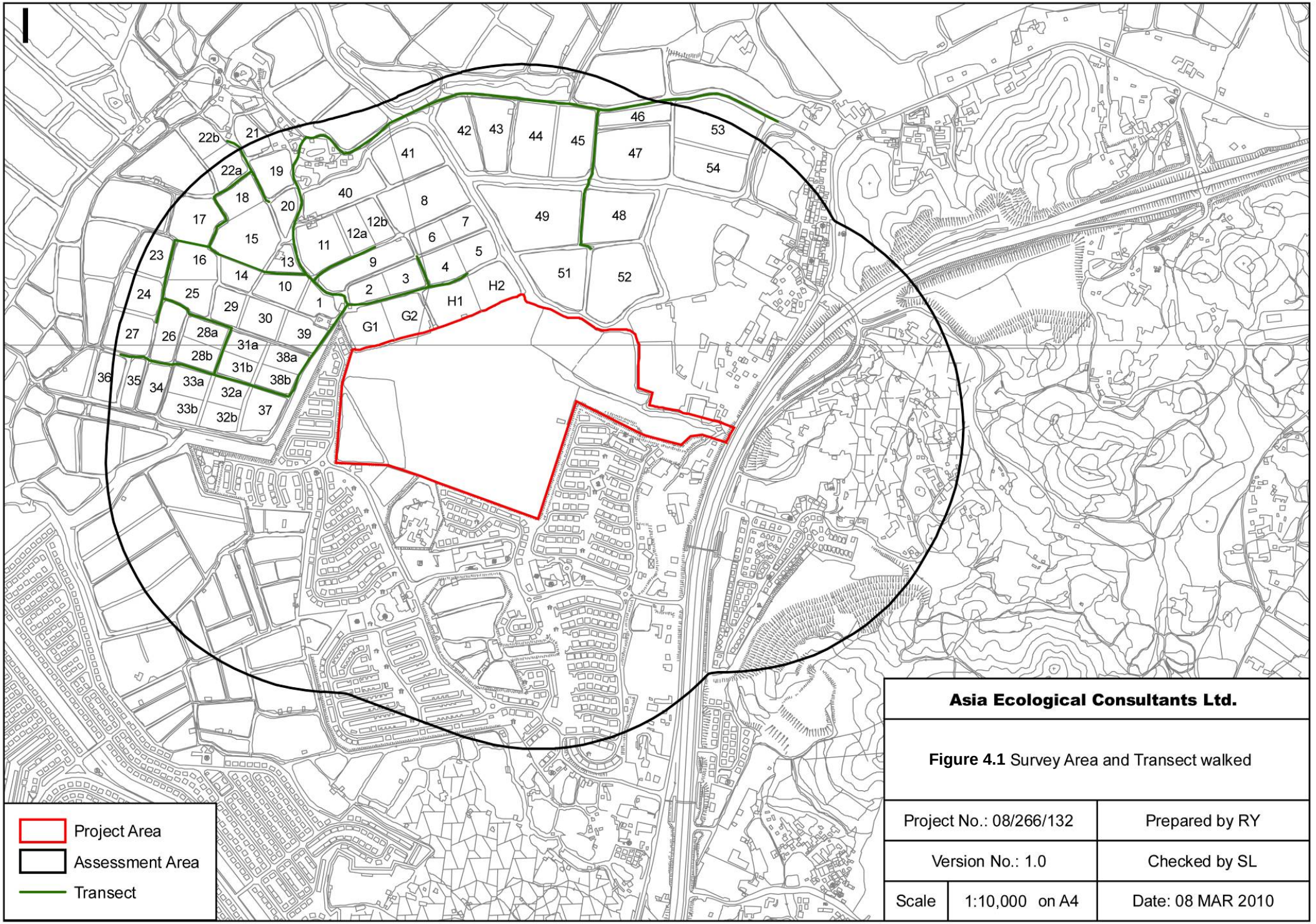
| | | | | | |
|---|---|---|---|---|---|
| Designed | | | Eng.Chk. | | |
| Drawn | | | Coordination | | |
| Dwg.Chk. | | | Approved | | |
| Scale | | Project | | Status | |
| | | CAD File | | | |

J:\22005\REPORT\ENV\EM&A_manual\080301\BaseMap.dgn

Drawing No.

Figure 2.3

Rev

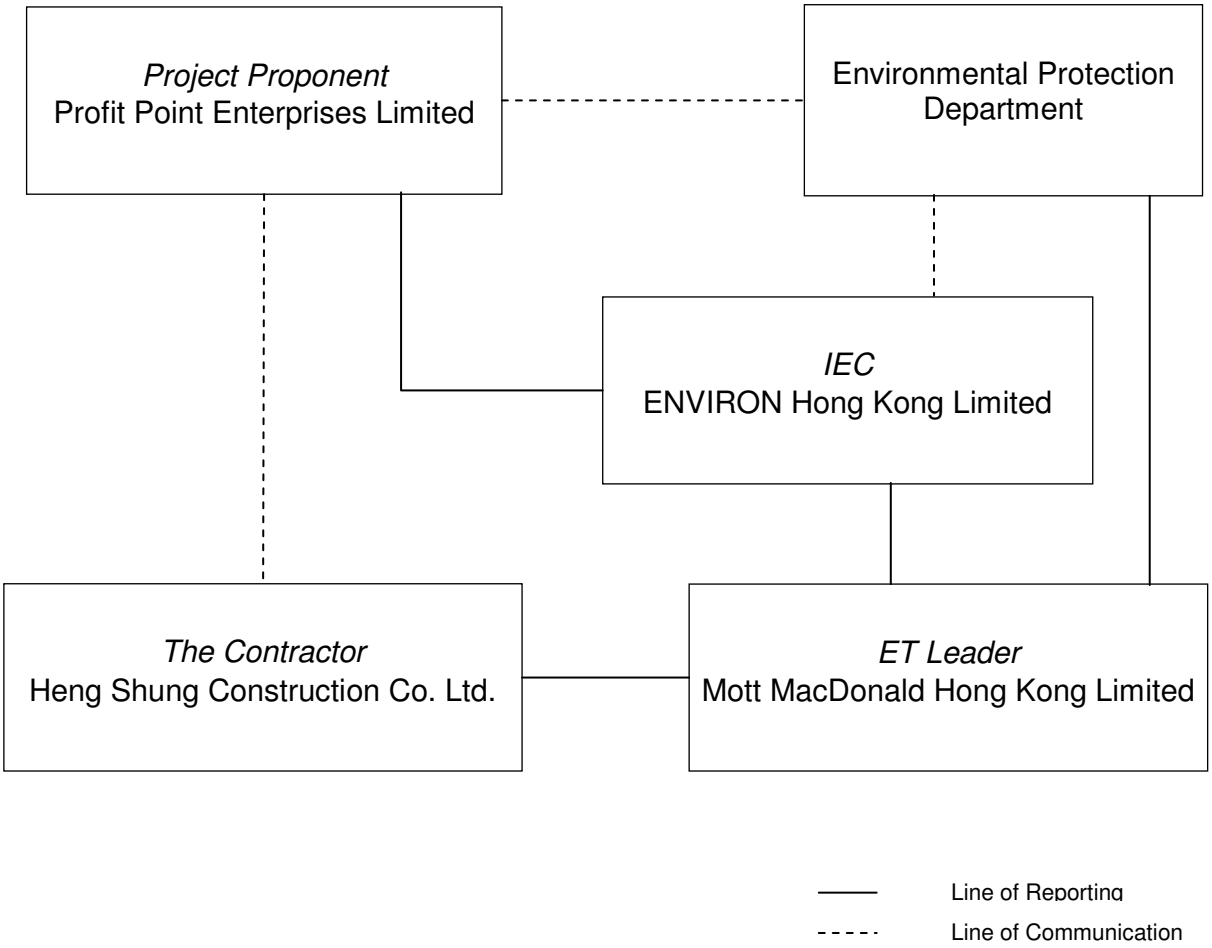



**Asia Ecological Consultants Ltd.**

**Figure 4.1** Survey Area and Transect walked

| | | |
|---|---|---|
| Project No.: 08/266/132 | | Prepared by RY |
| Version No.: 1.0 | | Checked by SL |
| Scale | 1:10,000 on A4 | Date: 08 MAR 2010 |

# Appendix A. Project Organization Chart



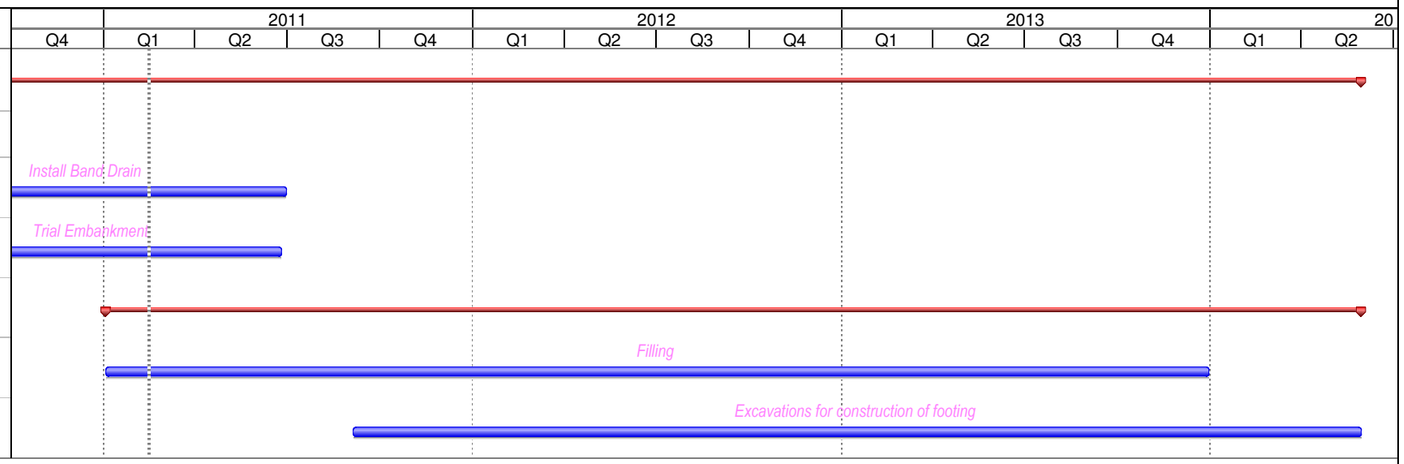

Contact information:

| Company | Position | Name | Telephone / Mobile |
|---|---|---|---|
| Heng Shung Construction Co. Ltd. (The Contractor) | Assistant Construction Manager | Ms Lynne Hung | 2908 2391 |
| Heng Shung Construction Co. Ltd. (The Contractor) | Site Agent | Mr Poon Man Ho | 9426 3533 |
| Heng Shung Construction Co. Ltd. (The Contractor) | Environmental Officer | Mr. Lun Ho Yin | 9866 7497 |
| ENVIRON Hong Kong Ltd (IEC) | Independent Environmental Checker | Mr David Yeung | 3743 0788 |
| Mott MacDonald Hong Kong Ltd. (ET) | ET Team Leader | Ms Florence Yuen | 2828 5768 |

# Appendix B. Tentative Construction Programme

# Wo Shang Wai Construction Works Programme

| ID | Task Name | Working | Start | Finish |
|---|---|---|---|---|
| 0 | **Wo Shang Wai Construction Phase** | **1205 days** | **Tue 01/06/10** | **Fri 30/05/14** |
| 1 | | | | |
| 2 | Install Band Drain | 317 days | Tue 01/06/10 | Thu 30/06/11 |
| 3 | Trial Embankment | 300 days | Thu 17/06/10 | Sat 25/06/11 |
| 4 | **Site Formation** | **1029 days** | **Mon 03/01/11** | **Fri 30/05/14** |
| 5 | Filling | 899 days | Mon 03/01/11 | Mon 30/12/13 |
| 6 | Excavations for construction of footing | 833 days | Mon 05/09/11 | Fri 30/05/14 |




Project : Wo Shang Wai
Revision : E
Print Date : Mon 14/02/11

Task Milestone Summary

# Appendix C. Action and Limit Levels for Construction Phase

## Air Quality

### Action and Limit Levels for 24-hour TSP

| Monitoring Station | Action Level (µg/m$^3$) | Limit Level (µg/m$^3$) |
|---|---|---|
| ASR1 | 226 | 260 |
| ASR2A | 213 | 260 |
| ASR3 | 205 | 260 |
| ASR4 | 237 | 260 |

### Action and Limit Levels for 1-hour TSP

| Monitoring Station | Action Level (µg/m$^3$) | Limit Level (µg/m$^3$) |
|---|---|---|
| ASR1 | 378 | 500 |
| ASR2A | 357 | 500 |
| ASR3 | 358 | 500 |
| ASR4 | 372 | 500 |

## Noise

### Action and Limit Levels for Construction Noise

| Time Period | Action Level | Limit Level |
|---|---|---|
| **NSR1, NSR3, NSR5, NSR7** | | |
| 0700 – 1900 hours on normal weekdays | When one documented complaint is received from any one of the sensitive receivers | 75 dB(A) |

## Water Quality

### Action and Limit Levels for Water Quality

| Parameters | DO in mg/L | | Turbidity in NTU | | SS in mg/L | | pH | |
|---|---|---|---|---|---|---|---|---|
| | Action Level | Limit Level | Action Level | Action Level | Action Level | Limit Level | Action Level | Limit Level |
| MP1 | 1.23 | 1.17 | 173 | 177 | 231 | 299 | < 5.5 or > 7.5 | < 4.0 or > 8.0 |
| MP2 | 1.04 | 0.89 | 132 | 163 | 170 | 209 | | |
| MP3 | 6.85 | 6.65 | 64 | 67 | 65 | 66 | | |
| MP4 | 3.91 | 3.82 | 60 | 64 | 50 | 53 | | |
| MP5 | 4.13 | 3.87 | 81 | 84 | 66 | 69 | | |
| MP6 | 4.61 | 4.52 | 94 | 96 | 75 | 75 | | |

# Appendix D. Event and Action Plan for Air Quality, Noise, Water Quality, Ecology and Landscape & Visual

## Air Quality

| Event | Action<br>ET Leader | IEC | ER | Contractor |
|---|---|---|---|---|
| **Action Level** | | | | |
| 1. Exceedance for one sample | 1. Identify source, investigate the causes of exceedance and propose remedial measures.<br>2. Inform IEC and ER.<br>3. Repeat measurement to confirm finding.<br>4. Increase monitoring frequency to daily. | 1. Check monitoring data submitted by ET.<br>2. Check Contractor's working method. | 1. Notify Contractor. | 1. Rectify any unacceptable practice.<br>2. Amend working methods if appropriate. |
| 2. Exceedance for two or more consecutive samples | 1. Identify the source.<br>2. Inform IEC and ER.<br>3. Advise ER on the effectiveness of the proposed remedial measures<br>4. Repeat measurements to confirm findings.<br>5. Increase monitoring frequency to daily.<br>6. Discuss with IEC and the Contractor on remedial actions required.<br>7. If exceedance continues, arrange meeting with IEC and ER.<br>8. If exceedance stops, cease additional monitoring. | 1. Check monitoring data submitted by ET.<br>2. Check the Contractor's working method.<br>3. Discuss with ET Leader and the Contractor on possible remedial measures.<br>4. Advise ER on the effectiveness of the proposed remedial measures.<br>5. Supervise implementation of remedial measures. | 1. Confirm receipt of notification of exceedance in writing.<br>2. Notify the Contractor.<br>3. Ensure remedial measures properly implemented. | 1. Submit proposals for remedial actions to IEC within 3 working days of notification.<br>2. Implement the agreed proposals.<br>3. Amend proposal if appropriate. |
| **Limit Level** | | | | |
| 1. Exceedance for one sample | 1. Identify source, investigate the causes of exceedance and propose remedial measures.<br>2. Inform ER and EPD.<br>3. Repeat measurement to confirm finding.<br>4. Increase monitoring frequency to daily.<br>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. | 1. Check monitoring data submitted by ET.<br>2. Check the Contractor's working method.<br>3. Discuss with ET Leader and the Contractor on possible remedial measures.<br>4. Advise ER on the effectiveness of the proposed remedial measures.<br>5. Supervise implementation of remedial measures. | 1. Confirm receipt of notification of exceedance in writing.<br>2. Notify the Contractor.<br>3. Ensure remedial measures properly implemented. | 1. Take immediate action to avoid further exceedance.<br>2. Submit proposals for remedial actions to IEC within 3 working days of notification.<br>3. Implement the agreed proposals.<br>4. Amend proposal if appropriate. |
| 2. Exceedance for two or more consecutive samples | 1. Notify IEC, ER, EPD and the Contractor.<br>2. Identify the source.<br>3. Repeat measurements to confirm findings. | 1. Discuss amongst ER, ET Leader and the Contractor on the potential remedial actions. | 1. Confirm receipt of notification of exceedance in writing.<br>2. Notify the | 1. Take immediate action to avoid further exceedance.<br>2. Submit proposals for remedial actions to |

| Event | Action | | | |
|---|---|---|---|---|
| | ET Leader | IEC | ER | Contractor |
| | 4. Increase monitoring frequency to daily.<br>5. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented.<br>6. Arrange meeting IEC and ER to discuss the remedial actions to be taken.<br>7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and ER informed of the results.<br>8. If exceedance stops, cease additional monitoring. | 2. Review the Contractor's remedial actions whenever necessary and advise ER accordingly.<br>3. Supervise the implementation of remedial measures. | Contractor.<br>3. In consultation with IEC, agree with the remedial measures to be implemented.<br>4. Ensure remedial measures are properly implemented.<br>5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. | IEC within 3 working days of notification.<br>3. Implement the agreed proposals.<br>4. Resubmit proposals if problem still not under control.<br>5. Stop the relevant activity of works as determined by ER until the exceedance is abated. |

## Construction Noise

| Event | Action<br>ET Leader | IEC | ER | Contractor |
|---|---|---|---|---|
| **Action Level** | 1. Notify IEC and the Contractor.<br>2. Carry out investigation.<br>3. Report the results of investigation to IEC and the Contractor.<br>4. Discuss with the Contractor and formulate remedial measures.<br>5. Increase monitoring frequency to check mitigation measures. | 1. Review with analysed results submitted by ET.<br>2. Review the proposed remedial measures by the Contractor and advise ER accordingly.<br>3. Supervise the implement of remedial measures. | 1. Confirm receipt of notification of exceedance in writing.<br>2. Notify the Contractor.<br>3. Require the Contractor to propose remedial measures for the analysed noise problem.<br>4. Ensure remedial measures are properly implemented. | 1. Submit noise mitigation proposals to IEC.<br>2. Implement noise mitigation proposals. |
| **Limit Level** | 1. Identify the source.<br>2. Notify IEC, ER, EPD and the Contractor.<br>3. Repeat measurement to confirm findings.<br>4. Increase monitoring frequency.<br>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented.<br>6. Inform IEC, ER, and EPD the causes & actions taken for the exceedances.<br>7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and ER informed of the results.<br>8. If exceedance stops, cease additional monitoring. | 1. Discuss amongst ER, ET Leader and the Contractor on the potential remedial actions.<br>2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly.<br>3. Supervise the implementation of remedial measures. | 1. Confirm receipt of notification of exceedance in writing.<br>2. Notify the Contractor.<br>3. Require the Contractor to propose remedial measures for the analysed noise problem.<br>4. Ensure remedial measures are properly implemented.<br>5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. | 1. Take immediate action to avoid further exceedance.<br>2. Submit proposals for remedial actions to IEC within 3 working days of notification.<br>3. Implement the agreed proposals.<br>4. Resubmit proposals if problem still not under control.<br>5. Stop the relevant activity of works as determined by the ER until the exceedance is abated. |

## Water Quality

| Event | Action<br>ET Leader | IEC | ER | Contractor |
|---|---|---|---|---|
| **Action Level** | | | | |
| **1. Exceedance for one sample** | 1. Repeat in-situ measurement to confirm finding;<br>2. Identify source(s) of impact;<br>3. Inform IEC and Contractor;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC and Contractor; and<br>6. Repeat measurement on next day of exceedance. | 1. Discuss with ET and Contractor on the mitigation measures;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and<br>3. Assess the effectiveness of the implemented mitigation measures. | 1. Discuss with IEC on the proposed mitigation measures; and<br>2. Make agreement on the mitigation measures to be implemented. | 1. Inform the ER and confirm notification of the non-compliance in writing;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment;<br>4. Consider changes of working methods;<br>5. Discuss with ET and IEC and propose mitigation measures to IEC and ER; and<br>6. Implement the agreed mitigation measures. |
| **2. Exceedance for two or more consecutive samples** | 1. Repeat in-situ measurement to confirm finding;<br>2. Identify source(s) of impact;<br>3. Inform IEC and Contractor;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC and Contractor;<br>6. Ensure mitigation measures are implemented;<br>7. Prepare to increase the monitoring frequency to daily; and<br>8. Repeat measurement on next day of exceedance. | 1. Discuss with ET and Contractor on the mitigation measures;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and<br>3. Assess the effectiveness of the implemented mitigation measures. | 1. Discuss with IEC on the proposed mitigation measures;<br>2. Make agreement on the mitigation measures to be implemented; and<br>3. Assess the effectiveness of the implemented mitigation measures. | 1. Inform the Engineer and confirm notification of the non-compliance in writing;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment;<br>4. Consider changes of working methods;<br>5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; and<br>6. Implement the agreed mitigation measures. |
| **Limit Level** | | | | |
| **1. Exceedance for one sample** | 1. Repeat in-situ measurement to confirm finding;<br>2. Identify source(s) of impact;<br>3. Inform IEC, Contractor and EPD;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, ER and Contractor;<br>6. Ensure mitigation measures are implemented; and | 1. Discuss with ET and Contractor on the mitigation measures;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and<br>3. Assess the effectiveness of the implemented mitigation measures. | 1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; and<br>2. Request Contractor to critically review the working methods;<br>3. Make agreement on the mitigation measures to be implemented; and<br>4. Assess the effectiveness of the implemented mitigation measures. | 1. Inform the Engineer and confirm notification of the non-compliance in writing;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment;<br>4. Consider changes of working methods;<br>5. Discuss with ET and IEC and ER and propose mitigation measures to IEC and ER within 3 working days; and |

| Event | Action | | | |
|---|---|---|---|---|
| | ET Leader | IEC | ER | Contractor |
| | 7. Increase the monitoring frequency to daily until no exceedance of Limit level. | | | 6. Implement the agreed mitigation measures. |
| **2. Exceedance for two or more consecutive samples** | 1. Repeat in-situ measurement to confirm finding;<br>2. Identify source(s) of impact;<br>3. Inform IEC, Contractor and EPD;<br>4. Check monitoring data, all plant, equipment and Contractor's working methods;<br>5. Discuss mitigation measures with IEC, ER and Contractor;<br>6. Ensure mitigation measures are implemented; and<br>7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. | 1. Discuss with ET and Contractor on the mitigation measures;<br>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and<br>3. Assess the effectiveness of the implemented mitigation measures. | 1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; and<br>2. Request Contractor to critically review the working methods;<br>3. Make agreement on the mitigation measures to be implemented;<br>4. Assess the effectiveness of the implemented mitigation measures; and<br>5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit Level. | 1. Inform the ER and confirm notification of the non-compliance in writing;<br>2. Rectify unacceptable practice;<br>3. Check all plant and equipment;<br>4. Consider changes of working methods;<br>5. Discuss with ET and IEC and ER and propose mitigation measures to IEC and ER within 3 working days;<br>6. Implement the agreed mitigation measures; and<br>7. As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities. |

# Appendix E. Calibration certificates

# Appendix E
# Calibration Record
# (Air Quality Monitoring)

# CERTIFICATE OF CALIBRATION AND TESTING

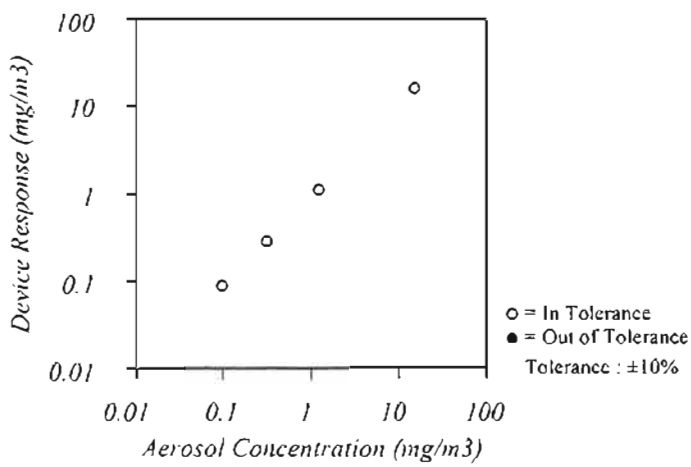
TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

| Environment Condition | | |
|---|---|---|
| Temperature | 78.3 (25.7) | °F (°C) |
| Relative Humidity | 25 | %RH |
| Barometric Pressure | 28.72 (972.6) | inHg (hPa) |

| | |
|---|---|
| Model | **AM510** |
| Serial Number | **11011005** |

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance




System ID: DTI101-01

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

| Measurement Variable | System ID | Last Cal. | Cal. Due |
|---|---|---|---|
| Photometer | E003433 | 11-11-10 | 05-11-11 |
| DC Voltage(Keithley) | E002859 | 01-05-10 | 01-05-11 |
| Barometric Pressure | E003733 | 12-26-09 | 12-26-10 |
| Humidity | E002873 | 02-23-10 | 02-23-11 |

| Measurement Variable | System ID | Last Cal. | Cal. Due |
|---|---|---|---|
| Flow and temperature | E003434 | 04-21-10 | 04-21-11 |
| Microbalance | E003403 | 01-07-10 | 01-07-11 |
| Temperature | E002873 | 02-23-10 | 02-23-11 |
| Pressure | E003440 | 08-24-10 | 08-24-11 |

Patricia McCarty
Calibrated

☑ Final Function Check

November 15, 2010
Date

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR1
Calibrated by : P.F.Yeung
Date : 07/03/2011

Sampler
Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 1806

Calibration Orfice and Standard Calibration Relationship
Serial Number : 1785
Service Date : 10 May 2010
Slope (m) : 2.01637
Intercept (b) : -0.02316
Correlation Coefficient(r) : 0.99996

Standard Condition
Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition
Pa (hpa) : 1018
Ta(K) : 292

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC | Y |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 11.2 | 3.389 | 1.692 | 58 | 58.7 |
| 2 | 13 holes | 8.8 | 3.004 | 1.501 | 51 | 51.6 |
| 3 | 10 holes | 6.9 | 2.660 | 1.331 | 44 | 44.6 |
| 4 | 7 holes | 4.4 | 2.124 | 1.065 | 34 | 34.4 |
| 5 | 5 holes | 2.7 | 1.664 | 0.837 | 25 | 25.3 |

Sampler Calibration Relationship

Slope(m):39.134 Intercept(b): -7.358 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan Date: 10/03/2011

High-Volume TSP Sampler
5-Point Calibration Record

| | | |
|---|---|---|
| Location | : | ASR2A |
| Calibrated by | : | P.F.Yeung |
| Date | : | 07/03/2011 |

Sampler

| | | |
|---|---|---|
| Model | : | GMWS-2310 ACCU-VOL |
| Serial Number | : | S/N 1061 |

Calibration Orfice and Standard Calibration Relationship

| | | |
|---|---|---|
| Serial Number | : | 1785 |
| Service Date | : | 10 May 2010 |
| Slope (m) | : | 2.01637 |
| Intercept (b) | : | -0.02316 |
| Correlation Coefficient(r) | : | 0.99996 |

Standard Condition

| | | |
|---|---|---|
| Pstd (hpa) | : | 1013 |
| Tstd (K) | : | 298.18 |

Calibration Condition

| | | |
|---|---|---|
| Pa (hpa) | : | 1018 |
| Ta(K) | : | 292 |

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC | Y |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 12.3 | 3.552 | 1.773 | 50 | 50.6 |
| 2 | 13 holes | 9.7 | 3.154 | 1.576 | 44 | 44.6 |
| 3 | 10 holes | 7.7 | 2.810 | 1.405 | 39 | 39.5 |
| 4 | 7 holes | 4.8 | 2.219 | 1.112 | 31 | 31.4 |
| 5 | 5 holes | 2.8 | 1.695 | 0.852 | 23 | 23.3 |

Sampler Calibration Relationship

Slope(m):29.401 Intercept(b): -1.625 Correlation Coefficient(r): 0.9998

Checked by: Magnum Fan Date: 10/03/2011

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR3
Calibrated by : K.T.Ho
Date : 07/03/2011

Sampler
Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 7577

Calibration Orfice and Standard Calibration Relationship
Serial Number : 1785
Service Date : 10 May 2010
Slope (m) : 2.01637
Intercept (b) : -0.02316
Correlation Coefficient(r) : 0.99996

Standard Condition
Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition
Pa (hpa) : 1018
Ta(K) : 292

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC | Y |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 12.5 | 3.580 | 1.787 | 60 | 60.8 |
| 2 | 13 holes | 10.0 | 3.202 | 1.600 | 53 | 53.7 |
| 3 | 10 holes | 7.5 | 2.773 | 1.387 | 45 | 45.6 |
| 4 | 7 holes | 4.8 | 2.219 | 1.112 | 35 | 35.4 |
| 5 | 5 holes | 3.0 | 1.754 | 0.881 | 27 | 27.3 |

Sampler Calibration Relationship

Slope(m):36.917 Intercept(b): -5.478 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan Date: 10/03/2011

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR4
Calibrated by : P.F.Yeung
Date : 07/03/2011

Sampler
Model : GMWS-2310 ACCU-VOL
Serial Number : S/N 1273

Calibration Orfice and Standard Calibration Relationship
Serial Number : 1785
Service Date : 10 May 2010
Slope (m) : 2.01637
Intercept (b) : -0.02316
Correlation Coefficient(r) : 0.99996

Standard Condition
Pstd (hpa) : 1013
Tstd (K) : 298.18

Calibration Condition
Pa (hpa) : 1018
Ta(K) : 292

| Resistance Plate | | dH [green liquid] (inch water) | Z | X=Qstd (cubic meter/min) | IC | Y |
|---|---|---|---|---|---|---|
| 1 | 18 holes | 11.6 | 3.449 | 1.722 | 58 | 58.7 |
| 2 | 13 holes | 8.8 | 3.004 | 1.501 | 50 | 50.6 |
| 3 | 10 holes | 6.8 | 2.641 | 1.321 | 44 | 44.6 |
| 4 | 7 holes | 4.5 | 2.124 | 1.065 | 35 | 35.4 |
| 5 | 5 holes | 2.7 | 1.664 | 0.837 | 27 | 27.3 |

Sampler Calibration Relationship

Slope(m):35.340 Intercept(b): -2.219 Correlation Coefficient(r): 0.9999

Checked by: Magnum Fan Date: 10/03/2011

# Appendix E
# Calibration Record
# (Noise Monitoring)

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

*Certificate No. : C105886*

# *Certificate of Calibration*

*This is to certify that the equipment*

*Description : Sound Level Meter*

*Manufacturer : Rion*

*Model No. : NL-31*

*Serial No. : 00983400*

*has been calibrated for the specific items and ranges.*
*The results are shown in the Calibration Report No. C105886.*

*The equipment is supplied by*

*Co. Name : Envirotech Services Co.*

*Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong*

*Date of Issue : 26 October 2010*

*Certified by :* K C Lee

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C105886

# *Calibration Report*

***ITEM TESTED***

DESCRIPTION : Sound Level Meter
MANUFACTURER : Rion
MODEL NO. : NL-31
SERIAL NO. : 00983400

***TEST CONDITIONS***

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

***TEST SPECIFICATIONS***

Calibration check

***DATE OF TEST*** : 25 October 2010 ***JOB NO.*** : IC10-2726

***TEST RESULTS***

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

*Tested by :* *L L Cheung* *Date : 26 October 2010*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C105886

# Calibration Report

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment :

| Equipment ID | Description | Certificate No. |
|---|---|---|
| CL280 | 40 MHz Arbitrary Waveform Generator | C100067 |
| CL281 | Multifunction Acoustic Calibrator | C1006860 |

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Spec. (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | | |
| 30 - 120 | $L_A$ | A | Fast | 94.00 | 1 | 94.0 | ± 1.1 |

6.1.2 Linearity

| UUT Setting | | | | Applied Value | | UUT Reading (dB) |
|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | |
| 30 - 120 | $L_A$ | A | Fast | 94.00 | 1 | 94.0 (Ref.) |
| | | | | 104.00 | | 104.0 |
| | | | | 114.00 | | 114.1 |

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

6.2 Time Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Spec. (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | | |
| 30 - 120 | $L_A$ | A | Fast | 94.00 | 1 | 94.0 | Ref. |
| | | | Slow | | | 93.9 | ± 0.3 |

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C105886

# *Calibration Report*

6.3 Frequency Weighting

6.3.1 A-Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Spec. (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. | | |
| 30 - 120 | $L_A$ | A | Fast | 94.00 | 63 Hz | 67.6 | -26.2 ± 1.5 |
| | | | | | 125 Hz | 77.7 | -16.1 ± 1.5 |
| | | | | | 250 Hz | 85.2 | -8.6 ± 1.4 |
| | | | | | 500 Hz | 90.7 | -3.2 ± 1.4 |
| | | | | | 1 kHz | 94.0 | Ref. |
| | | | | | 2 kHz | 95.3 | +1.2 ± 1.6 |
| | | | | | 4 kHz | 95.1 | +1.0 ± 1.6 |
| | | | | | 8 kHz | 93.0 | -1.1 (+2.1 ; -3.1) |
| | | | | | 12.5 kHz | 90.1 | -4.3 (+3.0 ; -6.0) |

6.3.2 C-Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Spec. (dB) |
|---|---|---|---|---|---|---|---|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. | | |
| 30 - 120 | $L_C$ | C | Fast | 94.00 | 63 Hz | 93.2 | -0.8 ± 1.5 |
| | | | | | 125 Hz | 93.8 | -0.2 ± 1.5 |
| | | | | | 250 Hz | 94.0 | 0.0 ± 1.4 |
| | | | | | 500 Hz | 94.0 | 0.0 ± 1.4 |
| | | | | | 1 kHz | 94.0 | Ref. |
| | | | | | 2 kHz | 93.9 | -0.2 ± 1.6 |
| | | | | | 4 kHz | 93.4 | -0.8 ± 1.6 |
| | | | | | 8 kHz | 91.1 | -3.0 (+2.1 ; -3.1) |
| | | | | | 12.5 kHz | 88.3 | -6.2 (+3.0 ; -6.0) |

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Report No. : C105886

# *Calibration Report*

Remarks : - Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

| | | |
|---|---|---|
| 94 dB : | 63 Hz - 125 Hz | : ± 0.35 dB |
| | 250 Hz - 500 Hz | : ± 0.30 dB |
| | 1 kHz | : ± 0.20 dB |
| | 2 kHz - 4 kHz | : ± 0.35 dB |
| | 8 kHz | : ± 0.45 dB |
| | 12.5 kHz | : ± 0.70 dB |
| 104 dB : | 1 kHz | : ± 0.10 dB (Ref. 94 dB) |
| 114 dB : | 1 kHz | : ± 0.10 dB (Ref. 94 dB) |

- The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Calibration Report 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 environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited 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 the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

輝創工程有限公司

Sun Creation Engineering Limited Calibration and Testing Laboratory

*Certificate No. : C110248*

*This is to certify that the equipment*

*Description : Sound Calibrator*

*Manufacturer : Rion*

*Model No. : NC-74*

*Serial No. : 34251498*

*has been calibrated for the specific items and ranges.*
*The results are shown in the Calibration Report No. C110248.*

*The equipment is supplied by*

*Co. Name : Envirotech Services Co.*

*Address : Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong*

*Date of Issue : 14 January 2011*

*Certified by :* _____
*K C Lee*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
4 F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8986 E-mail: callab@suncreation.com Website: www.suncreation.com

輝創工程有限公司
Sun Creation Engineering Limited Calibration and Testing Laboratory

Report No. : C110248

*ITEM TESTED*

DESCRIPTION : Sound Calibrator
MANUFACTURER : Rion
MODEL NO. : NC-74
SERIAL NO. : 34251498

*TEST CONDITIONS*

AMBIENT TEMPERATURE : (23 ± 2)°C RELATIVE HUMIDITY : (55 ± 20)%
LINE VOLTAGE : ---

*TEST SPECIFICATIONS*

Calibration check

***DATE OF TEST*** : 14 January 2011 ***JOB NO.*** : IC11-0115

*TEST RESULTS*

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

*Tested by :* *L L Cheung* *Date : 14 January 2011*

The test equipment used for calibration are traceable to the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

Calibration and Testing Laboratory of Sun Creation Engineering Limited
c o 4 F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
Tel: 2927 2606 Fax: 2744 8956 E-mail: callab@suncreation.com Website: www.suncreation.com

Report No. : C110248

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment :

| Equipment ID | Description | Certificate No. |
|---|---|---|
| TST150A | Measuring Amplifier | C101008 |
| CL130 | Universal Counter | C103289 |
| CL281 | Multifunction Acoustic Calibrator | C1006860 |

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

| UUT Nominal Value | Measured Value (dB) | Mfr's Spec. (dB) | Uncertainty of Measured Value (dB) |
|---|---|---|---|
| 94 dB, 1 kHz | 94.0 | ± 0.3 | ± 0.2 |

5.2 Frequency Accuracy

| UUT Nominal Value (kHz) | Measured Value (kHz) | Mfr's Spec. | Uncertainty of Measured Value (Hz) |
|---|---|---|---|
| 1 | 1.010 | 1 kHz ± 1 % | ± 1 |

Remark : - The uncertainties are for a confidence probability of not less than 95 %.

