Proposed Comprehensive Development at Wo Shang Wai, Yuen Long

Monthly EM&A Report for December 2012 (Rev. A)

January 2013
Report No.: 266567/50/A

Mott MacDonald

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Mott MacDonald

Pursuant to Condition 4.5 of Environmental Permit No. EP-311/2008/C, this Monthly EM&A Report for December 2012 has been reviewed, certified by Environmental Team Leader (ETL) and verified by the Independent Environmental Checker (IEC)

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Date 14 January 2013

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Executive Summary

Mott MacDonald Hong Kong Ltd. ("MMHK") has been commissioned by Heng Shung Construction Co. Ltd. (The Contractor) 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 32nd EM&A report submitted under the Condition 4.5 of Environmental Permit No. EP-311/2008/C. This report summarises the findings on EM&A during the period from 1 December to 31 December 2012.

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.

Exceedances of pH, DO and SS were observed at MP3 to MP6 in December 2012. Action Level exceedances of pH were observed at MP3 and MP4. DO exceedance was observed 9 times at MP3, 2 times at MP4, 2 times at MP5 and 4 times at MP6. SS exceedance was recorded on one monitoring date at MP4 but not recorded at MP3, MP5 and MP6. No exceedance of turbidity was recorded during the reporting month.

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 affecting the adjacent environments, such as natural variations, pond fish culture activities and rainfall, the exceedances were considered not due to construction works.

Implementation of mitigation measures

Site audits were carried out on 4, 11, 18, 24 and 31 December 2012 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 L**.

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 was no reporting change in the reporting month.

Future Key Issues

The major site works scheduled to be commissioned in the coming three months include site formation and foundation work. 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 then carried out under the EIA Ordinance (EIAO) and the Environmental Permit (EP) for construction of the comprehensive development in Wo Shang Wai was first granted by EPD on 9 September 2008. Subsequent applications for EP variations were made on 26 January 2010, 2 July 2010 and 8 October 2012. The current valid EP (EP-311/2008/C) was issued by EPD on 2 November 2012. 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 two weeks after the end of the reporting month. This report summarises the findings during the period from 1 December to 31 December 2012

1.2 Project Organization

The organization 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:

- Site formation

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 Monitoring 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 Nov, 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 Wetland Restoration Area (WRA)	Wetland Restoration Area	After filling of WRA with water, monthly for in situ water quality and every six 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 December 2012

Environmental Monitoring and Audit Schedule for Dec 2012

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3 Water	4 Bird *	5 Water 24-hr TSP 1-hr TSP Noise Monitoring	6	7 Water	8
9	10 Water	11 Bird 24-hr TSP 1-hr TSP Noise Monitoring *	12 Water	13	14 Water @	15
16	17 Water 24-hr TSP 1-hr TSP Noise Monitoring	18 Bird *	19 Water	20	21 Water 24-hr TSP 1-hr TSP	22
23	24 Water Bird *	25 Christmas Day	26 The first weekday after Christmas Day	27 Water 24-hr TSP 1-hr TSP Noise Monitoring	28 Water	29
30	31 Water *					

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

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 four 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 Dust Trak 8520 & 8532

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 two metres separation from walls, parapets and penthouse was required for rooftop sampler.
- A minimum of two metres 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 two-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 four 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 Stations	Equipment Model	
	Integrating Sound Level Meter	Calibrator
NSR1	Rion NL-31	Rion NC-73
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 07:00 and 19:00)
- 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, three 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 six 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 Equipment

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
Conductivity, Dissolved oxygen, pH, Salinity and Temperature Measuring Meter	YSI Professional Plus	10D101565, 10D101566
Turbidity Meter	Hach 2100QIS	11050C001264
	Hach 2100Q	12010C015757
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 Professional Plus) 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 2100QIS / 2100Q) 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°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 two 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 three-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 three 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°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 Wetland Restoration Area (WRA)

Species / Parameter	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 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. Minimum 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 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 4, 11, 18, 24 and 31 December 2012 in the reporting month to assess the compliance with environmental requirements.

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

Table 3.1: Summary of 1-hour TSP Monitoring Results

Monitoring Date	Start Time	1-hr TSP (µg/m^3)			Range (µg/m^3)	Action Level (µg/m^3)	Limit Level (µg/m^3)
		1st Result	2nd Result	3rd Result			
ASR1							
05-Dec-12	13:10	106	112	110	104 – 128	378	500
11-Dec-12	13:06	112	106	111			
17-Dec-12	13:10	106	104	118			
21-Dec-12	12:41	113	120	128			
27-Dec-12	13:12	122	114	120			
ASR2A							
05-Dec-12	12:47	103	112	116	102 – 132	357	500
11-Dec-12	12:46	106	114	118			
17-Dec-12	12:47	102	108	116			
21-Dec-12	13:18	106	110	114			
27-Dec-12	12:46	110	126	132			
ASR3							
05-Dec-12	12:34	112	106	122	102 – 126	358	500
11-Dec-12	12:33	122	118	126			
17-Dec-12	12:33	120	116	110			
21-Dec-12	13:06	120	114	102			
27-Dec-12	12:33	126	122	118			
ASR4							
05-Dec-12	13:05	122	130	124	104 – 140	372	500
11-Dec-12	12:59	123	120	116			
17-Dec-12	13:03	120	118	125			
21-Dec-12	12:33	106	112	104			
27-Dec-12	13:06	136	140	132			

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

Table 3.2: Summary of 24-hour TSP Monitoring Results

Monitoring Date	Monitoring Results ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
ASR1				
05-Dec-12	102	80 – 102	226	260
11-Dec-12	95			
17-Dec-12	98			
21-Dec-12	89			
27-Dec-12	80			
ASR2A				
05-Dec-12	89	84 – 90	213	260
11-Dec-12	90			
17-Dec-12	90			
21-Dec-12	84			
27-Dec-12	84			
ASR3				
05-Dec-12	95	88 – 95	205	260
11-Dec-12	90			
17-Dec-12	95			
21-Dec-12	94			
27-Dec-12	88			
ASR4				
05-Dec-12	91	80 – 98	237	260
11-Dec-12	98			
17-Dec-12	96			
21-Dec-12	86			
27-Dec-12	80			

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

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

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
05-Dec-12	14:50	56	58	50	
11-Dec-12	15:15	50	52	46	
17-Dec-12	14:59	57	60	44	
27-Dec-12	14:40	56	58	46	
NSR3					
05-Dec-12	15:38	52	55	49	
11-Dec-12	14:33	52	56	50	
17-Dec-12	15:40	55	57	51	
27-Dec-12	15:22	54	56	44	
NSR5					
05-Dec-12	13:14	61	64	58	
11-Dec-12	13:09	57	59	54	
17-Dec-12	13:13	59	62	55	
27-Dec-12	13:15	57	60	56	
NSR7					
05-Dec-12	13:59	64	68	60	
11-Dec-12	13:55	67	69	63	
17-Dec-12	13:58	66	70	61	
27-Dec-12	13:59	66	68	58	

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

Table 3.4: Summary of Water Quality Monitoring Results

Monitoring Date	Temp (°C)	pH	Dissolved Oxygen (DO) (mg/L)	DO (%)	Turbidity (NT)	BOD (mg/L) (1)	Suspended Solids (mg/L)
MP3							
03/12/2012	18.5	**7.6**	**3.5**	45.0	32.4	3	35.5
05/12/2012	16.1	7.4	**4.7**	62.1	31.3	2.5	12.5
07/12/2012	14.5	**7.7**	**4.4**	58.0	16.8	3.5	15
10/12/2012	19.7	**7.8**	**5.8**	80.0	16.8	3.5	25.5
12/12/2012	20.6	7.5	**5.3**	68.1	19.9	4	16
14/12/2012	21.3	**7.6**	**4.9**	60.8	18.6	3.5	18
17/12/2012	17.0	**7.8**	**4.7**	49.1	32.8	7	30
19/12/2012	18.1	7.3	8.0	87.3	36.8	4.5	19.5
21/12/2012	24.8	7.5	8.0	88.4	20.1	4.5	12
24/12/2012	16.3	7.2	**5.6**	71.7	22.9	3	20.5
27/12/2012	19.1	7.2	**5.6**	74.3	37.9	3.5	31.5
28/12/2012	19.6	7.2	9.1	99.7	25.0	4	26
31/12/2012	18.2	7.1	8.1	88.6	33.2	4	35
Action Level	-	<5.5 or >7.5	<6.85	-	>64	-	>65

Monitoring Date	Temp (°C)	pH	Dissolved Oxygen (DO) (mg/L)	DO (%)	Turbidity (NT)	BOD (mg/L) (1)	Suspended Solids (mg/L)
Limit Level	-	<4.0 or >8.0	<6.65	-	>67	-	>66
MP4							
03/12/2012	18.6	7.5	4.0	51.0	59.3	2	**51.5**
05/12/2012	15.8	7.3	4.6	59.0	58.5	<2	44
07/12/2012	14.7	7.5	4.0	52.9	46.4	2.5	36
10/12/2012	20.1	7.5	5.4	69.0	46.4	3	30.5
12/12/2012	20.7	7.2	5.6	72.8	22.7	3	17.5
14/12/2012	21.0	7.2	5.2	64.9	16.7	<2	14
17/12/2012	17.3	7.2	7.8	80.8	24.0	3	18
19/12/2012	18.7	**7.6**	4.9	52.8	45.5	3	21.5
21/12/2012	24.5	7.3	7.7	79.8	29.1	5	18.5
24/12/2012	17.9	7.0	**3.3**	38.3	12.1	3	10.5
27/12/2012	18.5	7.1	5.0	61.0	9.5	3	9
28/12/2012	21.2	7.3	**3.8**	43.6	11.9	5	13.5
31/12/2012	16.7	7.3	6.3	67.9	34.5	4	36.5
Action Level	-	<5.5 or >7.5	<3.91	-	>60	-	>50
Limit Level	-	<4.0 or >8.0	<3.82	-	>64	-	>53
MP5							
03/12/2012	19.1	7.5	**4.1**	52.5	50.5	2.5	43
05/12/2012	16.4	7.2	4.9	68.2	23.5	<2	13
07/12/2012	14.8	7.4	4.6	62.2	42.2	3.5	38
10/12/2012	19.8	7.5	6.0	82.1	42.2	4	21
12/12/2012	20.6	7.4	5.2	64.2	16.3	3	12.5
14/12/2012	21.3	7.3	**4.0**	52.2	34.7	2.5	39.5
17/12/2012	14.9	7.3	6.7	66.9	16.8	2.5	16
19/12/2012	19.0	7.5	5.2	56.4	17.1	11.5	15
21/12/2012	24.9	7.4	7.5	76.8	35.4	11.5	14.5
24/12/2012	17.3	7.4	4.3	45.5	12.1	5	10
27/12/2012	19.6	7.3	6.3	84.8	12.0	7.5	11
28/12/2012	19.7	7.4	5.5	61.7	13.0	6.5	10.5
31/12/2012	16.8	7.4	5.2	56.3	40.6	4.5	40.5
Action Level	-	<5.5 or >7.5	<4.13	-	>81	-	>66
Limit Level	-	<4.0 or >8.0	<3.87	-	>84	-	>69
MP6							
03/12/2012	18.8	7.4	**4.4**	58.0	49.3	2.5	37
05/12/2012	15.9	7.3	5.1	71.5	31.5	<2	16.5
07/12/2012	14.6	7.4	4.8	65.5	48.5	3.5	47.5
10/12/2012	19.6	7.5	5.8	78.8	48.5	3.5	19
12/12/2012	20.3	7.5	5.5	70.7	8.9	<2	6.5
14/12/2012	21.5	7.4	**4.4**	58.1	26.5	2	25.5
17/12/2012	15.1	7.2	7.2	71.8	15.5	2.5	10
19/12/2012	18.9	7.5	5.5	62.1	13.1	9.5	12
21/12/2012	24.1	7.4	7.9	85.0	31.9	12.5	19.5
24/12/2012	17.4	7.5	**4.6**	49.8	10.8	5.5	9
27/12/2012	18.9	7.4	5.7	75.9	16.8	8	13
28/12/2012	21.2	7.4	**3.8**	43.5	11.3	9	14.5
31/12/2012	16.9	7.4	7.9	85.8	50.1	5	55
Action Level	-	<5.5 or >7.5	<4.61	-	>94	-	>75
Limit Level	-	<4.0 or >8.0	<4.52	-	>96	-	>75

Notes:

(1) "-" : BOD value is too low to indicate (<2mg/L).

(2) Values **Bold** indicate Action Level exceedance.

(3) Values **Underlined and Bold** indicate Limit Level exceedance.

Exceedance Investigation and Findings

Exceedances of pH, DO and SS were observed at MP3 to MP6 in December 2012. Action Level exceedances of pH were observed at MP3 and MP4. DO exceedance was observed 9 times at MP3, 2 times at MP4, 2 times at MP5 and 4 times at MP6. SS exceedance was recorded on one monitoring date at MP4 but not recorded at MP3, MP5 and MP6. No exceedance of turbidity was recorded during the reporting month.

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 site formation. 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.

Exceedances of pH and DO at MP3

Exceedances of the Action Level of pH were occasionally observed and Limit Level exceedances of DO were recorded on 9 monitoring dates at MP3. Also, Action/Limit Level exceedance of turbidity and SS was not observed at MP3. As understood, 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 and DO may be due to external factors such as pond fish culture activities which were out of the control of the project.

Exceedances of pH, DO and SS at MP4 to MP6

One exceedance of Action Level of pH were observed at MP4 on 19 December 2012. Action/Limit Levels of DO were exceeded on two monitoring dates at MP4, two monitoring dates at MP5 and four monitoring dates at MP6. Action/Limit Level exceedance of turbidity was not observed at MP4, MP5 or MP6. Action Level exceedance of SS was observed at MP4 on 3 December 2012.

From Hong Kong Observatory (HKO) records, total rainfall recorded at HKO during the reporting month was 56.0 mm, which was above the 1981-2010 climatological normal for the same month of 26.8 mm. The heaviest rain fell on 3 and 29 December 2012 when 10.9 and 22.1 mm of rain respectively was recorded at HKO. Also, Strong Monsoon Signal was issued on 12 days, but no Rainstorm Warning signal, Special Announcement on Flooding in the northern New Territories or tropical cyclone warning signal was issued during the reporting month.

The rain on 3 and 29 December 2012 may have caused large amounts of surface runoff from all sources in the vicinity of the ditch. This could have significantly increased the turbulence and thus resulted in higher turbidity and SS inside the ditch water on the day of SS exceedance on 3 December 2012.

Starting from early May 2011, the DO measured at the ditch has fallen significantly due to microbe growth (including algae). The ditch continued to be affected by this factor (respiration and degradation of microbes which consumed oxygen). However, on sunny days, photosynthesis of the algae sometimes increases the DO sharply in the water. As algae grows further and dies, it may lead to an increase in suspended solids and a decrease in DO in the water.

The recorded exceedance of pH during the reporting period could be due to natural variation as the value was slightly outside the acceptable pH range stated in the EM&A Manual. Also, the site effluent was effectively treated by the AquaSed system and discharged from the site at a low, controlled rate during the reporting month.

Conclusion

As a result, the abovementioned exceedances are unlikely to be due to the construction works and therefore not considered to be related to the project.

4. Ecological Monitoring

4.1 Introduction

This report documents surveys conducted in the Survey Area between 1 December and 31 December 2012. The Wetland Restoration Area (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. A transect was followed in the bird surveys (see **Figure 4.1**). All bird species were identified to species and all bird species of conservation importance and/or wetland dependent were enumerated and recorded to the habitats in which they were observed. Flying birds were not recorded unless they were foraging and/or 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. In the Survey Area (excluding WRA), 24 bird species of conservation importance and/or wetland-dependence were recorded. Within the WRA, 19 bird species of conservation importance and/or wetland-dependent species were recorded, including two of the target species (i.e. Little Egret and Chinese Pond Heron). A summary of survey data is provided in **Appendix I**.

4.3 Monitoring of Herpetofauna

No herpetofauna surveys were scheduled in the period. No amphibian species or reptile species were recorded in other survey

4.4 Monitoring of Dragonflies and Butterflies

No Odonates and Butterflies surveys were scheduled in the period.

4.5 Monitoring of Mammals

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

4.6 Monitoring of Water Quality

During the reporting period, pH of Cell 2, 3, 4 reached the Action Level. Monitoring data are presented in **Appendix K**.

4.7 Management Activities

4.7.1 Vegetation Management

Removal of exotic vegetation in all cells was undertaken; these included but not limited to *Typha, Ipomoes* and *Pennisetum*.

The routine vegetation management activities undertaken at the site primarily involved watering of plants, weeding and grass cutting.

4.7.2 Wildlife Management

Removal of Golden Apple Snail was undertaken on an "as-seen" basis.

All sighted red fire ant nests were treated with approved pesticide.

4.8 Summary

Ecological monitoring during December 2012 was carried out according to the survey methodology and frequency outlined in the EM&A Manual.

Summary of survey finding listed as follows:

Table 4.1: Summary of Ecological Monitoring in WRA and Survey Area

Species	Survey Area (excluding WRA)	WRA
Birds of conservation importance and/or wetland-dependence	24	19
Amphibians	0	0
Reptiles	0	0
Mammals	0	0
Odonates	0	0
Butterflies	0	0

Survey findings indicate that the ponds within the Survey Area supported numbers and diversity of wetland-dependent birds typical of fish pond areas. The WRA continues to attract wetland dependent fauna and serves as a buffer between the residential portion and the fishponds in the north.

5. Landscape and Visual

5.1 Site Inspections

The EM&A programme for Landscape and Visual impact due to the construction commenced in May 2010 and continued during the reporting period. Site inspections on Landscape and Visual impact were carried out on 11 December 2012 and 2 January 2012 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. No construction works were observed to have exceeded the site boundaries. 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 retained within the site along the northeast boundary, beside wetland restoration area, have been identified and protected by temporary protective fencing.
Streams	The works site is partly encircled by a berm / perimeter channel 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 ponds have been 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 soil material which had been excavated and stockpiled from the original site, has now been re-used within the landscape works. Dust suppression measures are active along all 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 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 generally	Continuous belt of screen planting along the southern and western boundaries of the site has been completed. The formation, soiling and water control structures of the wetland restoration area have been completed. The wetland areas are being established, with the ponds are being seasonally filled with rain water. Planting of areas around the WRA cells is complete. No construction was carried out at the wetland restoration area after 15 November 2010.
Soiling, etc.	The soiling for the advance planting strip has been completed. The soil placement and grading for each of the wetland restoration areas has been completed.
Plant supply	The plant material used in the Advance Planting Strip and in the WRA are all commonly available species and came from commercial sources. Transplanted reeds (*Phragmites australis*) at the wetland habitat came from the temporary holding nursery onsite.
Planting	The total number of trees that will reach a minimum of 10m in the advance planting strip meets the contract requirements. The tree species are all from the approved list. This planting should achieve the required screening effect within the required time period. Some of the trees that were identified as dead in previous month or having defects (i.e. extensive bark damage, cavities, fungal growths etc) still need to be replaced with new specimens. Some of the recently planted trees are still in poor condition, but are showing small signs of graduate improvement Seedling trees and shrubs have been established at the margins of the wetland cells. Some additional fill-in planting has been undertaken.

Establishment Works	The advance planting, the compensatory planting and transplanted trees are generally being maintained by the landscape sub-contractor in accordance with the specification to ensure that the contract requirements are met. Some of the taller trees (*Eucalyptus sp.)* that had been partially blown over, or are growing into the noise barrier structure, have been set upright and supported with rope cables and bamboo stakes, but many trees still need to be rectified. Precautions should be taken to prevent damage to the trees by the structure. Low coverage of some areas of shrubs need to be rectified with further infill shrubs planting. Minor areas of shrubs have been cleared and these need to be replaced. Pruning of tall shrubs (e.g. *Ligustrum sinensis*) needs to be undertaken. There are still areas of extensive growth of weeds and invasive climbers in the space behind screen noise barrier which may be inhibiting the advance planting, and clearance needs to be carried out on a monthly basis. *Phragmites australis* reeds (translocated from the original site) are growing profusely and urgently need active management. Hydroseeded grass has been established along the access path around the WRA cells. Regular horticultural maintenance (grass cutting, weeding, watering etc.) in the shrubs and tree seedling areas around the WRA cells is being undertaken, but needs to continue on a regular basis. The trees / shrubs planted along the northern site boundary are recovering from the previous insect infestation after the application of a pesticide. Growth of shrubs / seedlings on the north side of WRA1 is unsatisfactory. Trees from outside the site which fell on top of trees in the advance planting strip, have been removed but no rectification of affected trees has been undertaken. Trees (T21 and T364) lost their leader and are no longer viable, so should be removed and replaced. Branches broken during the typhoon on trees have been pruned away. Workmanship of some pruning works did not comply with proper arboricultural practice resulting in bark tearing. A number of trees are missing/ removed, and their replacement remains outstanding. T400 have been replaced with juvenile specimen which is unlikely to meet EP requirements. T98, T117 and T136 have been replaced with new *Acacia mangium* trees in December 2012. Profuse fungal growth was noted on trunk of T292. Tree is irreparably damaged / rotten and should be removed immediately.

6. Environmental Site Inspection and Audit

6.1 Site Inspection

The ET had carried out construction phase weekly site inspections on 4, 11, 18, 24 and 31 December 2012. 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)
Oil stains were observed underneath some heavy construction plant	To check the source of the oil stains and provide suitable mitigation measures as soon as possible (e.g. tarpaulin sheet underneath plant)	Agreed and followed up	11 Dec 2012
Dust emissions from moving dump trucks and other site vehicles	To increase frequency of water spray on haul roads to minimise dust emissions	Agreed and followed up	18 Dec 2012
Some oil stains were observed on the ground	To handle the affected soil/fill as chemical waste	Agreed and followed up	18 Dec 2012
Some oil containers were observed on the ground	To provide drip trays for these containers or to remove containers	Agreed and followed up	24 Dec 2012
Stockpile of general refuse was uncovered	To cover stockpile with tarpaulin covering	Agreed and followed up	8 Jan 2012

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, 8765.6 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. 7.1 tonnes of other types of wastes (e.g. general refuse) was generated on site and disposed of at public landfill facility.

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 reporting 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-311/2008/C	Valid

Statutory Reference	Description	Permit/Reference No.	Status
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 L**. 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; and
- Oil stains on soil should be cleared by disposal of contaminated soil.

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.

Exceedances of pH, DO and SS were observed at MP3 to MP6 in December 2012. Action Level exceedances of pH were observed at MP3 and MP4. DO exceedance was observed 9 times at MP3, 2 times at MP4, 2 times at MP5 and 4 times at MP6. SS exceedance was recorded on one monitoring date at MP4 but not recorded at MP3, MP5 and MP6. No exceedance of turbidity was recorded during the reporting month.

Table 7.1: Summary of Exceedances in Water Quality

Monitoring Date	pH	Dissolved Oxygen (mg/L)	Turbidity (NT)	Suspended Solids (mg/L)
MP3				
03/12/2012	**7.6**	**3.5**	32.4	35.5
05/12/2012	7.4	**4.7**	31.3	12.5
07/12/2012	**7.7**	**4.4**	16.8	15
10/12/2012	**7.8**	**5.8**	16.8	25.5
12/12/2012	7.5	**5.3**	19.9	16
14/12/2012	**7.6**	**4.9**	18.6	18
17/12/2012	**7.8**	**4.7**	32.8	30
19/12/2012	7.3	8.0	36.8	19.5
21/12/2012	7.5	8.0	20.1	12
24/12/2012	7.2	**5.6**	22.9	20.5
27/12/2012	7.2	**5.6**	37.9	31.5
28/12/2012	7.2	9.1	25.0	26
31/12/2012	7.1	8.1	33.2	35
Action Level	<5.5 or >7.5	<6.85	>64	>65
Limit Level	<4.0 or >8.0	<6.65	>67	>66
MP4				
03/12/2012	7.5	4.0	59.3	**51.5**
05/12/2012	7.3	4.6	58.5	44
07/12/2012	7.5	4.0	46.4	36
10/12/2012	7.5	5.4	46.4	30.5
12/12/2012	7.2	5.6	22.7	17.5
14/12/2012	7.2	5.2	16.7	14
17/12/2012	7.2	7.8	24.0	18
19/12/2012	**7.6**	4.9	45.5	21.5
21/12/2012	7.3	7.7	29.1	18.5
24/12/2012	7.0	**3.3**	12.1	10.5
27/12/2012	7.1	5.0	9.5	9
28/12/2012	7.3	**3.8**	11.9	13.5
31/12/2012	7.3	6.3	34.5	36.5
Action Level	<5.5 or >7.5	<3.91	>60	>50
Limit Level	<4.0 or >8.0	<3.82	>64	>53

Monitoring Date	pH	Dissolved Oxygen (mg/L)	Turbidity (NT)	Suspended Solids (mg/L)
MP5				
03/12/2012	7.5	**4.1**	50.5	43
05/12/2012	7.2	4.9	23.5	13
07/12/2012	7.4	4.6	42.2	38
10/12/2012	7.5	6.0	42.2	21
12/12/2012	7.4	5.2	16.3	12.5
14/12/2012	7.3	**4.0**	34.7	39.5
17/12/2012	7.3	6.7	16.8	16
19/12/2012	7.5	5.2	17.1	15
21/12/2012	7.4	7.5	35.4	14.5
24/12/2012	7.4	4.3	12.1	10
27/12/2012	7.3	6.3	12.0	11
28/12/2012	7.4	5.5	13.0	10.5
31/12/2012	7.4	5.2	40.6	40.5
Action Level	<5.5 or >7.5	<4.13	>81	>66
Limit Level	<4.0 or >8.0	<3.87	>84	>69
MP6				
03/12/2012	7.4	**4.4**	49.3	37
05/12/2012	7.3	5.1	31.5	16.5
07/12/2012	7.4	4.8	48.5	47.5
10/12/2012	7.5	5.8	48.5	19
12/12/2012	7.5	5.5	8.9	6.5
14/12/2012	7.4	**4.4**	26.5	25.5
17/12/2012	7.2	7.2	15.5	10
19/12/2012	7.5	5.5	13.1	12
21/12/2012	7.4	7.9	31.9	19.5
24/12/2012	7.5	**4.6**	10.8	9
27/12/2012	7.4	5.7	16.8	13
28/12/2012	7.4	**3.8**	11.3	14.5
31/12/2012	7.4	7.9	50.1	55
Action Level	<5.5 or >7.5	<4.61	>94	>75
Limit Level	<4.0 or >8.0	<4.52	>96	>75

Notes:

(1) Values **Bold** indicate Action Level exceedance.

(2) 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 site formation. 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 rainfall, 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 (Dec 2012)	0	0	0
From 12 May 2010 to end of the reporting month (Dec 2012)	3	0	0

8. Future Key Issues

8.1 Site Preparatory Works and Construction Works for the Coming Month

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

- Site Formation
- Foundation Work

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 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 January 2013 is shown in the **Table 8.1**.

Table 8.1: Tentative Environmental Monitoring and Audit Schedule for January 2013

Tentative Environmental Monitoring and Audit Schedule for Jan 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 The first day of January	2 Water 24-hr TSP 1-hr TSP Noise Monitoring	3	4 Water Bird	5
6	7 Water	8 Bird 24-hr TSP 1-hr TSP Noise Monitoring *	9 Water	10	11 Water	12
13	14 Water 24-hr TSP 1-hr TSP Noise Monitoring @	15 Bird	16 Water	17 *	18 Water 24-hr TSP 1-hr TSP	19
20	21 Water	22 Bird *	23 Water	24 24-hr TSP 1-hr TSP Noise Monitoring	25 Water	26
27	28 Water *	29 Bird	30 Water 24-hr TSP 1-hr TSP Noise Monitoring	31		

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

Conclusions and Recommendations

8.3.1 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.

Exceedances of pH, DO and SS were observed at MP3 to MP6 in December 2012. 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 affecting the adjacent environments, such as natural variations, pond fish culture activities and rainfall, the exceedances were considered not due to construction works.

Therefore, the exceedances were considered not due to construction works.

8.3.2 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

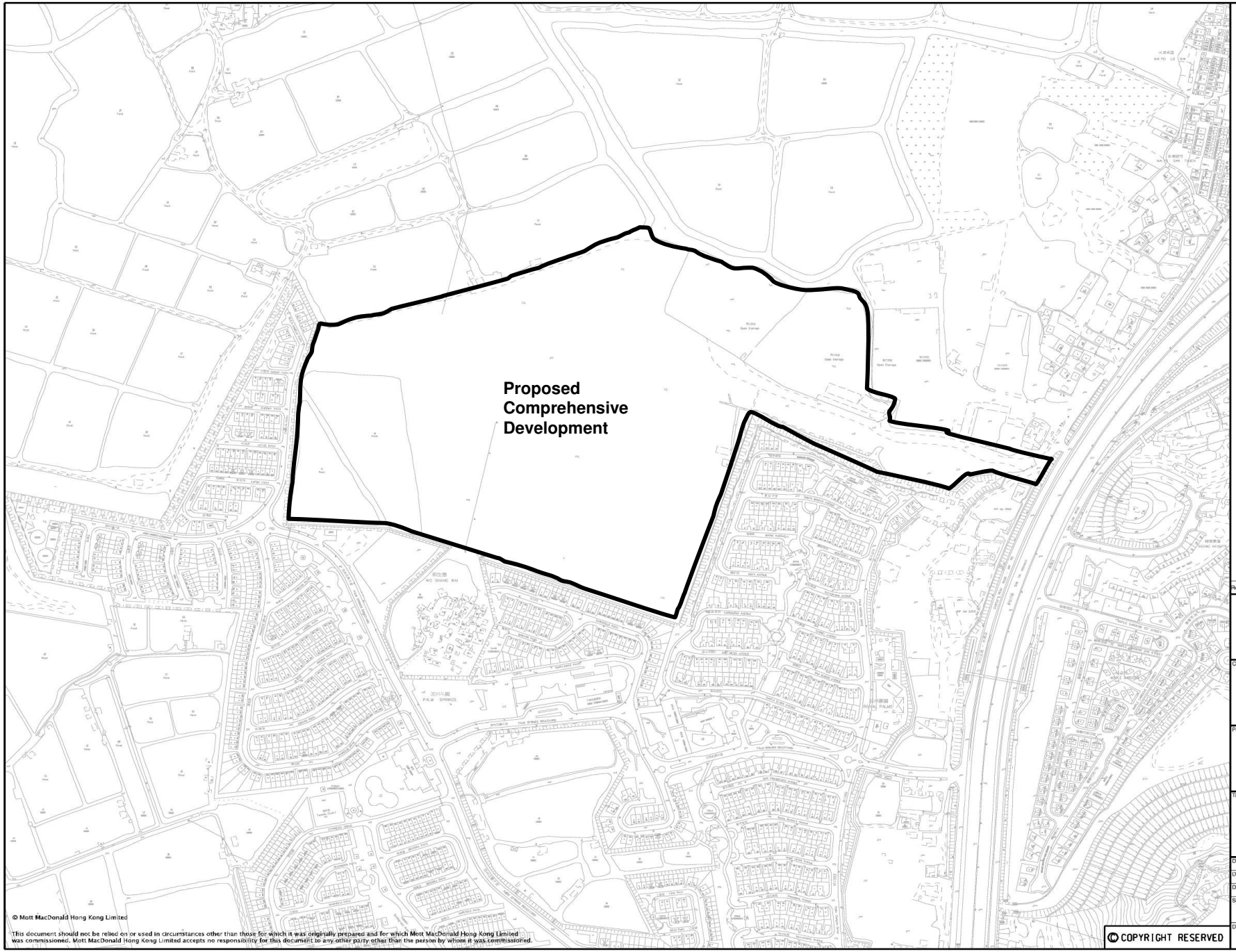
- Mobile plant should be sited as far away from NSRs as possible;
- Plant known to emit noise strongly in one direction should be orientated to direct noise away from the NSRs; and
- The construction activities should be better scheduled to reduce noise nuisance.