Note :
The values given in this Calibration Report 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 environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited 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 the National Standards as specified in this report.
This report shall not be reproduced except in full and with prior written approval from this laboratory.

# Appendix E
# Calibration Record
# (Water Quality Monitoring)

# ALS Technichem (HK) Pty Ltd

## *CERTIFICATE OF ANALYSIS*

| | | | |
|---|---|---|---|
| **CONTACT:** | MR THOMAS WONG | **WORK ORDER:** | HK1105014 |
| **CLIENT:** | ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY | **LABORATORY:** | HONG KONG |
| **ADDRESS:** | RM 3704, SIK MAN HOUSE,<br>HOMANTIN ESTATE,<br>KOWLOON, HONG KONG. | **DATE RECEIVED:** | 01/03/2011 |
| | | **DATE OF ISSUE:** | 04/03/2011 |
| | | **SAMPLE TYPE:** | EQUIPMENT |
| | | **No. of SAMPLES:** | 1 |
| **ORDER No.:** | | | |

## COMMENTS

The calibration procedure used for the analysis has been applied for the calibration of the above instrument.

## 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@alsenviro.com


Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong


*This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.*


*Abbreviations:* *% SPK REC denotes percentage spike recovery*
*CHK denotes duplicate check sample*
*LOR denotes limit of reporting*
*LCS % REC denotes Laboratory Control Sample percentage recovery*




ADDRESS 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong PHONE +852 2610 1044 FAX +852 2610 2021
ALS TECHNICHEM (HK) PTY LTD Part of the ALS Laboratory Group A Campbell Brothers Limited Company
Environmental www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

# CERTIFICATE OF ANALYSIS

**Work Order:** HK1105014
**Date of Issue:** 04/03/2011
**Client:** ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY
**Client Reference:**

***Calibration of Multimeter***

Item : Turbidimeter
ALS Lab ID: HK1105014 -001
Date of Calibration: 01 March, 2011

Model No.: HACH 2100Q
Equipment No.: --
Serial No.: 09120C000514

Testing Results :

Turbidity

| Expected Reading | Recording Reading |
|---|---|
| 4.00 NTU | 4.30 NTU |
| 16.0 NTU | 16.2 NTU |
| 40.0 NTU | 39.8 NTU |
| 160 NTU | 160 NTU |
| 400 NTU | 401 NTU |
| Allowing Deviation | ± 10% |

**Testing Method:**

APHA (19th edition), 2130B

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

# ALS Technichem (HK) Pty Ltd

## *CERTIFICATE OF ANALYSIS*

| | | | |
|---|---|---|---|
| **CONTACT:** | MR THOMAS WONG | **WORK ORDER:** | HK1101810 |
| **CLIENT:** | ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY | **AMENDMENT:** | 1 |
| **ADDRESS:** | RM 3704, SIK MAN HOUSE,<br>HOMANTIN ESTATE,<br>KOWLOON, HONG KONG. | **LABORATORY:** | HONG KONG |
| | | **DATE RECEIVED:** | 20/01/2011 |
| | | **DATE OF ISSUE:** | 22/01/2011 |
| | | **SAMPLE TYPE:** | EQUIPMENT |
| **ORDER No.:** | | **No. of SAMPLES:** | 2 |

## COMMENTS

The calibration procedure used for the analysis has been applied for the calibration of the above instrument.

## 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@alsenviro.com


Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong


*This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd*


*Abbreviations:* *% SPK REC denotes percentage spike recovery*
*CHK denotes duplicate check sample*
*LOR denotes limit of reporting*
*LCS % REC denotes Laboratory Control Sample percentage recovery*




ADDRESS 11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., Hong Kong PHONE +852 2610 1044 FAX +852 2610 2021
ALS TECHNICHEM (HK) PTY LTD Part of the ALS Laboratory Group A Campbell Brothers Limited Company
Environmental www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

# CERTIFICATE OF ANALYSIS

**Work Order:** HK1101810
**Date of Issue:** 22/01/2011
**Client:** ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY
**Client Reference:**

***Calibration of Mulitimeter***

| | | | |
|---|---|---|---|
| Item : | YSI Multimeter | Serial No.: | 10D101566 |
| Model No.: | YSI Professional Plus | Equipment No.: | N/A |
| ALS Lab ID: | HK1101810 -001 | Date of Calibration: | 20 January, 2011 |

Testing Results :

Salinity

| Expected Reading | Recording Reading |
|---|---|
| 10.0 g/L | 10.1 g/L |
| 20.0 g/L | 20.4 g/L |
| 30.0 g/L | 30.5 g/L |
| Allowing Deviation | ± 10% |

**Testing Method:**

APHA (20th edition), 2520 A and B

Dissolved Oxygen

| Expected Reading | Recording Reading |
|---|---|
| 0.0 mg/L | <0.1 mg/L |
| 3.2 mg/L | 3.1 mg/L |
| 6.6 mg/L | 6.6 mg/L |
| 9.6 mg/L | 9.8 mg/L |
| Allowing Deviation | ± 0.2 mg/L |

**Testing Method:**

APHA (20th edition), 4500-OC & G

pH

| Expected Reading | Recording Reading |
|---|---|
| 4.00 | 4.00 |
| 7.00 | 7.10 |
| 10.0 | 10.0 |
| Allowing Deviation | ± 0.2 unit |

**Testing Method:**

APHA (20th edition), 4500-$H^+$B

Temperature

| Expected Reading | Recording Reading |
|---|---|
| 9.0 °C | 8.8 °C |
| 18.7 °C | 18.8 °C |
| Allowing Deviation | ±2.0 °C |

**Testing Method:**

In House Method

Mr Chan Kwok Fai, Godfrey
Laboratory Manager – Hong Kong

# CERTIFICATE OF ANALYSIS

**Work Order:** HK1101810
**Date of Issue:** 22/01/2011
**Client:** ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY
**Client Reference:**

***Calibration of Mulitimeter***

| | | | |
|---|---|---|---|
| Item : | YSI Multimeter | Serial No.: | 10D101565 |
| Model No.: | YSI Professional Plus | Equipment No.: | N/A |
| ALS Lab ID: | HK1101810-002 | Date of Calibration: | 20 January, 2011 |

Testing Results :

Salinity

| Expected Reading | Recording Reading |
|---|---|
| 10.0 g/L | 10.1 g/L |
| 20.0 g/L | 20.2 g/L |
| 30.0 g/L | 30.3 g/L |
| Allowing Deviation | ± 10% |

**Testing Method:**

APHA (20th edition), 2520 A and B

Dissolved Oxygen

| Expected Reading | Recording Reading |
|---|---|
| 0.0 mg/L | 0.1 mg/L |
| 3.2 mg/L | 3.3 mg/L |
| 6.6 mg/L | 6.5 mg/L |
| 9.6 mg/L | 9.5 mg/L |
| Allowing Deviation | ± 0.2 mg/L |

**Testing Method:**

APHA (20th edition), 4500-OC & G

pH

| Expected Reading | Recording Reading |
|---|---|
| 4.00 | 3.90 |
| 7.00 | 7.00 |
| 10.0 | 10.0 |
| Allowing Deviation | ± 0.2 unit |

**Testing Method:**

APHA (20th edition), 4500-$H^+$B

Temperature

| Expected Reading | Recording Reading |
|---|---|
| 9.0 °C | 9.0 °C |
| 18.7 °C | 18.7 °C |
| Allowing Deviation | ±2.0 °C |

**Testing Method:**

In House Method

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

# ALS Technichem (HK) Pty Ltd

## *REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION*

| | | | |
|---|---|---|---|
| **CONTACT:** | MR THOMAS WONG | **WORK ORDER:** | HK1109695 |
| **CLIENT:** | ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY | **LABORATORY:** | HONG KONG |
| **ADDRESS:** | RM 3704, SIK MAN HOUSE,<br>HOMANTIN ESTATE,<br>KOWLOON, HONG KONG. | **DATE RECEIVED:** | 20/04/2011 |
| | | **DATE OF ISSUE:** | 27/04/2011 |
| **PROJECT:** | -- | | |

### 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 aceptance criteria of ALS will be followed.

| | |
|---|---|
| Scope of Test: | Temperature, Salinity, pH and Dissolved Oxygen |
| Description: | YSI Multimeter |
| Brand Name: | YSI |
| Model No.: | YSI Professional Plus |
| Serial No.: | 10D101566 |
| Equipment No.: | -- |
| Date of Calibration: | 20 April, 2011 |

### 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

*This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.*

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

**Work Order:** HK1109695
**Date of Issue:** 27/04/2011
**Client:** ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY

Description: YSI Multimeter
Brand Name: YSI
Model No.: YSI Professional Plus
Serial No.: 10D101566
Equipment No.: --
Date of Calibration: 20 April, 2011 Date of next Calibration: 20 July, 2011

**Parameters:**

**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 ) |
|---|---|---|
| 13.7 | 13.9 | 0.2 |
| 22.7 | 22.4 | -0.3 |
| | Tolerance Limit (°C) | 2.0 |

**pH Value**

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

| Expected Reading (pH Unit) | Displayed Reading (pH Unit) | Tolerance (pH unit) |
|---|---|---|
| 4.00 | 4.0 | 0.00 |
| 7.00 | 7.1 | 0.10 |
| 10.0 | 10.0 | 0.00 |
| | Tolerance Limit (±unit) | 0.20 |

**Dissolved Oxygen**

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

| Expected Reading (mg/L) | Displayed Reading (mg/L) | Tolerance (mg/L) |
|---|---|---|
| 0.00 | 0.1 | 0.10 |
| 2.43 | 2.6 | 0.13 |
| 6.67 | 6.6 | -0.07 |
| 8.98 | 8.9 | -0.08 |
| | Tolerance Limit (±mg/L) | 0.20 |

**Salinity**

**Method Ref: APHA (21st edition), 2520B**

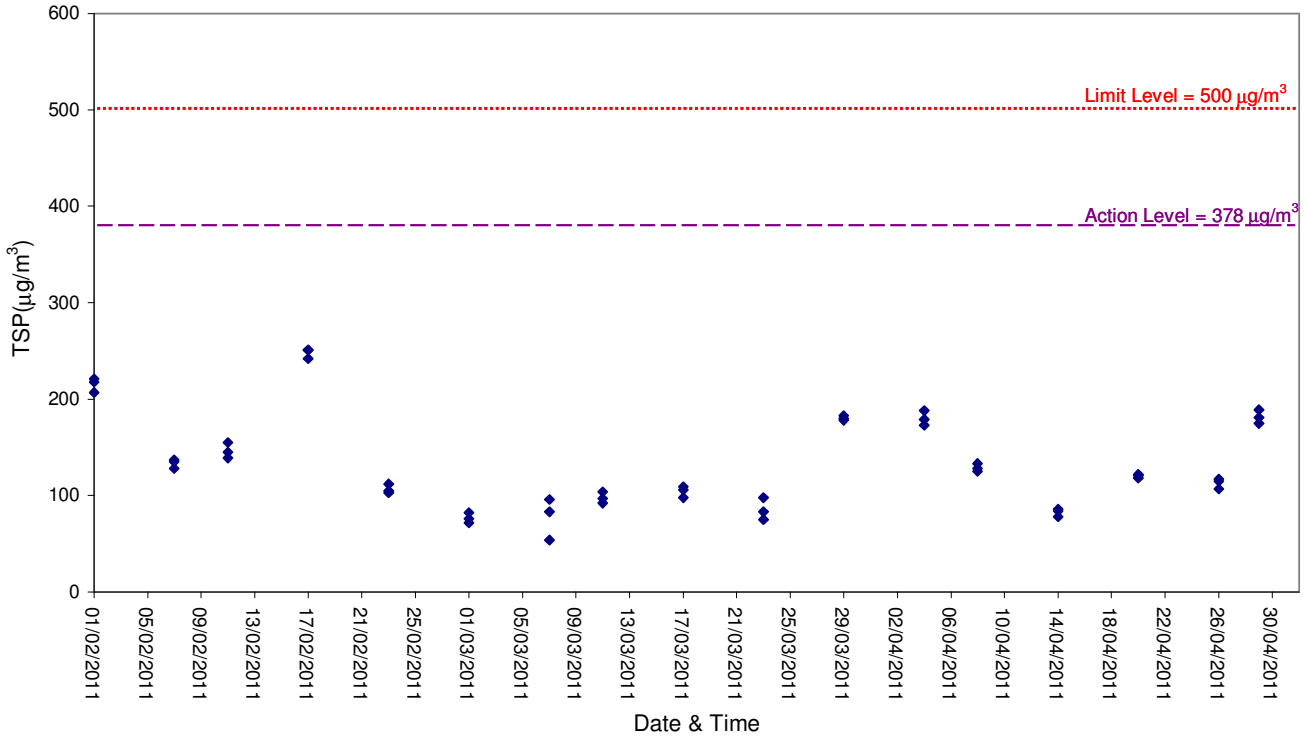
| Expected Reading (ppt) | Displayed Reading (ppt) | Tolerance (%) |
|---|---|---|
| 10.0 | 9.98 | -0.2 |
| 20.0 | 20.15 | 0.7 |
| 30.0 | 30.45 | 1.5 |
| | Tolerance Limit (±%) | 10.0 |

Mr Chan Kwok Fai, Godfrey
Laboratory Manager – Hong Kong

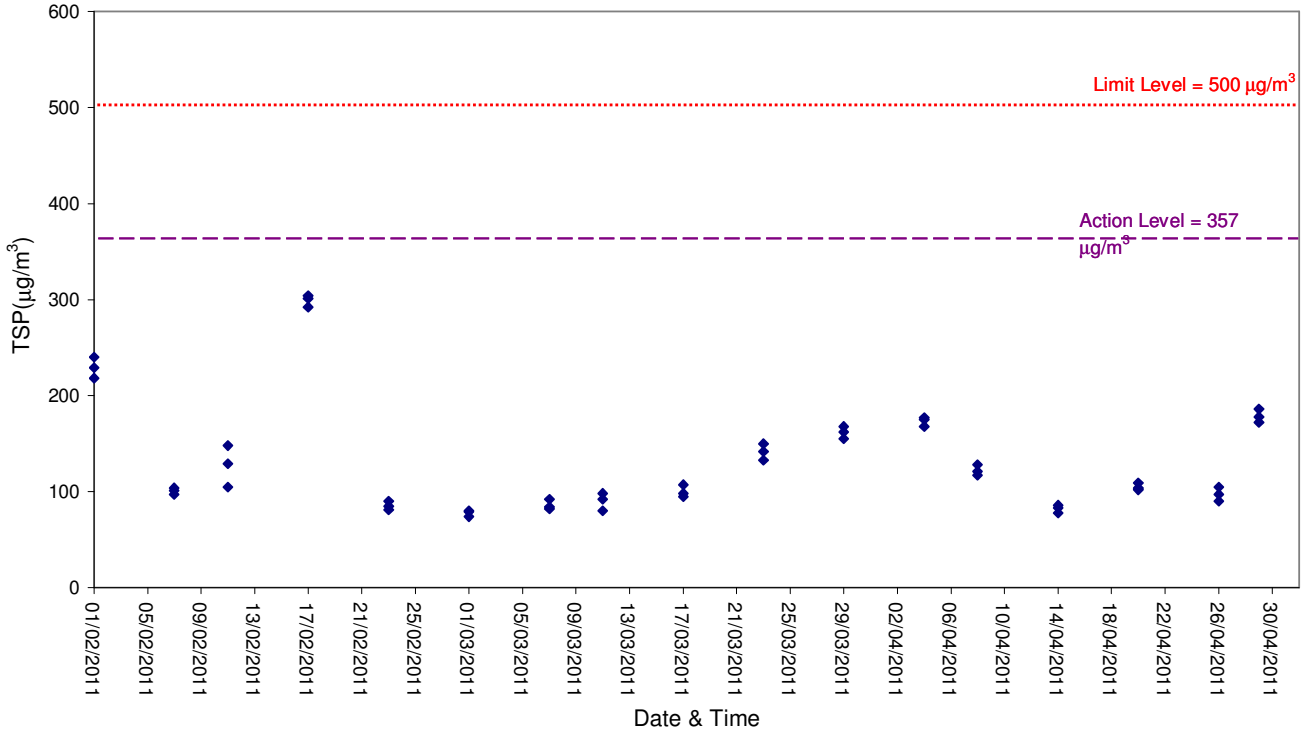
# Appendix F. Graphical plots of the monitoring results