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; and
- 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
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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

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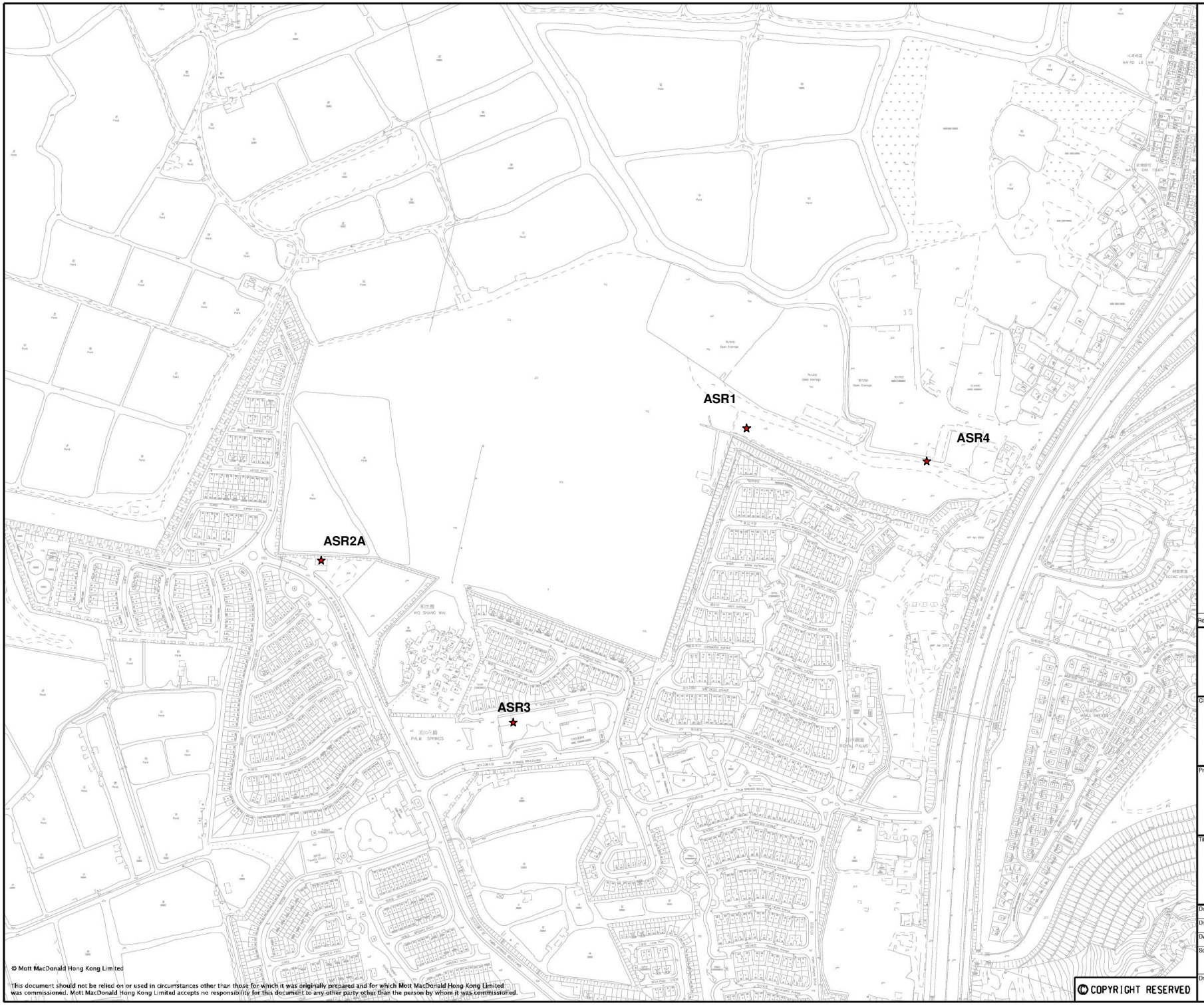

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Legend:

★ Indicative Air Quality Monitoring Locations

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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	
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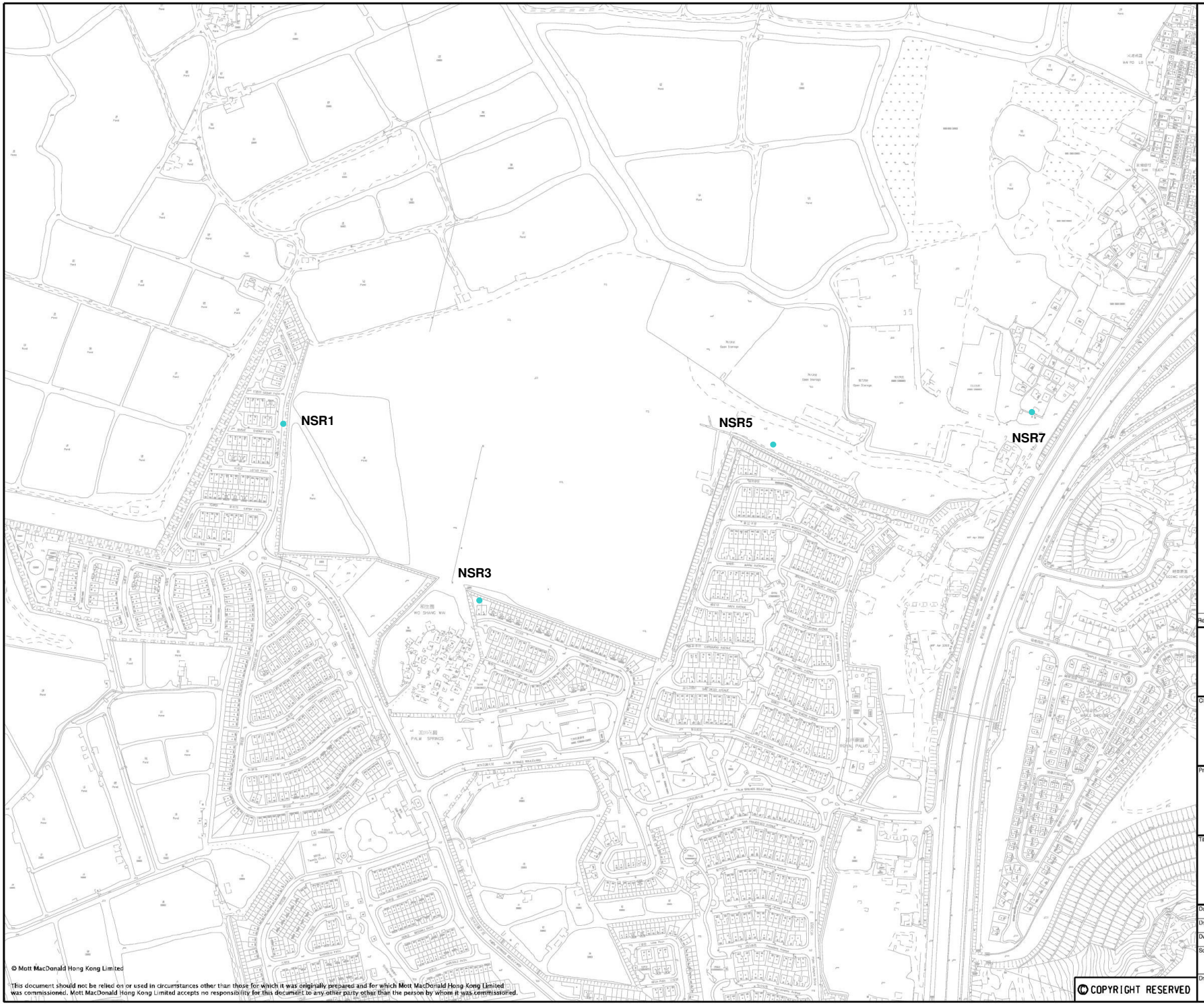
Drawing No. Figure 2.1 Rev



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- Indicative Baseline Noise Monitoring Stations

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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	
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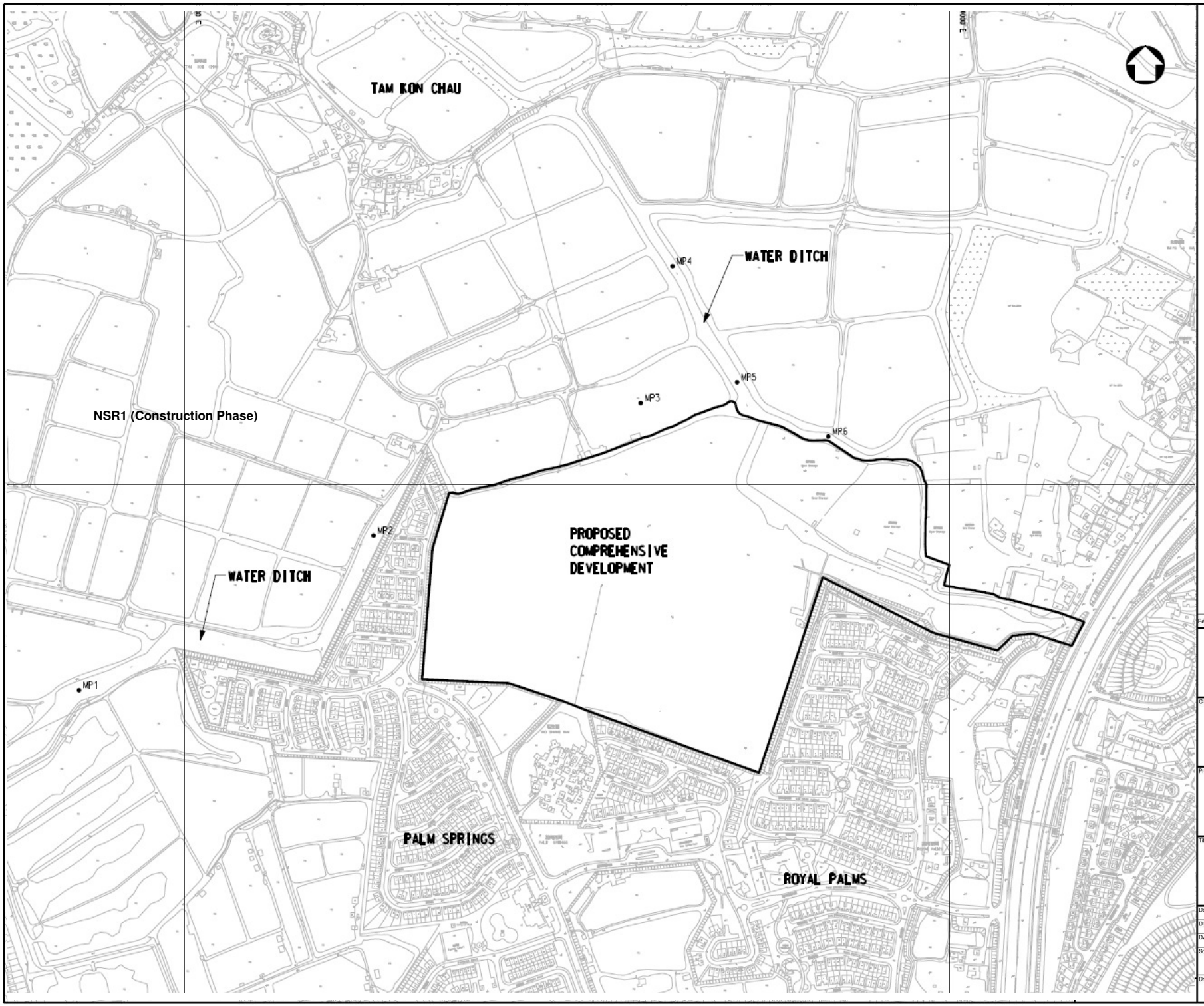

Legend:

- Water Quality Sampling Stations

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

Mott MacDonald

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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			

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Figure 2.3

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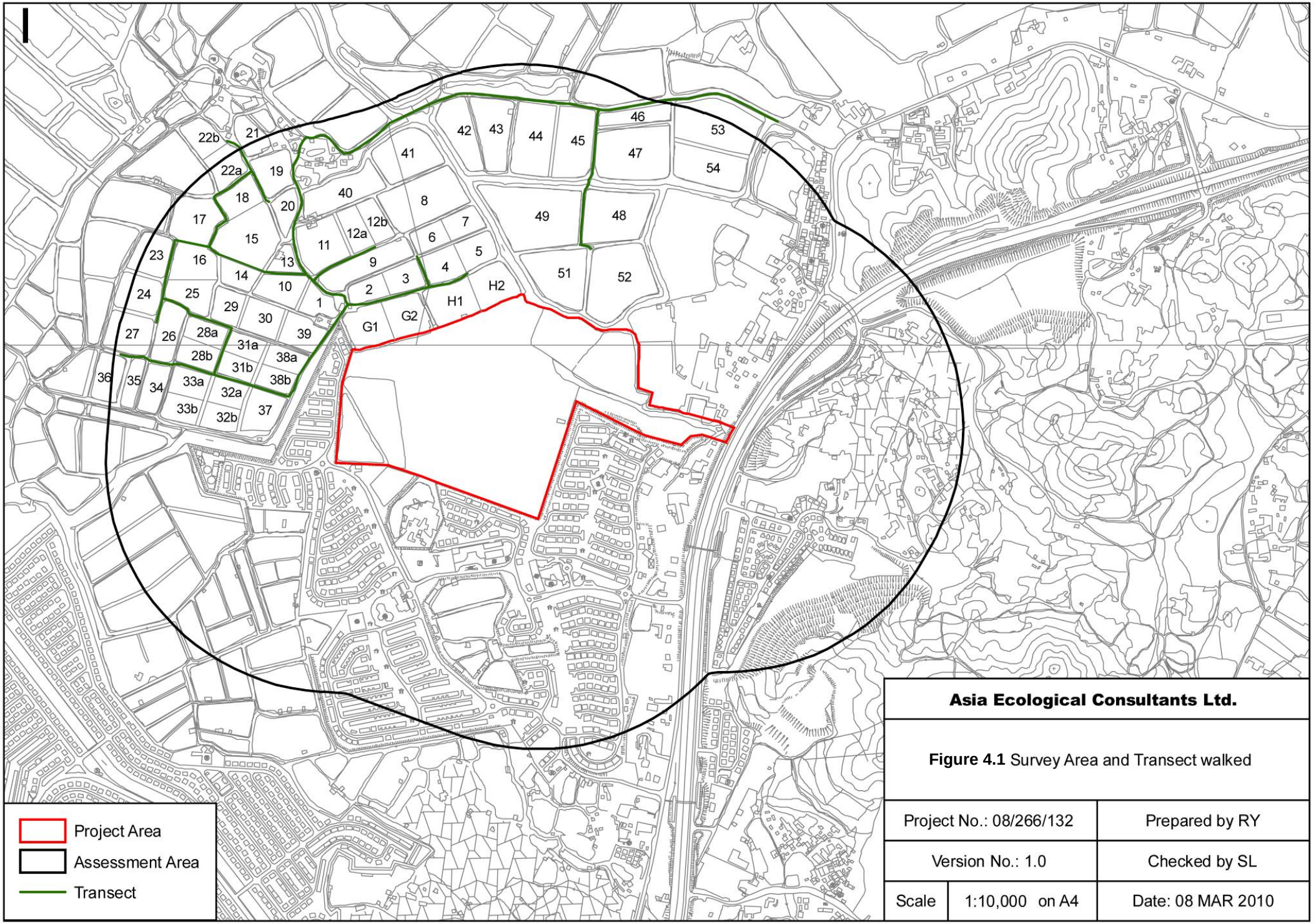
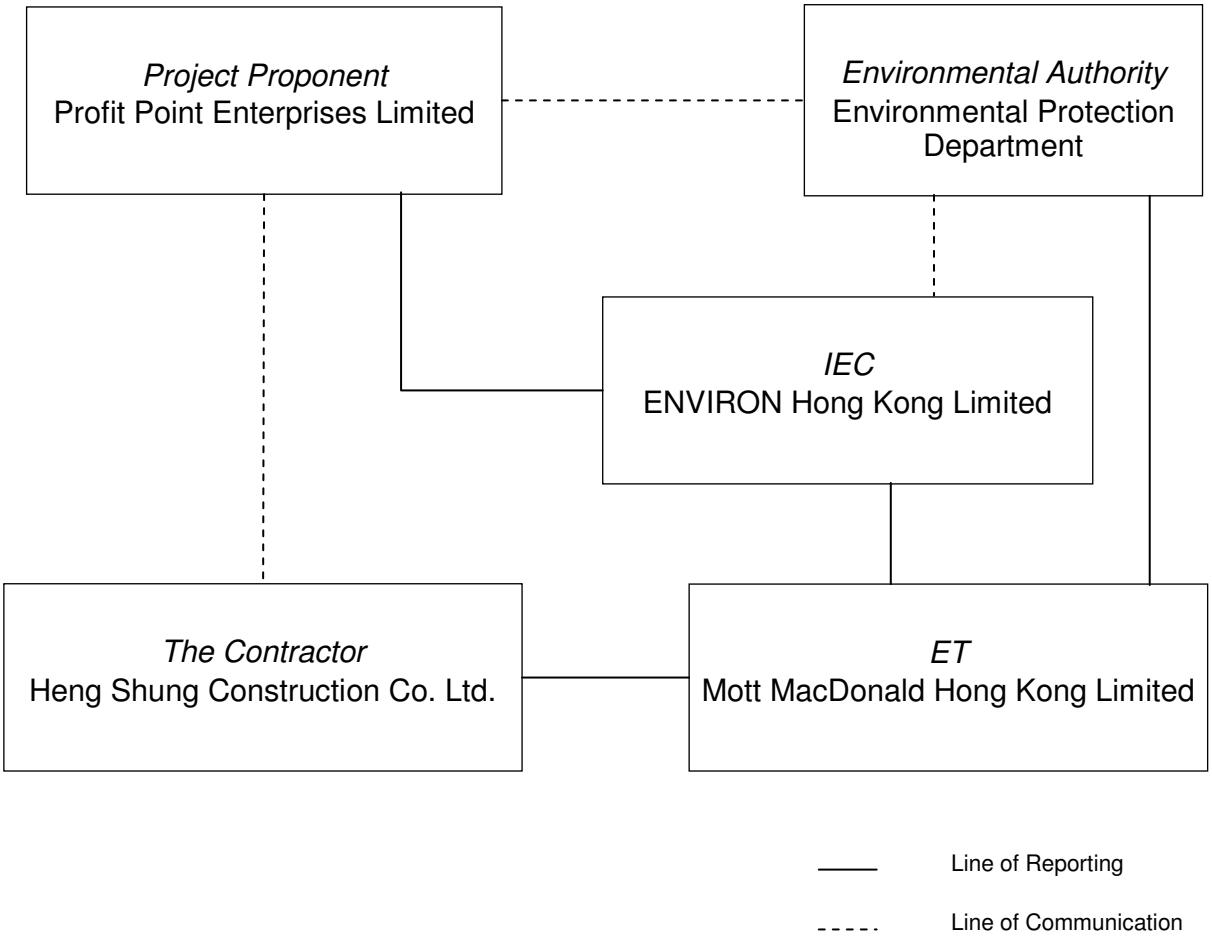


Asia Ecological Consultants Ltd.

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



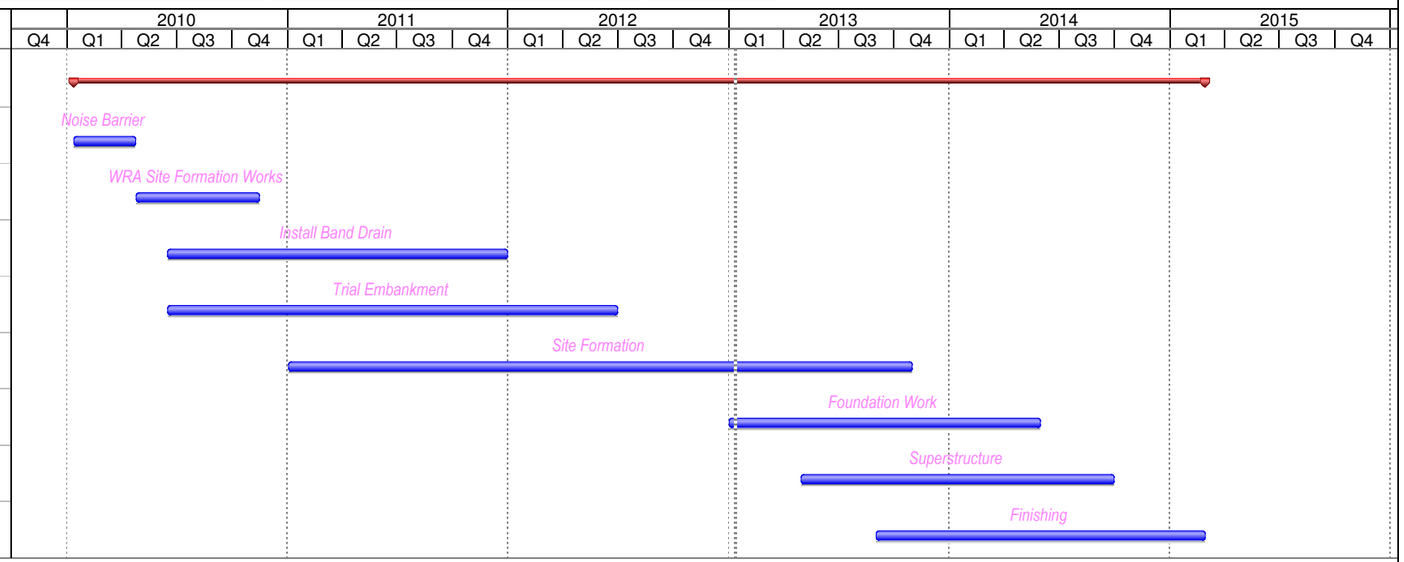
Contact information:

Company	Position	Name	Telephone
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. Ricky WONG	9866 7625
ENVIRON Hong Kong Ltd. (Independent Environmental Checker (IEC))	Independent Environmental Checker	Mr. David YEUNG	3743 0788
Mott MacDonald Hong Kong Ltd. (Environmental Team (ET))	Environmental Team Leader	Ms. Florence YUEN	2828 5768

Appendix B. Tentative Construction Programme

Wo Shang Wai Construction Works Programme (Phase I) (except TOA)

ID	Task Name	Working	Start	Finish
0	**Wo Shang Wai Construction Phase**	**1556 days**	**Wed 13/01/10**	**Sat 28/02/15**
1	Noise Barrier	85 days	Wed 13/01/10	Sat 24/04/10
2	WRA Site Formation Works	168 days	Mon 26/04/10	Mon 15/11/10
3	Install Band Drain	456 days	Thu 17/06/10	Sat 31/12/11
4	Trial Embankment	600 days	Thu 17/06/10	Sat 30/06/12
5	Site Formation	849 days	Mon 03/01/11	Thu 31/10/13
6	Foundation Work	442 days	Wed 02/01/13	Sat 31/05/14
7	Superstructure	444 days	Wed 01/05/13	Tue 30/09/14
8	Finishing	468 days	Mon 02/09/13	Sat 28/02/15



Project : Wo Shang Wai
Revision : I
Print Date : Fri 11/01/13

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

Event	Action			
	ET Leader	IEC	ER	Contractor
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, EPD and the Contractor. 2. Identify the source. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented. 6. Arrange meeting IEC and ER to discuss the remedial actions to be taken. 7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary and advise ER accordingly. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing. 2. Notify the Contractor. 3. In consultation with IEC, agree with the remedial measures to be implemented. 4. Ensure remedial measures are properly implemented. 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. 2. Submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by ER until the exceedance is abated.

Construction Noise

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

Water Quality

Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level				
1. Exceedance for one sample	1. Repeat in-situ measurement to confirm finding; 2. Identify source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; and 6. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures; and 2. Make agreement on the mitigation measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER; and 6. Implement the agreed mitigation measures.
2. Exceedance for two or more consecutive samples	1. Repeat in-situ measurement to confirm finding; 2. Identify source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; and 8. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; and 3. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; and 6. Implement the agreed mitigation measures.
Limit Level				
1. Exceedance for one sample	1. Repeat in-situ measurement to confirm finding; 2. Identify source(s) of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; and 7. Increase the monitoring frequency to daily until no exceedance of Limit level.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; and 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; and 4. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and ER and propose mitigation measures to IEC and ER within 3 working days; and 6. Implement the agreed mitigation measures.

Event	Action			
	ET Leader	IEC	ER	Contractor
2. Exceedance for two or more consecutive samples	1. Repeat in-situ measurement to confirm finding; 2. Identify source(s) of impact; 3. Inform IEC, Contractor and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; and 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; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; and 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures; and 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; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures; and 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)

TSI P/N 2306157

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

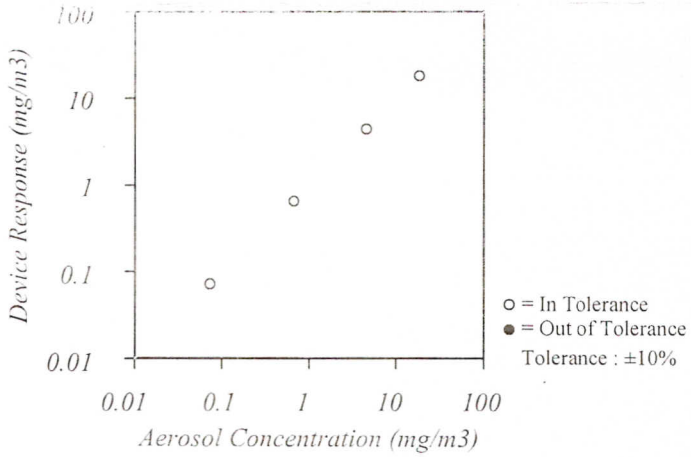
Environment Condition		
Temperature	66.7 (19.3)	°F (°C)
Relative Humidity	55	%RH
Barometric Pressure	28.92 (979.3)	inHg (hPa)

Model	AM510
Serial Number	11108010

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII01-02

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
Barometric Pressure	E003733	02-25-12	02-25-13
Humidity	E002873	11-14-11	11-14-12
DC Voltage	E003315	01-03-12	01-03-13
Microbalance	M001324	01-04-11	01-04-13
Flowmeter	E002006	03-06-12	03-06-13

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E002873	11-14-11	11-14-12
DC Voltage	E003314	01-03-12	01-03-13
Photometer	E003319	07-26-12	01-26-13
Pressure	E003511	11-11-11	11-11-12

Darlene Johnson
Calibrated

☑ Final Function Check

August 22, 2012
Date

TSI P/N 2300157

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

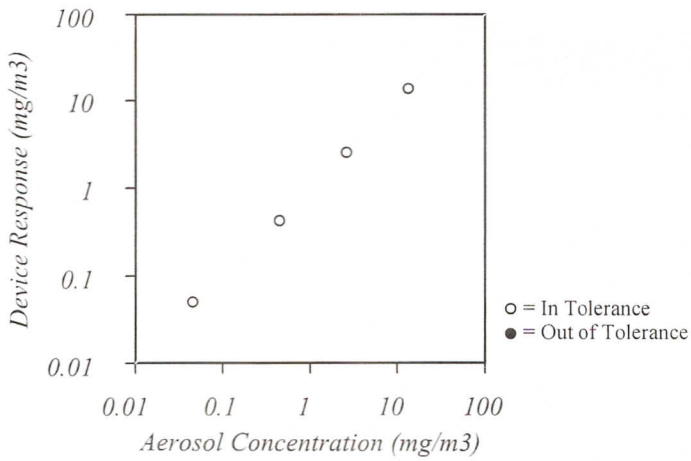
Environment Condition		
Temperature	71.4 (21.9)	°F (°C)
Relative Humidity	39	%RH
Barometric Pressure	28.63 (969.5)	inHg (hPa)

Model	**8520**
Serial Number	**85202623**

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTII01-02

Zero Stability Results

Average:	Minimum:	Maximum:	Time:
0.000 :mg/m^3	0.000 :mg/m^3	0.001 :mg/m^3	4.00 :hrs.

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
Barometric Pressure	E003733	02-25-12	02-25-13
Humidity	E002873	11-14-11	11-14-12
DC Voltage	E003315	01-03-12	01-03-13
Microbalance	M001324	01-04-11	01-04-13
Flowmeter	E003769	06-13-11	06-13-12

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E002873	11-14-11	11-14-12
DC Voltage	E003314	01-03-12	01-03-13
Photometer	E003319	01-26-12	07-26-12
Pressure	E003511	11-11-11	11-11-12

Calibrated

☑ Final Function Check

March 12, 2012
Date

TSI P/N 2300157

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

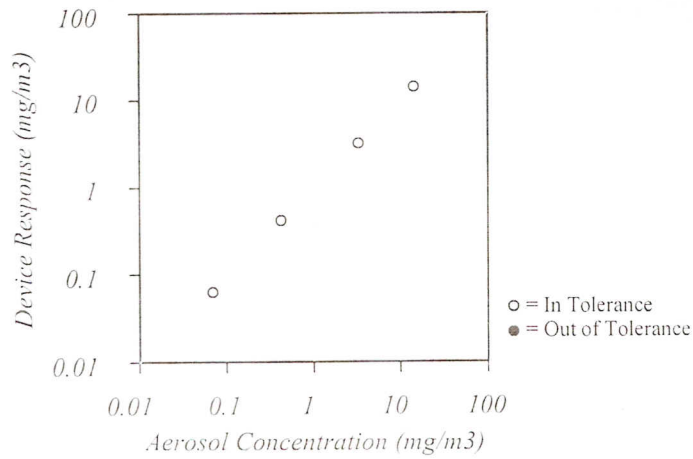
Environment Condition		
Temperature	67.5 (19.7)	°F (°C)
Relative Humidity	37	%RH
Barometric Pressure	28.87 (977.7)	inHg (hPa)

Model	8520
Serial Number	23183

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTI101-01

Zero Stability Results

Average:	Minimum:	Maximum:	Time:
0.000 :mg/m³	0.000 :mg/m³	0.001 :mg/m³	2.00 :hrs.