# Air Quality

**1-hour TSP Level at ASR1**

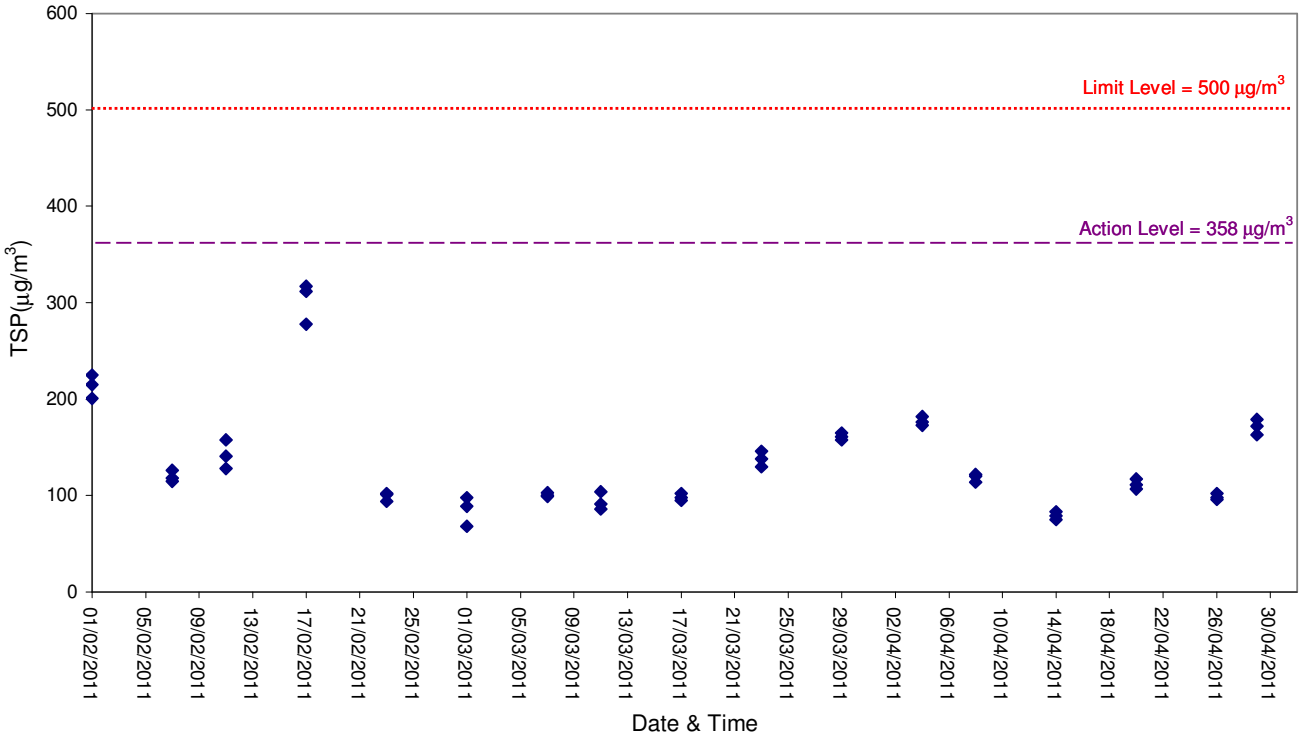



**1-hour TSP Level at ASR2A**

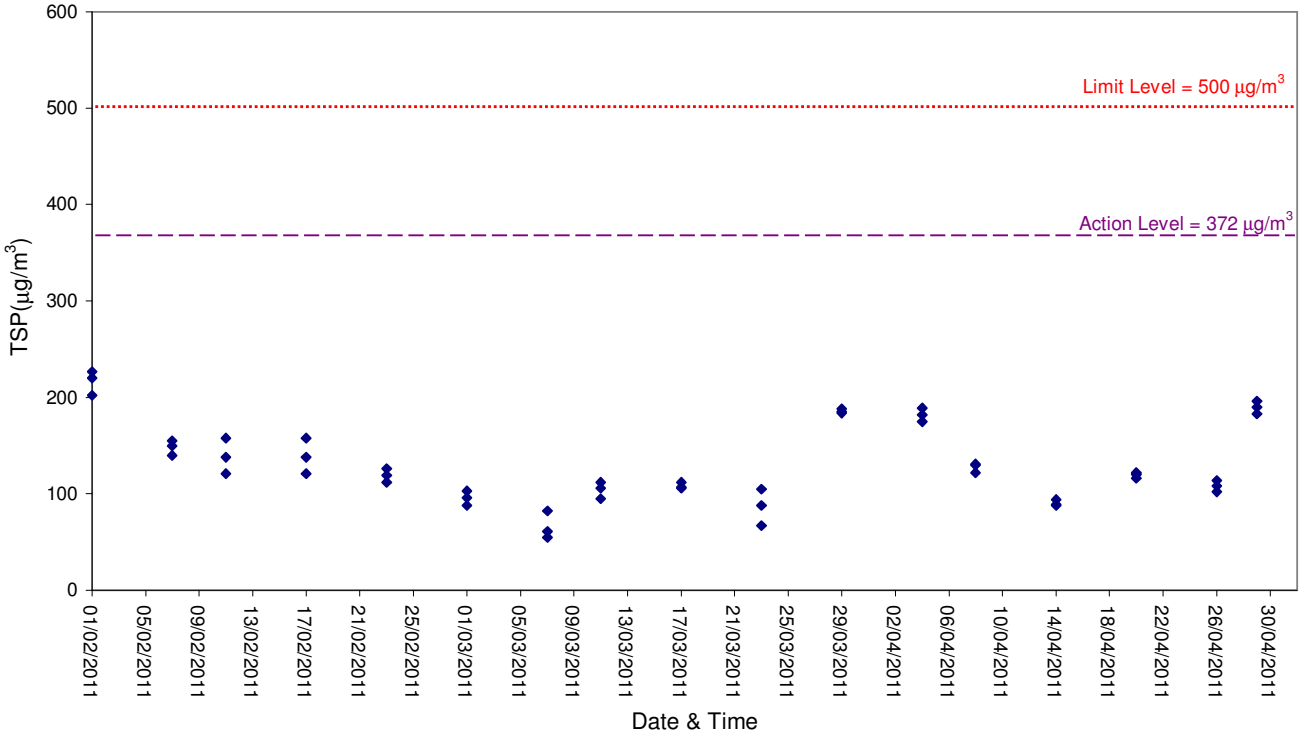


# Air Quality

**1-hour TSP Level at ASR3**

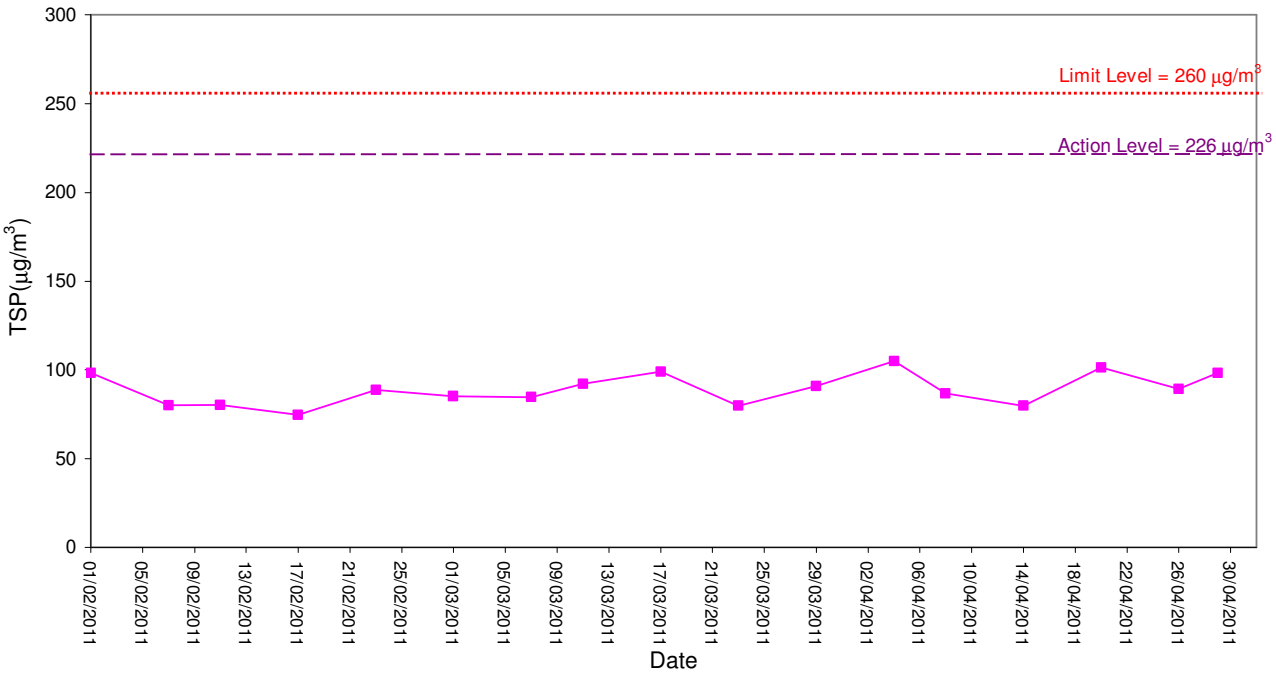



**1-hour TSP Level at ASR4**

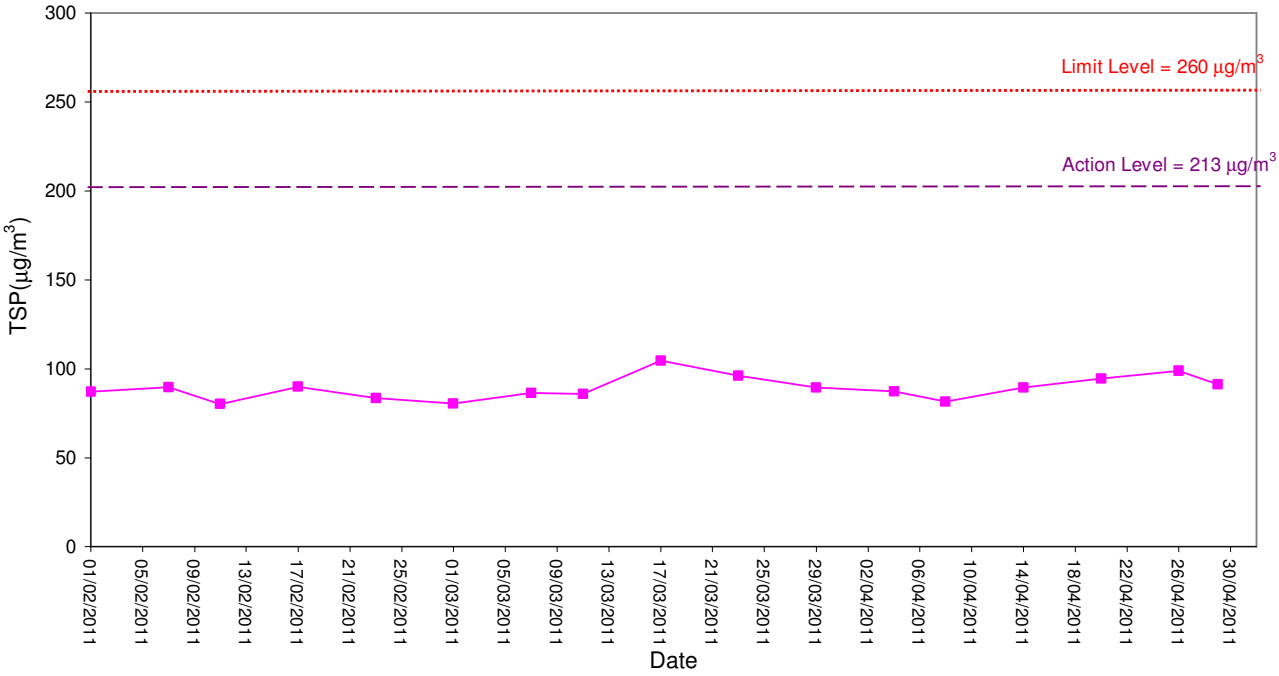


# Air Quality

**24-hour TSP Level at ASR1**

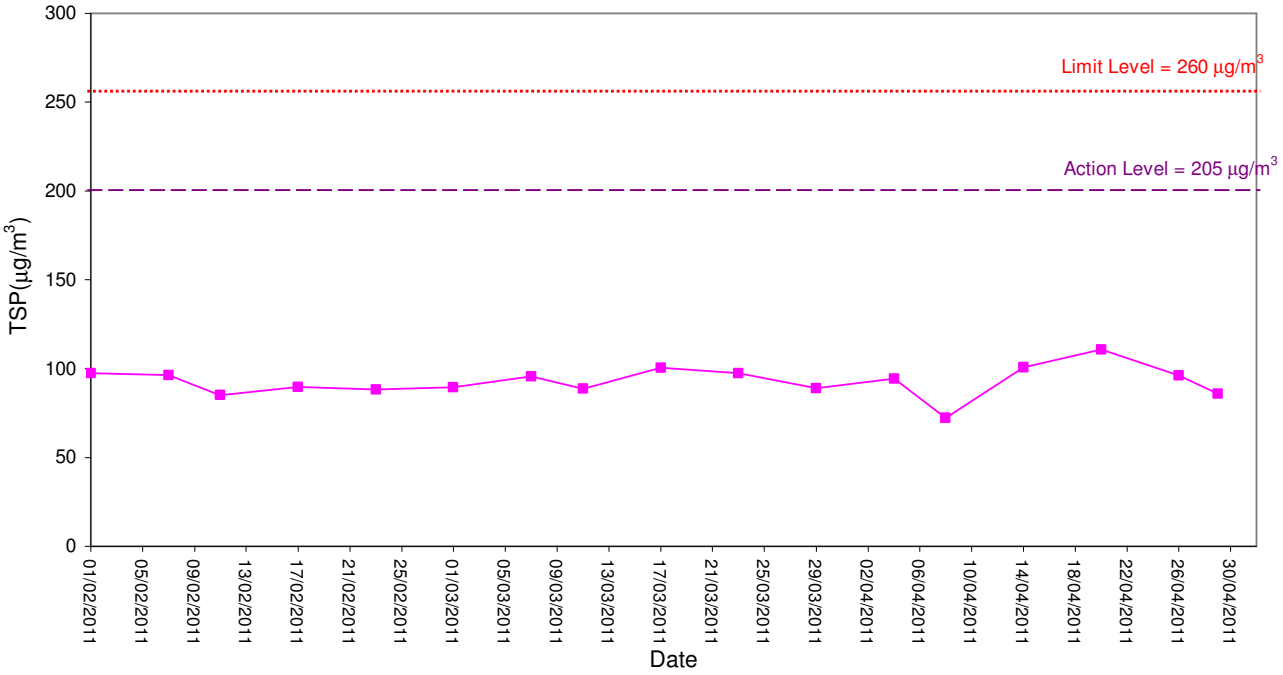



**24-hour TSP Level at ASR2A**

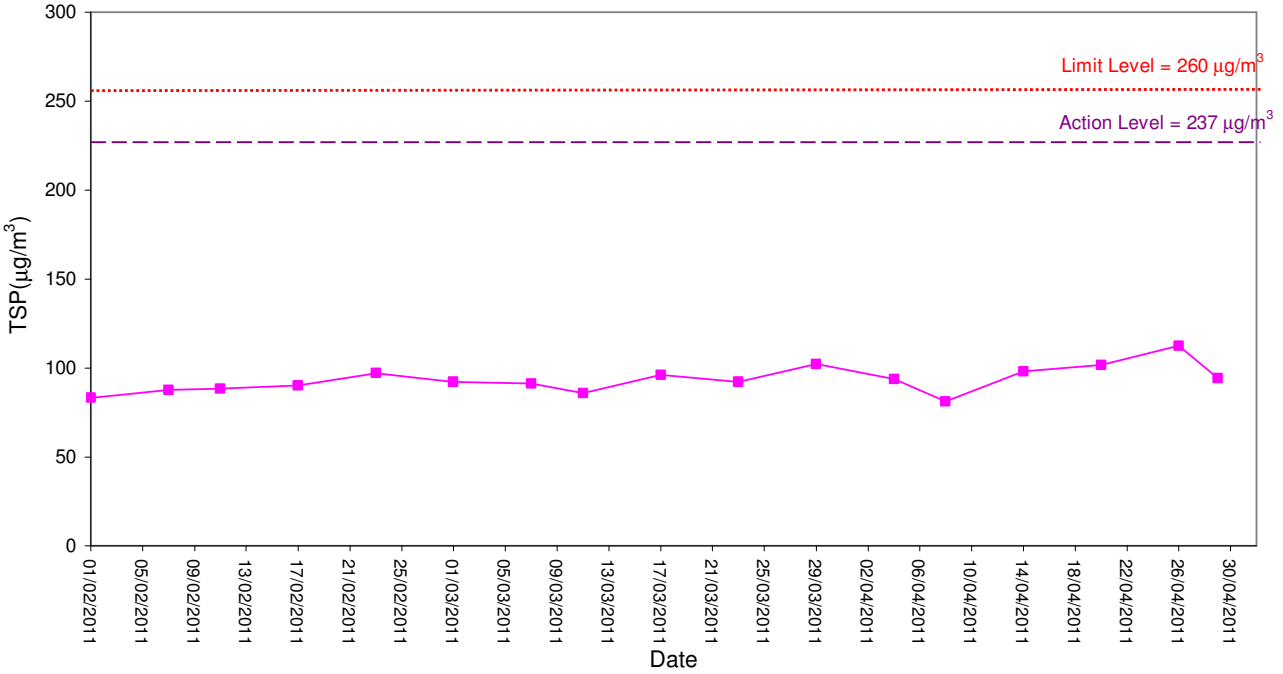


# Air Quality

**24-hour TSP Level at ASR3**

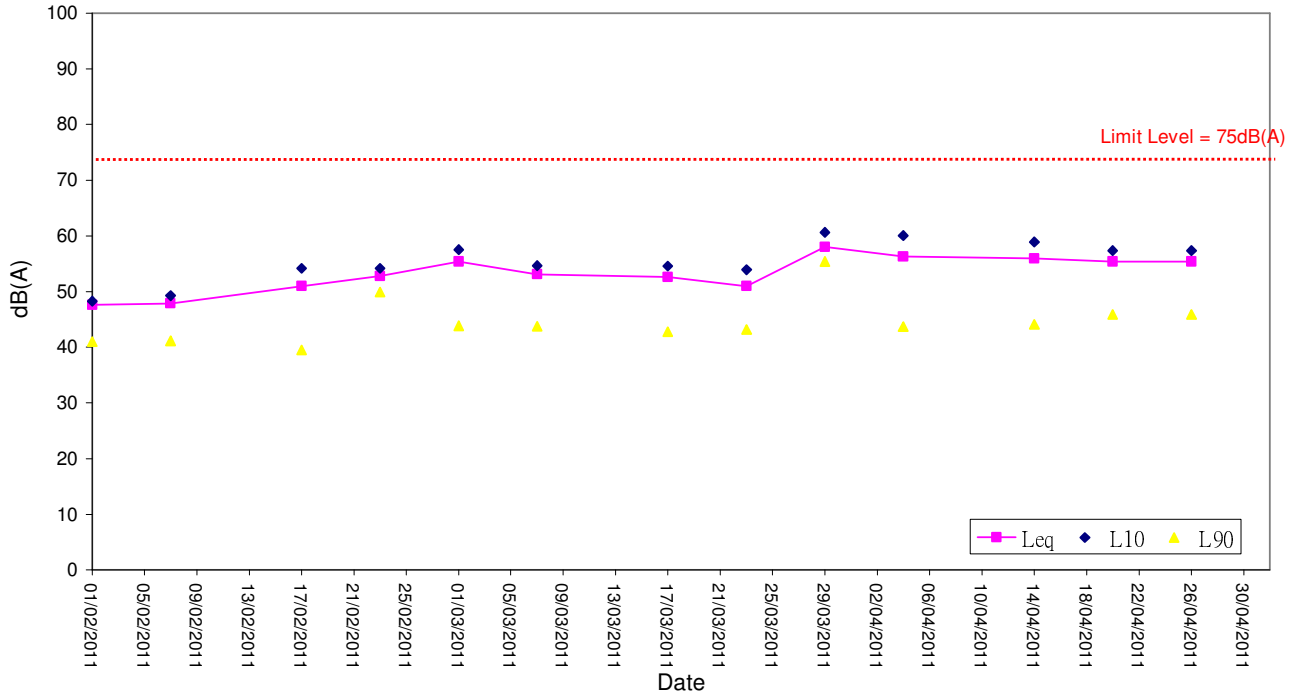



**24-hour TSP Level at ASR4**

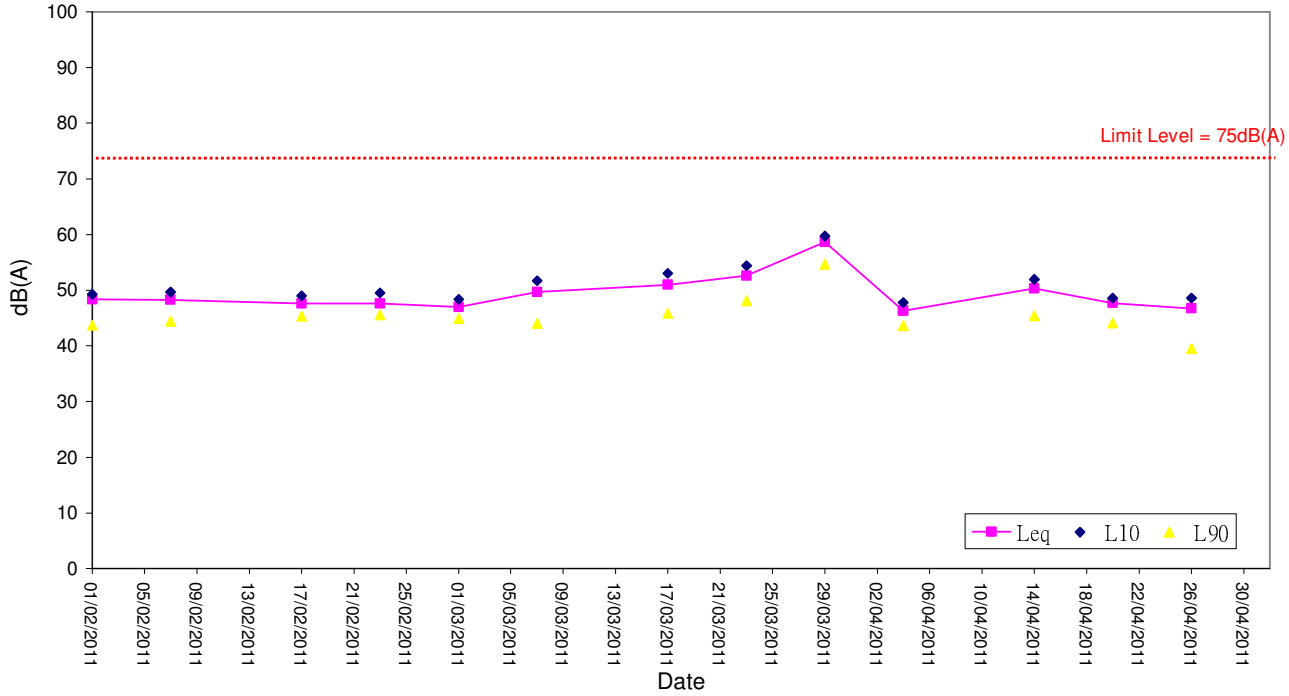


# Noise

**Noise Level for 30 min, dB(A), at NSR1**

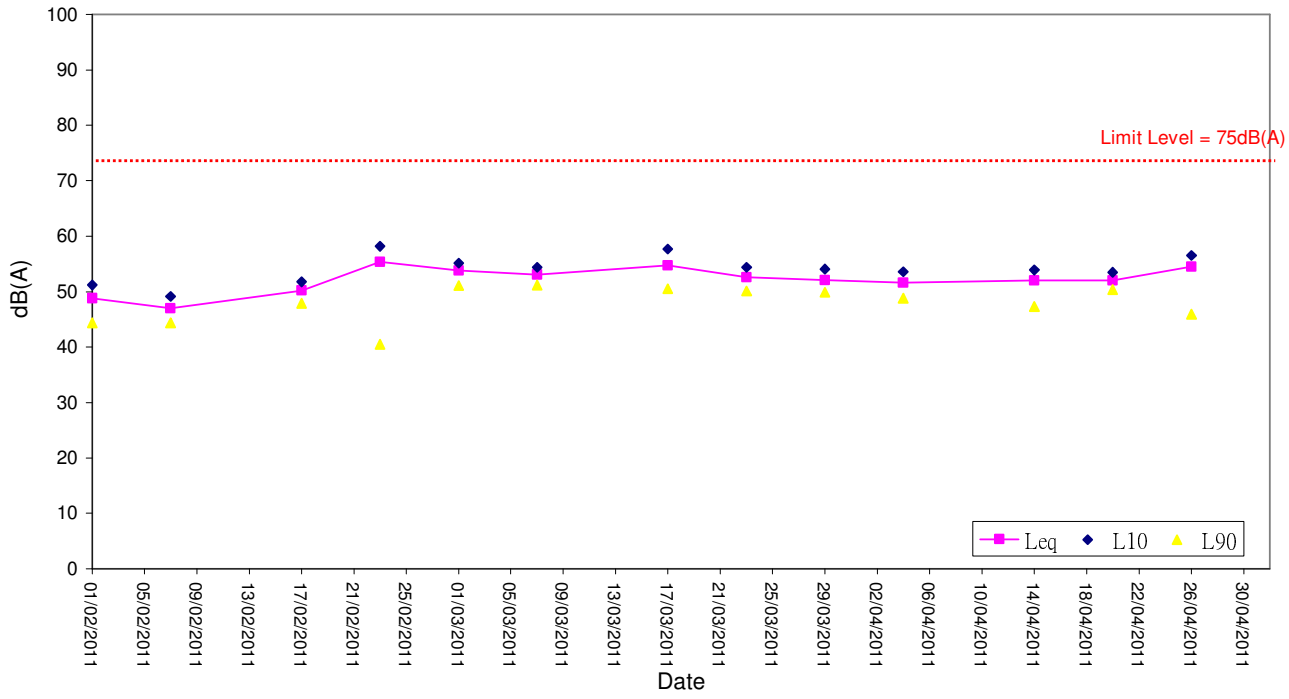



**Noise Level for 30 min, dB(A), at NSR3**

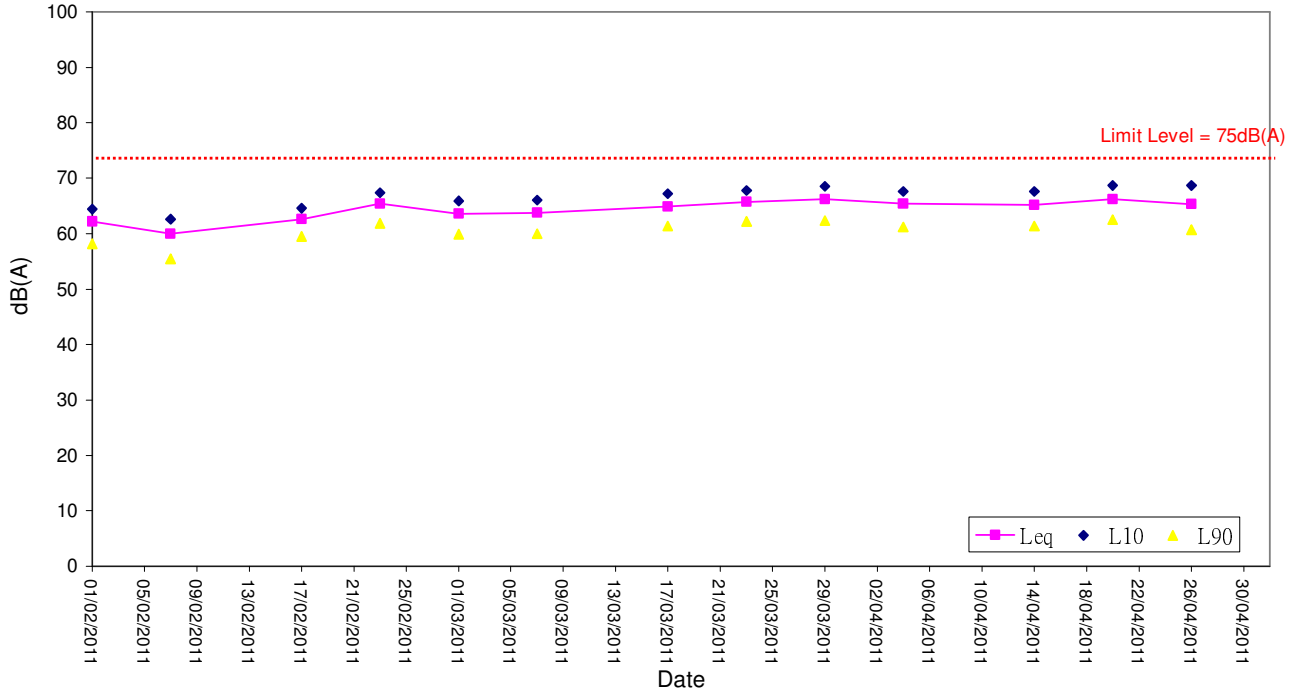


# Noise

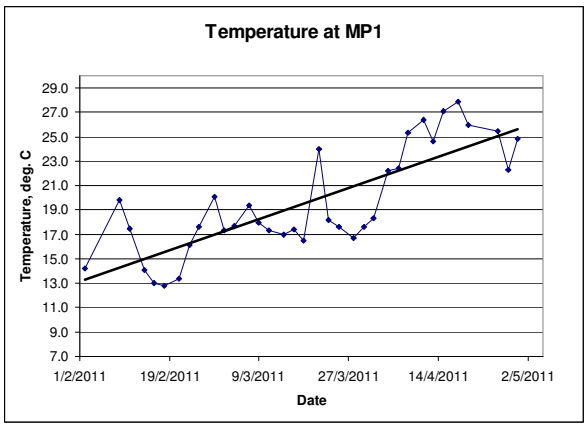
**Noise Level for 30 min, dB(A), at NSR5**