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	04-11-12	10-11-12
DC Voltage(Keithley)	E002859	01-18-12	01-18-13
Barometric Pressure	E003733	02-25-12	02-25-13
Humidity	E002873	11-14-11	11-14-12

Measurement Variable	System ID	Last Cal.	Cal. Due
Flow and temperature	E002371	03-06-12	03-06-13
Microbalance	M001324	01-04-11	01-04-13
Temperature	E002873	11-14-11	11-14-12
Pressure	E003440	08-23-11	08-23-12

Calibrated

☒ Final Function Check

June 1, 2012
Date

TSI P/N 2300157

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

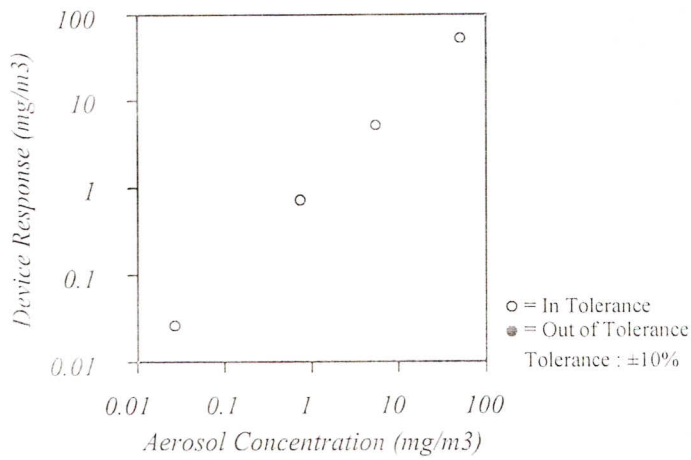
Environment Condition		
Temperature	67.8 (19.9)	°F (°C)
Relative Humidity	51	%RH
Barometric Pressure	29.08 (984.8)	inHg (hPa)

Model	8532
Serial Number	8532113605

☒ As Left ☐ As Found

☒ In Tolerance ☐ Out of Tolerance

Concentration Linearity Plot



System ID: DTH01-02

FLOW AND PRESSURE VERIFICATION

SYSTEM DTH01-02

Parameter	Standard	Measured	Allowable Range	Parameter	Standard	Measured	Allowable Range
Flow lpm	3.1	3.0	2.92 ~ 3.23	Pressure kPa	98.7	98.7	93.74 ~ 103.61

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
Barometric Pressure	E003733	02-25-12	02-25-13
Humidity	E002873	11-14-11	11-14-12
DC Voltage	E003315	01-03-12	01-03-13
Microbalance	M001324	01-04-11	01-04-13
2.8 um PSL	580457	n/a	n/a
Pressure	E003511	11-11-11	11-11-12

Measurement Variable	System ID	Last Cal.	Cal. Due
Temperature	E002873	11-14-11	11-14-12
DC Voltage	E003314	01-03-12	01-03-13
Photometer	E003319	07-26-12	01-26-13
1 um PSL	588500	n/a	n/a
10 um PSL	25875	n/a	n/a
Flowmeter	E002006	03-06-12	03-06-13

Calibrated

August 31, 2012
Date

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR2A
Calibrated by : P.F.Yeung
Date : 02/11/2012

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

Calibration Orfice and Standard Calibration Relationship
Serial Number : 1378
Service Date : 22 Feb 2012
Slope (m) : 1.99405
Intercept (b) : -0.00397
Correlation Coefficient(r) : 0.99984

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

Calibration Condition
Pa (hpa) : 1016
Ta(K) : 296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.6	3.211	1.612	49	48.3
2	13 holes	9.0	2.959	1.486	46	45.3
3	10 holes	7.2	2.647	1.329	42	41.4
4	7 holes	4.5	2.092	1.051	36	35.5
5	5 holes	2.5	1.560	0.784	30	29.6

Sampler Calibration Relationship

Slope(m):22.541 Intercept(b): 11.80 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 07/11/2012

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR4
Calibrated by : P.F.Yeung
Date : 02/11/2012

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

Calibration Orfice and Standard Calibration Relationship
Serial Number : 1378
Service Date : 22 Feb 2012
Slope (m) : 1.99405
Intercept (b) : -0.00397
Correlation Coefficient(r) : 0.99984

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

Calibration Condition
Pa (hpa) : 1016
Ta(K) : 296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.2	3.187	1.600	57	56.9
2	13 holes	8.4	2.892	1.452	50	49.9
3	10 holes	6.0	2.444	1.228	41	40.9
4	7 holes	4.0	1.996	1.003	32	31.9
5	5 holes	2.4	1.546	0.777	23	23.0

Sampler Calibration Relationship

Slope(m):40.870 Intercept(b): -9.026 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 07/11/2012

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR3
Calibrated by : K.T.Ho
Date : 02/11/2012

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

Calibration Orfice and Standard Calibration Relationship
Serial Number : 1378
Service Date : 22 Feb 2012
Slope (m) : 1.99405
Intercept (b) : -0.00397
Correlation Coefficient(r) : 0.99984

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

Calibration Condition
Pa (hpa) : 1016
Ta(K) : 296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	11.4	3.393	1.703	58	58.3
2	13 holes	8.8	2.981	1.497	50	50.2
3	10 holes	6.5	2.562	1.287	43	43.2
4	7 holes	4.5	2.132	1.071	35	35.2
5	5 holes	2.6	1.620	0.815	26	26.1

Sampler Calibration Relationship

Slope(m):36.010 Intercept(b): -3.293 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 07/11/2012

High-Volume TSP Sampler
5-Point Calibration Record

Location : ASR1
Calibrated by : P.F.Yeung
Date : 02/11/2012

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

Calibration Orfice and Standard Calibration Relationship
Serial Number : 1378
Service Date : 22 Feb 2012
Slope (m) : 1.99405
Intercept (b) : -0.00397
Correlation Coefficient(r) : 0.99984

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

Calibration Condition
Pa (hpa) : 1016
Ta(K) : 296

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC	Y
1	18 holes	10.7	3.287	1.650	57	57.3
2	13 holes	8.4	2.912	1.463	49	49.2
3	10 holes	6.2	2.502	1.257	41	41.2
4	7 holes	4.4	2.108	1.059	33	33.2
5	5 holes	2.4	1.557	0.783	22	22.1

Sampler Calibration Relationship

Slope(m):40.380 Intercept(b):-9.571 Correlation Coefficient(r): 0.9995

Checked by: Magnum Fan Date: 07/11/2012

Appendix E
Calibration Record
(Noise Monitoring)

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

Certificate of Calibration
校正證書

Certificate No. : C120474
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-0154)

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-31
Serial No. / 編號	:	00983400
Supplied By / 委託者	:	Envirotech Services Co. Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road, Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 21 January 2012

TEST RESULTS / 測試結果

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
- Rohde & Schwarz Laboratory, Germany
- Fluke Precision Measurement Ltd., UK
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee

Certified By 核證 : H C Chan

Date of Issue 簽發日期 : 30 January 2012

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號青山灣機樓四樓
Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

Certificate of Calibration
校正證書

Certificate No. : C120474
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 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	C120016
CL281	Multifunction Acoustic Calibrator	DC110233

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	94.4	± 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	94.4 (Ref.)
				104.00		104.4
				114.00		114.5

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	94.4	Ref.
			Slow			94.4	± 0.3

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Certificate of Calibration
校正證書

Certificate No. : C120474
證書編號

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	67.9	-26.2 ± 1.5
					125 Hz	78.1	-16.1 ± 1.5
					250 Hz	85.6	-8.6 ± 1.4
					500 Hz	91.1	-3.2 ± 1.4
					1 kHz	94.4	Ref.
					2 kHz	95.7	+1.2 ± 1.6
					4 kHz	95.5	+1.0 ± 1.6
					8 kHz	93.4	-1.1 (+2.1 ; -3.1)
					12.5 kHz	90.5	-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	93.5	-0.8 ± 1.5
					125 Hz	94.2	-0.2 ± 1.5
					250 Hz	94.4	0.0 ± 1.4
					500 Hz	94.4	0.0 ± 1.4
					1 kHz	94.4	Ref.
					2 kHz	94.3	-0.2 ± 1.6
					4 kHz	93.8	-0.8 ± 1.6
					8 kHz	91.5	-3.0 (+2.1 ; -3.1)
					12.5 kHz	88.7	-6.2 (+3.0 ; -6.0)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
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Certificate of Calibration
校正證書

Certificate No. : C120474
證書編號

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 Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

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

Certificate of Calibration
校正證書

Certificate No. : C126665
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC12-2878)

Description / 儀器名稱 : Sound Level Calibrator
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-73
Serial No. / 編號 : 10486660
Supplied By / 委託者 : Envirotech Services Co.
Shop 6, G/F., Casio Mansion, 209 Shaukeiwan Road,
Hong Kong

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C
Relative Humidity / 相對濕度 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 19 November 2012

TEST RESULTS / 測試結果

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
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By 測試 : K C Lee

Certified By 核證 : C C Cheung

Date of Issue 簽發日期 : 21 November 2012

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

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Certificate of Calibration
校正證書

Certificate No. : C126665
證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 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.
CL130	Universal Counter	C123541
CL281	Multifunction Acoustic Calibrator	DC110233
TST150A	Measuring Amplifier	C120886

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	93.9	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.991	1 kHz ± 2 %	± 1

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

Note :
The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with 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.

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Appendix E
Calibration Record
(Water Quality Monitoring)

ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR SAM WONG	**WORK ORDER:**	HK1223622
CLIENT:	ENOVATIVE ENVIRONMENTAL SERVICE LTD	**LABORATORY:**	HONG KONG
ADDRESS:	RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG.	**DATE RECEIVED:**	06/09/2012
		DATE OF ISSUE:	11/09/2012
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:	Conductivity, Dissolved Oxygen, pH, Salinity and Temperature
Description:	YSI Multimeter
Brand Name:	YSI
Model No.:	YSI Professional Plus
Serial No.:	10D101566
Equipment No.:	--
Date of Calibration:	07 September, 2012

NOTES

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

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd

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1-3 Wing Yip Street
Kwai Chung
HONG KONG

Phone: 852-2610 1044
Fax: 852-2610 2021
Email: hongkong@alsglobal.com

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1223622
Date of Issue: 11/09/2012
Client: ENOVATIVE ENVIRONMENTAL SERVICE LTD

Description: YSI Multimeter
Brand Name: YSI
Model No.: YSI Professional Plus
Serial No.: 10D101566
Equipment No.: --
Date of Calibration: 07 September, 2012 Date of next Calibration: 07 December, 2012

Parameters:

Conductivity

Method Ref: APHA (20th edition), 2510B

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	142.1	-3.3
6667	6227	-6.6
12890	12165	-5.6
58670	55592	-5.2
	Tolerance Limit (±%)	10.0

Dissolved Oxygen

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.25	2.22	-0.03
6.11	6.19	0.08
7.78	7.74	-0.04
	Tolerance Limit (±mg/L)	0.20

pH Value

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

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.13	0.13
7.0	6.96	-0.04
10.0	9.97	-0.03
	Tolerance Limit (±unit)	0.20

Salinity

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	0
10	10.36	3.6
20	20.18	0.9
30	30.78	2.6
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1223622
Date of Issue: 11/09/2012
Client: ENOVATIVE ENVIRONMENTAL SERVICE LTD

Description: YSI Multimeter
Brand Name: YSI
Model No.: YSI Professional Plus
Serial No.: 10D101566
Equipment No.: --
Date of Calibration: 07 September, 2012 Date of next Calibration: 07 December, 2012

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)
9.0	8.7	-0.3
23.5	23.7	0.2
44.5	44.0	-0.5
	Tolerance Limit (°C)	2.0

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR IVAN LEUNG	**WORK ORDER:**	HK1228591
CLIENT:	ALS TECHNICHEM (HK) PTY LTD	**LABORATORY:**	HONG KONG
ADDRESS:	11/F., CHUNG SHUN KNITTING CENTRE, 1-3 WING YIP STREET, KWAI CHUNG, N.T., HONG KONG	**DATE RECEIVED:**	27/10/2012
		DATE OF ISSUE:	29/10/2012

COMMENTS

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

Scope of Test:	Conductivity, Dissolved Oxygen, pH, Salinity, Temperature and Redox Potential
Description:	YSI MULTIMETER
Brand Name:	YSI
Model No.:	PROFESSIONAL PLUS
Serial No.:	10D101565
Equipment No.:	--
Date of Calibration:	29 October, 2012

NOTES

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

ISSUING LABORATORY: HONG KONG

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Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1228591
Date of Issue: 29/10/2012
Client: ALS TECHNICHEM (HK) PTY LTD

Description: YSI MULTIMETER
Brand Name: YSI
Model No.: PROFESSIONAL PLUS
Serial No.: 10D101565
Equipment No.: --
Date of Calibration: 29 October, 2012 Date of next Calibration: 29 January, 2013

Parameters:

Conductivity

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

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	152.2	3.6
6667	6733	1.0
12890	13260	2.9
58670	60031	2.3
	Tolerance Limit (%)	10.0

Dissolved Oxygen

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.15	4.21	0.06
5.61	5.71	0.10
8.12	8.12	0.00
	Tolerance Limit (±mg/L)	0.20

pH Value

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

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.02	0.02
7.0	7.14	0.14
10.0	9.96	-0.04
	Tolerance Limit (±unit)	0.2

Salinity

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

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0	--
10	10.74	7.4
20	21.39	7.0
30	32.59	8.6
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1228591
Date of Issue: 29/10/2012
Client: ALS TECHNICHEM (HK) PTY LTD

Description: YSI MULTIMETER
Brand Name: YSI
Model No.: PROFESSIONAL PLUS
Serial No.: 10D101565
Equipment No.: --
Date of Calibration: 29 October, 2012 Date of next Calibration: 29 January, 2013

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)
10.0	10.4	0.4
20.5	20.3	-0.2
46.0	45.9	-0.1
	Tolerance Limit (°C)	2.0

Redox Potential

Method Ref: APHA (21st edition), 2580B
Method Ref: Orion Research Instruction Manual and the Laboratory Manual the Environmental of Water, Wastewater and Soil (2nd edition), Rump & Krist (1992)

	Displayed Reading (mV)
Solution A (~234mV)	158.1
Solution B (~300mV)	227.1
Difference of Solution A & B	69
Acceptance Criteria (mV)	>66

Calibration Solution*:
Solution A: 0.1M Potassium Ferrocyanide (ENV 3251) & 0.05M Potassium Ferricyanide (ENV 5199) soluion
Solution B: 0.01M Potassium Ferrocyanide (ENV 3251), 0.05M Potassium Ferricyanide (ENV 5199) & 0.36M Potassium Fluoride (ENV 5200) solution

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:**	HK1224660
CLIENT:	ENOVATIVE ENVIRONMENTAL SERVICE LTD	**LABORATORY:**	HONG KONG
ADDRESS:	RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG.	**DATE RECEIVED:**	04/10/2012
		DATE OF ISSUE:	14/10/2013
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:	Turbidity
Description:	Turbidity Meter
Brand Name:	HACH
Model No.:	HACH 2100QIS
Serial No.:	11050C001264
Equipment No.:	--
Date of Calibration:	04 October, 2012

NOTES

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

ISSUING LABORATORY: HONG KONG

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Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1224660
Date of Issue: 14/10/2012
Client: ENOVATIVE ENVIRONMENTAL SERVICE LTD

Description: Turbidity Meter
Brand Name: HACH
Model No.: HACH 2100QIS
Serial No.: 11050C001264
Equipment No.: --
Date of Calibration: 03 October, 2012 Date of next Calibration: 03 January, 2013

Parameters:

Turbidity

Method Ref: ALPHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0.00	0.29	--
4.00	4.14	3.5
40.0	40.2	0.5
80.0	77.1	-3.6
400	364	-9.0
800	778	-2.8
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR IVAN LEUNG	**WORK ORDER:**	HK1228468
CLIENT:	ALS TECHNICHEM (HK) PTY LTD	**LABORATORY:**	HONG KONG
ADDRESS:	11/F., CHUNG SHUN KNITTING CENTRE, 1-3 WING YIP STREET, KWAI CHUNG, N.T., HONG KONG	**DATE RECEIVED:**	25/10/2012
		DATE OF ISSUE:	31/10/2012
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:	Turbidity
Description:	Turbidity meter
Brand Name:	HACH
Model No.:	HACH 2100Q
Serial No.:	12010C015757
Equipment No.:	--
Date of Calibration:	31 October, 2012

NOTES

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

ISSUING LABORATORY: HONG KONG

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1228468
Date of Issue: 31/10/2012
Client: ALS TECHNICHEM (HK) PTY LTD

Description: Turbidity meter
Brand Name: HACH
Model No.: HACH 2100Q
Serial No.: 12010C015757
Equipment No.: --
Date of Calibration: 31 October, 2012 Date of next Calibration: 31 January, 2013

Parameters:

Turbidity

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

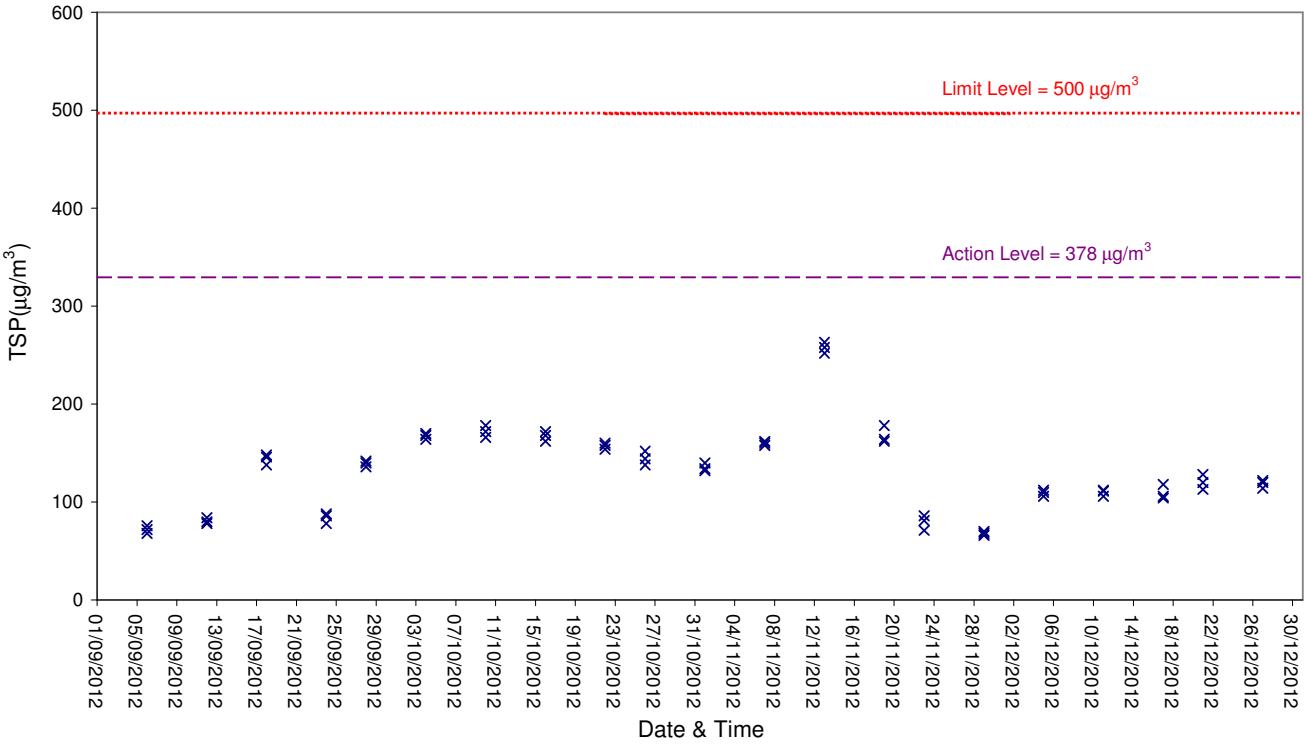
Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.40	--
4	3.93	-1.8
40	40.5	1.3
80	79.2	-1.0
400	399	-0.3
800	808	1.0
	Tolerance Limit (±%)	10.0

Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

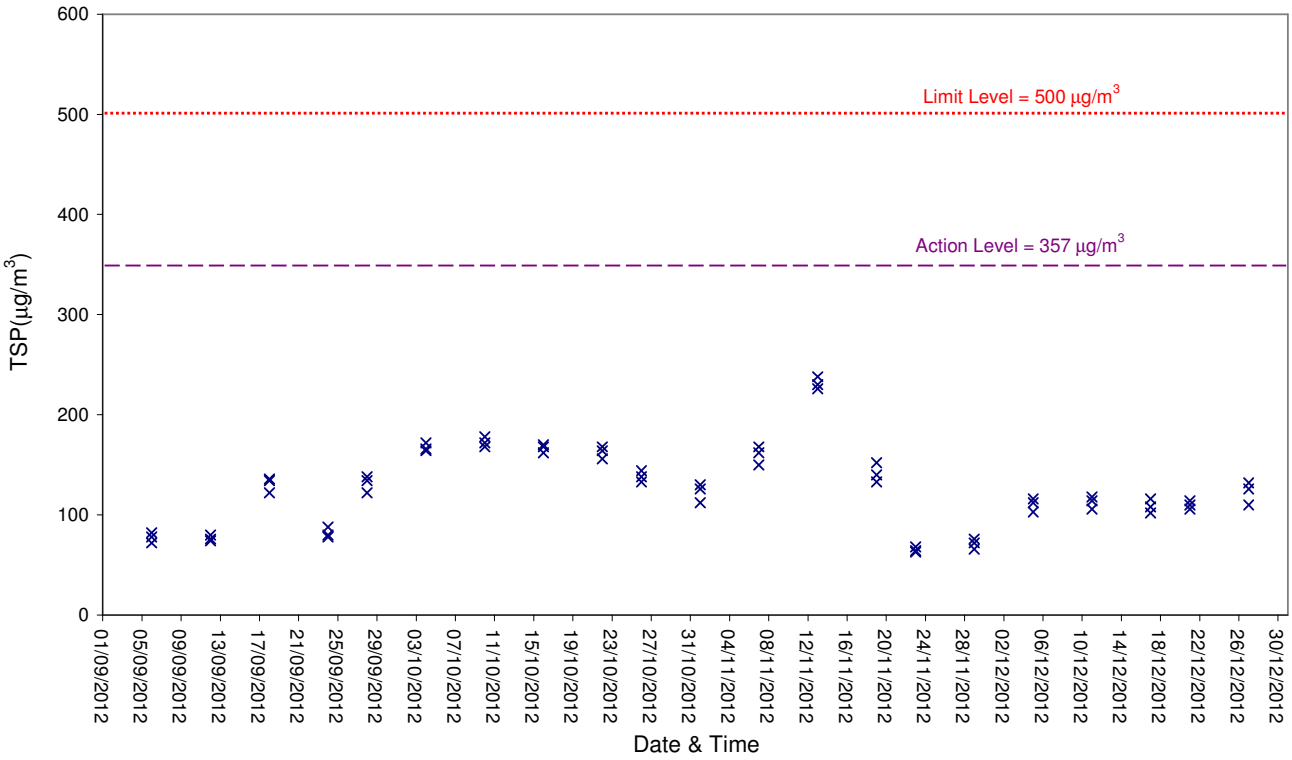
Appendix F. Graphical plots of the monitoring results