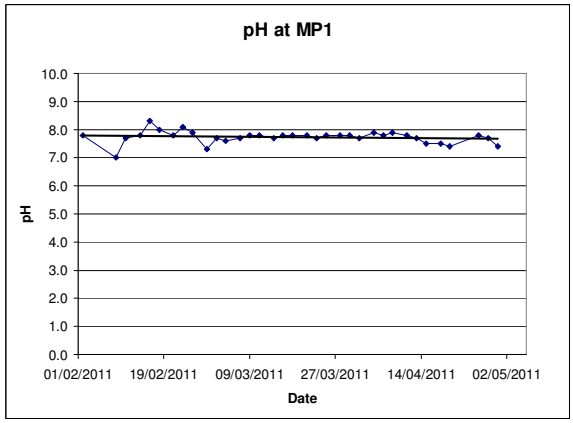


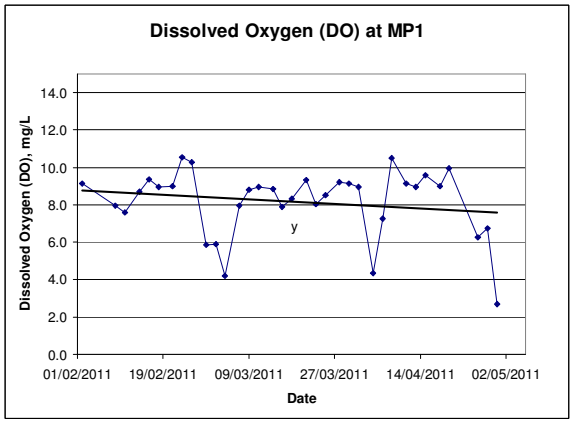

**Noise Level for 30 min, dB(A), at NSR7**

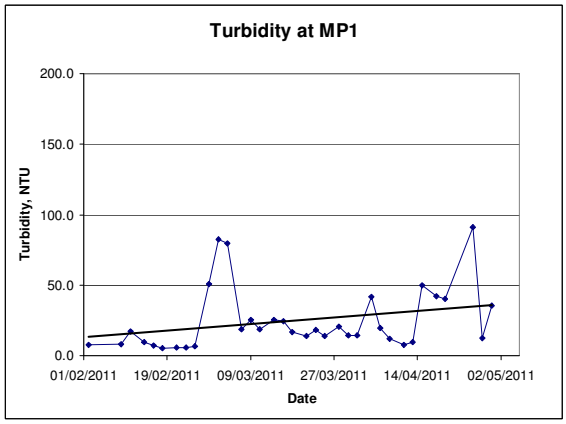


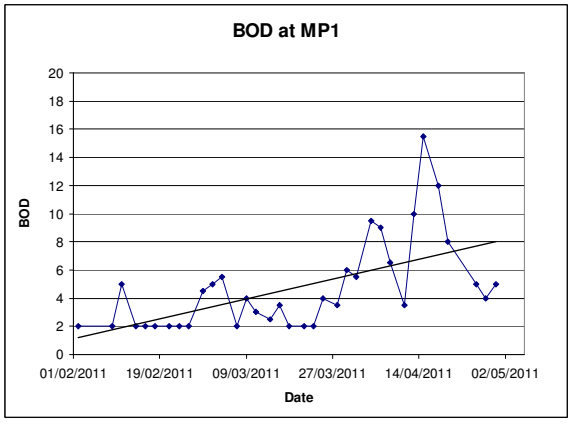
# Water Quality

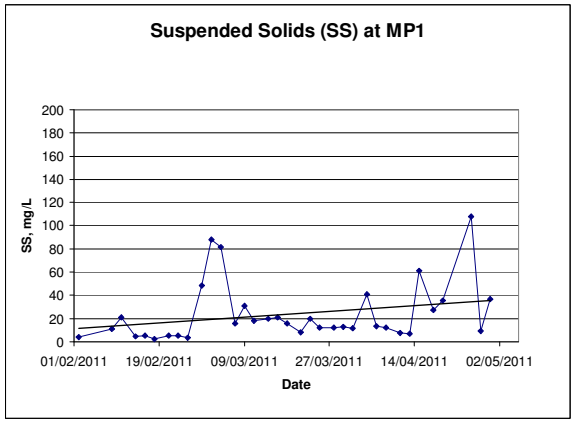


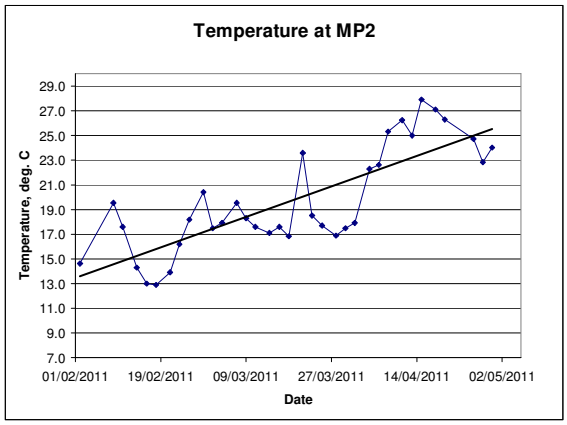



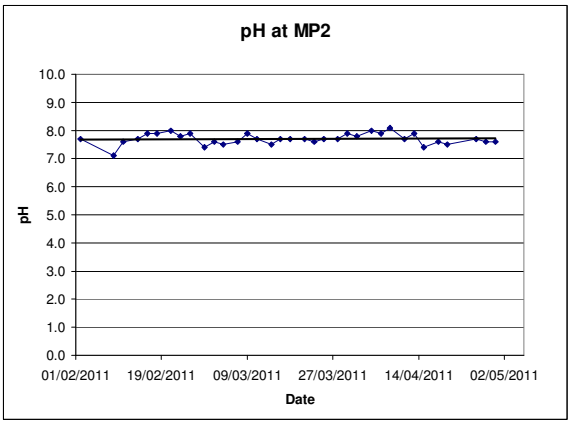



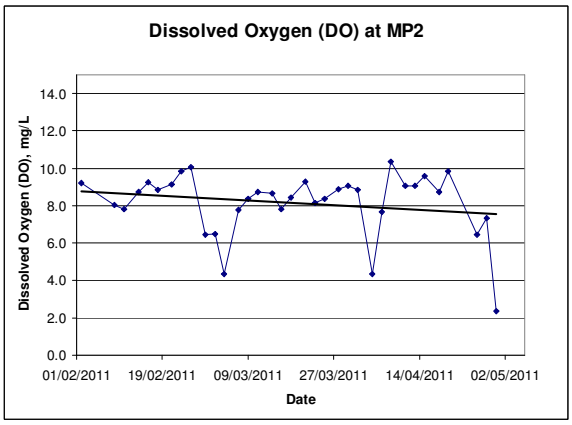



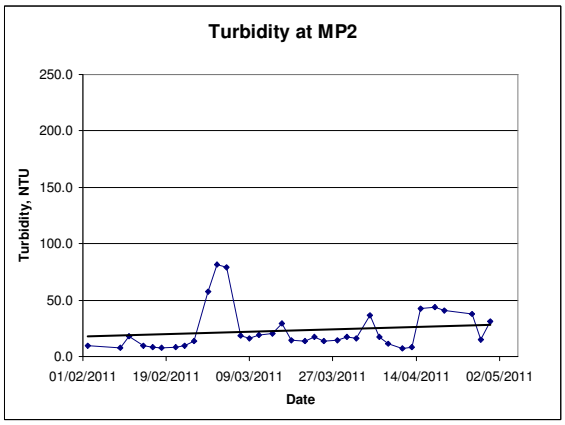



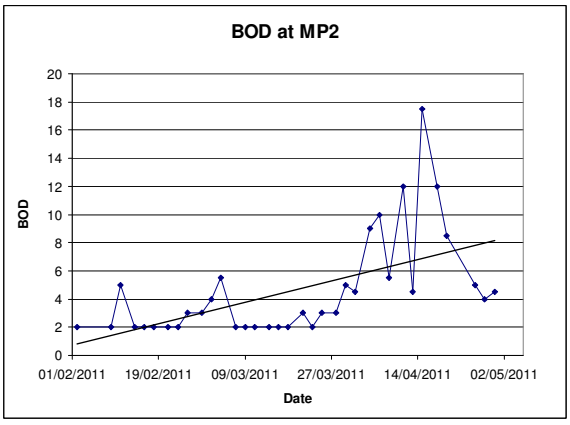
# Water Quality

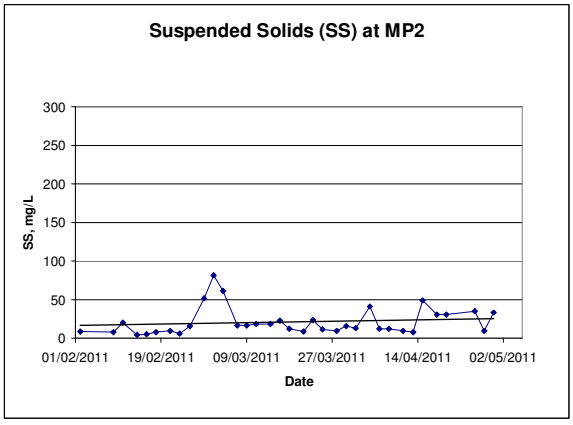


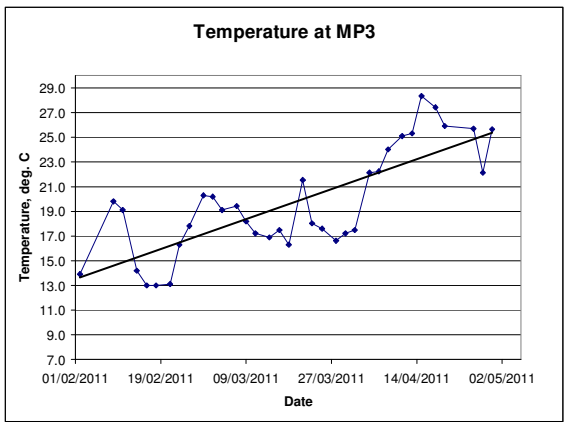



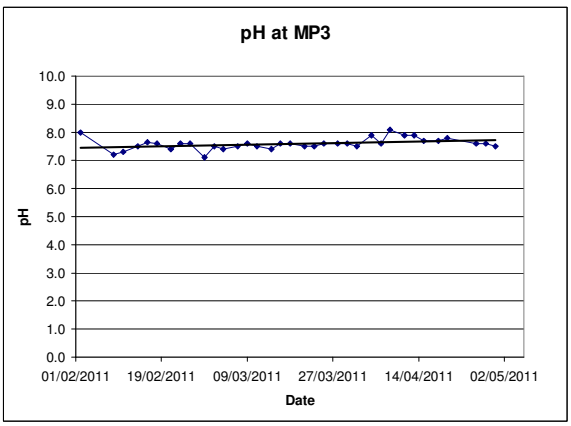



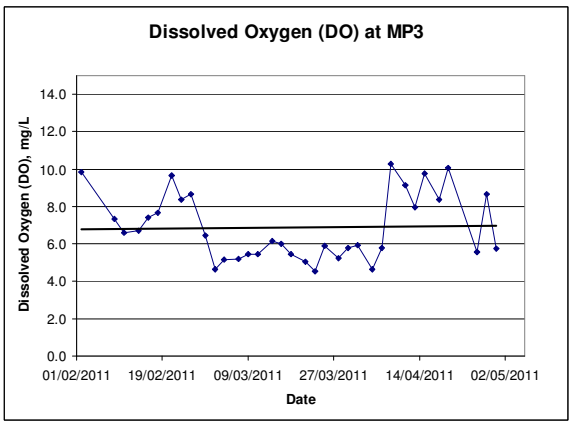



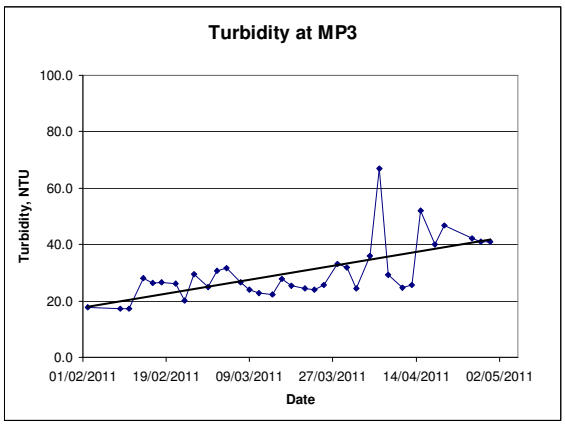



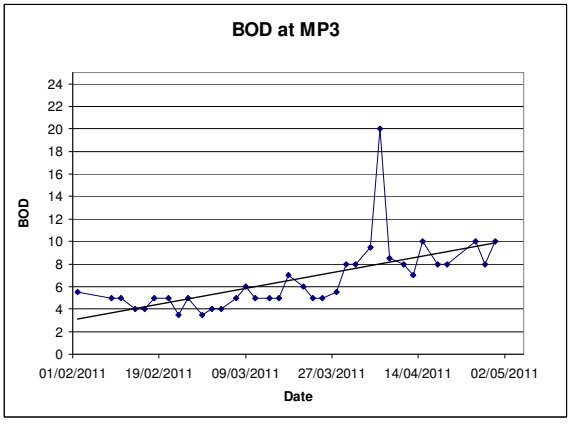
# Water Quality

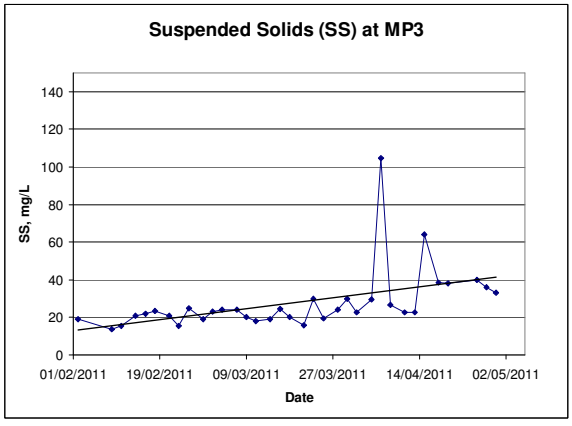


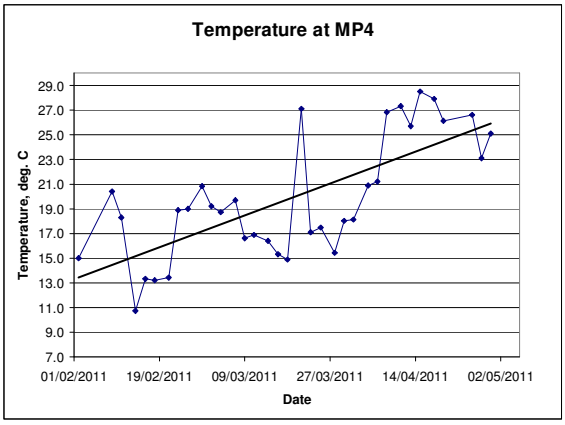



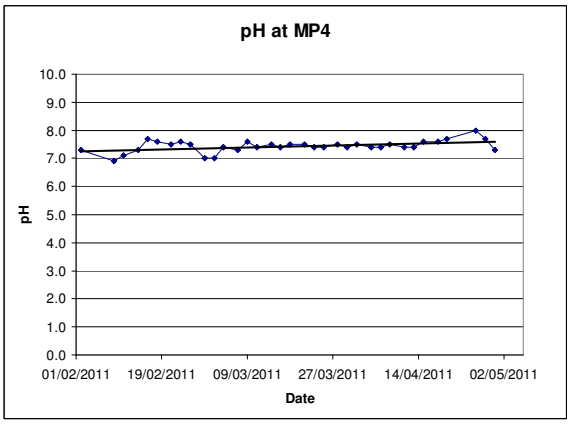



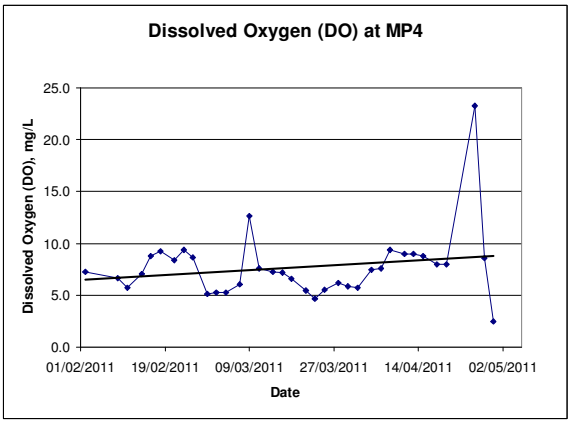



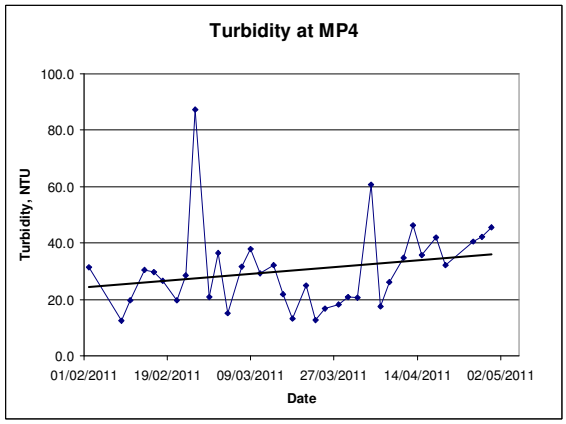



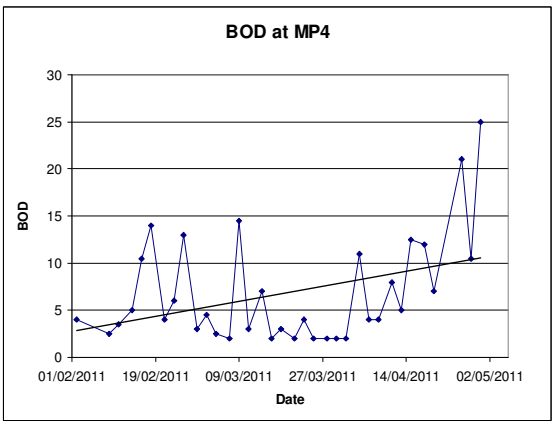
# Water Quality

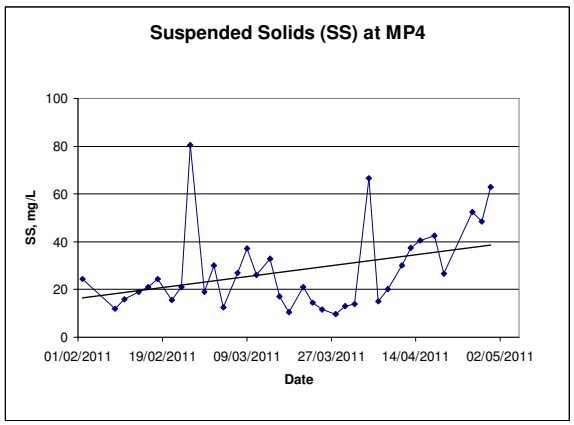


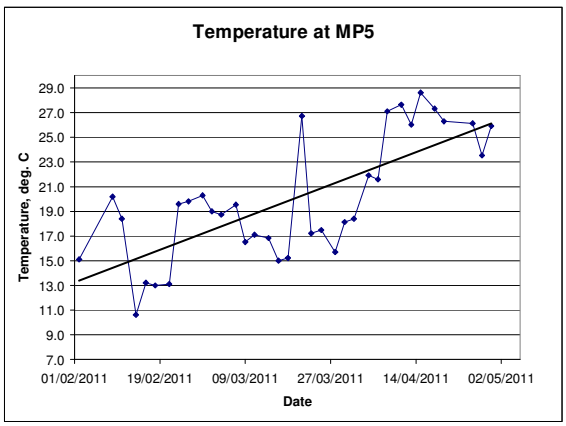



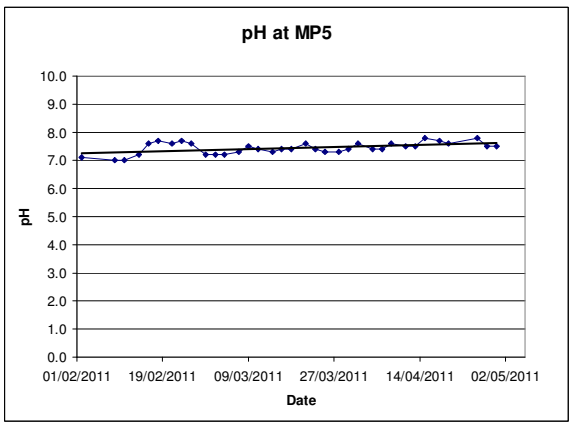



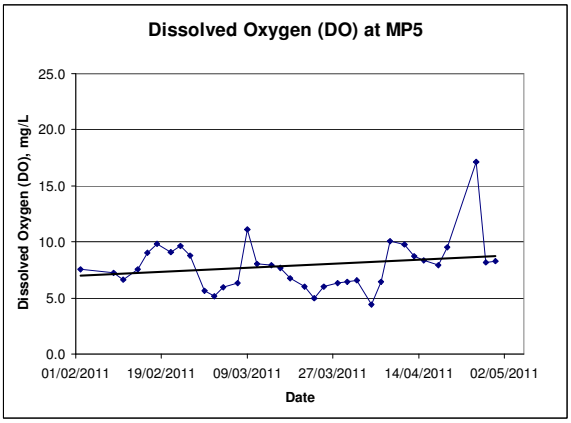



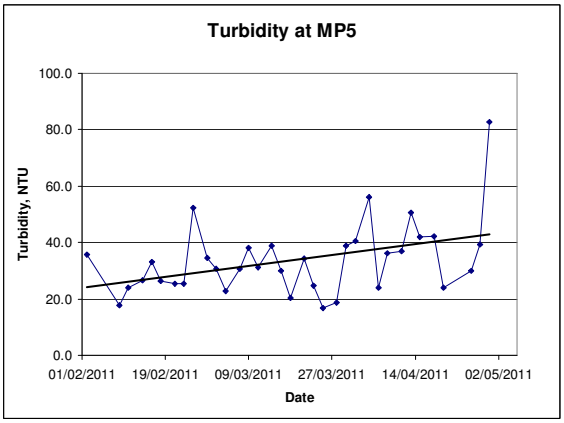



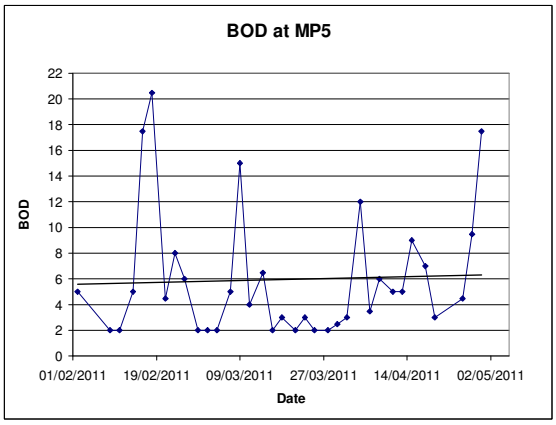
# Water Quality

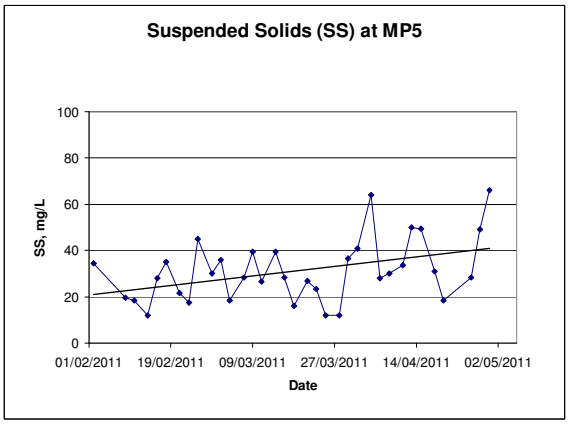


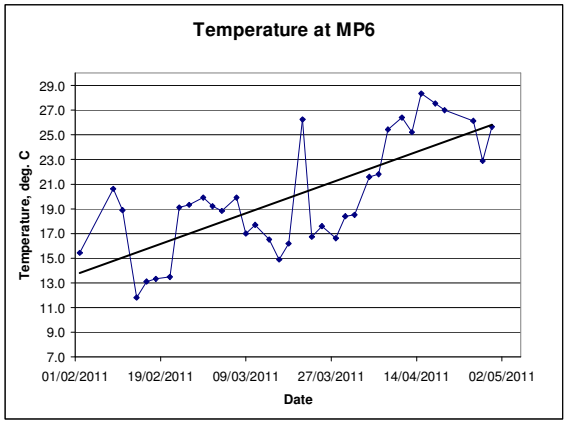



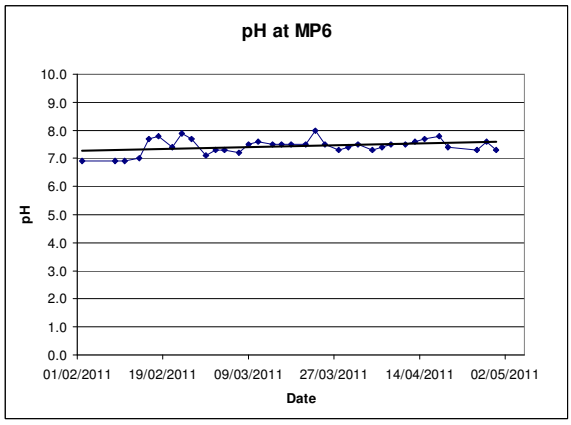



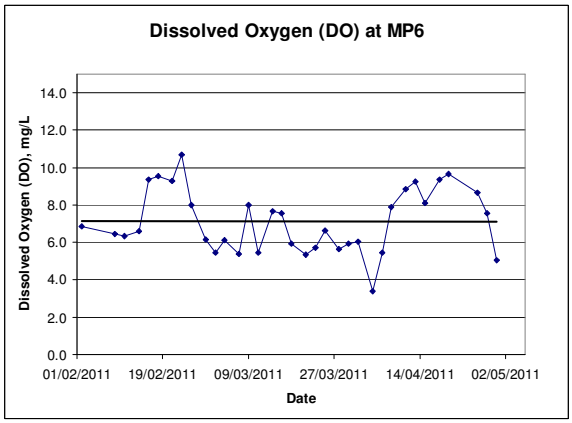



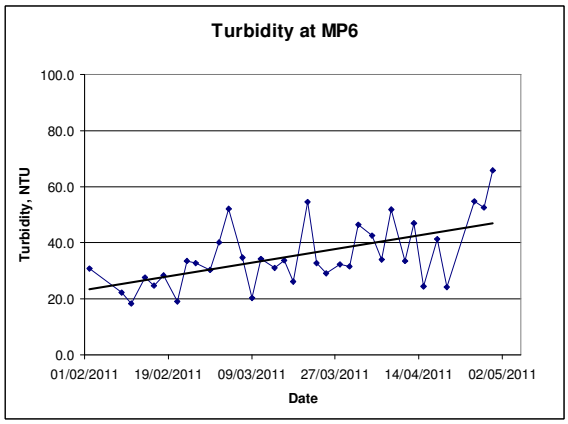



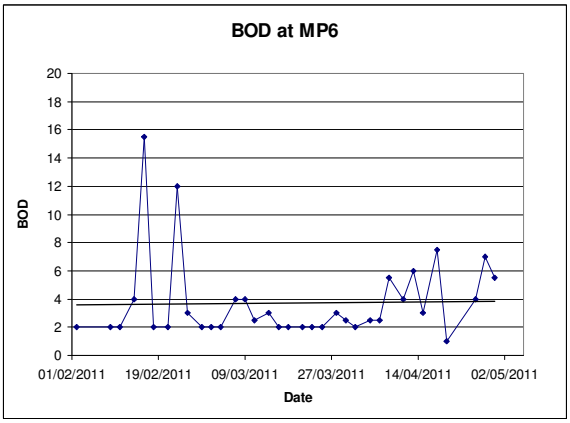
# Water Quality

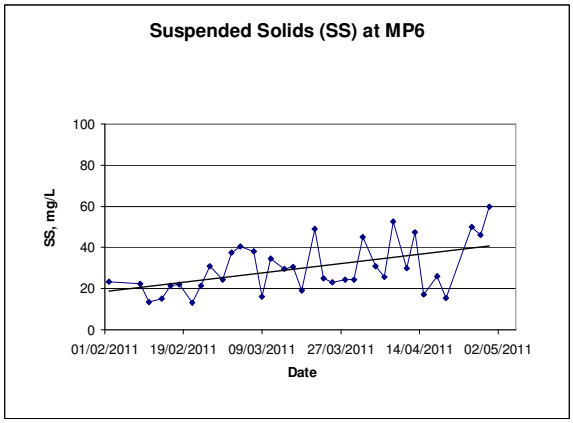


# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Client | : ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY | Laboratory | : ALS Technichem HK Pty Ltd | Page | : 1 of 3 | | |
| Contact | : MR THOMAS WONG | Contact | : Chan Kwok Fai, Godfrey | Work Order | : HK1107548 | | |
| Address | : RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG | Address | : 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong | | | | |
| E-mail | : thomas.wong@eno.com.hk | E-mail | : Godfrey.Chan@alsenviro.com | | | | |
| Telephone | : +852 22421020 | Telephone | : +852 2610 1044 | | | | |
| Facsimile | : +852 27143612 | Facsimile | : +852 2610 2021 | | | | |
| Project | : PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG | Quote number | : HK/1577/2009** | Date received | : 01-APR-2011 | | |
| Order number | : ---- | | | Date of issue | : 11-APR-2011 | | |
| C-O-C number | : ---- | | | No. of samples | - Received : | | 12 |
| Site | : ---- | | | | - Analysed : | | 12 |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1107548 supersedes any previous reports with this reference. The completion date of analysis is 07-APR-2011. 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 HK1107548 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| Signatory | Position | Authorised results for:- |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* 2 mg/L | 2 mg/L | | | |
| | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [01-APR-2011] | HK1107548-001 | **11** | **5** | | | |
| **MP1-2** | [01-APR-2011] | HK1107548-002 | **12** | **6** | | | |
| **MP2-1** | [01-APR-2011] | HK1107548-003 | **14** | **4** | | | |
| **MP2-2** | [01-APR-2011] | HK1107548-004 | **12** | **5** | | | |
| **MP3-1** | [01-APR-2011] | HK1107548-005 | **22** | **8** | | | |
| **MP3-2** | [01-APR-2011] | HK1107548-006 | **23** | **8** | | | |
| **MP4-1** | [01-APR-2011] | HK1107548-007 | **14** | <2 | | | |
| **MP4-2** | [01-APR-2011] | HK1107548-008 | **14** | **2** | | | |
| **MP5-1** | [01-APR-2011] | HK1107548-009 | **42** | **3** | | | |
| **MP5-2** | [01-APR-2011] | HK1107548-010 | **40** | **3** | | | |
| **MP6-1** | [01-APR-2011] | HK1107548-011 | **46** | <2 | | | |
| **MP6-2** | [01-APR-2011] | HK1107548-012 | **44** | <2 | | | |

## Laboratory Duplicate (DUP) Report

Matrix: **WATER**

| Laboratory sample ID | Client sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | LOR | Unit | Original Result | Duplicate Result | RPD (%) |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1733583)** | | | | | | | | |
| HK1107548-001 | MP1-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 11 | 11 | 0.0 |
| HK1107548-011 | MP6-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 46 | 44 | 4.0 |

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

Matrix: **WATER**

| Method: Compound | CAS Number | Method Blank (MB) Report | | | Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| | | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1733583)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 96.5 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1739275)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 101 | ---- | 85 | 115 | ---- | ---- |

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

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

# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Client* | : | **ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY** | *Laboratory* | : | **ALS Technichem HK Pty Ltd** | *Page* | : **1 of 3** |
| *Contact* | : | **MR THOMAS WONG** | *Contact* | : | **Chan Kwok Fai, Godfrey** | *Work Order* | : **HK1107718** |
| *Address* | : | **RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG** | *Address* | : | **11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong** | | |
| *E-mail* | : | **thomas.wong@eno.com.hk** | *E-mail* | : | **Godfrey.Chan@alsenviro.com** | | |
| *Telephone* | : | **+852 22421020** | *Telephone* | : | **+852 2610 1044** | | |
| *Facsimile* | : | **+852 27143612** | *Facsimile* | : | **+852 2610 2021** | | |
| *Project* | : | **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG** | *Quote number* | : | **HK/1577/2009**** | *Date received* | : **04-APR-2011** |
| *Order number* | : | **----** | | | | *Date of issue* | : **13-APR-2011** |
| *C-O-C number* | : | **----** | | | | *No. of samples* | - *Received* : **12** |
| *Site* | : | **----** | | | | | - *Analysed* : **12** |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1107718 supersedes any previous reports with this reference. The completion date of analysis is 07-APR-2011. 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 HK1107718 : Sample(s) were received in a chilled condition.

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

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| *Signatory* | *Position* | *Authorised results for:-* |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* 2 mg/L | 2 mg/L | | | |
| | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [04-APR-2011] | HK1107718-001 | **42** | **9** | | | |
| **MP1-2** | [04-APR-2011] | HK1107718-002 | **40** | **10** | | | |
| **MP2-1** | [04-APR-2011] | HK1107718-003 | **43** | **9** | | | |
| **MP2-2** | [04-APR-2011] | HK1107718-004 | **39** | **9** | | | |
| **MP3-1** | [04-APR-2011] | HK1107718-005 | **29** | **9** | | | |
| **MP3-2** | [04-APR-2011] | HK1107718-006 | **30** | **10** | | | |
| **MP4-1** | [04-APR-2011] | HK1107718-007 | **64** | **11** | | | |
| **MP4-2** | [04-APR-2011] | HK1107718-008 | **69** | **11** | | | |
| **MP5-1** | [04-APR-2011] | HK1107718-009 | **62** | **12** | | | |
| **MP5-2** | [04-APR-2011] | HK1107718-010 | **66** | **12** | | | |
| **MP6-1** | [04-APR-2011] | HK1107718-011 | **31** | **3** | | | |
| **MP6-2** | [04-APR-2011] | HK1107718-012 | **31** | **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: 1739230)** | | | | | | | | |
| HK1107718-001 | MP1-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 42 | 43 | 3.1 |
| HK1107718-011 | MP6-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 31 | 32 | 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 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1739230)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 87.5 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1739276)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 102 | ---- | 85 | 115 | ---- | ---- |

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

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

# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Client* | : | **ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY** | *Laboratory* | : | **ALS Technichem HK Pty Ltd** | *Page* | : **1 of 3** |
| *Contact* | : | **MR THOMAS WONG** | *Contact* | : | **Chan Kwok Fai, Godfrey** | *Work Order* | : **HK1107828** |
| *Address* | : | **RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG** | *Address* | : | **11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong** | | |
| *E-mail* | : | **thomas.wong@eno.com.hk** | *E-mail* | : | **Godfrey.Chan@alsenviro.com** | | |
| *Telephone* | : | **+852 22421020** | *Telephone* | : | **+852 2610 1044** | | |
| *Facsimile* | : | **+852 27143612** | *Facsimile* | : | **+852 2610 2021** | | |
| *Project* | : | **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG** | *Quote number* | : | **HK/1577/2009**** | *Date received* | : **06-APR-2011** |
| *Order number* | : | **----** | | | | *Date of issue* | : **14-APR-2011** |
| *C-O-C number* | : | **----** | | | | *No. of samples* | - *Received* : **12** |
| *Site* | : | **----** | | | | | - *Analysed* : **12** |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1107828 supersedes any previous reports with this reference. The completion date of analysis is 11-APR-2011. 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 HK1107828 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| *Signatory* | *Position* | *Authorised results for:-* |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* 2 mg/L | 2 mg/L | | | |
| | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [06-APR-2011] | HK1107828-001 | **13** | **9** | | | |
| **MP1-2** | [06-APR-2011] | HK1107828-002 | **14** | **9** | | | |
| **MP2-1** | [06-APR-2011] | HK1107828-003 | **12** | **10** | | | |
| **MP2-2** | [06-APR-2011] | HK1107828-004 | **12** | **10** | | | |
| **MP3-1** | [06-APR-2011] | HK1107828-005 | **108** | **21** | | | |
| **MP3-2** | [06-APR-2011] | HK1107828-006 | **101** | **19** | | | |
| **MP4-1** | [06-APR-2011] | HK1107828-007 | **16** | **4** | | | |
| **MP4-2** | [06-APR-2011] | HK1107828-008 | **14** | **4** | | | |
| **MP5-1** | [06-APR-2011] | HK1107828-009 | **30** | **4** | | | |
| **MP5-2** | [06-APR-2011] | HK1107828-010 | **26** | **3** | | | |
| **MP6-1** | [06-APR-2011] | HK1107828-011 | **26** | **2** | | | |
| **MP6-2** | [06-APR-2011] | HK1107828-012 | **25** | **3** | | | |

## Laboratory Duplicate (DUP) Report

Matrix: **WATER**

| Laboratory sample ID | Client sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | LOR | Unit | Original Result | Duplicate Result | RPD (%) |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1739233)** | | | | | | | | |
| HK1107819-002 | Anonymous | EA025: Suspended Solids (SS) | ---- | 3 | mg/L | 9 | 7 | 22.0 |
| HK1107827-002 | Anonymous | EA025: Suspended Solids (SS) | ---- | 3 | mg/L | <3 | <3 | 0.0 |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1739234)** | | | | | | | | |
| HK1107828-010 | MP5-2 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 26 | 25 | 0.0 |
| HK1107834-008 | Anonymous | EA025: Suspended Solids (SS) | ---- | 2.0 | mg/L | <2.0 | <2.0 | 0.0 |

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

Matrix: **WATER**

| Method: Compound | CAS Number | Method Blank (MB) Report | | | Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| | | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1739233)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 99.0 | ---- | 85 | 115 | ---- | ---- |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1739234)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 94.0 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1741149)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 99.2 | ---- | 85 | 115 | ---- | ---- |

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

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

# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Client* | : | **ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY** | *Laboratory* | : | **ALS Technichem HK Pty Ltd** | *Page* | : **1 of 3** |
| *Contact* | : | **MR THOMAS WONG** | *Contact* | : | **Chan Kwok Fai, Godfrey** | *Work Order* | : **HK1107998** |
| *Address* | : | **RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG** | *Address* | : | **11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong** | | |
| *E-mail* | : | **thomas.wong@eno.com.hk** | *E-mail* | : | **Godfrey.Chan@alsenviro.com** | | |
| *Telephone* | : | **+852 22421020** | *Telephone* | : | **+852 2610 1044** | | |
| *Facsimile* | : | **+852 27143612** | *Facsimile* | : | **+852 2610 2021** | | |
| *Project* | : | **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG** | *Quote number* | : | **HK/1577/2009**** | *Date received* | : **08-APR-2011** |
| *Order number* | : | **----** | | | | *Date of issue* | : **19-APR-2011** |
| *C-O-C number* | : | **----** | | | | *No. of samples* | - *Received* : **12** |
| *Site* | : | **----** | | | | | - *Analysed* : **12** |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1107998 supersedes any previous reports with this reference. The completion date of analysis is 11-APR-2011. 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 HK1107998 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| *Signatory* | *Position* | *Authorised results for:-* |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* | **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* | 2 mg/L | 2 mg/L | | | |
| | | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [08-APR-2011] | HK1107998-001 | | **13** | **6** | | | |
| **MP1-2** | [08-APR-2011] | HK1107998-002 | | **11** | **7** | | | |
| **MP2-1** | [08-APR-2011] | HK1107998-003 | | **13** | **5** | | | |
| **MP2-2** | [08-APR-2011] | HK1107998-004 | | **12** | **6** | | | |
| **MP3-1** | [08-APR-2011] | HK1107998-005 | | **28** | **9** | | | |
| **MP3-2** | [08-APR-2011] | HK1107998-006 | | **25** | **8** | | | |
| **MP4-1** | [08-APR-2011] | HK1107998-007 | | **20** | **4** | | | |
| **MP4-2** | [08-APR-2011] | HK1107998-008 | | **20** | **4** | | | |
| **MP5-1** | [08-APR-2011] | HK1107998-009 | | **30** | **6** | | | |
| **MP5-2** | [08-APR-2011] | HK1107998-010 | | **30** | **6** | | | |
| **MP6-1** | [08-APR-2011] | HK1107998-011 | | **52** | **6** | | | |
| **MP6-2** | [08-APR-2011] | HK1107998-012 | | **53** | **5** | | | |

## Laboratory Duplicate (DUP) Report

Matrix: **WATER**

| Laboratory sample ID | Client sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | LOR | Unit | Original Result | Duplicate Result | RPD (%) |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1743293)** | | | | | | | | |
| HK1107969-001 | Anonymous | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 209 | 208 | 0.8 |
| HK1107991-005 | Anonymous | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 264 | 245 | 7.4 |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1743294)** | | | | | | | | |
| HK1107998-009 | MP5-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 30 | 34 | 10.0 |
| HK1108038-001 | 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: Compound | CAS Number | Method Blank (MB) Report | | | Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| | | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1743293)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 89.0 | ---- | 85 | 115 | ---- | ---- |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1743294)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 89.0 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1743301)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 102 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1743302)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 88.2 | ---- | 85 | 115 | ---- | ---- |

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

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

# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Client* | : | **ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY** | *Laboratory* | : | **ALS Technichem HK Pty Ltd** | *Page* | : **1 of 3** |
| *Contact* | : | **MR THOMAS WONG** | *Contact* | : | **Chan Kwok Fai, Godfrey** | *Work Order* | : **HK1108284** |
| *Address* | : | **RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG** | *Address* | : | **11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong** | | |
| *E-mail* | : | **thomas.wong@eno.com.hk** | *E-mail* | : | **Godfrey.Chan@alsenviro.com** | | |
| *Telephone* | : | **+852 22421020** | *Telephone* | : | **+852 2610 1044** | | |
| *Facsimile* | : | **+852 27143612** | *Facsimile* | : | **+852 2610 2021** | | |
| *Project* | : | **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG** | *Quote number* | : | **HK/1577/2009**** | *Date received* | : **11-APR-2011** |
| *Order number* | : | **----** | | | | *Date of issue* | : **19-APR-2011** |
| *C-O-C number* | : | **----** | | | | *No. of samples* | - *Received* : **12** |
| *Site* | : | **----** | | | | | - *Analysed* : **12** |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1108284 supersedes any previous reports with this reference. The completion date of analysis is 13-APR-2011. 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 HK1108284 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| *Signatory* | *Position* | *Authorised results for:-* |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* 2 mg/L | 2 mg/L | | | |
| | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [11-APR-2011] | HK1108284-001 | **8** | **3** | | | |
| **MP1-2** | [11-APR-2011] | HK1108284-002 | **7** | **4** | | | |
| **MP2-1** | [11-APR-2011] | HK1108284-003 | **9** | **12** | | | |
| **MP2-2** | [11-APR-2011] | HK1108284-004 | **10** | **12** | | | |
| **MP3-1** | [11-APR-2011] | HK1108284-005 | **24** | **8** | | | |
| **MP3-2** | [11-APR-2011] | HK1108284-006 | **21** | **8** | | | |
| **MP4-1** | [11-APR-2011] | HK1108284-007 | **30** | **8** | | | |
| **MP4-2** | [11-APR-2011] | HK1108284-008 | **30** | **8** | | | |
| **MP5-1** | [11-APR-2011] | HK1108284-009 | **33** | **5** | | | |
| **MP5-2** | [11-APR-2011] | HK1108284-010 | **34** | **5** | | | |
| **MP6-1** | [11-APR-2011] | HK1108284-011 | **30** | **4** | | | |
| **MP6-2** | [11-APR-2011] | HK1108284-012 | **30** | **4** | | | |

## Laboratory Duplicate (DUP) Report

Matrix: **WATER**

| Laboratory sample ID | Client sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | LOR | Unit | Original Result | Duplicate Result | RPD (%) |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1744337)** | | | | | | | | |
| HK1108249-004 | Anonymous | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | <2 | 0.0 |
| HK1108284-002 | MP1-2 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 7 | 8 | 13.0 |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1744338)** | | | | | | | | |
| HK1108284-011 | MP6-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 30 | 30 | 0.0 |
| HK1108299-001 | Anonymous | EA025: Suspended Solids (SS) | ---- | 3 | mg/L | 201 | 199 | 0.7 |

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

Matrix: **WATER**

| Method: Compound | CAS Number | Method Blank (MB) Report | | | Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| | | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1744337)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 89.0 | ---- | 85 | 115 | ---- | ---- |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1744338)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 95.0 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1745087)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 98.9 | ---- | 85 | 115 | ---- | ---- |

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

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

# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Client* | : | **ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY** | *Laboratory* | : | **ALS Technichem HK Pty Ltd** | *Page* | : **1 of 3** |
| *Contact* | : | **MR THOMAS WONG** | *Contact* | : | **Chan Kwok Fai, Godfrey** | *Work Order* | : **HK1108579** |
| *Address* | : | **RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG** | *Address* | : | **11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong** | | |
| *E-mail* | : | **thomas.wong@eno.com.hk** | *E-mail* | : | **Godfrey.Chan@alsenviro.com** | | |
| *Telephone* | : | **+852 22421020** | *Telephone* | : | **+852 2610 1044** | | |
| *Facsimile* | : | **+852 27143612** | *Facsimile* | : | **+852 2610 2021** | | |
| *Project* | : | **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG** | *Quote number* | : | **HK/1577/2009**** | *Date received* | : **13-APR-2011** |
| *Order number* | : | **----** | | | | *Date of issue* | : **21-APR-2011** |
| *C-O-C number* | : | **----** | | | | *No. of samples* | - *Received* : **12** |
| *Site* | : | **----** | | | | | - *Analysed* : **12** |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1108579 supersedes any previous reports with this reference. The completion date of analysis is 18-APR-2011. 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 HK1108579 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| *Signatory* | *Position* | *Authorised results for:-* |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* 2 mg/L | 2 mg/L | | | |
| | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [13-APR-2011] | HK1108579-001 | **7** | **10** | | | |
| **MP1-2** | [13-APR-2011] | HK1108579-002 | **7** | **10** | | | |
| **MP2-1** | [13-APR-2011] | HK1108579-003 | **7** | **5** | | | |
| **MP2-2** | [13-APR-2011] | HK1108579-004 | **9** | **4** | | | |
| **MP3-1** | [13-APR-2011] | HK1108579-005 | **23** | **7** | | | |
| **MP3-2** | [13-APR-2011] | HK1108579-006 | **22** | **7** | | | |
| **MP4-1** | [13-APR-2011] | HK1108579-007 | **39** | **5** | | | |
| **MP4-2** | [13-APR-2011] | HK1108579-008 | **36** | **5** | | | |
| **MP5-1** | [13-APR-2011] | HK1108579-009 | **51** | **5** | | | |
| **MP5-2** | [13-APR-2011] | HK1108579-010 | **49** | **5** | | | |
| **MP6-1** | [13-APR-2011] | HK1108579-011 | **49** | **6** | | | |
| **MP6-2** | [13-APR-2011] | HK1108579-012 | **46** | **6** | | | |

## Laboratory Duplicate (DUP) Report

Matrix: **WATER**

| Laboratory sample ID | Client sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | LOR | Unit | Original Result | Duplicate Result | RPD (%) |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1751290)** | | | | | | | | |
| HK1108579-001 | MP1-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 7 | 8 | 16.1 |
| HK1108579-011 | MP6-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 49 | 47 | 4.1 |

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

Matrix: **WATER**

| Method: Compound | CAS Number | Method Blank (MB) Report | | | Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| | | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1751290)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 102 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1751078)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 104 | ---- | 85 | 115 | ---- | ---- |

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

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

# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Client* | : | **ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY** | *Laboratory* | : | **ALS Technichem HK Pty Ltd** | *Page* | : **1 of 3** |
| *Contact* | : | **MR THOMAS WONG** | *Contact* | : | **Chan Kwok Fai, Godfrey** | *Work Order* | : **HK1108849** |
| *Address* | : | **RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG** | *Address* | : | **11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong** | | |
| *E-mail* | : | **thomas.wong@eno.com.hk** | *E-mail* | : | **Godfrey.Chan@alsenviro.com** | | |
| *Telephone* | : | **+852 22421020** | *Telephone* | : | **+852 2610 1044** | | |
| *Facsimile* | : | **+852 27143612** | *Facsimile* | : | **+852 2610 2021** | | |
| *Project* | : | **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG** | *Quote number* | : | **HK/1577/2009**** | *Date received* | : **15-APR-2011** |
| *Order number* | : | **----** | | | | *Date of issue* | : **27-APR-2011** |
| *C-O-C number* | : | **----** | | | | *No. of samples* | - *Received* : **12** |
| *Site* | : | **----** | | | | | - *Analysed* : **12** |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1108849 supersedes any previous reports with this reference. The completion date of analysis is 19-APR-2011. 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 HK1108849 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| *Signatory* | *Position* | *Authorised results for:-* |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* 2 mg/L | 2 mg/L | | | |
| | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [15-APR-2011] | HK1108849-001 | **64** | **16** | | | |
| **MP1-2** | [15-APR-2011] | HK1108849-002 | **58** | **15** | | | |
| **MP2-1** | [15-APR-2011] | HK1108849-003 | **51** | **18** | | | |
| **MP2-2** | [15-APR-2011] | HK1108849-004 | **48** | **17** | | | |
| **MP3-1** | [15-APR-2011] | HK1108849-005 | **60** | **10** | | | |
| **MP3-2** | [15-APR-2011] | HK1108849-006 | **68** | **10** | | | |
| **MP4-1** | [15-APR-2011] | HK1108849-007 | **40** | **13** | | | |
| **MP4-2** | [15-APR-2011] | HK1108849-008 | **41** | **12** | | | |
| **MP5-1** | [15-APR-2011] | HK1108849-009 | **48** | **9** | | | |
| **MP5-2** | [15-APR-2011] | HK1108849-010 | **51** | **9** | | | |
| **MP6-1** | [15-APR-2011] | HK1108849-011 | **19** | **3** | | | |
| **MP6-2** | [15-APR-2011] | HK1108849-012 | **15** | **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: 1755414)** | | | | | | | | |
| HK1108817-001 | Anonymous | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | <2 | 0.0 |
| HK1108849-009 | MP5-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 48 | 50 | 4.5 |

## 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 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1755414)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 89.5 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1753263)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 89.1 | ---- | 85 | 115 | ---- | ---- |

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

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

# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Client* | : | **ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY** | *Laboratory* | : | **ALS Technichem HK Pty Ltd** | *Page* | : **1 of 3** |
| *Contact* | : | **MR THOMAS WONG** | *Contact* | : | **Chan Kwok Fai, Godfrey** | *Work Order* | : **HK1108951** |
| *Address* | : | **RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG** | *Address* | : | **11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong** | | |
| *E-mail* | : | **thomas.wong@eno.com.hk** | *E-mail* | : | **Godfrey.Chan@alsenviro.com** | | |
| *Telephone* | : | **+852 22421020** | *Telephone* | : | **+852 2610 1044** | | |
| *Facsimile* | : | **+852 27143612** | *Facsimile* | : | **+852 2610 2021** | | |
| *Project* | : | **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG** | *Quote number* | : | **HK/1577/2009**** | *Date received* | : **18-APR-2011** |
| *Order number* | : | **----** | | | | *Date of issue* | : **29-APR-2011** |
| *C-O-C number* | : | **----** | | | | *No. of samples* | - *Received* : **12** |
| *Site* | : | **----** | | | | | - *Analysed* : **12** |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1108951 supersedes any previous reports with this reference. The completion date of analysis is 21-APR-2011. 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 HK1108951 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| *Signatory* | *Position* | *Authorised results for:-* |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* 2 mg/L | 2 mg/L | | | |
| | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [18-APR-2011] | HK1108951-001 | **28** | **12** | | | |
| **MP1-2** | [18-APR-2011] | HK1108951-002 | **27** | **12** | | | |
| **MP2-1** | [18-APR-2011] | HK1108951-003 | **31** | **12** | | | |
| **MP2-2** | [18-APR-2011] | HK1108951-004 | **31** | **12** | | | |
| **MP3-1** | [18-APR-2011] | HK1108951-005 | **36** | **8** | | | |
| **MP3-2** | [18-APR-2011] | HK1108951-006 | **41** | **8** | | | |
| **MP4-1** | [18-APR-2011] | HK1108951-007 | **44** | **12** | | | |
| **MP4-2** | [18-APR-2011] | HK1108951-008 | **41** | **12** | | | |
| **MP5-1** | [18-APR-2011] | HK1108951-009 | **32** | **7** | | | |
| **MP5-2** | [18-APR-2011] | HK1108951-010 | **30** | **7** | | | |
| **MP6-1** | [18-APR-2011] | HK1108951-011 | **27** | **8** | | | |
| **MP6-2** | [18-APR-2011] | HK1108951-012 | **25** | **7** | | | |

## 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: 1755416)** | | | | | | | | |
| HK1108943-001 | Anonymous | EA025: Suspended Solids (SS) | ---- | 3 | mg/L | 189 | 173 | 8.9 |
| HK1108951-006 | MP3-2 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 41 | 39 | 4.5 |

## 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 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| Method: Compound | CAS Number | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1755416)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 95.5 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1757524)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 104 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1757525)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 88.6 | ---- | 85 | 115 | ---- | ---- |

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

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

# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Client* | : | **ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY** | *Laboratory* | : | **ALS Technichem HK Pty Ltd** | *Page* | : **1 of 3** |
| *Contact* | : | **MR THOMAS WONG** | *Contact* | : | **Chan Kwok Fai, Godfrey** | *Work Order* | : **HK1109117** |
| *Address* | : | **RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG** | *Address* | : | **11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong** | | |
| *E-mail* | : | **thomas.wong@eno.com.hk** | *E-mail* | : | **Godfrey.Chan@alsenviro.com** | | |
| *Telephone* | : | **+852 22421020** | *Telephone* | : | **+852 2610 1044** | | |
| *Facsimile* | : | **+852 27143612** | *Facsimile* | : | **+852 2610 2021** | | |
| *Project* | : | **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG** | *Quote number* | : | **HK/1577/2009**** | *Date received* | : **20-APR-2011** |
| *Order number* | : | **----** | | | | *Date of issue* | : **30-APR-2011** |
| *C-O-C number* | : | **----** | | | | *No. of samples* | - *Received* : **12** |
| *Site* | : | **----** | | | | | - *Analysed* : **12** |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1109117 supersedes any previous reports with this reference. The completion date of analysis is 26-APR-2011. 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 HK1109117 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| *Signatory* | *Position* | *Authorised results for:-* |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* 2 mg/L | 2 mg/L | | | |
| | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [20-APR-2011] | HK1109117-001 | **35** | **8** | | | |
| **MP1-2** | [20-APR-2011] | HK1109117-002 | **36** | **8** | | | |
| **MP2-1** | [20-APR-2011] | HK1109117-003 | **29** | **8** | | | |
| **MP2-2** | [20-APR-2011] | HK1109117-004 | **33** | **9** | | | |
| **MP3-1** | [20-APR-2011] | HK1109117-005 | **38** | **8** | | | |
| **MP3-2** | [20-APR-2011] | HK1109117-006 | **38** | **8** | | | |
| **MP4-1** | [20-APR-2011] | HK1109117-007 | **27** | **7** | | | |
| **MP4-2** | [20-APR-2011] | HK1109117-008 | **26** | **7** | | | |
| **MP5-1** | [20-APR-2011] | HK1109117-009 | **17** | **3** | | | |
| **MP5-2** | [20-APR-2011] | HK1109117-010 | **20** | **3** | | | |
| **MP6-1** | [20-APR-2011] | HK1109117-011 | **16** | **2** | | | |
| **MP6-2** | [20-APR-2011] | HK1109117-012 | **15** | **2** | | | |

## Laboratory Duplicate (DUP) Report

Matrix: **WATER**

| Laboratory sample ID | Client sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | LOR | Unit | Original Result | Duplicate Result | RPD (%) |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1758564)** | | | | | | | | |
| HK1109113-001 | Anonymous | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 36 | 33 | 6.7 |
| HK1109117-009 | MP5-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 17 | 17 | 0.0 |

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

Matrix: **WATER**

| Method: Compound | CAS Number | Method Blank (MB) Report | | | Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| | | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1758564)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 89.0 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1761762)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 93.9 | ---- | 85 | 115 | ---- | ---- |

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

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

# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Client* | : | **ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY** | *Laboratory* | : | **ALS Technichem HK Pty Ltd** | *Page* | : **1 of 3** |
| *Contact* | : | **MR THOMAS WONG** | *Contact* | : | **Chan Kwok Fai, Godfrey** | *Work Order* | : **HK1109486** |
| *Address* | : | **RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG** | *Address* | : | **11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong** | | |
| *E-mail* | : | **thomas.wong@eno.com.hk** | *E-mail* | : | **Godfrey.Chan@alsenviro.com** | | |
| *Telephone* | : | **+852 22421020** | *Telephone* | : | **+852 2610 1044** | | |
| *Facsimile* | : | **+852 27143612** | *Facsimile* | : | **+852 2610 2021** | | |
| *Project* | : | **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG** | *Quote number* | : | **HK/1577/2009**** | *Date received* | : **26-APR-2011** |
| *Order number* | : | **----** | | | | *Date of issue* | : **06-MAY-2011** |
| *C-O-C number* | : | **----** | | | | *No. of samples* | - *Received* : **12** |
| *Site* | : | **----** | | | | | - *Analysed* : **12** |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1109486 supersedes any previous reports with this reference. The completion date of analysis is 29-APR-2011. 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 HK1109486 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| *Signatory* | *Position* | *Authorised results for:-* |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* 2 mg/L | 2 mg/L | | | |
| | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [26-APR-2011] | HK1109486-001 | **112** | **5** | | | |
| **MP1-2** | [26-APR-2011] | HK1109486-002 | **104** | **5** | | | |
| **MP2-1** | [26-APR-2011] | HK1109486-003 | **36** | **5** | | | |
| **MP2-2** | [26-APR-2011] | HK1109486-004 | **35** | **5** | | | |
| **MP3-1** | [26-APR-2011] | HK1109486-005 | **39** | **10** | | | |
| **MP3-2** | [26-APR-2011] | HK1109486-006 | **41** | **10** | | | |
| **MP4-1** | [26-APR-2011] | HK1109486-007 | **55** | **22** | | | |
| **MP4-2** | [26-APR-2011] | HK1109486-008 | **50** | **20** | | | |
| **MP5-1** | [26-APR-2011] | HK1109486-009 | **29** | **5** | | | |
| **MP5-2** | [26-APR-2011] | HK1109486-010 | **28** | **4** | | | |
| **MP6-1** | [26-APR-2011] | HK1109486-011 | **50** | **4** | | | |
| **MP6-2** | [26-APR-2011] | HK1109486-012 | **50** | **4** | | | |

## Laboratory Duplicate (DUP) Report

Matrix: **WATER**

| Laboratory sample ID | Client sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | LOR | Unit | Original Result | Duplicate Result | RPD (%) |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1765092)** | | | | | | | | |
| HK1109466-002 | Anonymous | EA025: Suspended Solids (SS) | ---- | 3 | mg/L | 61 | 61 | 0.0 |
| HK1109486-004 | MP2-2 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 35 | 34 | 0.0 |

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

Matrix: **WATER**

| Method: Compound | CAS Number | Method Blank (MB) Report | | | Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| | | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1765092)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 91.5 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1765116)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 104 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1765117)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 102 | ---- | 85 | 115 | ---- | ---- |

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

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

# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Client* | : | **ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY** | *Laboratory* | : | **ALS Technichem HK Pty Ltd** | *Page* | : **1 of 3** |
| *Contact* | : | **MR THOMAS WONG** | *Contact* | : | **Chan Kwok Fai, Godfrey** | *Work Order* | : **HK1109763** |
| *Address* | : | **RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG** | *Address* | : | **11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong** | | |
| *E-mail* | : | **thomas.wong@eno.com.hk** | *E-mail* | : | **Godfrey.Chan@alsenviro.com** | | |
| *Telephone* | : | **+852 22421020** | *Telephone* | : | **+852 2610 1044** | | |
| *Facsimile* | : | **+852 27143612** | *Facsimile* | : | **+852 2610 2021** | | |
| *Project* | : | **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG** | *Quote number* | : | **HK/1577/2009**** | *Date received* | : **28-APR-2011** |
| *Order number* | : | **----** | | | | *Date of issue* | : **06-MAY-2011** |
| *C-O-C number* | : | **----** | | | | *No. of samples* | - *Received* : **12** |
| *Site* | : | **----** | | | | | - *Analysed* : **12** |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1109763 supersedes any previous reports with this reference. The completion date of analysis is 04-MAY-2011. 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 HK1109763 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| *Signatory* | *Position* | *Authorised results for:-* |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* 2 mg/L | 2 mg/L | | | |
| | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [28-APR-2011] | HK1109763-001 | **9** | **4** | | | |
| **MP1-2** | [28-APR-2011] | HK1109763-002 | **10** | **4** | | | |
| **MP2-1** | [28-APR-2011] | HK1109763-003 | **9** | **4** | | | |
| **MP2-2** | [28-APR-2011] | HK1109763-004 | **11** | **4** | | | |
| **MP3-1** | [28-APR-2011] | HK1109763-005 | **36** | **8** | | | |
| **MP3-2** | [28-APR-2011] | HK1109763-006 | **36** | **8** | | | |
| **MP4-1** | [28-APR-2011] | HK1109763-007 | **51** | **11** | | | |
| **MP4-2** | [28-APR-2011] | HK1109763-008 | **46** | **10** | | | |
| **MP5-1** | [28-APR-2011] | HK1109763-009 | **52** | **9** | | | |
| **MP5-2** | [28-APR-2011] | HK1109763-010 | **46** | **10** | | | |
| **MP6-1** | [28-APR-2011] | HK1109763-011 | **48** | **8** | | | |
| **MP6-2** | [28-APR-2011] | HK1109763-012 | **44** | **6** | | | |

## Laboratory Duplicate (DUP) Report

Matrix: **WATER**

| Laboratory sample ID | Client sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | LOR | Unit | Original Result | Duplicate Result | RPD (%) |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1770373)** | | | | | | | | |
| HK1109064-021 | Anonymous | EA025: Suspended Solids (SS) | ---- | 2.0 | mg/L | 5.3 | 5.6 | 4.9 |
| HK1109742-001 | Anonymous | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 11 | 12 | 0.0 |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1770374)** | | | | | | | | |
| HK1109763-009 | MP5-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 52 | 52 | 0.0 |
| HK1109766-007 | 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: Compound | CAS Number | Method Blank (MB) Report | | | Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| | | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1770373)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 97.0 | ---- | 85 | 115 | ---- | ---- |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1770374)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 98.5 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1768586)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 108 | ---- | 85 | 115 | ---- | ---- |

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

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

# CERTIFICATE OF ANALYSIS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Client* | : | **ENOVATIVE ENVIRONMENTAL TECHNOLOGY COMPANY** | *Laboratory* | : | **ALS Technichem HK Pty Ltd** | *Page* | : **1 of 3** |
| *Contact* | : | **MR THOMAS WONG** | *Contact* | : | **Chan Kwok Fai, Godfrey** | *Work Order* | : **HK1109956** |
| *Address* | : | **RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG** | *Address* | : | **11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong** | | |
| *E-mail* | : | **thomas.wong@eno.com.hk** | *E-mail* | : | **Godfrey.Chan@alsenviro.com** | | |
| *Telephone* | : | **+852 22421020** | *Telephone* | : | **+852 2610 1044** | | |
| *Facsimile* | : | **+852 27143612** | *Facsimile* | : | **+852 2610 2021** | | |
| *Project* | : | **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG** | *Quote number* | : | **HK/1577/2009**** | *Date received* | : **30-APR-2011** |
| *Order number* | : | **----** | | | | *Date of issue* | : **06-MAY-2011** |
| *C-O-C number* | : | **----** | | | | *No. of samples* | - *Received* : **12** |
| *Site* | : | **----** | | | | | - *Analysed* : **12** |

## Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1109956 supersedes any previous reports with this reference. The completion date of analysis is 04-MAY-2011. 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 HK1109956 : Sample(s) were received in a chilled condition.