Air Quality

1-hour TSP Level at ASR1

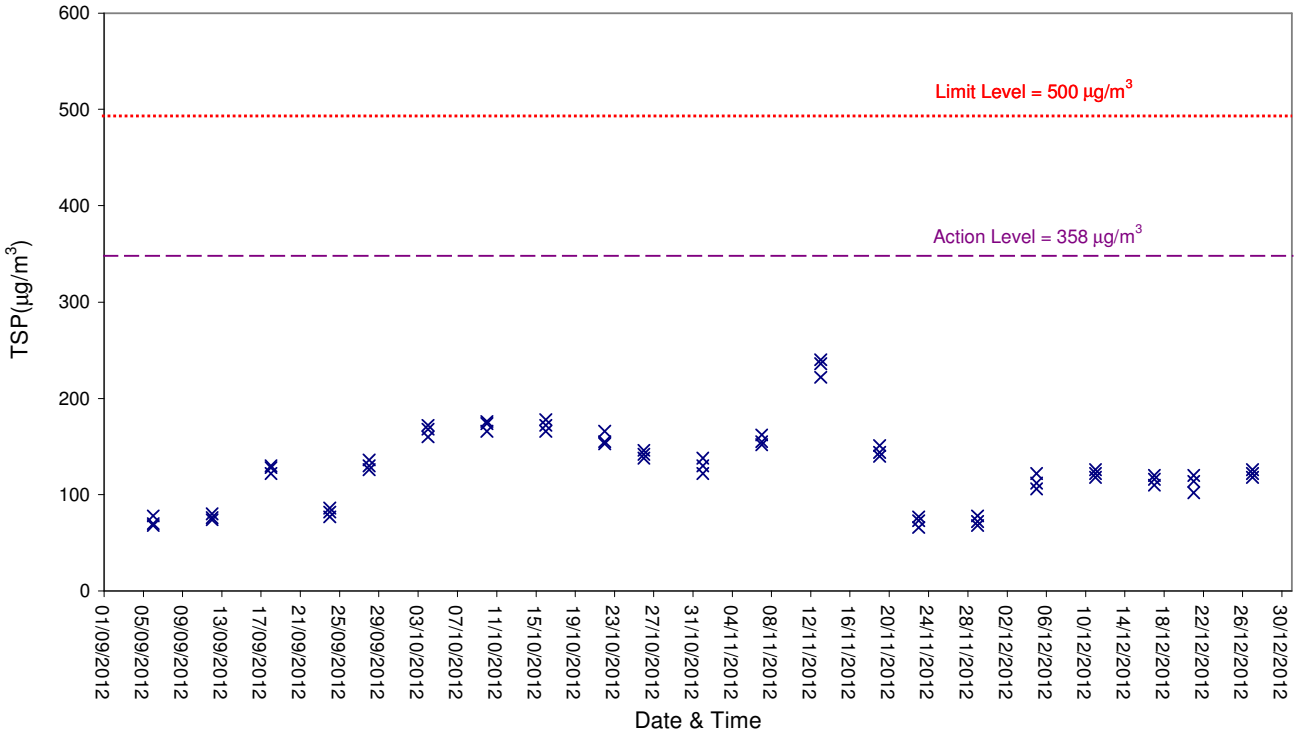


1-hour TSP Level at ASR2A

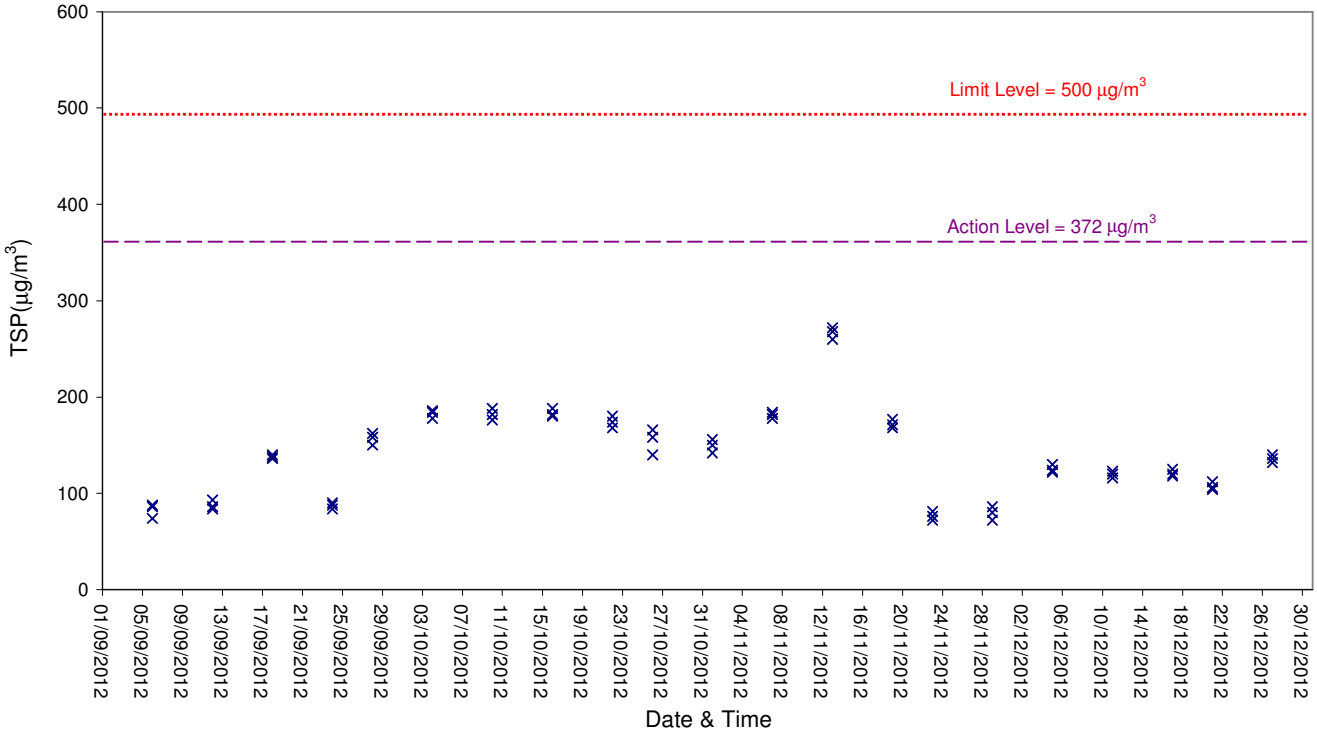


Air Quality

1-hour TSP Level at ASR3

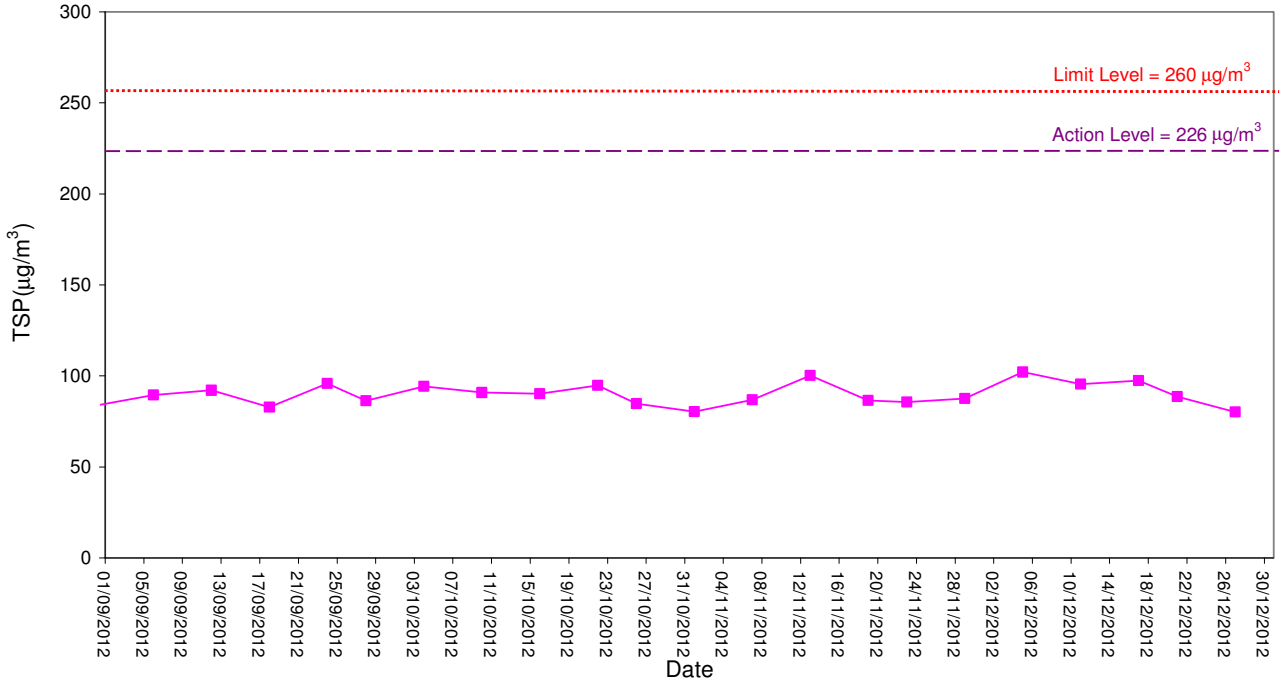


1-hour TSP Level at ASR4

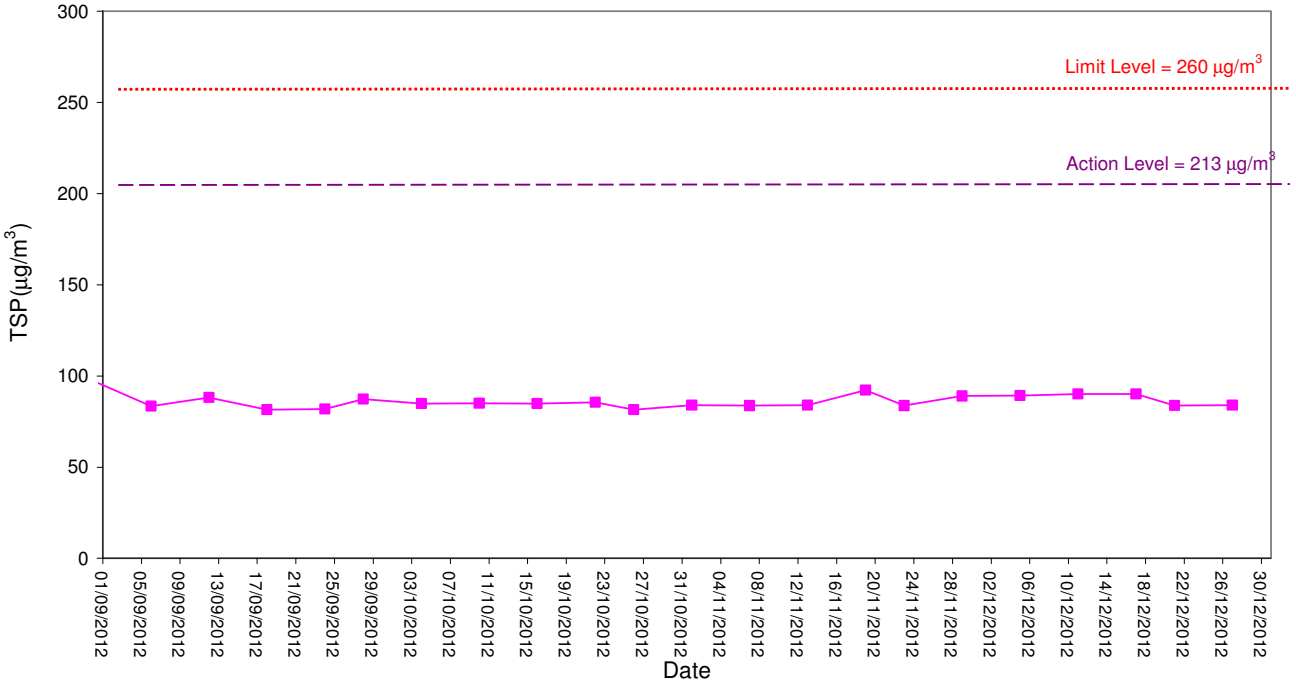


Air Quality

24-hour TSP Level at ASR1

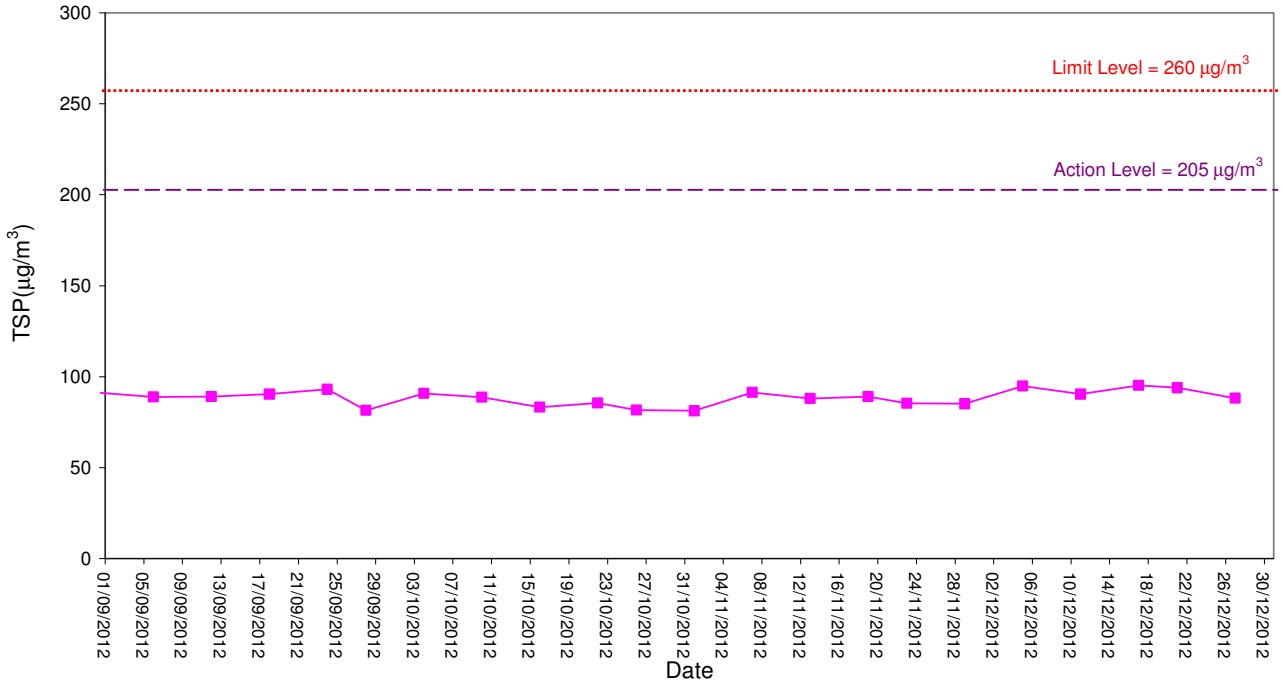


24-hour TSP Level at ASR2A

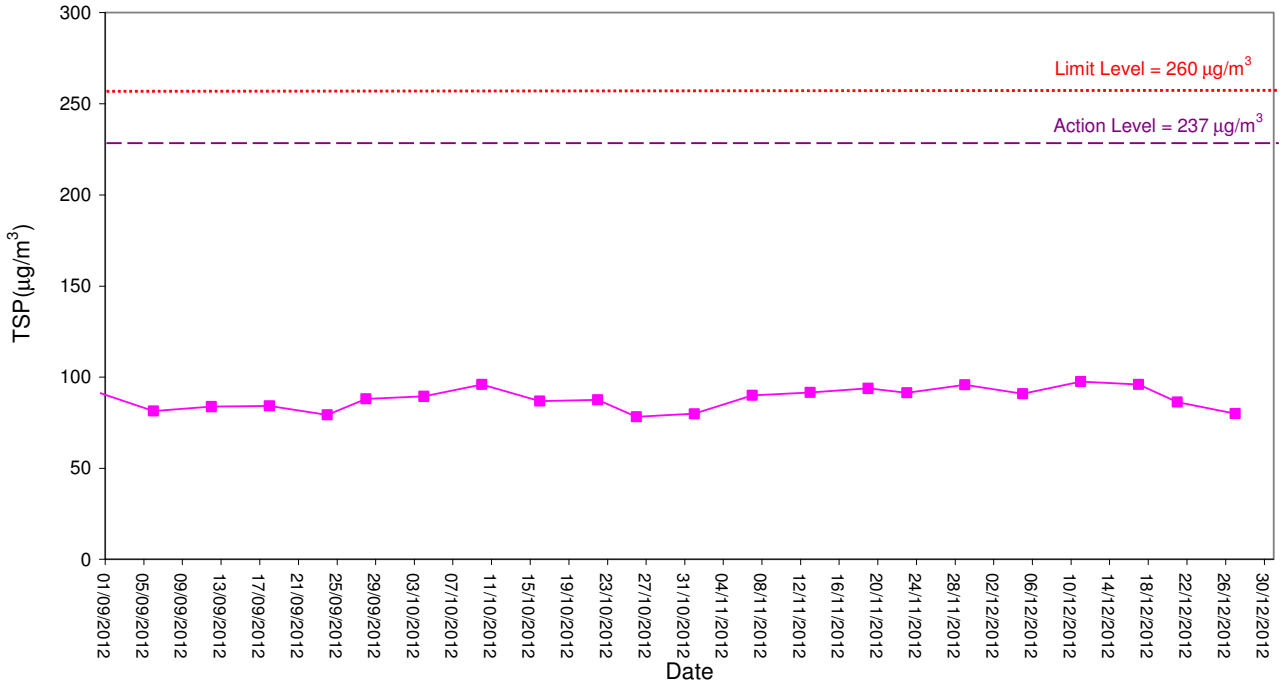


Air Quality

24-hour TSP Level at ASR3

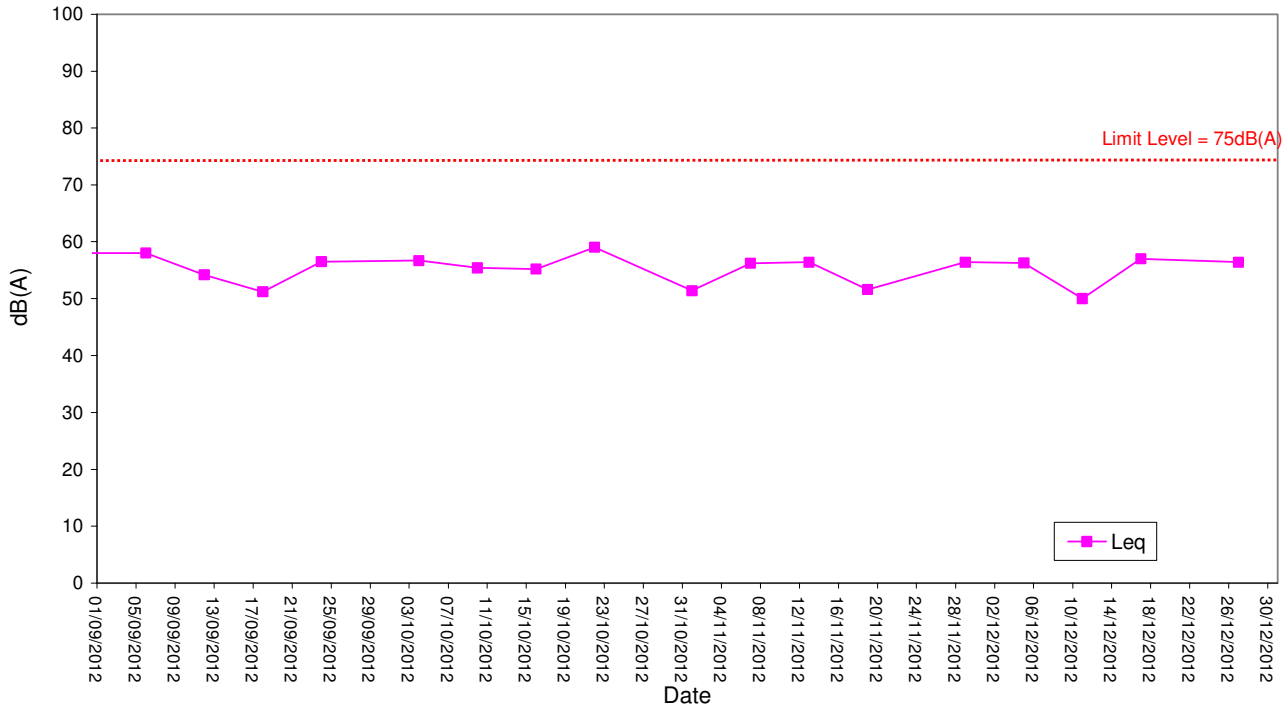


24-hour TSP Level at ASR4

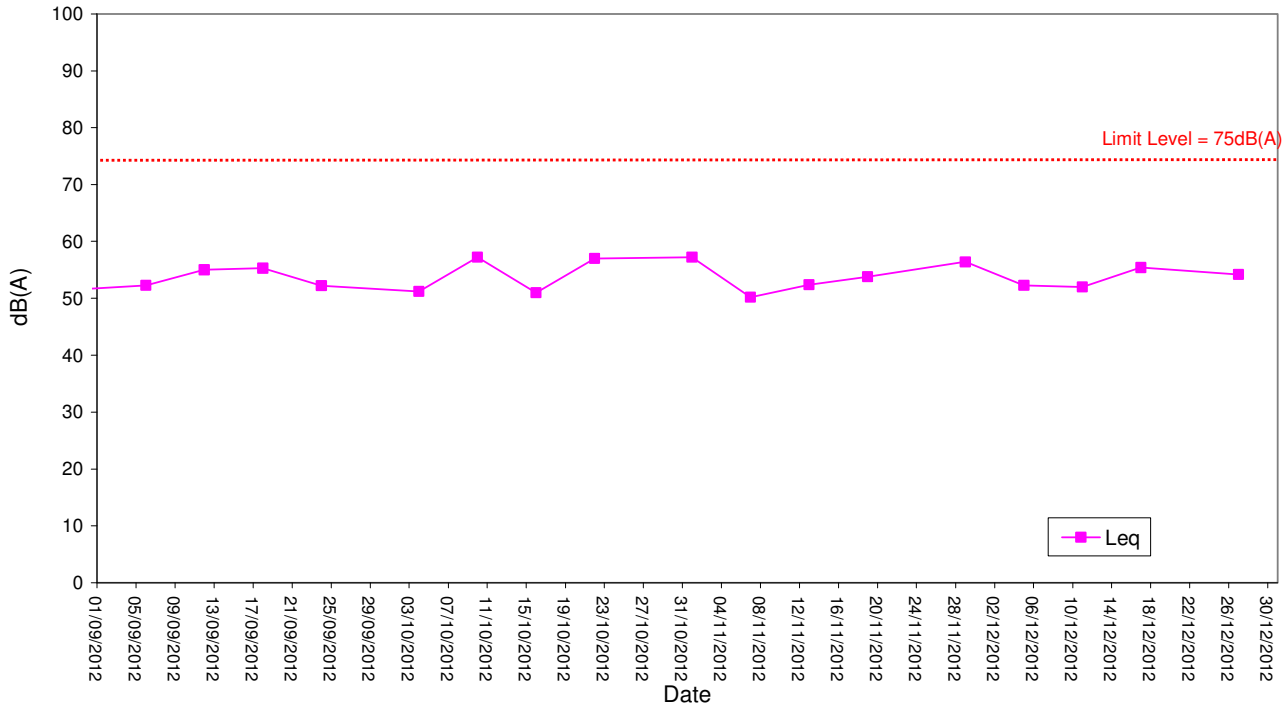


Noise

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