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

**This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.**

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.

| *Signatory* | *Position* | *Authorised results for:-* |
|---|---|---|
| **Fung Lim Chee, Richard** | **General Manager** | **Inorganics** |

## *Analytical Results*

Sub-Matrix: **WATER**

| *Client sample ID* | *Client sampling date / time* | *Laboratory sample ID* | *Compound* **EA025: Suspended Solids (SS)** | **EP030: Biochemical Oxygen Demand** | | | |
|---|---|---|---|---|---|---|---|
| | | | *LOR Unit* 2 mg/L | 2 mg/L | | | |
| | | | EA/ED: Physical and Aggregate Properties | EP: Aggregate Organics | | | |
| **MP1-1** | [30-APR-2011] | HK1109956-001 | **38** | **5** | | | |
| **MP1-2** | [30-APR-2011] | HK1109956-002 | **36** | **5** | | | |
| **MP2-1** | [30-APR-2011] | HK1109956-003 | **34** | **4** | | | |
| **MP2-2** | [30-APR-2011] | HK1109956-004 | **32** | **5** | | | |
| **MP3-1** | [30-APR-2011] | HK1109956-005 | **35** | **10** | | | |
| **MP3-2** | [30-APR-2011] | HK1109956-006 | **31** | **10** | | | |
| **MP4-1** | [30-APR-2011] | HK1109956-007 | **62** | **24** | | | |
| **MP4-2** | [30-APR-2011] | HK1109956-008 | **64** | **26** | | | |
| **MP5-1** | [30-APR-2011] | HK1109956-009 | **68** | **18** | | | |
| **MP5-2** | [30-APR-2011] | HK1109956-010 | **64** | **17** | | | |
| **MP6-1** | [30-APR-2011] | HK1109956-011 | **58** | **6** | | | |
| **MP6-2** | [30-APR-2011] | HK1109956-012 | **62** | **5** | | | |

## Laboratory Duplicate (DUP) Report

Matrix: **WATER**

| Laboratory sample ID | Client sample ID | Method: Compound | CAS Number | Laboratory Duplicate (DUP) Report | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | LOR | Unit | Original Result | Duplicate Result | RPD (%) |
| **EA/ED: Physical and Aggregate Properties (QC Lot: 1772311)** | | | | | | | | |
| HK1109956-001 | MP1-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 38 | 39 | 0.0 |
| HK1109956-011 | MP6-1 | EA025: Suspended Solids (SS) | ---- | 2 | mg/L | 58 | 60 | 2.4 |

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

Matrix: **WATER**

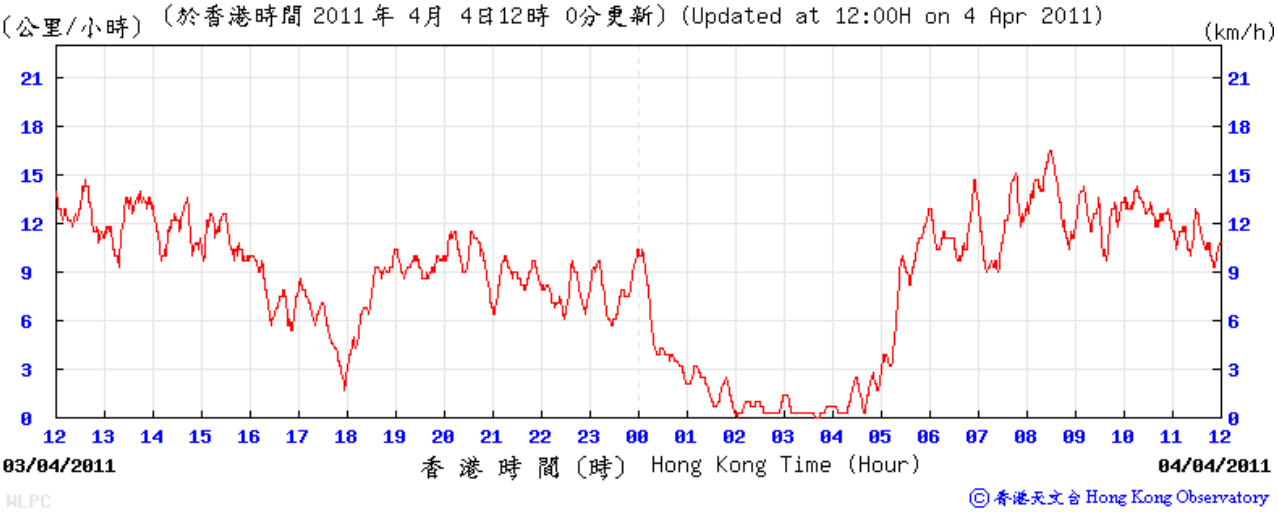
| Method: Compound | CAS Number | Method Blank (MB) Report | | | Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | | Recovery Limits (%) | | RPDs (%) | |
| | | LOR | Unit | Result | Concentration | LCS | DCS | Low | High | Value | Control Limit |
| **EA/ED: Physical and Aggregate Properties (QCLot: 1772311)** | | | | | | | | | | | |
| EA025: Suspended Solids (SS) | ---- | 2 | mg/L | <2 | 20 mg/L | 85.5 | ---- | 85 | 115 | ---- | ---- |
| **EP: Aggregate Organics (QCLot: 1772622)** | | | | | | | | | | | |
| EP030: Biochemical Oxygen Demand | ---- | 2 | mg/L | ---- | 198 mg/L | 113 | ---- | 85 | 115 | ---- | ---- |

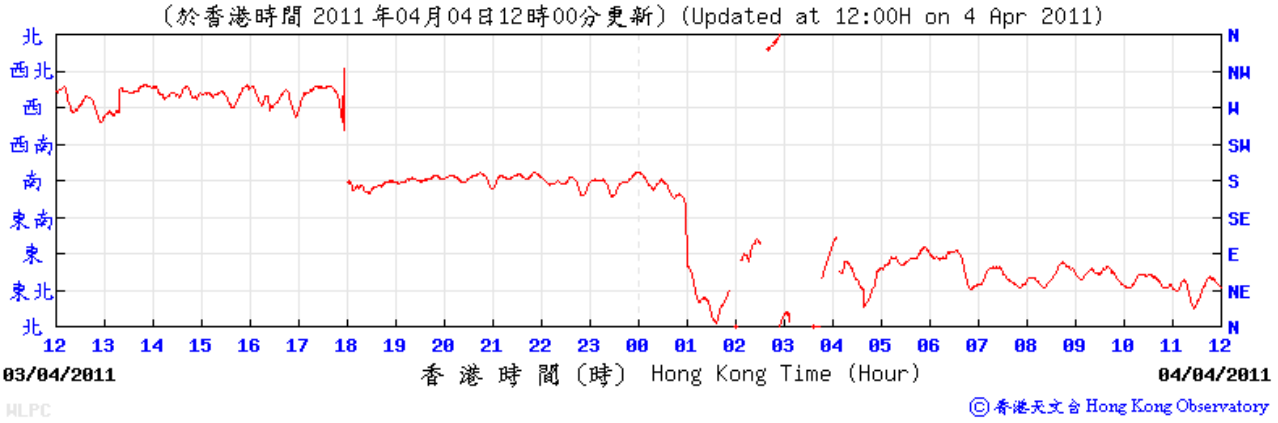
## Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

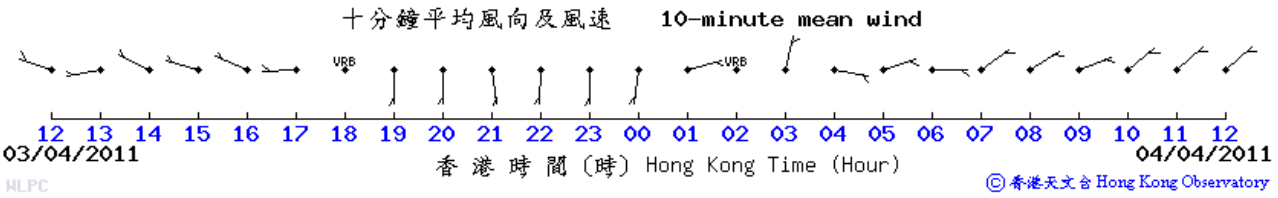
- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

# Appendix G. Weather conditions during the monitoring period

## Wind Data for Wetland Park
## 4 April 2011

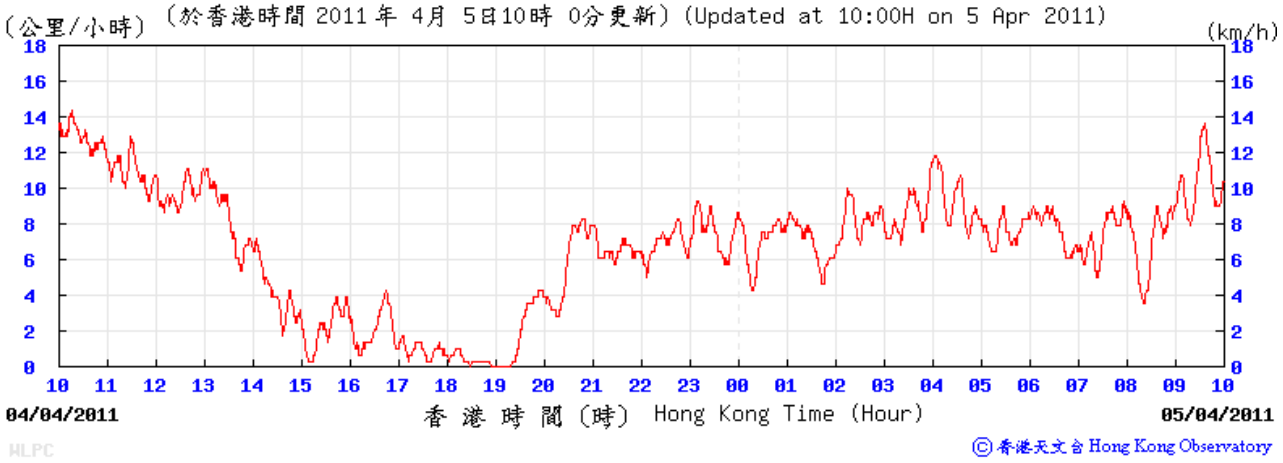


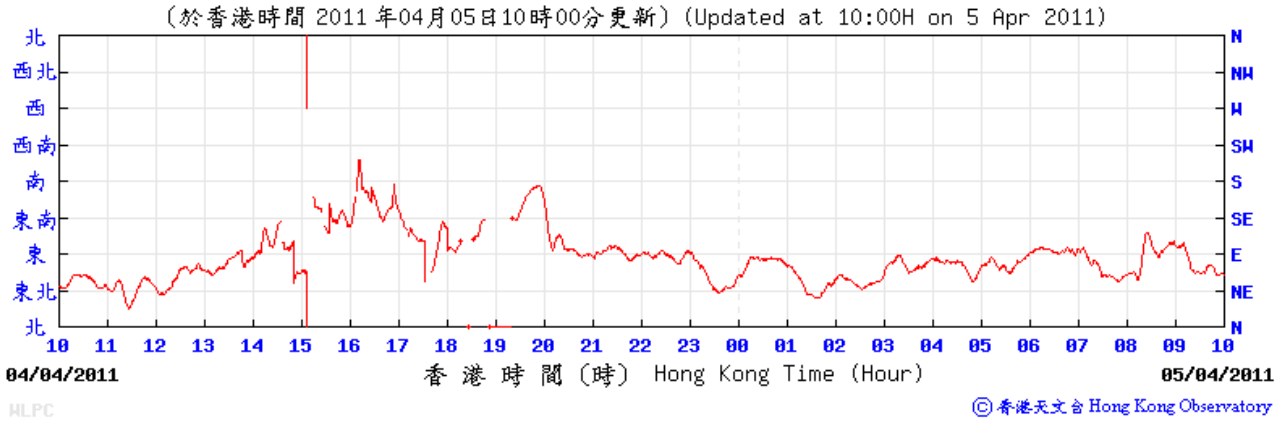



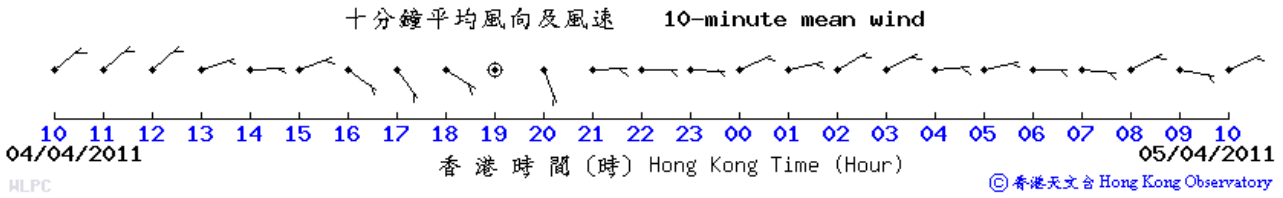



## Wind Data for Wetland Park

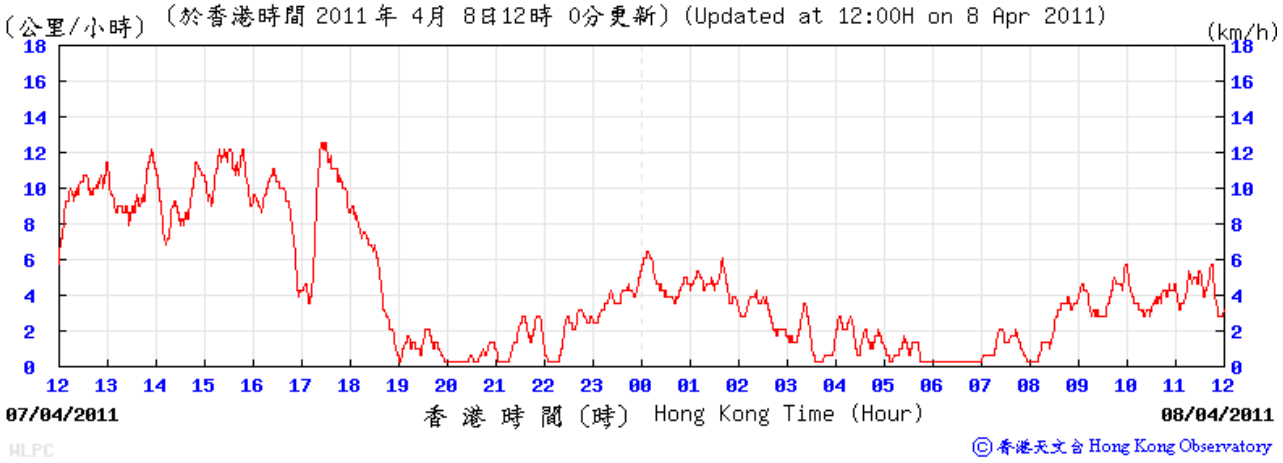
## 5 April 2011

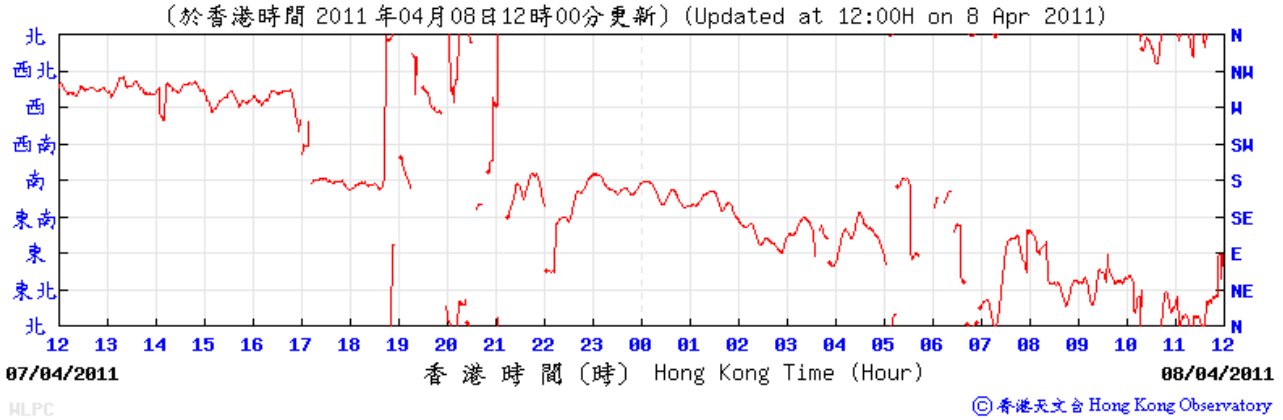


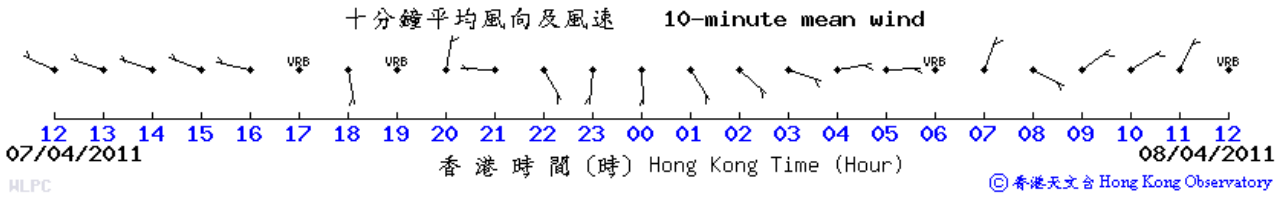



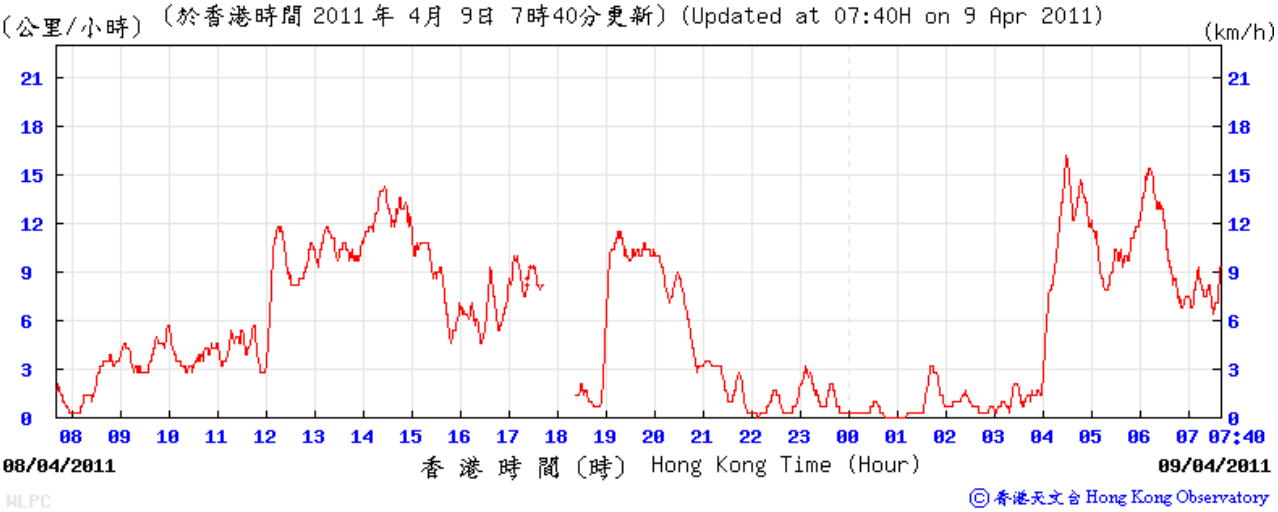
## Wind Data for Wetland Park
## 8 April 2011

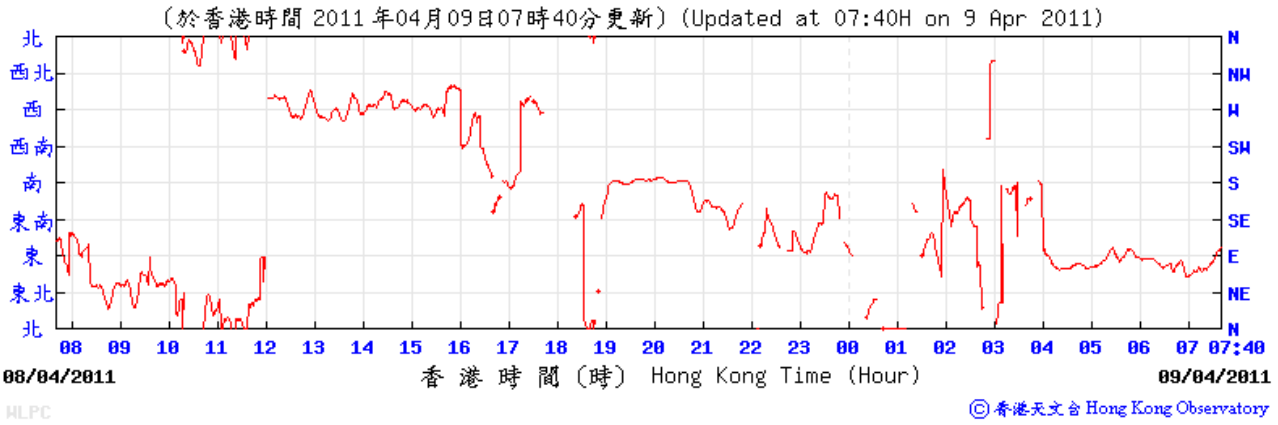


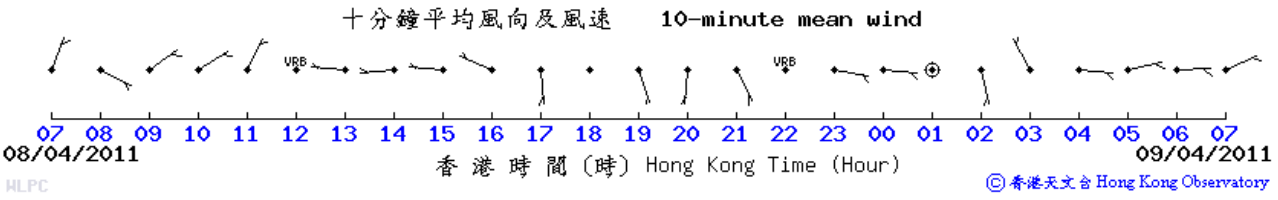



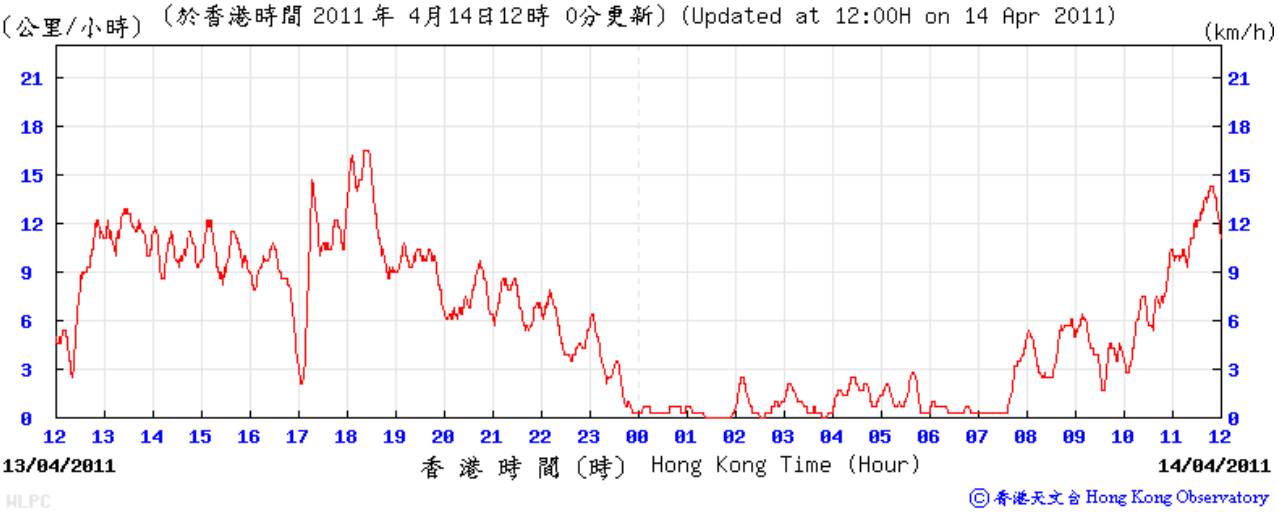
## Wind Data for Wetland Park
## 9 April 2011

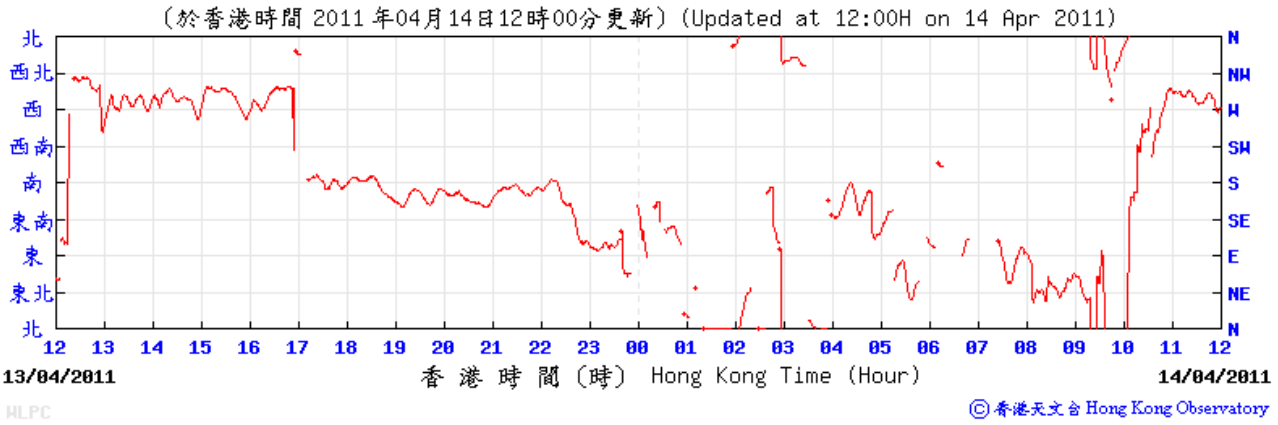


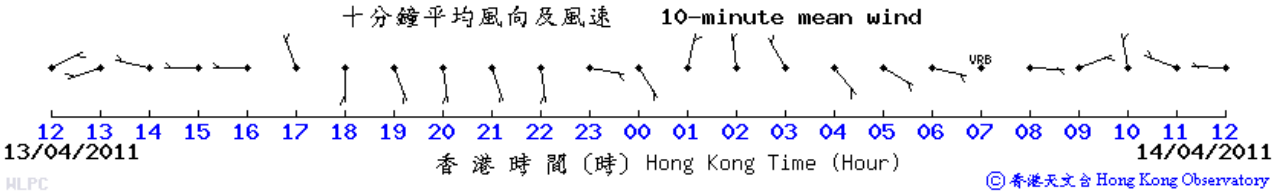



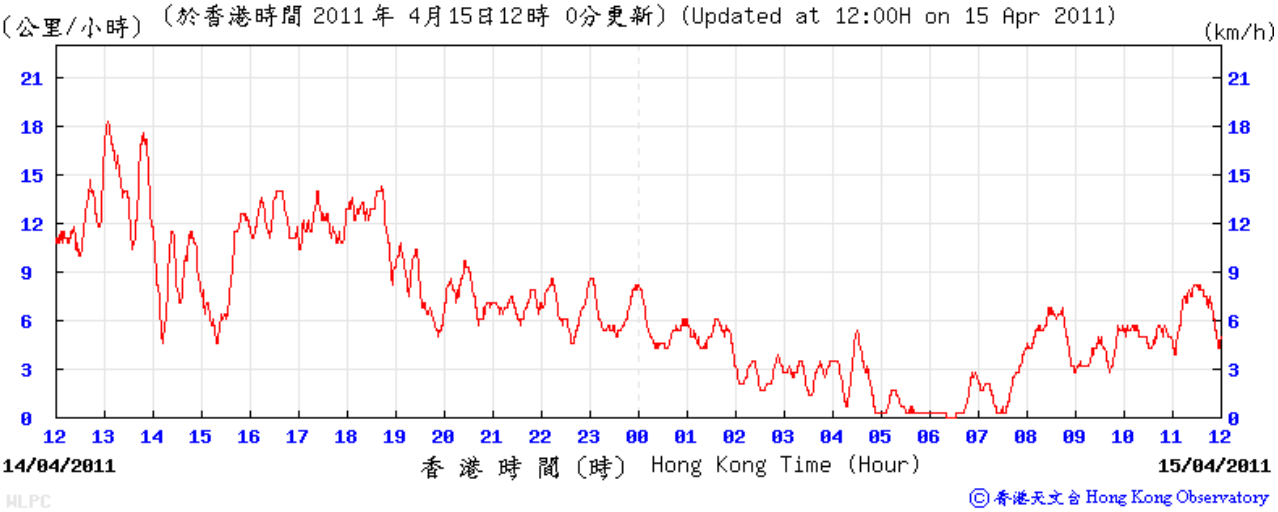
## Wind Data for Wetland Park
## 14 April 2011

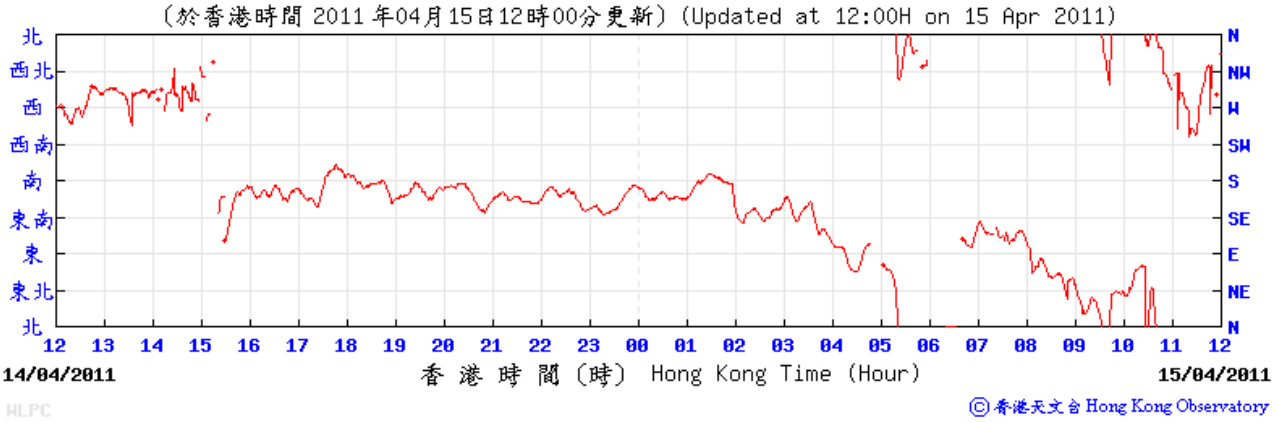


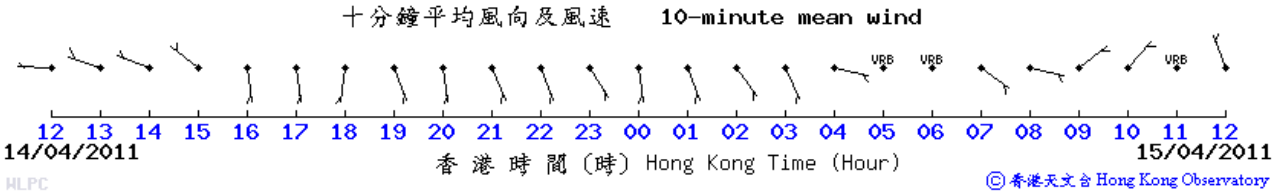



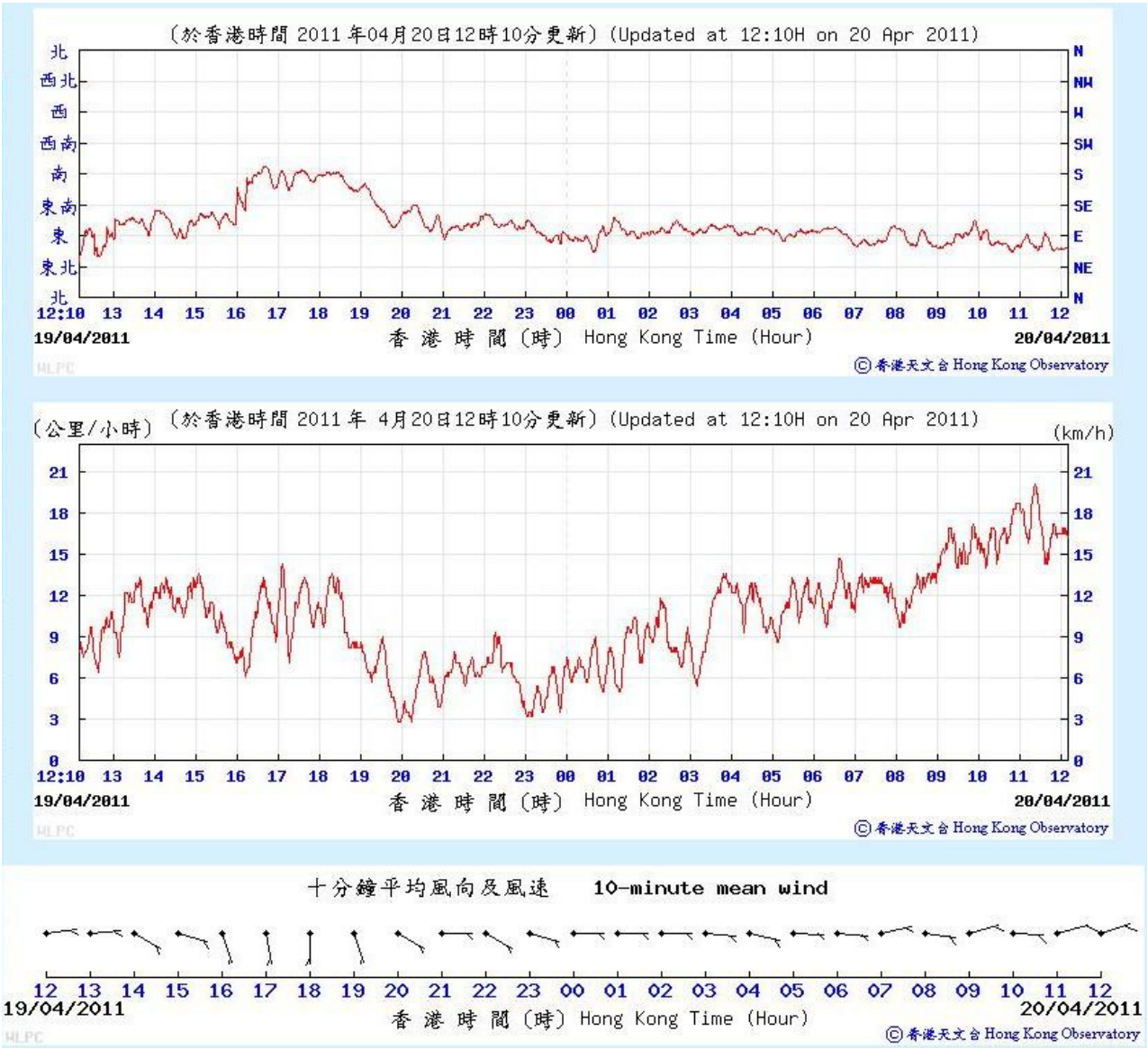
## Wind Data for Wetland Park
## 15 April 2011



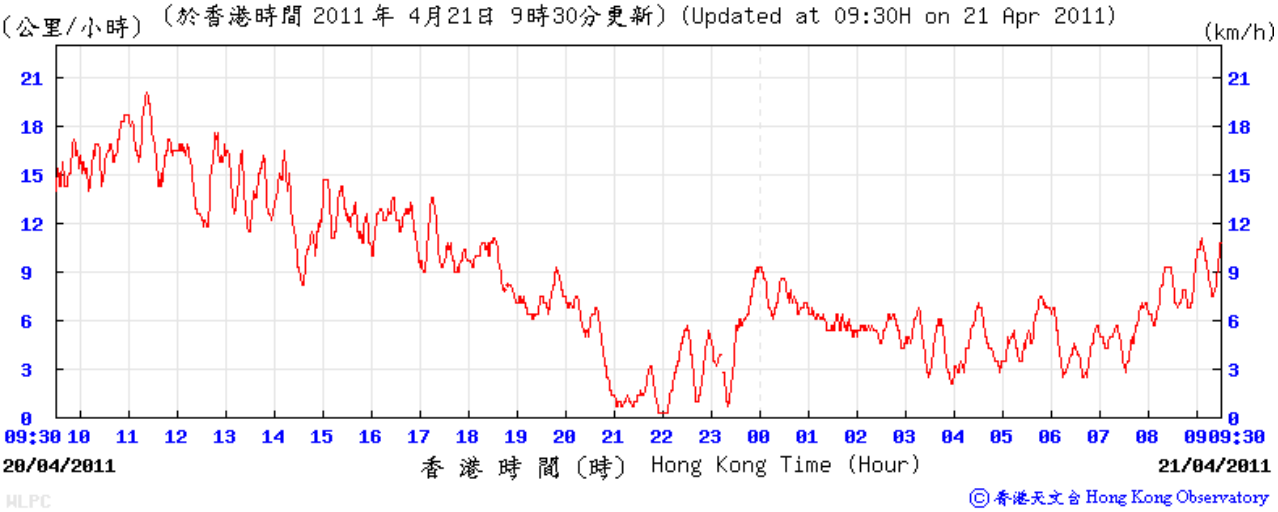



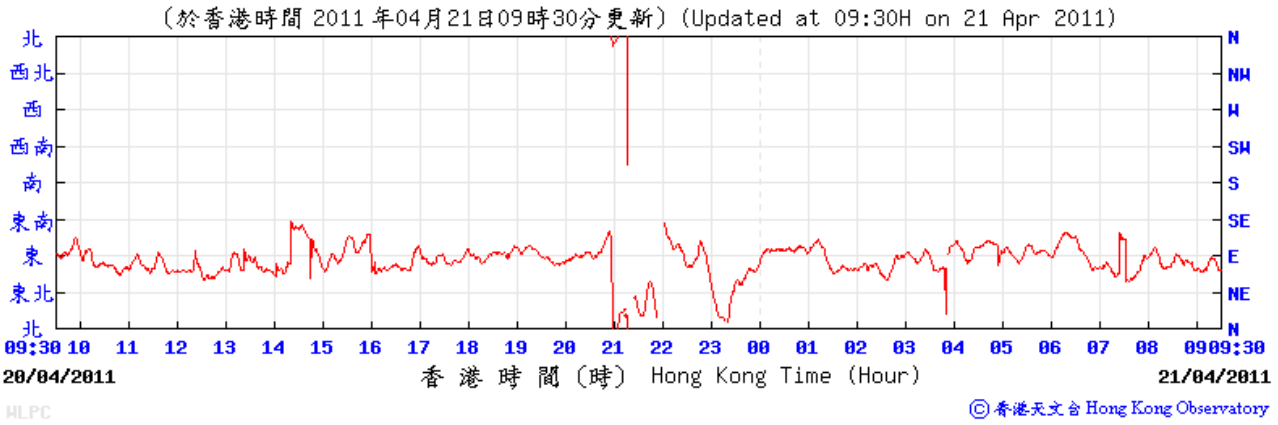
## Wind Data for Wetland Park
## 20 April 2011

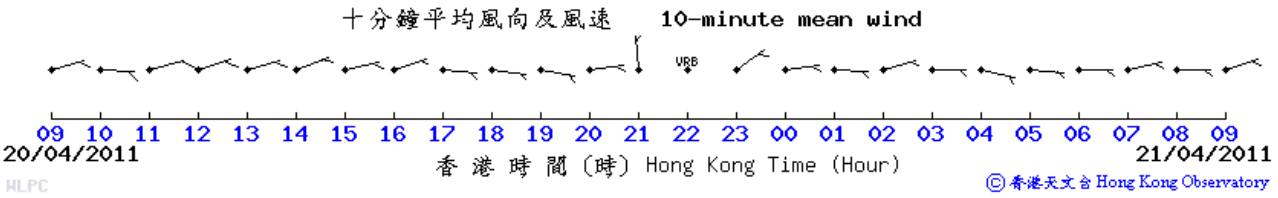


## Wind Data for Wetland Park

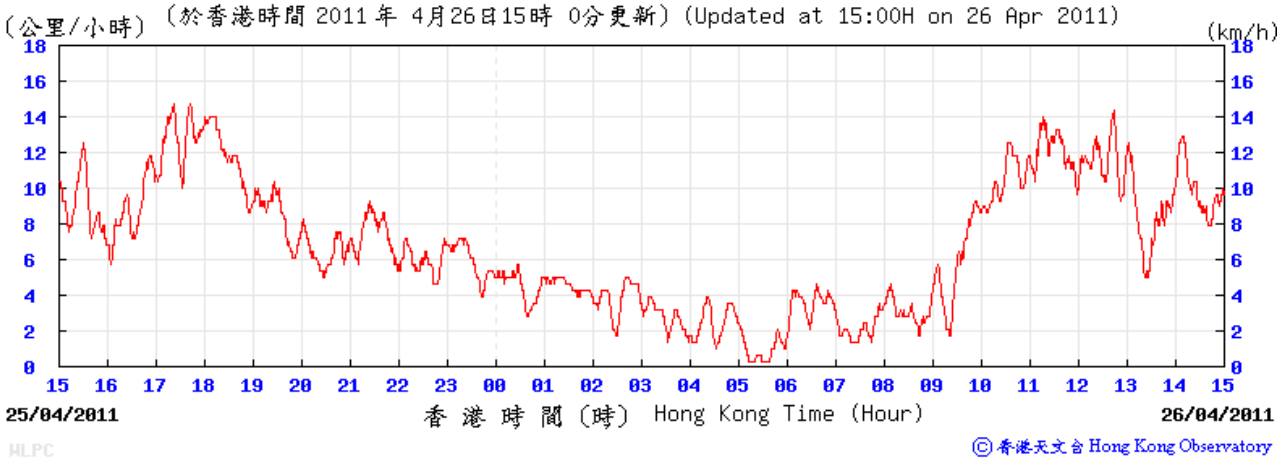
## 21 April 2011

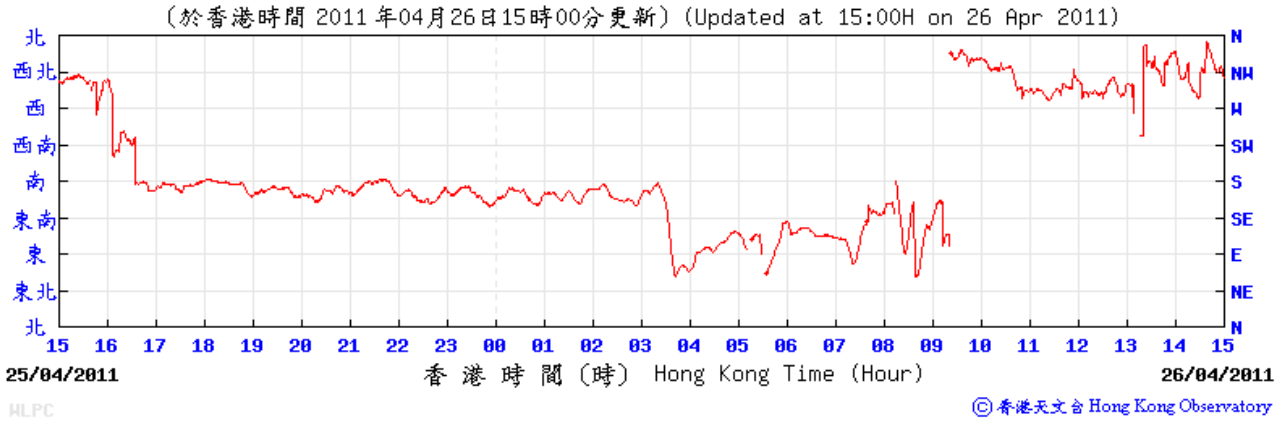


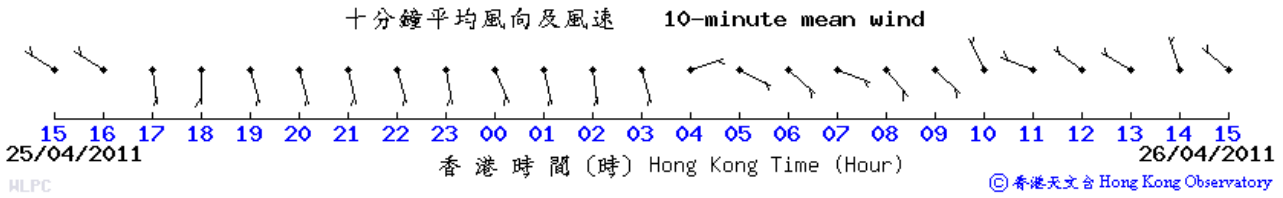



## Wind Data for Wetland Park
## 26 April 2011

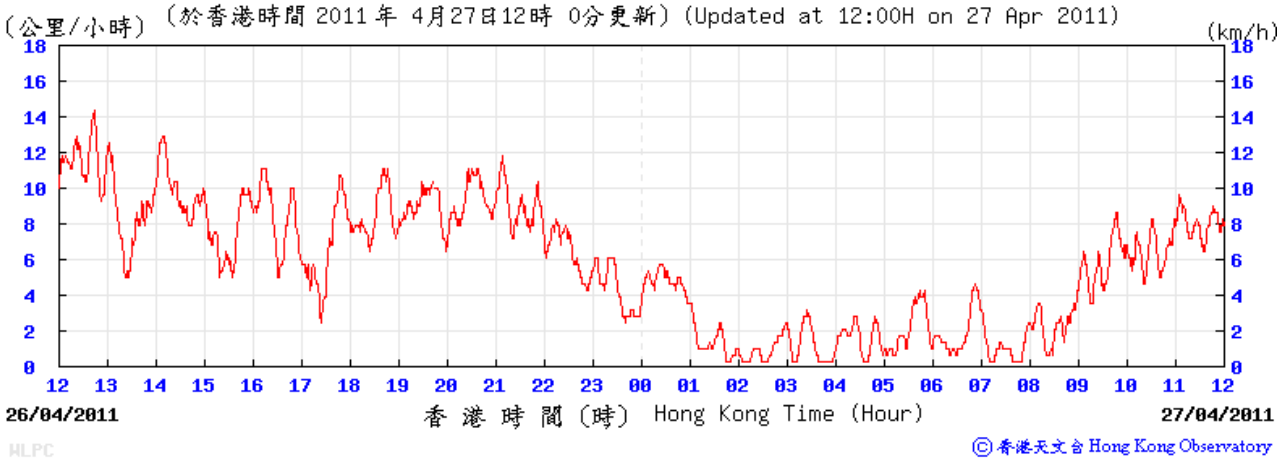


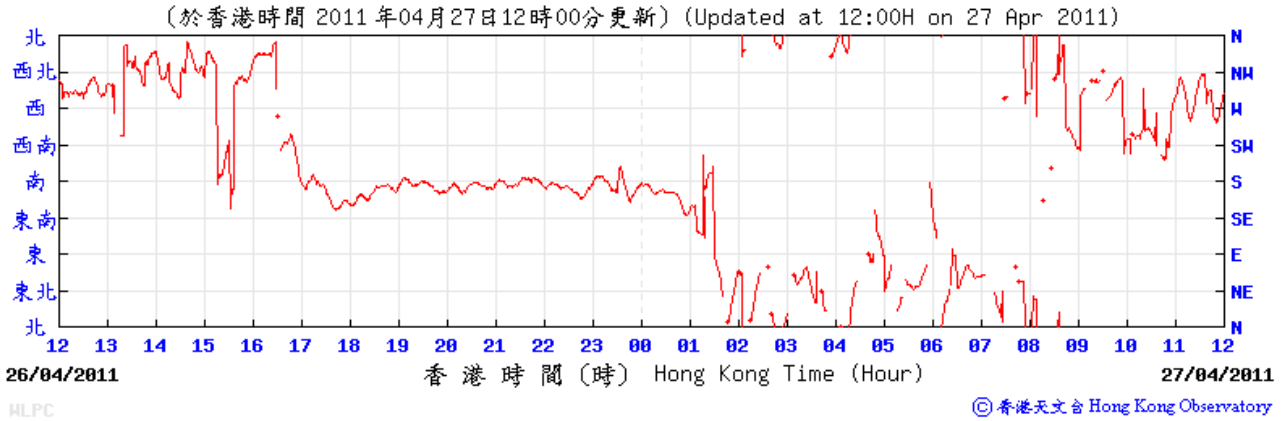



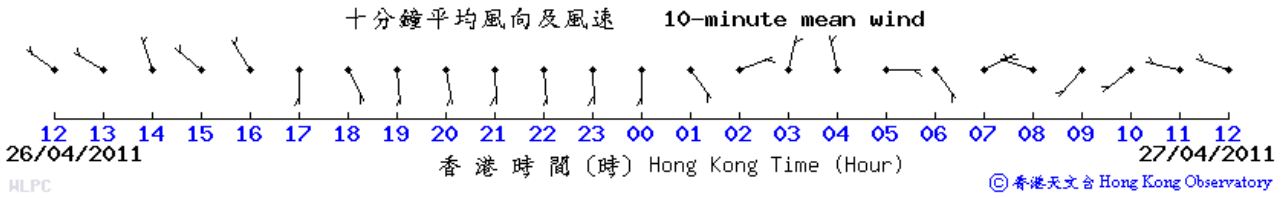



## Wind Data for Wetland Park

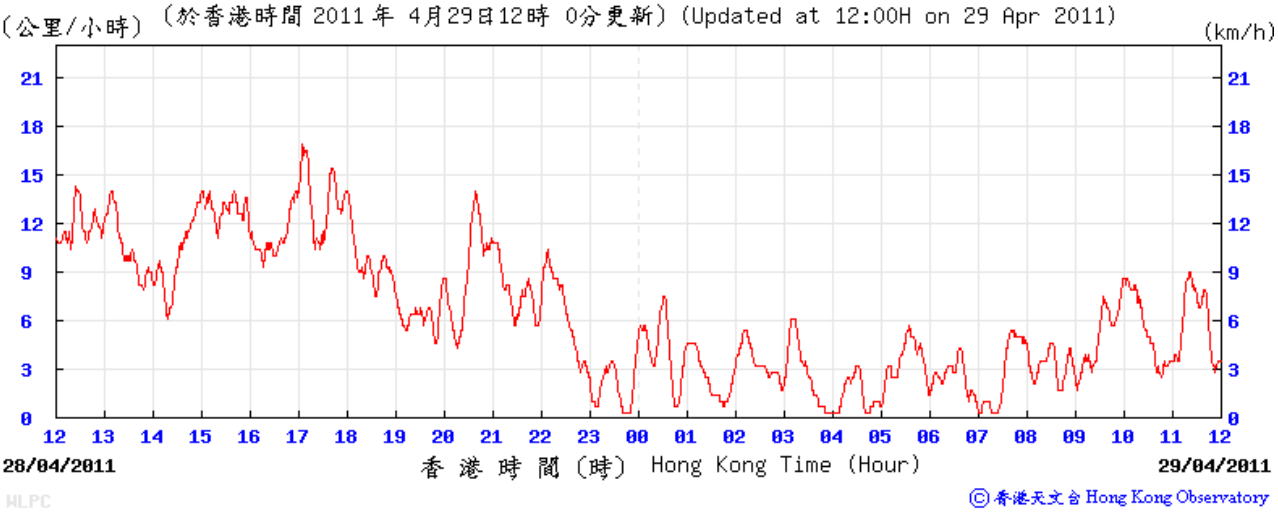
## 27 April 2011

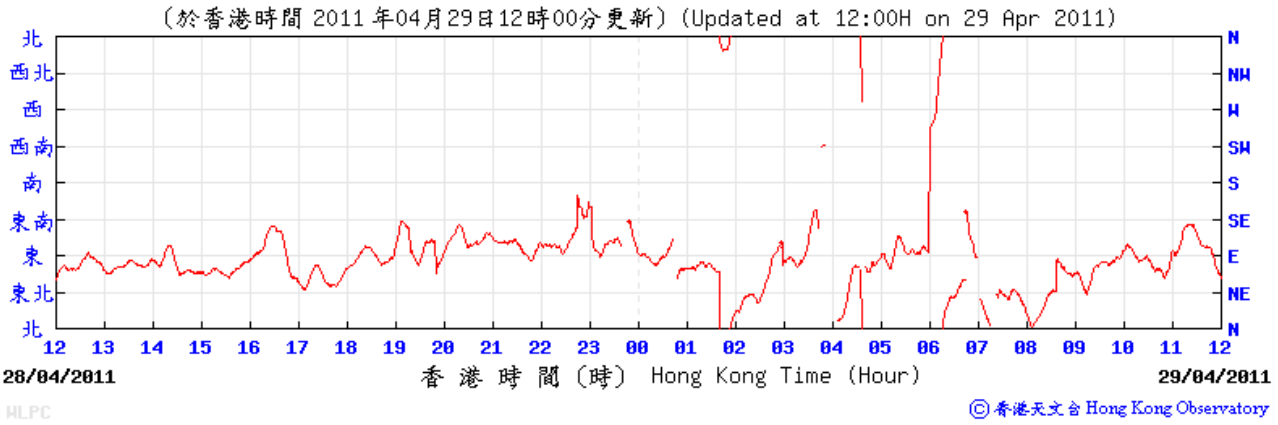


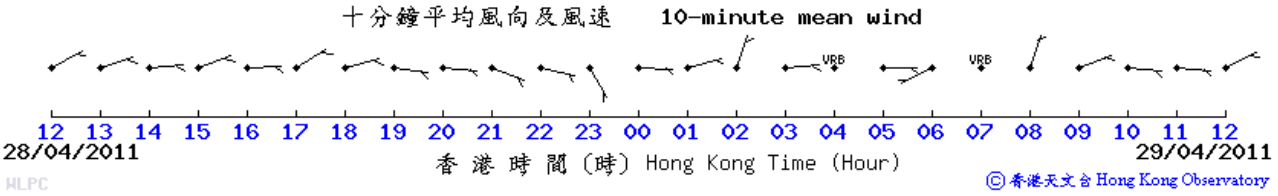



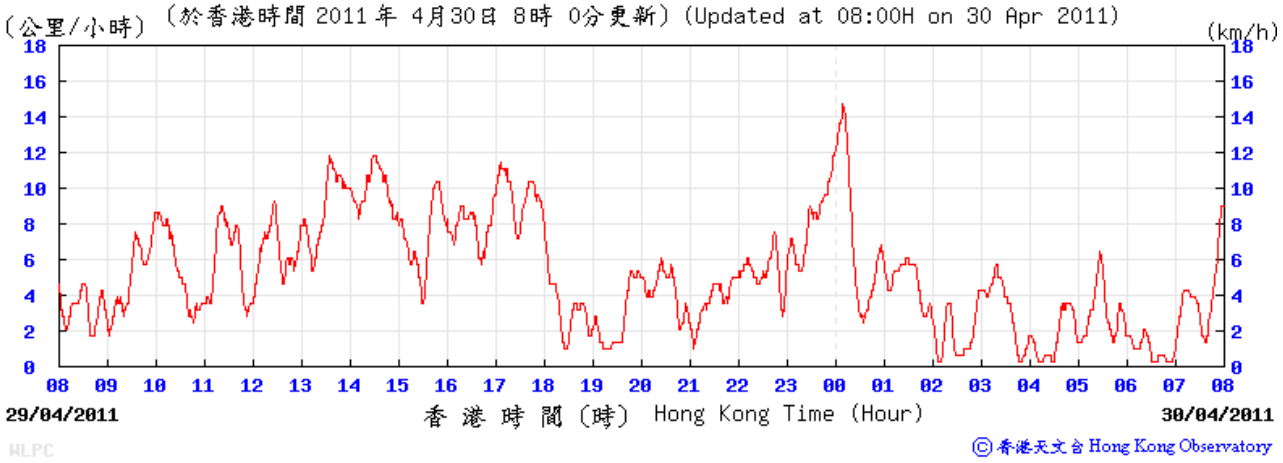
## Wind Data for Wetland Park
## 29 April 2011

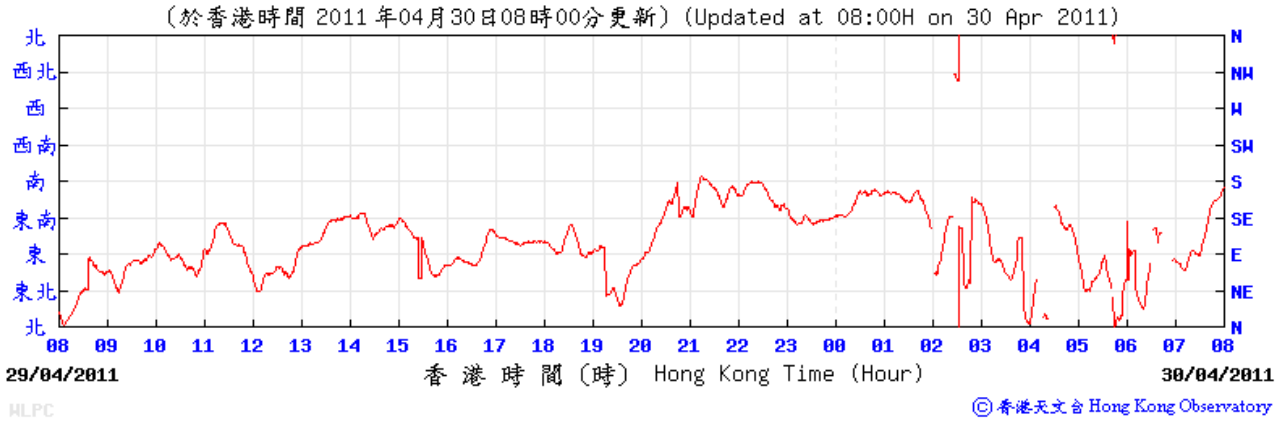


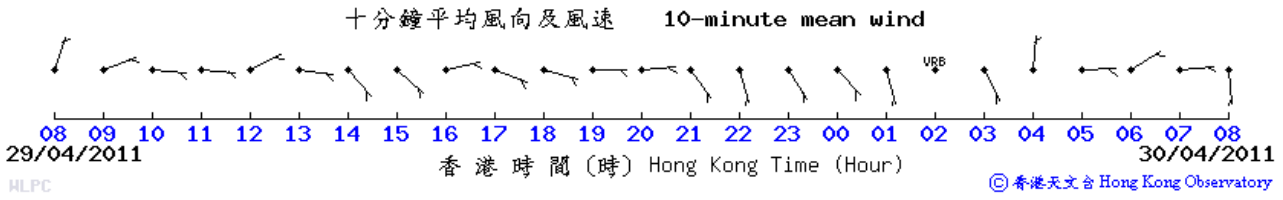



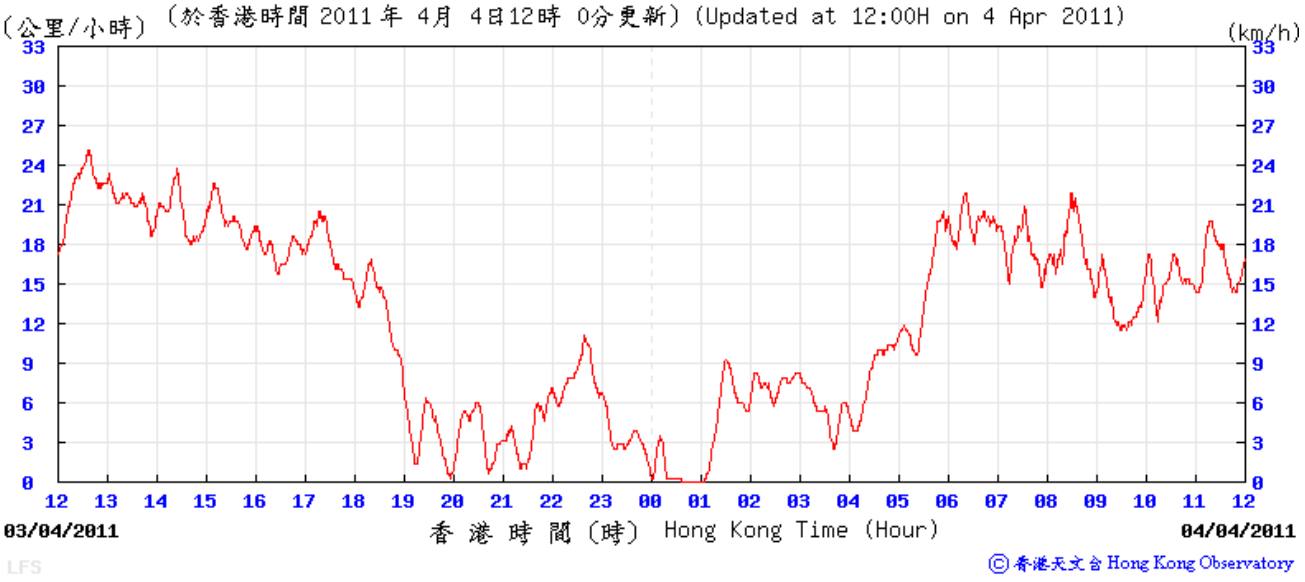
## Wind Data for Wetland Park
## 30 April 2011

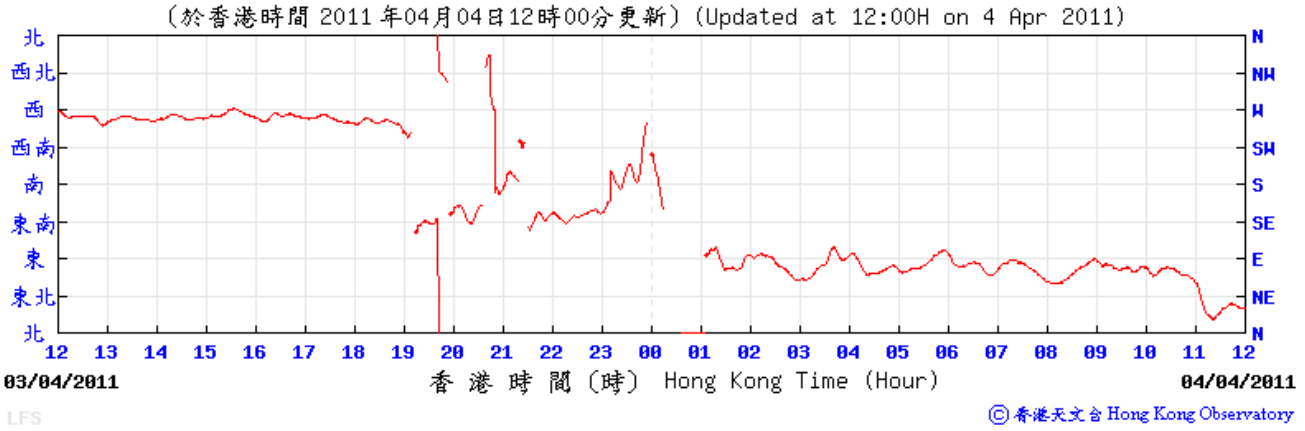


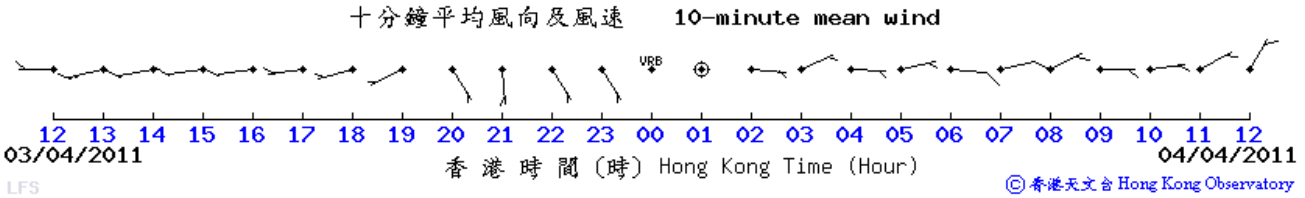



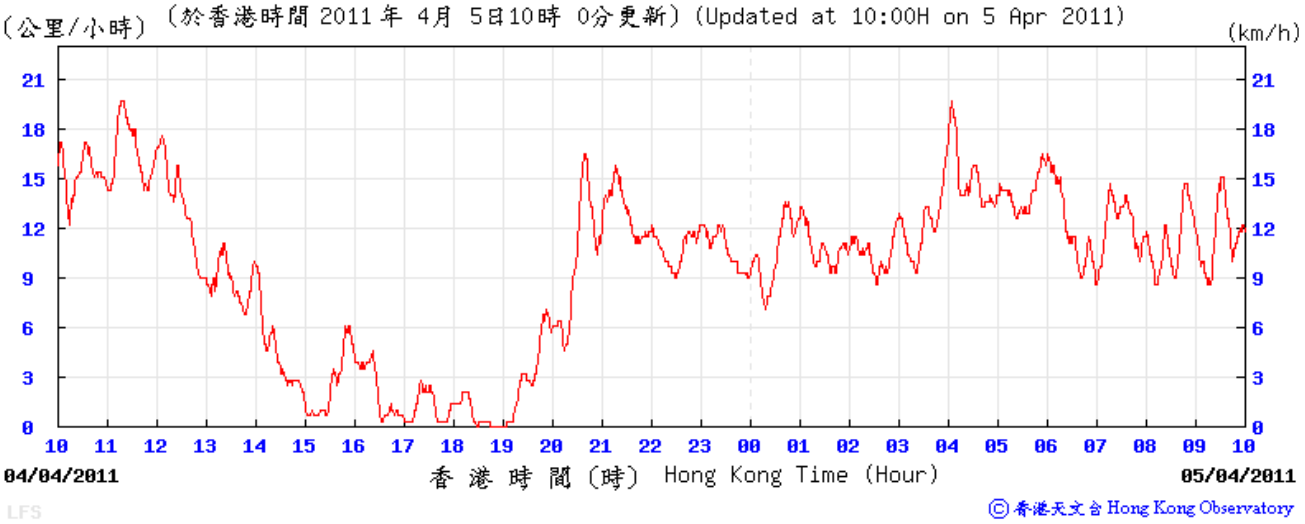
## Wind Data for Lau Fau Shan
## 4 April 2011

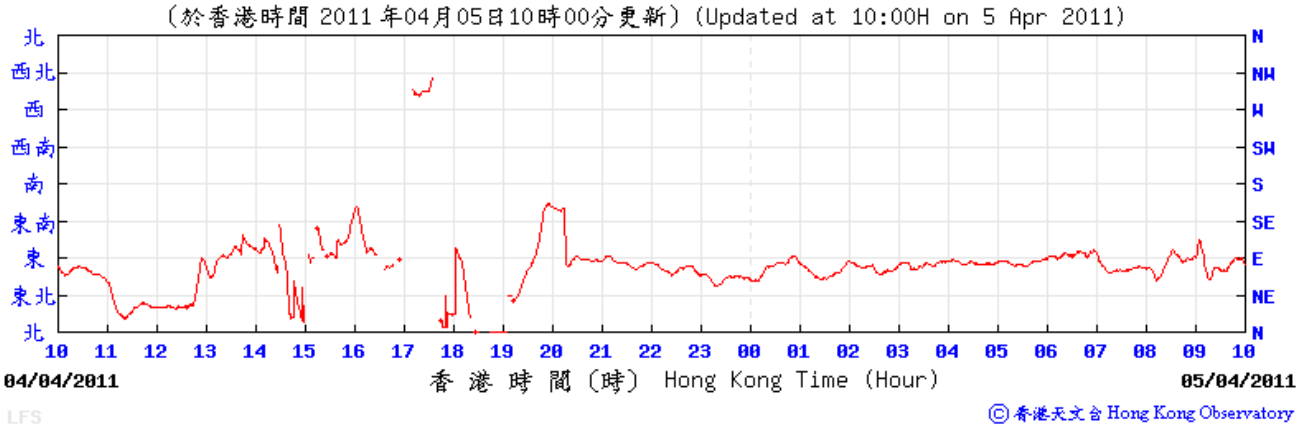


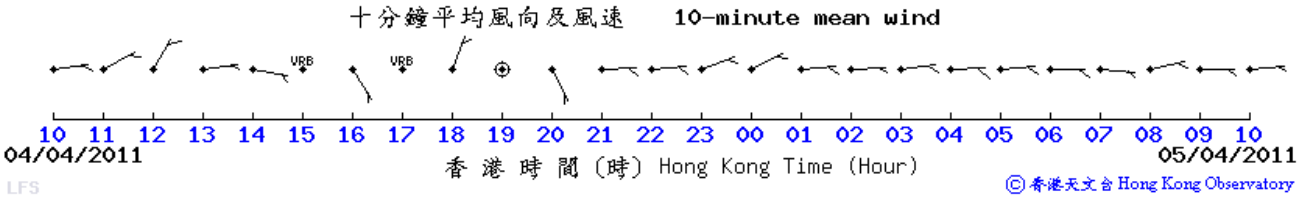



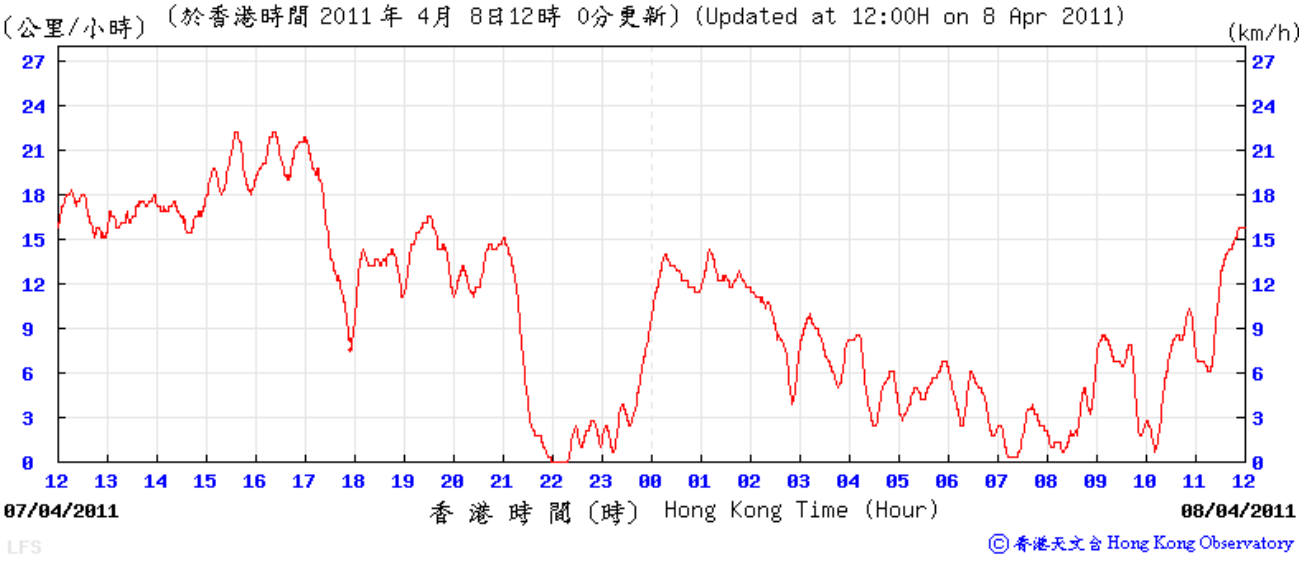
## Wind Data for Lau Fau Shan
## 5 April 2011

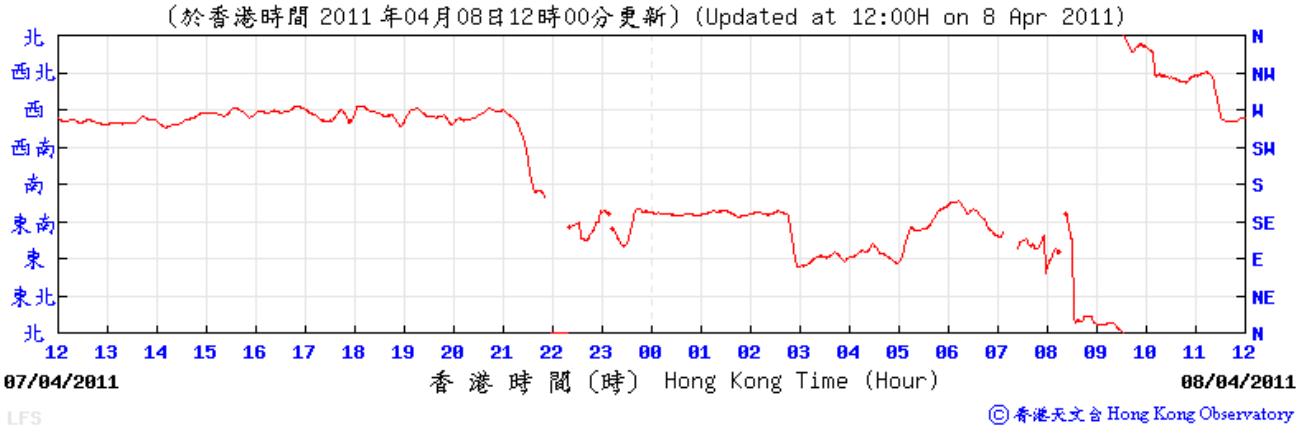


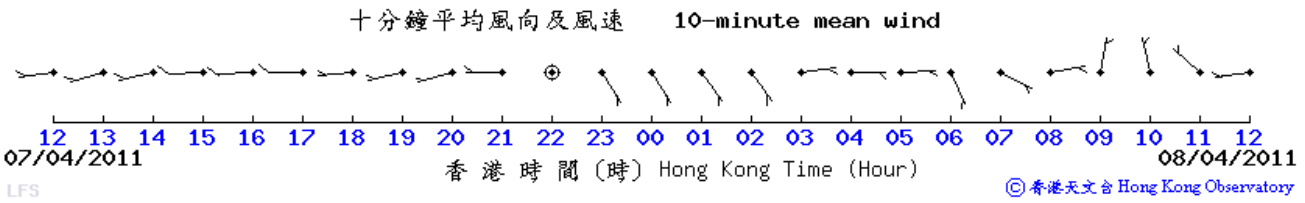



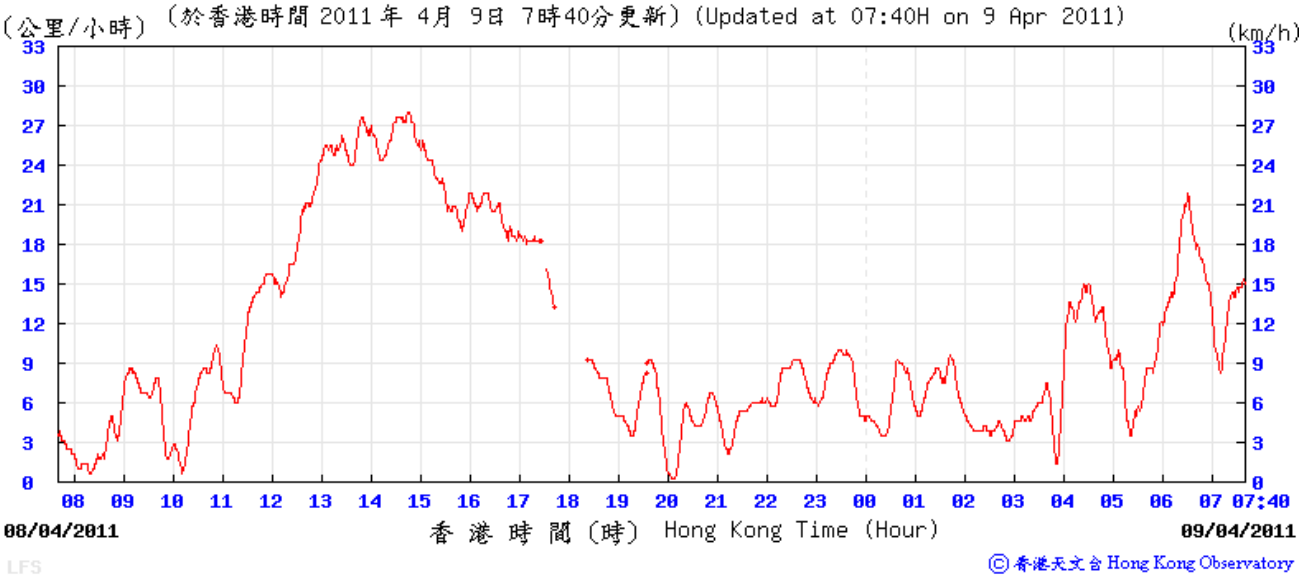
## Wind Data for Lau Fau Shan
## 8 April 2011

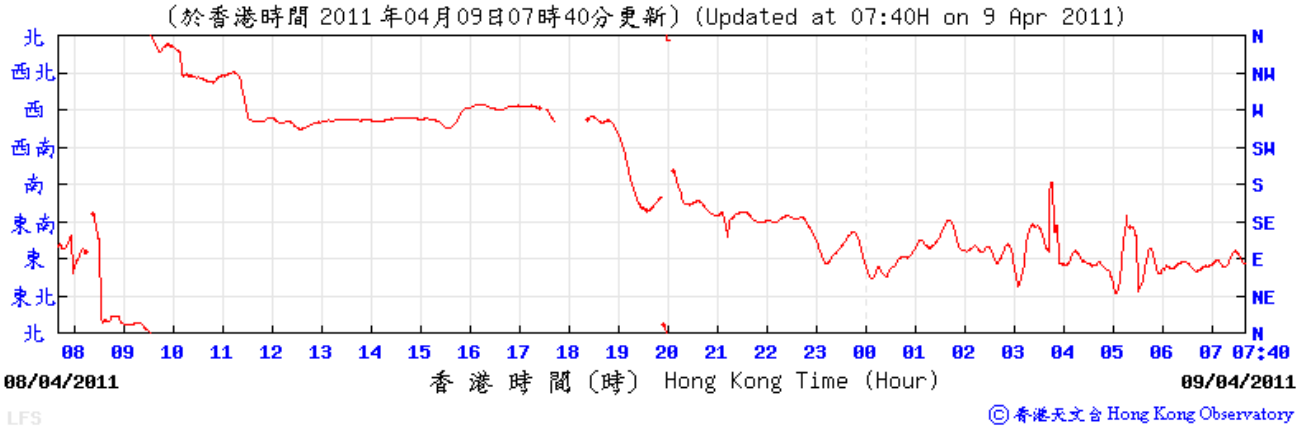


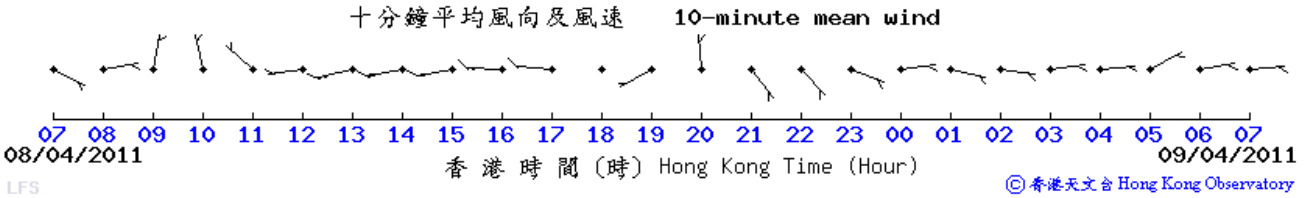



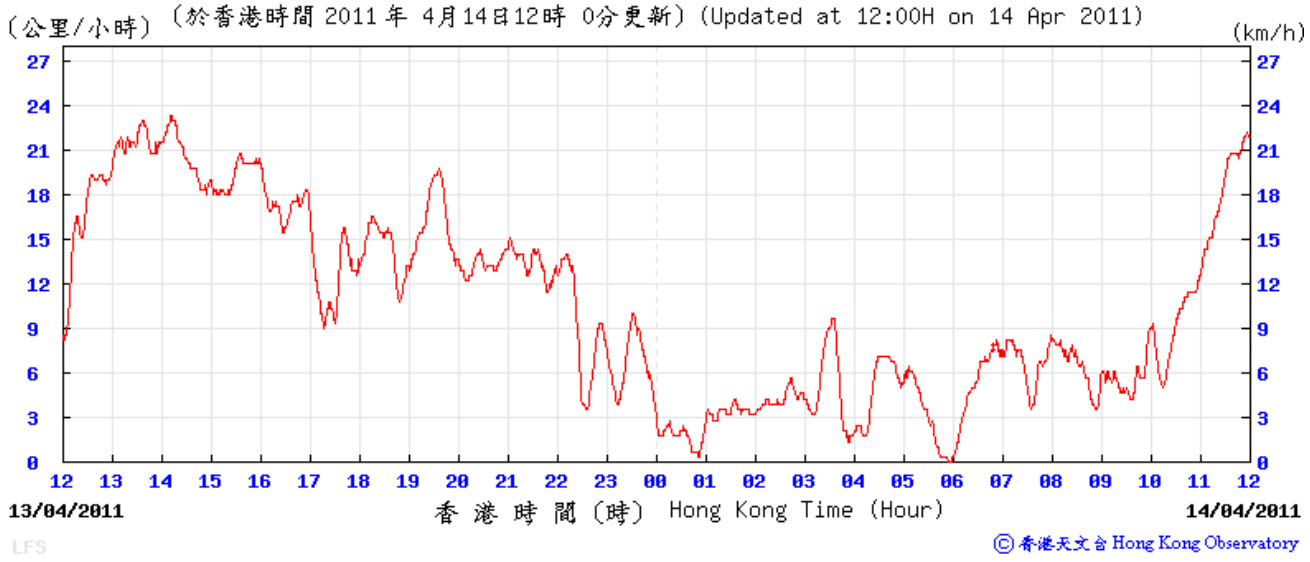
## Wind Data for Lau Fau Shan
## 9 April 2011

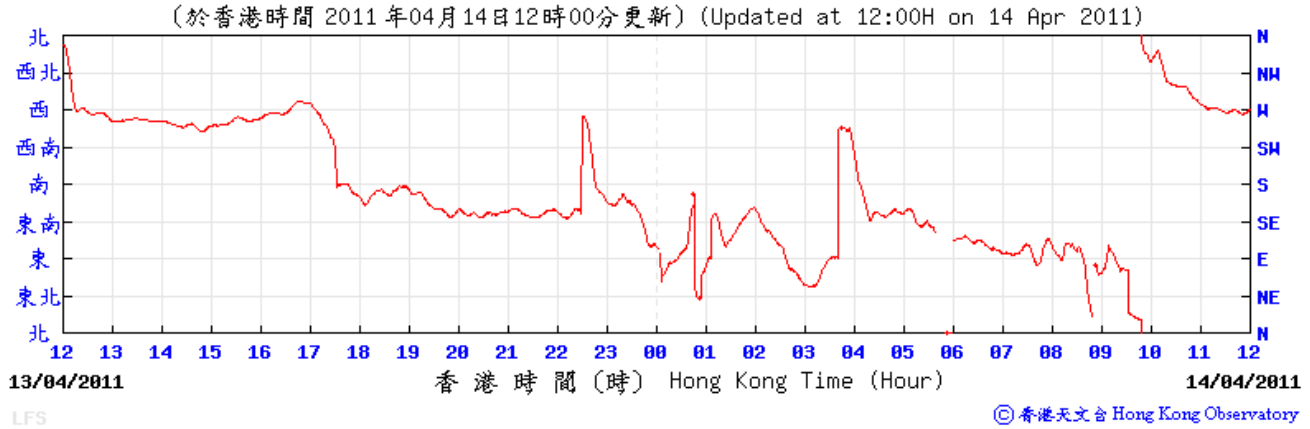


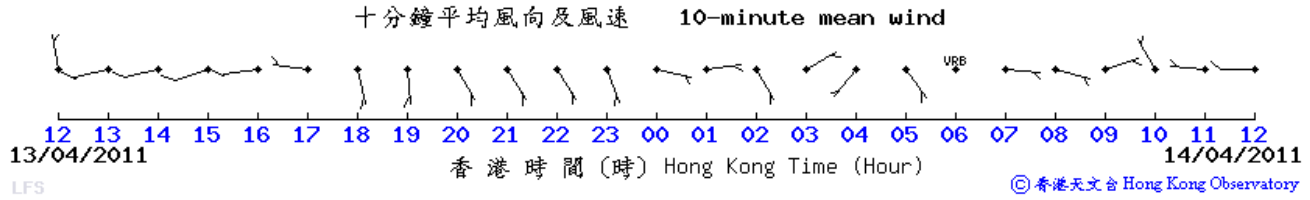



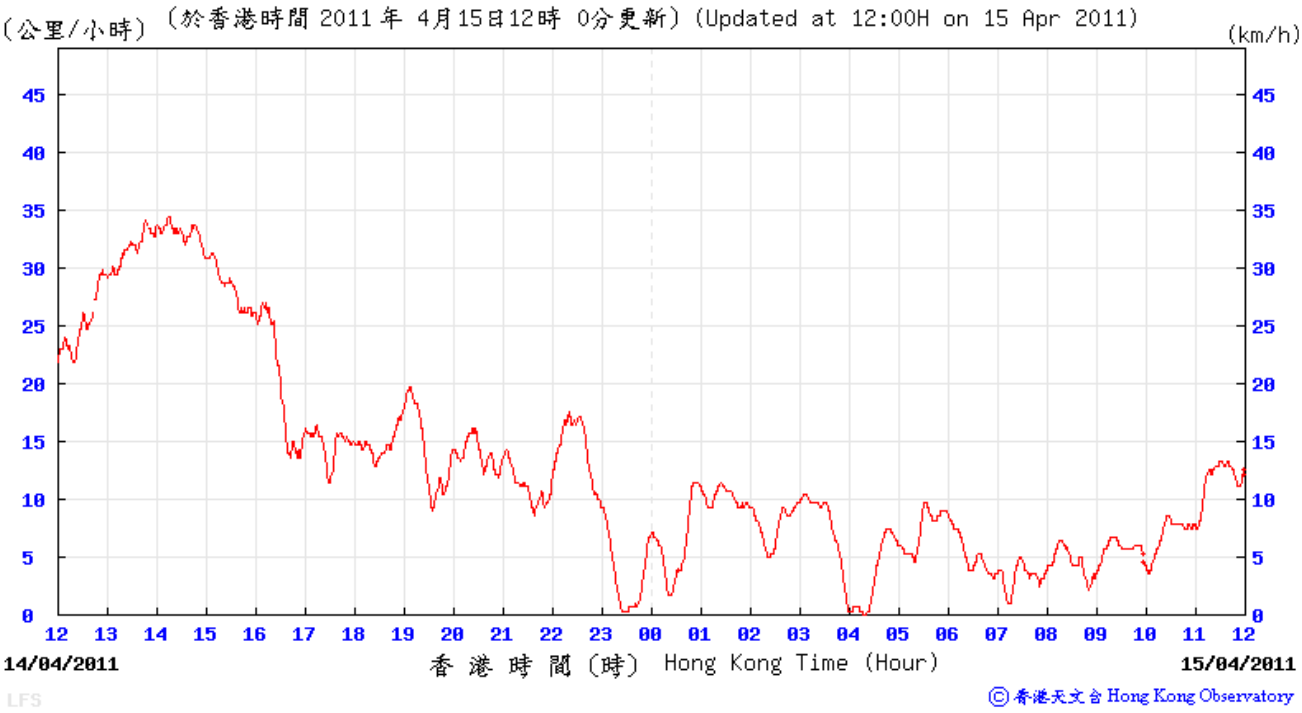
## Wind Data for Lau Fau Shan
## 14 April 2011

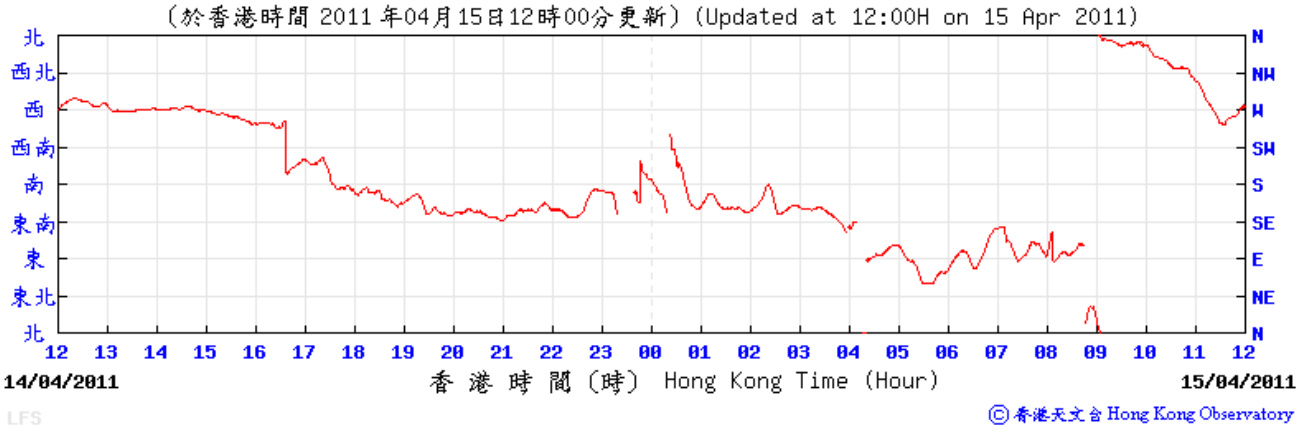


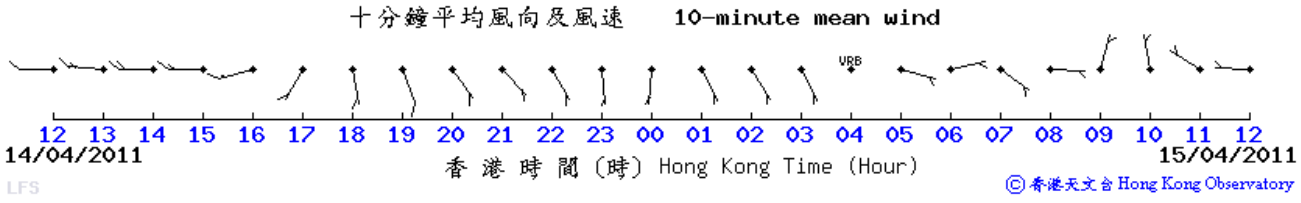



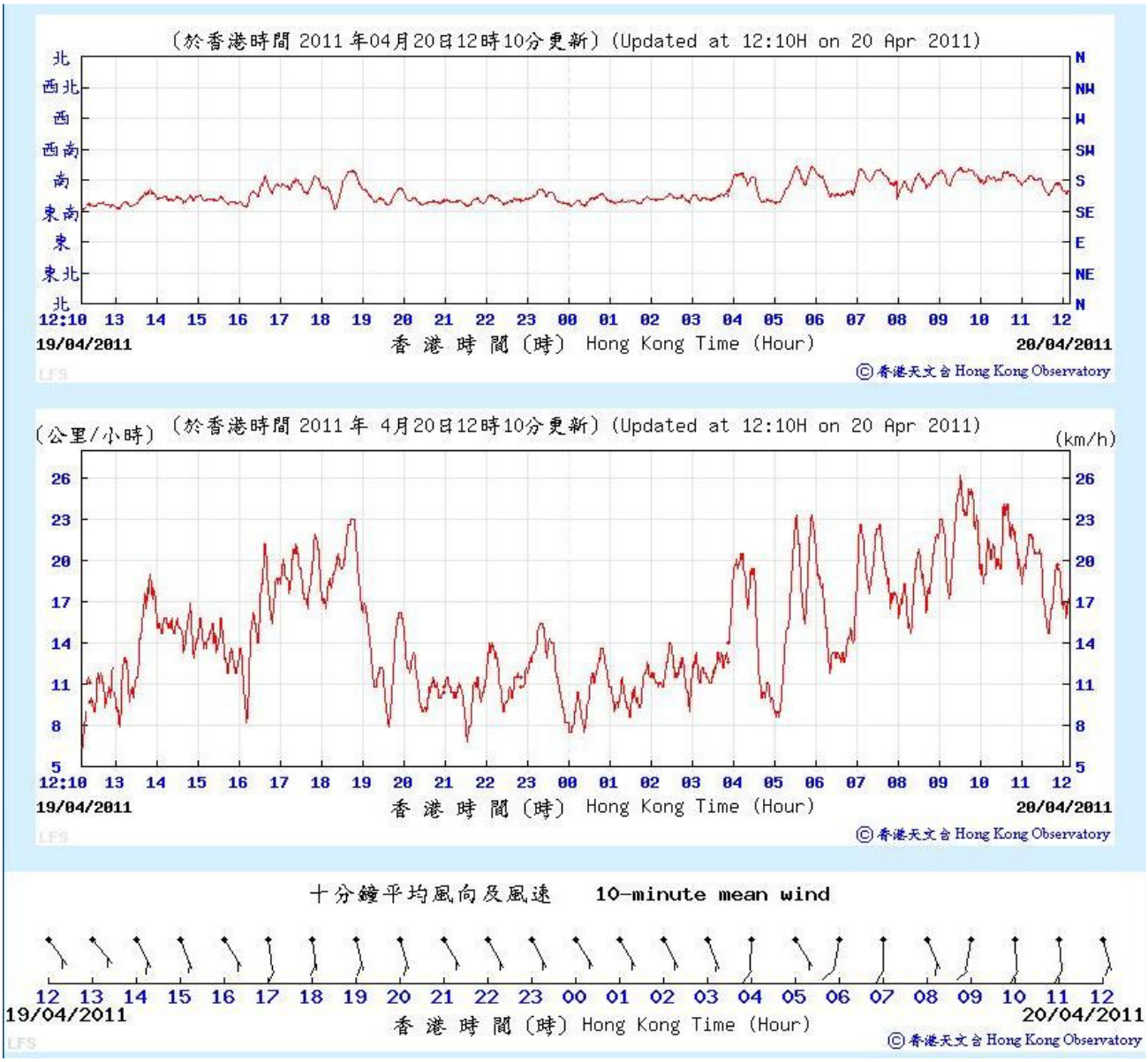
## Wind Data for Lau Fau Shan
## 15 April 2011



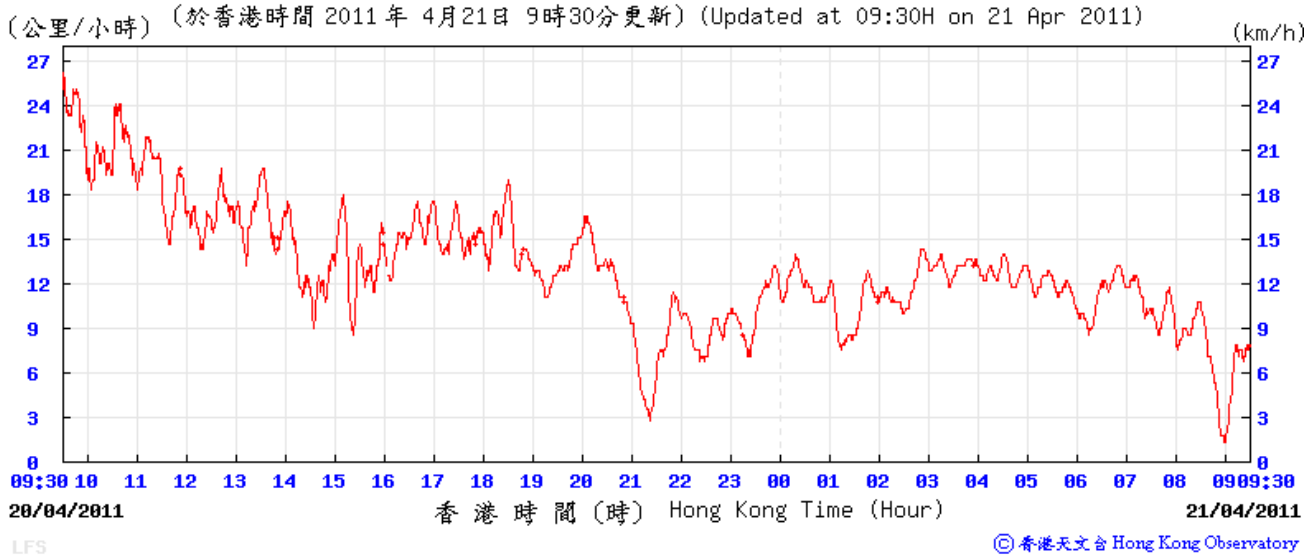



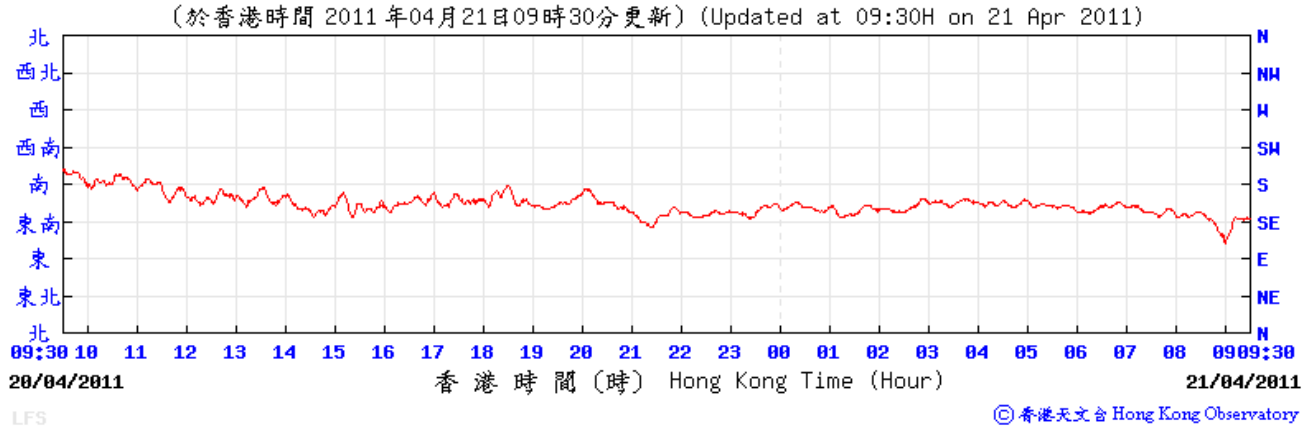



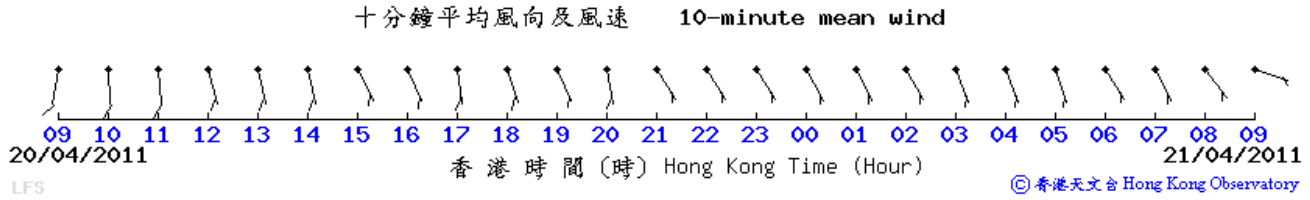
## Wind Data for Lau Fau Shan
## 20 April 2011



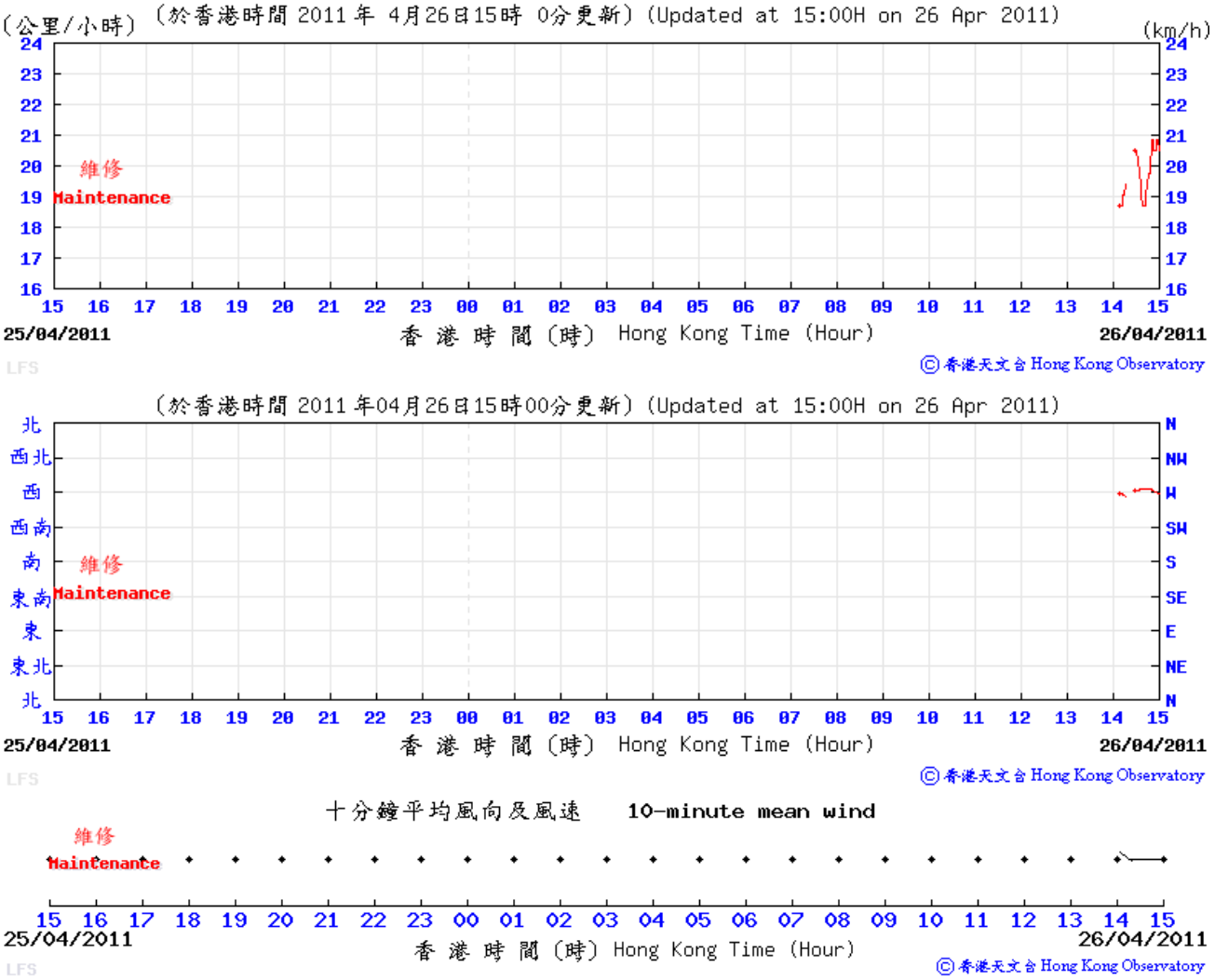
## Wind Data for Lau Fau Shan
## 21 April 2011



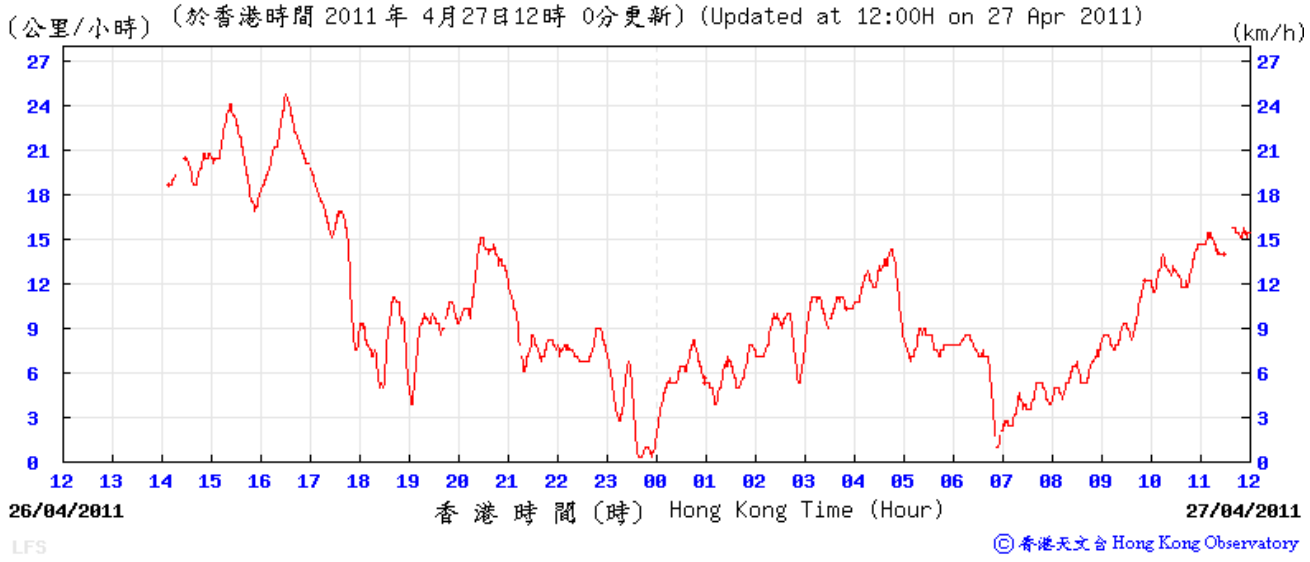



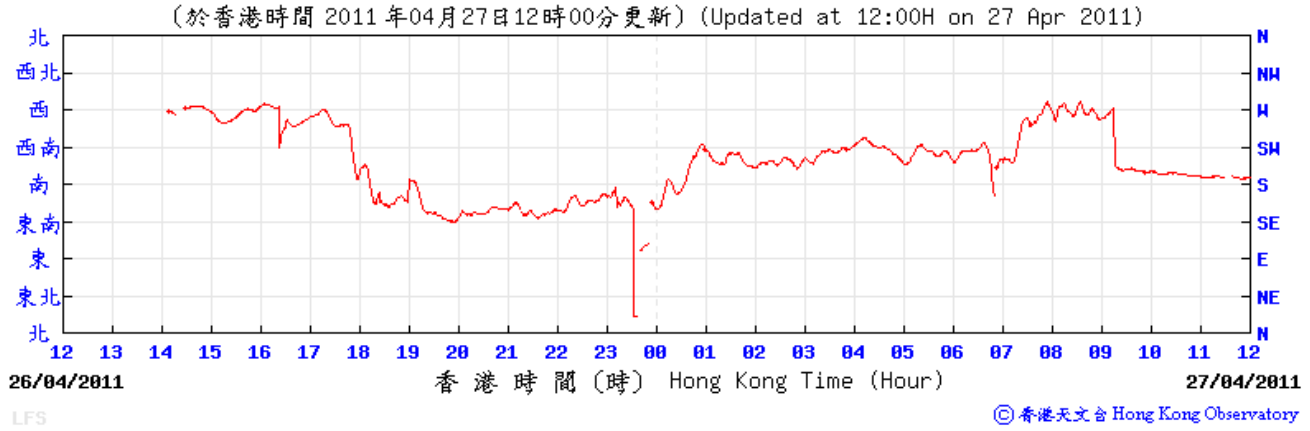



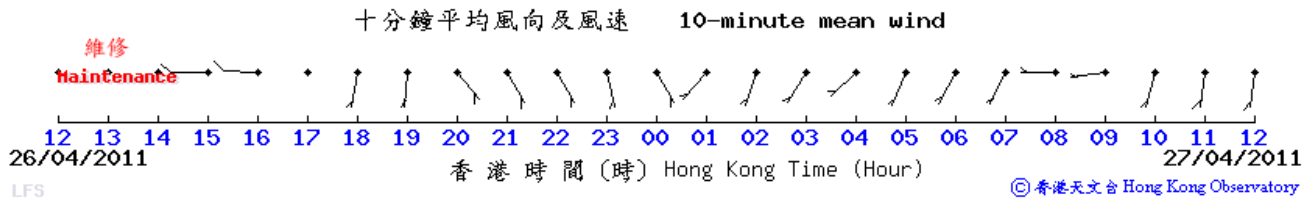
## Wind Data for Lau Fau Shan
## 26 April 2011



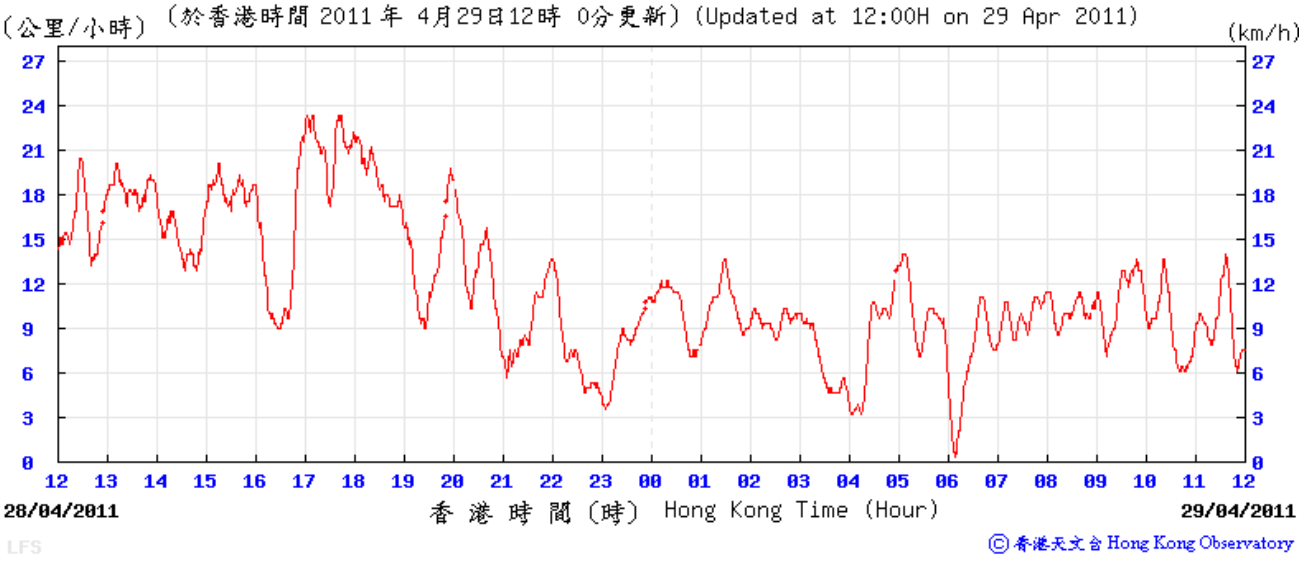
## Wind Data for Lau Fau Shan
## 27 April 2011

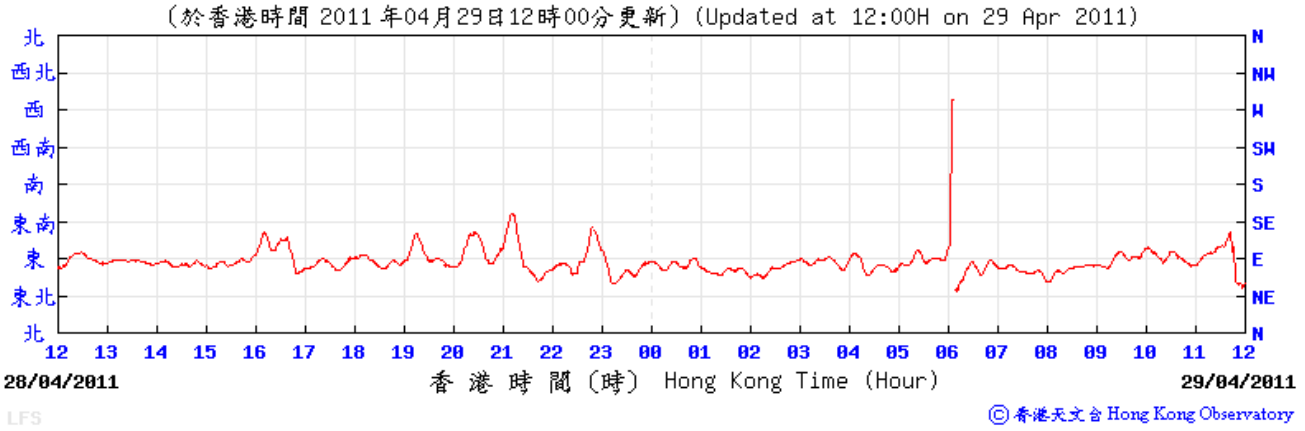


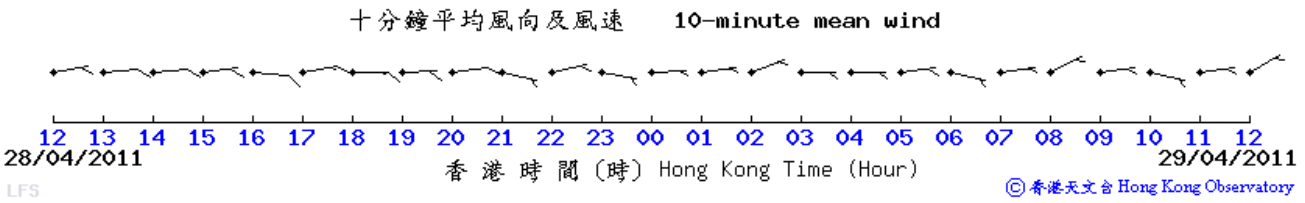



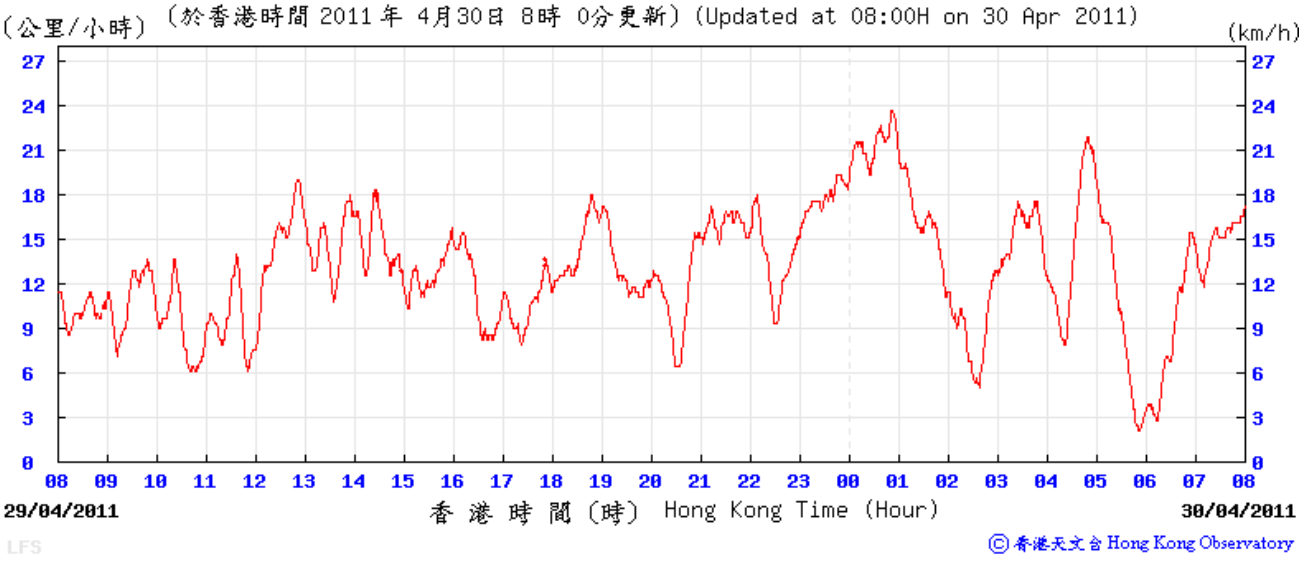
## Wind Data for Lau Fau Shan
## 29 April 2011

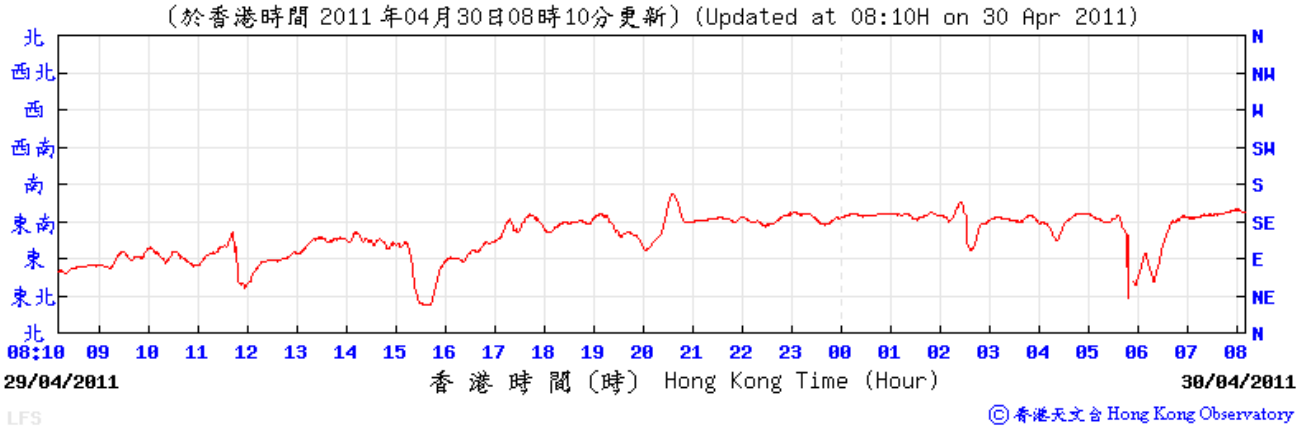


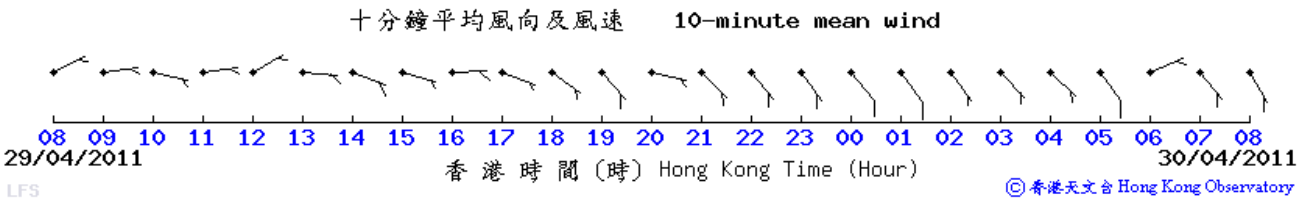



## Wind Data for Lau Fau Shan
## 30 April 2011



# Appendix H. Ecological Monitoring conducted

| April 2011 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mammals | | | | ✓ | | ✓ | | | | | | | | ✓ | ✓ |
| Birds | | | | ✓ | | | | | | | | | | | ✓ |
| Herpetofauna | | | | | | ✓ | | | | | | | | | |
| Dragonflies & butterflies | | | | | | | | | | | | | | ✓ | |
| Inspection Visits | | | | ✓ | | | | | | | | | | | ✓ |

| April 2011 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mammals | | | ✓ | | ✓ | ✓ | | | | | ✓ | | | | |
| Birds | | | | | ✓ | | | | | | ✓ | | | | |
| Herpetofauna | | | ✓ | | | | | | | | | | | | |
| Dragonflies & butterflies | | | | | | ✓ | | | | | | | | | |
| Inspection Visits | | | | | ✓ | | | | | | ✓ | | | | |

Note:

* Light grey cells indicated public holidays or Sundays.

# Appendix I. Summary of Bird Surveys conducted

**Table I1. Summary of bird monitoring in the Survey Area**

| Species Name | Scientific Name | Conservation Status [2] | Apr 2011 | |
|---|---|---|---|---|
| | | | Occurrence[3] | Mean[4] |
| Little Grebe | *Tachybaptus ruficollis* | LC, (1) | 4 | 4.0 |
| Great Egret | *Egretta alba* | PRC, (1) | 4 | 3.8 |
| Intermediate Egret | *Egretta intermedia* | RC, (1) | 3 | 0.8 |
| Little Egret | *Egretta garzetta* | PRC, (1) | 4 | 24.3 |
| Cattle Egret | *Bubulcus ibis* | (LC), (1) | 2 | 2.5 |
| Chinese Pond Heron | *Ardeola bacchus* | PRC, (1) | 4 | 21.8 |
| Black-crowned Night Heron | *Nycticorax nycticorax* | LC, (1) | 1 | 0.3 |
| Black-faced Spoonbill | *Platalea minor* | PGC, EN[5], (1) | 1 | 2.8 |
| Japanese Quail | *Coturnix japonica* | LC, (1) | 1 | 0.3 |
| White-breasted Waterhen | *Amaurornis phoenicurus* | (1) | 3 | 2.0 |
| Common Moorhen | *Gallinula chloropus* | (1) | 1 | 3.3 |
| Little Ringed Plover | *Charadrius dubius* | LC, (1) | 3 | 3.5 |
| Common Greenshank | *Tringa nebularia* | RC, (1) | 2 | 0.5 |
| Green Sandpiper | *Tringa ochropus* | (1) | 4 | 2.0 |
| Wood Sandpiper | *Tringa glareola* | LC, (1) | 3 | 3.0 |
| Common Sandpiper | *Actitis hypoleucos* | (1) | 4 | 9.8 |
| Pied Kingfisher | *Ceryle rudis* | (LC), (1) | 1 | 0.3 |
| Common Kingfisher | *Alcedo atthis* | (1) | 1 | 0.5 |
| Yellow Wagtail | *Motacilla flava* | (1) | 4 | 39.3 |
| Grey Wagtail | *Motacilla cinerea* | (1) | 1 | 0.8 |
| Red-throated Pipit | *Anthus cervinus* | LC | 1 | 1.3 |
| Zitting Cisticola | *Cisticola juncidis* | LC | 2 | 1.5 |
| White-shouldered Starling | *Sturnus sinensis* | (LC) | 2 | 2.0 |
| Collared Crow | *Corvus torquatus* | LC, NT | 1 | 1.0 |
| | | **No. of Species Recorded** | **24** | |

(1) indicates wetland-dependant or wetland-associated species.

(2) Conservation status follows that of Fellowes et al. (2002) and BirdLife International listing (2010).

(3) indicates number of surveys recorded within the reporting period.

(4) refers to the mean number of individuals recorded in each survey in the Survey Area (excluding the WRA).

(5) Black-faced Spoonbill is listed as endangered in the IUCN Red List.

**Table I2. Summary of bird monitoring in the WRA**

| Species Name | Scientific Name | Conservation Status [2] | Apr 2011 | |
|---|---|---|---|---|
| | | | Occurrence[3] | Mean[4] |
| Great Egret | *Egretta alba* | PRC, (1) | 2 | 0.5 |
| Little Egret | *Egretta garzetta* | PRC, (1) | 2 | 0.5 |
| Chinese Pond Heron | *Ardeola bacchus* | PRC, (1) | 1 | 0.3 |
| Greater Painted- snipe | *Rostratula benghalensis* | LC, (1) | 1 | 0.5 |
| Oriental Pratincole | *Glareola maldivarum* | LC, (1) | 2 | 2.5 |
| Little Ringed Plover | *Charadrius dubius* | LC, (1) | 4 | 10.5 |
| Common Sandpiper | *Actitis hypoleucos* | (1) | 3 | 1.0 |
| Temminck's Stint | *Calidris temminckii* | LC, (1) | 1 | 1.3 |
| Pacific Swift | *Apus pacificus* | (LC) | 1 | 0.3 |

| | | | | |
|---|---|---|---|---|
| Common Kingfisher | *Alcedo atthis* | (1) | 1 | 0.3 |
| Yellow Wagtail | *Motacilla flava* | (1) | 4 | 11.8 |
| Richard's Pipit | *Anthus richardi* | - | 4 | 1.8 |
| Common Stonechat | *Saxicola torquata* | - | 1 | 0.3 |
| Zitting Cisticola | *Cisticola juncidis* | LC | 3 | 1.5 |
| Black-faced Bunting | *Emberiza spodocephala* | - | 1 | 0.5 |
| Scaly-breasted Munia | *Lonchura punctulata* | - | 1 | 15.0 |
| Collared Crow | *Corvus torquatus* | LC, NT | 1 | 0.5 |
| | | **No. of Species Recorded** | **17** | |

(1) indicates wetland-dependant or -associated species.

(2) Conservation status follows that of Fellowes et al. (2002) and BirdLife International listing (2010).

(3) indicates number of surveys recorded within the reporting period.

(4) refers to the mean number of individuals recorded in each survey in the WRA

# Appendix J. Summary of Herpetofauna, and Insects Surveys conducted

**Table J1. Summary of herpetofauna monitoring in the Survey Area**

| Species Name | Scientific Name | Conservation Status[1] | Apr | |
|---|---|---|---|---|
| | | | Occurrence[2] | Mean[3] |
| **Amphibian** | **No. of Species Recorded** | | **3** | |
| Asian Common Toad | *Bufo melanostictus* | - | 1 | 0.5 |
| Paddy Frog | *Fejervarya limnocharis* | - | 1 | 0.5 |
| Günther's Frog | *Rana guentheri* | - | 1 | 0.5 |
| | | | Occurrence[2] | Mean[3] |
| **Reptiles** | **No. of Species Recorded** | | **1** | |
| Bowring's Gecko | *Hemidactylus bowringii* | - | 2 | 2.0 |

(1) Conservation status follows that of Fellowes et al. (2002), Chan et al. (2005) and Karsen et al. (1998).

(2) indicates number of surveys recorded within the reporting period.

(3) refers to the mean number of individuals recorded in each survey in the WRA.

**Table J2. Summary of herpetofauna monitoring in the WRA**

| Species Name | Scientific Name | Conservation Status[1] | Apr | |
|---|---|---|---|---|
| | | | Occurrence[2] | Mean[3] |
| **Amphibian** | **No. of Species Recorded** | | **1** | |
| Günther's Frog | *Rana guentheri* | - | 1 | 0.5 |
| | | | Occurrence[2] | Mean[3] |
| **Reptiles** | | | | |
| (No Records in Apr 2011) | | | | |

(1) Conservation status follows that of Fellowes et al. (2002), Chan et al. (2005) and Karsen et al. (1998).

(2) indicates number of surveys recorded within the reporting period.

(3) refers to the mean number of individuals recorded in each survey in the WRA.

**Table J3. Summary of mammal monitoring in the Survey Area**

| Species Name | Scientific Name | Conservation Status[1] | Apr |
|---|---|---|---|
| **Mammal** | | | |
| (No Records in Apr 2011) | | | |

(1) Conservation status follows that of Fellowes *et al.* (2002) and Shek (2006).

**Table J4. Summary of mammal monitoring in the WRA**

| Species Name | Scientific Name | Conservation Status[1] | Apr |
|---|---|---|---|
| **Mammal** | | | |
| (No Records in Apr 2011) | | | |

(1) Conservation status follows that of Fellowes *et al.* (2002) and Shek (2006).

**Table J5. Summary of dragonfly and butterfly monitoring in the Survey Area**

| Common Name | Scientific Name | Conservation Status[1] | Apr Occurrence[2] | Total [3] |
|---|---|---|---|---|
| **Odonate** | **No. of Species Recorded** | | **4** | |
| Asian Amberwing | *Brachythemis contaminata* | - | 2 | 1.0 |
| Green Skimmer | *Orthetrum sabina* | - | 1 | 1.0 |
| Lesser Blue Skimmer | *Orthetrum triangulare* | - | 1 | 1.0 |
| Wandering Glider | *Pantala flavescens* | - | 1 | 0.5 |
| **Butterfly** | **No. of Species Recorded** | | **2** | |
| Common Mormon | *Papilio polytes* | - | 1 | 0.5 |
| Indian Cabbage White | *Pieris canidia* | - | 2 | 10.0 |

(1) Conservation status follows that of Fellowes *et al.* (2002), Lo & Hui (2004), Wilson (2004) and Young & Yiu (2002).

(2) indicates number of surveys recorded within the reporting period.

(3) refers to the total number of individuals recorded in the survey.

**Table J6. Summary of dragonfly and butterfly monitoring in the WRA**

| Common Name | Scientific Name | Conservation Status[1] | Apr Occurrence[2] | Total [3] |
|---|---|---|---|---|
| **Odonate** | **No. of Species Recorded** | | **4** | |
| Common Bluetail | *Aschnura senegalensis* | - | 2 | 591.0 |
| Regal Pond Cruiser | *Epophthalmia elegans* | - | 1 | 0.5 |
| Crimson Darter | *Crocothemis servilia* | - | 1 | 0.5 |
| Green Skimmer | *Orthetrum sabina* | - | 2 | 5.0 |
| Wandering Glider | *Pantala flavescens* | - | 1 | 0.5 |
| **Butterfly** | **No. of Species Recorded** | | **3** | |
| Common Bluebottle | *Graphium sarpedon* | - | 1 | 0.5 |
| Indian Cabbage White | *Pieris canidia* | - | 1 | 0.5 |
| Pale Grass Blue | *Zizeeria maha* | - | 1 | 0.5 |

(1) Conservation status follows that of Fellowes *et al.* (2002), Lo & Hui (2004), Wilson (2004) and Young & Yiu (2002).

(2) indicates number of surveys recorded within the reporting period.

(3) refers to the total number of individuals recorded in the survey.

# Appendix K. Environmental Mitigation Measures - Implementation Status

Mott MacDonald

# Environmental Mitigation Measures - Implementation Status

## Air Quality – Recommended Mitigation Measures

| Air Quality Mitigation Measures during construction | Implementation Status |
|---|---|
| • use of effective dust screens, sheeting or netting to be provided to enclose dry scaffolding which may be provided from the ground floor level of the building or if a canopy is provided at the first floor level, from the first floor level, up to the highest level (maximum four floors for this Project) of the scaffolding where scaffolding is erected around the perimeter of a building under construction; | N/A |
| • dump trucks for material transport should be totally enclosed using impervious sheeting; | ✓ |
| • any excavated dusty materials or stockpile of dusty materials should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet, and recovered or backfilled or reinstated within 24 hours of the excavation or unloading; | P |
| • dusty materials remaining after a stockpile is removed should be wetted with water; | ✓ |
| • the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with e.g. concrete, bituminous materials or hardcore or similar; | ✓ |
| • the portion of road leading only to a construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials; | ✓ |
| • stockpile of dusty materials to be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides; or sprayed with water so as to maintain the entire surface wet; | N/A |
| • all dusty materials to be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty material wet; | ✓ |
| • vehicle speed to be limited to 10 kph except on completed access roads; | ✓ |
| • every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites; | ✓ |
| • the load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle; | ✓ |
| • the working area of excavation should be sprayed with water immediately before, during and immediately after (as necessary) the operations so as to maintain the entire surface wet; | ✓ |
| **Odour mitigation measures** | |
| • all malodorous excavated material should be placed as far as possible from any ASRs; | N/A |
| • the stockpiled malodorous material should be removed from site as soon as possible; and | N/A |
| • the stockpiled malodorous material should be covered entirely by plastic tarpaulin sheets. | N/A |

## Noise – Recommended Mitigation Measures

| Noise Mitigation Measures during construction | Implementation Status |
|---|---|
| • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works; | ✓ |
| • machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; | ✓ |
| • plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs; | ✓ |
| • silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction period; | ✓ |
| • mobile plant should be sited as far away from NSRs as possible; | ✓ |

## Environmental Mitigation Measures - Implementation Status

| | |
|---|---|
| • material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities; and | ✓ |
| • The Contractor shall at all times comply with all current statutory environmental legislation. | ✓ |
| *Selection of quieter plant and working methods*<br>The Contractor shall obtain particular models of plant that are quieter than standards given in GW-TM. The list of assumed quieter plants can be found in the **Table 4–14** of the EIA report. The Contractor shall select from the available models achieving the assumed sound levels while making reference to the GW-TM and BS5228: Part 1: 1997 | N/A |
| *Use of Noise Barriers*<br>Noise barriers are proposed along the site boundary to block the direct line of sight from the most affected NSRs to the major noise contribution construction phases. The height of the noise barriers ranged from 9-10m. The noise barriers shall be built before the commencement of construction works in order to ensure protection to nearby NSRs. The noise barrier should have a surface density of at least 10kg/$m^2$ or material providing equivalent transmission loss. The noise barriers and hoardings should have no gaps and openings to avoid noise leakage. | ✓ |

## Water Quality – Recommended Mitigation Measures

| Water Quality Mitigation Measures during construction | Implementation Status |
|---|---|
| • The site should be confined to avoid silt runoff to the site. | ✓ |
| • No discharge of silty water into the storm drain and drainage channel within and the vicinity of the site. | ✓ |
| • Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials. | ✓ |
| • Stockpiles to be covered by tarpaulin to avoid spreading of materials during rainstorms; | N/A |
| • Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport; | ✓ |
| • Chemical waste containers shall be labelled with appropriate warning signs in English and Chinese to avoid accidents. there shall also be clear instructions showing what action to take in the event of an accidental; | ✓ |
| • Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area; | ✓ |
| • Any construction plant which causes pollution to the water system due to leakage of oil or fuel shall be removed off-site immediately; | ✓ |
| • Spillage or leakage of chemical waste to be controlled by using suitable absorbent materials; | ✓ |
| • Chemicals will always be stored on drip trays or in bunded areas where the volume is 110% of the stored volume; | P |
| • Regular clearance of domestic waste generated in the temporary sanitary facilities to avoid waste water spillage. | ✓ |
| • Temporary sanitary facilities to be provided for on-site workers during construction. | ✓ |
| • Temporary drainage channel and associated facilities will be provided to collect the surface runoff generated within the Project Area during the construction phase. | ✓ |
| • Sandbags or silt traps will need to be placed to avoid silt runoff to the drainage channel draining the water in the northern ditch. Draining of the ditches should avoid rainy weather. | ✓ |
| • Excavated soil which needs to be temporarily stockpiled should be stored in a specially designated area and provided with a tarpaulin cover to avoid runoff into the drainage channels. | ✓ |

## Environmental Mitigation Measures - Implementation Status

## Waste Management – Recommended Mitigation Measures

| Waste Management Mitigation Measures during construction | Implementation Status |
|---|---|
| *Site Clearance Waste*<br>• The major construction works of Wo Shang Wai is in the development of residential buildings and other associated facilities (club house, tennis courts, etc). The amount of site clearance works will be limited with the exception of the excavated materials. The thin layer of vegetation removed can be stored and reused for landscaping. | ✓ |
| *Excavated Materials*<br>The intention is to maximize the reuse of the excavated materials on-site as fill materials. | ✓ |
| *Imported Filling Material*<br>The excavated/imported filling material may have to be temporarily stockpiled on-site for the construction of road embankment and foundation of viaduct substructure. Control measures should be taken at the stockpiling area to prevent the generation of dust and pollution of stormwater channels. However, to eliminate the risk of blocking drains in the wet season, it is recommended that stockpiling of excavated materials at during wet season should be avoided as far as practicable. | N/A |
| *Construction and Demolition Materials*<br>Careful design, planning and good site management can minimise over-ordering and generation of waste materials such as concrete, mortars and cement grouts. The design of formwork should maximise the use of standard wooden panels so that high reuse levels can be achieved. Alternatives such as steel formwork of plastic facing should be considered to increase the potential for reuse. | ✓ |
| The Contractor should reuse any C&D material on-site. C&D waste should be segregated and stored in different containers to other wastes to encourage the re-use or recycling of materials and their proper disposal. | ✓ |
| *Chemical Waste*<br>For those processes which generate chemical waste, it may be possible to find alternatives which generate reduced quantities or even no chemical waste, or less dangerous types of chemical waste. | N/A |
| Containers used for the storage of chemical wastes should: | |
| • be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed: | ✓ |
| • have a capacity of less than 450 litres unless the specification have been approved by the EPD; and | ✓ |
| • display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations, | ✓ |
| The storage area for chemical wastes should: | |
| • be clearly labelled and used solely for the storage of chemical waste; | ✓ |
| • be enclosed on at least 3 sides; | ✓ |
| • have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area whichever is the greatest; | ✓ |
| • have adequate ventilation; | ✓ |
| • be covered to prevent rainfall entering (water collected within the bund must be tested and disposed as chemical waste if necessary); and | ✓ |
| • be arranged so that incompatible materials are adequately separated. | ✓ |
| Disposal of chemical waste should: | |
| • be via a licensed waste collector; and | ✓ |
| • be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility which also offers a chemical waste collection service and can supply the necessary storage containers, or | N/A |
| • to be reuser of the waste, under approval from the EPD. | N/A |

## Environmental Mitigation Measures - Implementation Status

| | |
|---|---|
| General Refuse<br>Should be stored in enclosed bins or compaction units separate from C&D and chemical wastes. The Contractor should employ a reputable waste collector to remove general refuse from the site, separate from C&D and chemical wastes, on a regular basis to minimise odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. | ✓ |
| **Disposal of Excavated Sediment at Sea** | |
| The requirements and procedures for excavated sediment disposal are specified under the ETWB TCW No. 34/2002 and PNAP 252. The management of the excavation, use and disposal of sediment is monitored by Fill Management Committee, whilst the licensing of marine dumping is the responsibility of the Director of Environmental Protection (DEP). | N/A |
| The excavated sediment would be loaded onto barges or other appropriate vessel and transported to the designated marine disposal site. Category L sediment and Category M sediment passing the biological test would be suitable for disposal at a gazetted open sea disposal ground. Category M sediment failing the biological test and Category H sediment passing the biological test would require confined marine disposal. | N/A |
| During transportation and disposal of the dredged sediment, the following measures should be taken to minimize potential impacts on water quality: - | N/A |
| • Bottom opening transport vessels should be fitted with tight fitting seals to prevent leakage of material. Excess material should be cleaned from the decks and exposed fittings of vessels before the vessel is moved. | N/A |
| • Monitoring of the barge loading should be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels should be equipped with automatic self-monitoring devices as specified by the DEP. | N/A |

## Ecology – Recommended Mitigation Measures

| Ecology Mitigation Measures during construction | Implementation Status |
|---|---|
| *Clear Definition of Site Limit* | |
| Clear definition of the site limit should be provided in order to minimize and confine the disturbance during the construction period, especially the northern limit of the Site which is adjacent to fishponds within the Conservation Area (CA) zone and are considered to be ecological sensitive receivers.<br><br>During wetland construction stage the WRA boundary will be delineated using a temporary hoarding in order to reduce disturbance to off-site habitats and wildlife. During the establishment phase this hoarding will be replaced with a 1 m high chain-link fence in order to reduce disturbance to the WRA through access by humans and dogs, and a hoarding will be established around the residential construction site. | ✓ |
| *Dust and Noise Suppression and Avoidance of Water Pollution* | |
| Good site practices of dust and noise suppression should be strictly implemented to ensure that disturbance is minimized to acceptable levels. Mitigation measures for the off-site disturbance impacts on the fishponds in the CA include hoarding at the northern site boundary during construction of the WRA to reduce noise and dust impacts to the adjacent habitats. Through the use of quieter plant and temporary/movable noise barriers, the noise level would be reduced significantly to an acceptable level. Hoarding at the northern boundary should be replaced with a 1 m high chain-link fence following construction and the WRA will then act as a buffer between the existing wetland areas and the residential part of the site until construction is completed. Hoarding will be retained between the WRA and ongoing construction work to avoid visual disturbance and reduce noise and dust emissions. Pollution of watercourses and sedimentary runoff will be minimized by good site practice, especially the containment of water and sediment within the site for removal.<br><br>These standard noise and air and water quality site practices are considered to be effective measures for minimizing the disturbance impact during the construction period. | ✓ |
| *Planning of Construction Schedule* | |

## Environmental Mitigation Measures - Implementation Status

| | |
|---|---|
| The construction of the proposed project should be scheduled in phases. Because mitigation is preferably carried out in advance of the main works rather than after the completion of works, the construction of the WRA will commence at the start of the project. Construction work within the WRA is scheduled to take place in a single wet season, followed by 1.5 years of wetland establishment. During the wetland establishment period no noisy work will be undertaken within the WRA to minimize the disturbance to off-site habitats and wildlife. | ✓ |
| Reusing Onsite Materials | |
| Soil and plants on-site should be reused (e.g. used as fill material) as far as practical. Stock piles of these reusable materials should be stored in an appropriate area on-site. In particular, the re-use of the wetland soils and topsoil should be considered. | ✓ |
| Construction of the Wetland Restoration Area<br>The WRA will be operational within 2.5 yrs from the commencement of construction (1 year for site formation and 1.5 years for establishment) and will compensate for the predicted ecological impacts of the proposed development. | ✓ |

## Landscape and Visual – Recommended Mitigation Measures

| Landscape and Visual Mitigation Measures during construction | Implementation Status |
|---|---|
| CM1- The construction area and contractor's temporary works areas should be minimised to avoid impacts on adjacent landscape. | ✓ |
| CM2 - Screening of construction works by hoarding / noise barriers. | ✓ |
| CM3 - Reduction of construction period to practical minimum. | ✓ |
| CM4 - Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where the soil material meets acceptable criteria and where practical. The Contract Specification shall include storage and reuse of topsoil as appropriate. | ✓ |
| CM5 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone). | ✓ |
| CM6 – Advance screen planting of noise barriers | ✓ |
| CM7 - Control night-time lighting and glare by hooding all lights. | ✓ |
| CM8 - Ensure no run-off into streams adjacent to the Project Area. | ✓ |
| CM9 - Protection of existing trees on boundary of site shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at S16 and Tree Removal Application stage). | ✓ |
| CM10 - Trees unavoidably affected by the works shall be transplanted where practical. Trees should be transplanted straight to their destinations and not held in a nursery. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, if applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme. | ✓ |

Legend:

| | |
|---|---|
| ✓ | Implemented |
| × | Not implemented |
| P | Partially implemented |
| N/A | Not applicable |