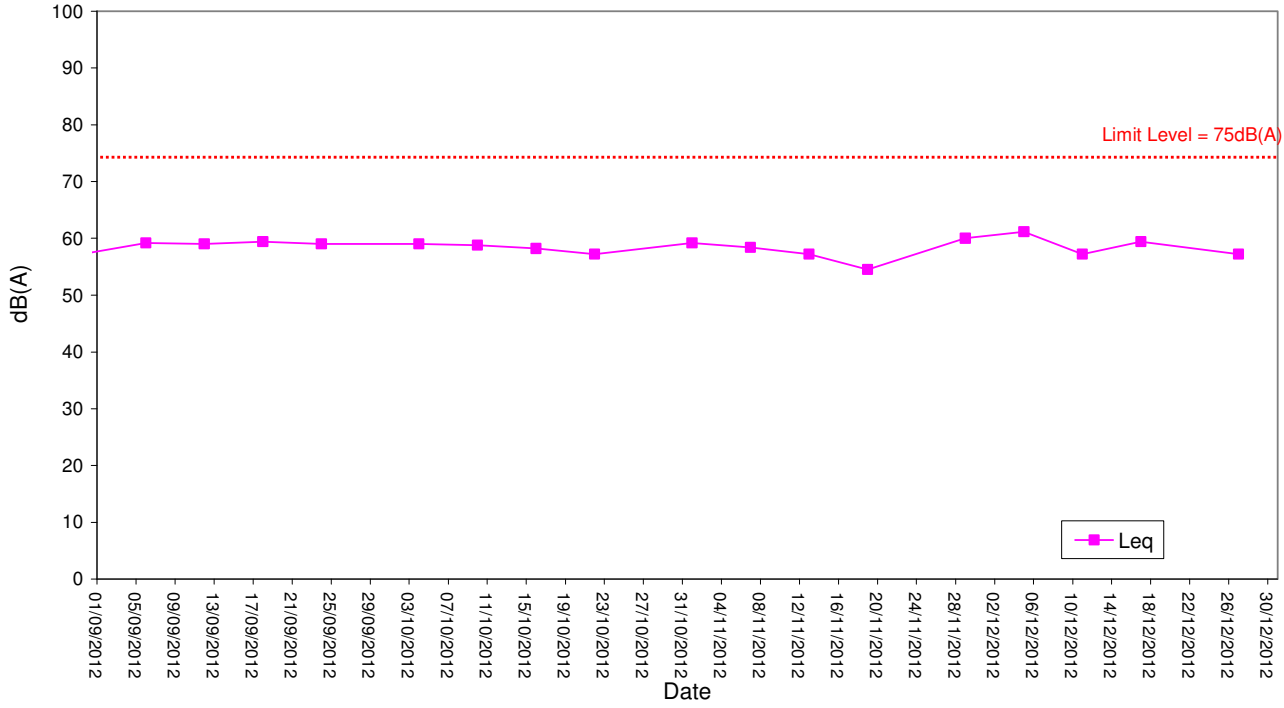


Noise Level for 30 min, dB(A), at NSR3

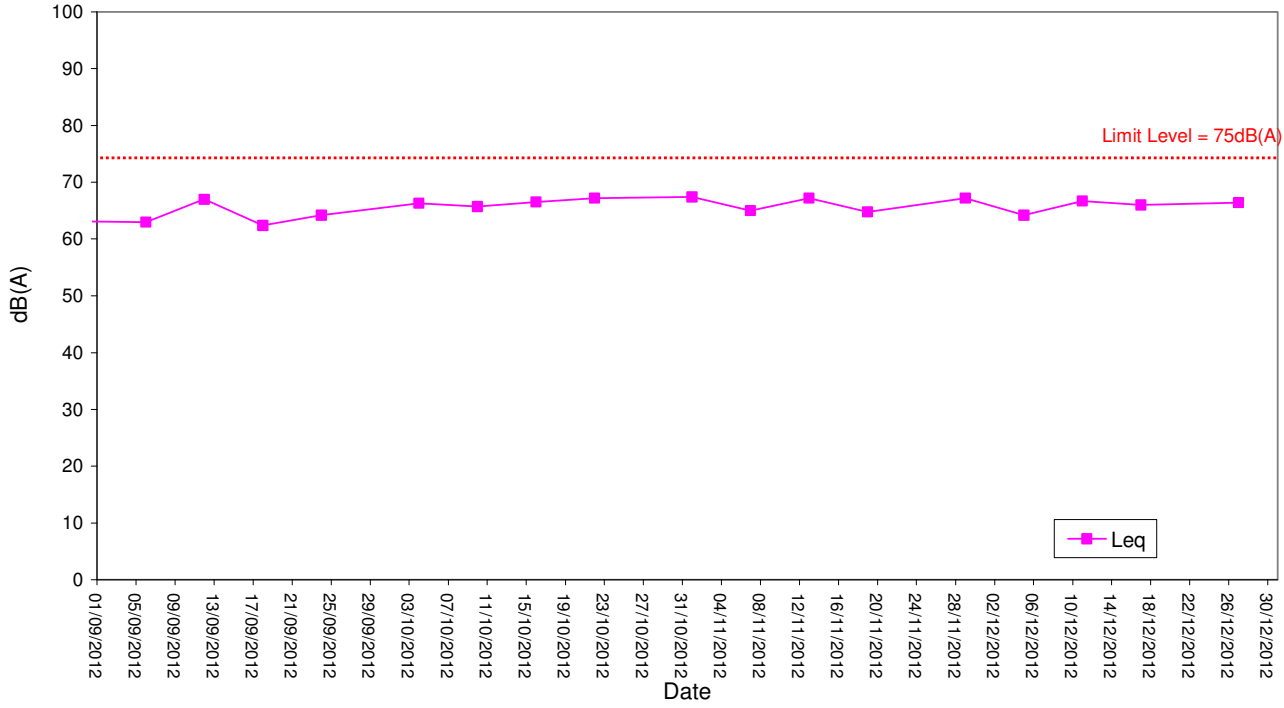


Noise

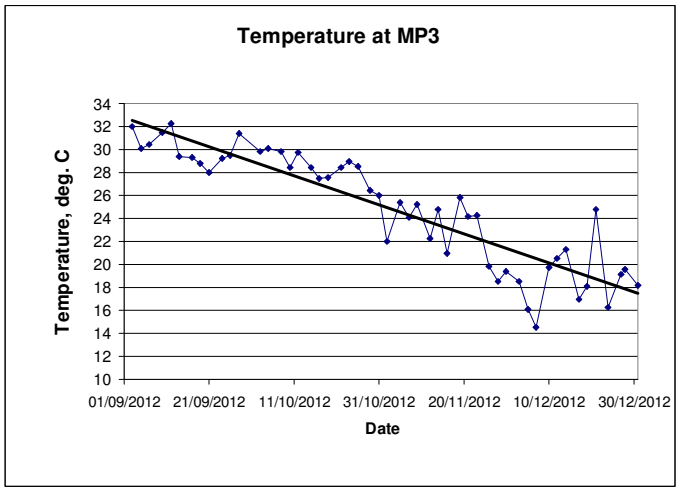
Noise Level for 30 min, dB(A), at NSR5

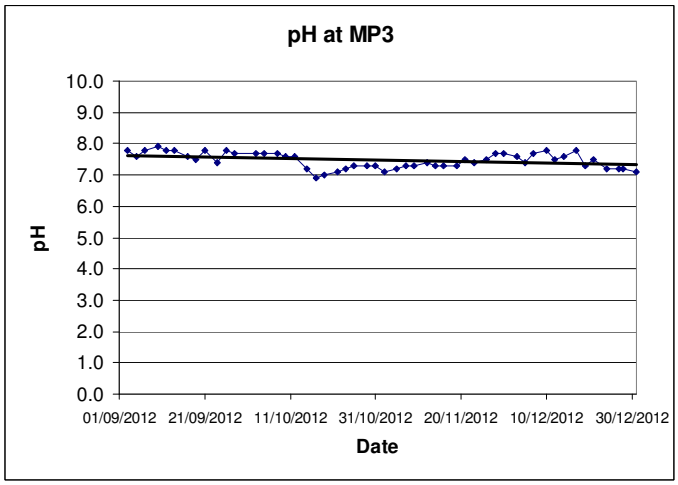


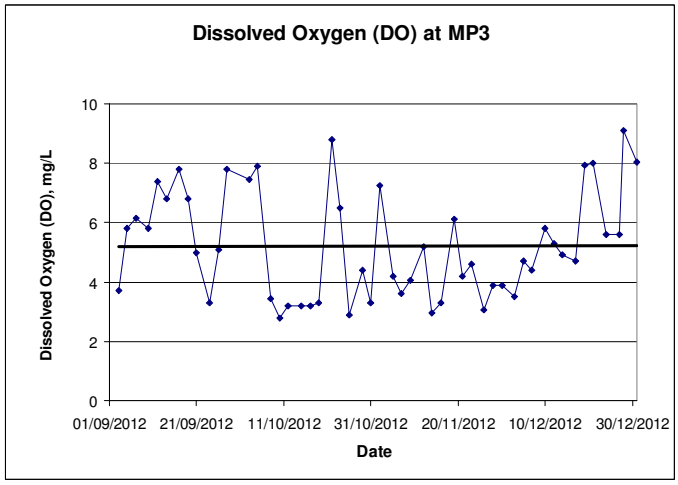
Noise Level for 30 min, dB(A), at NSR7

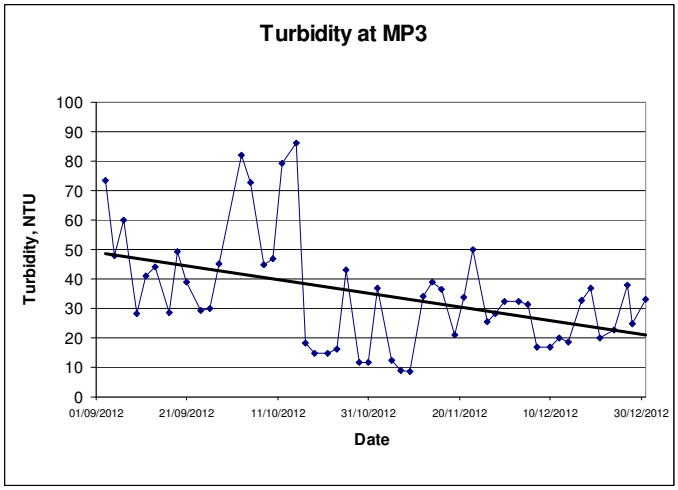


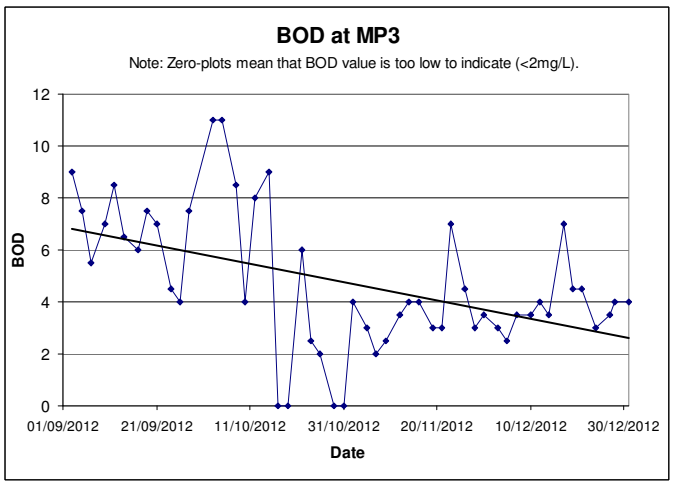
Water Quality

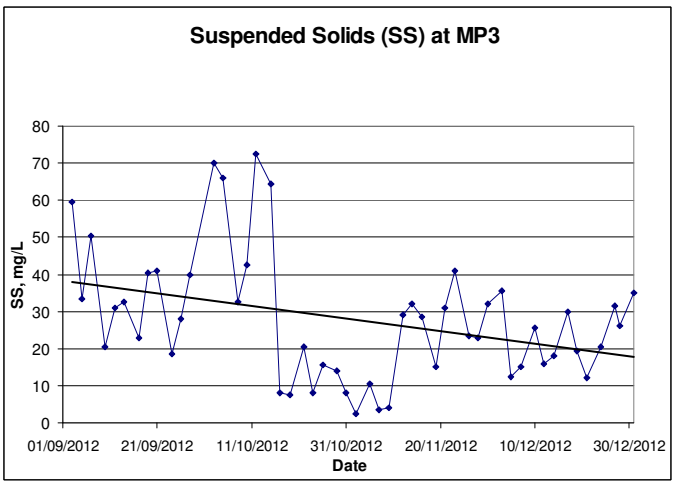




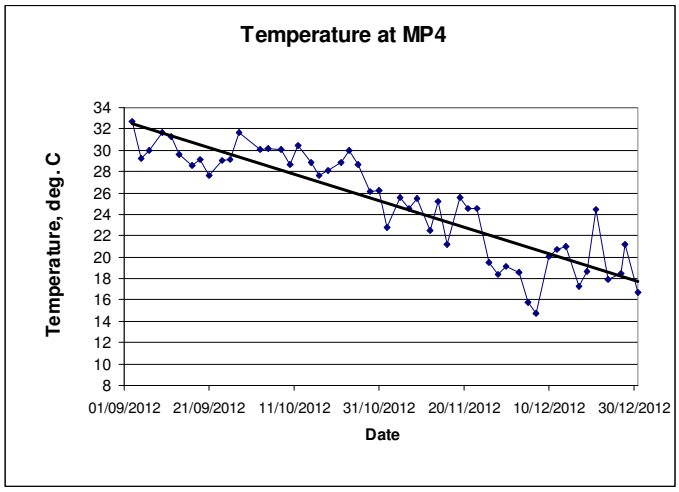


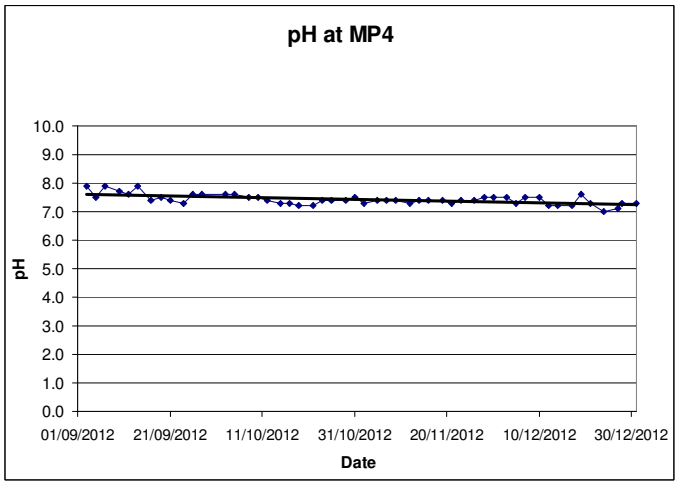


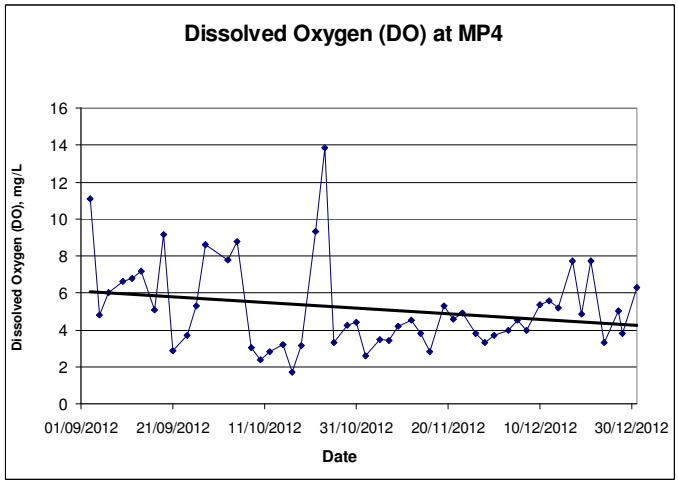


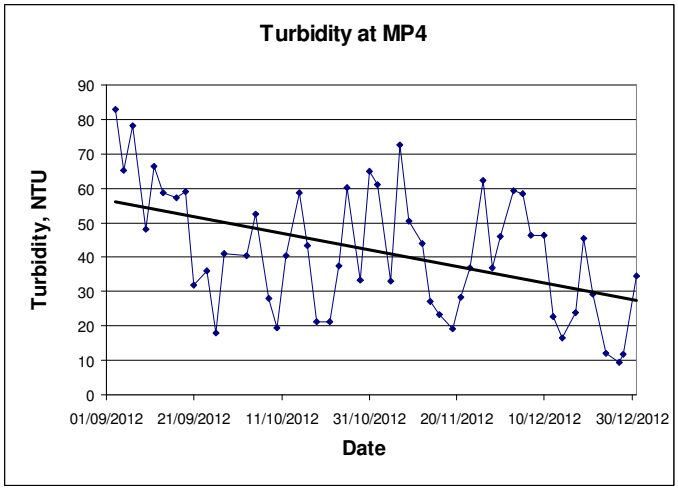


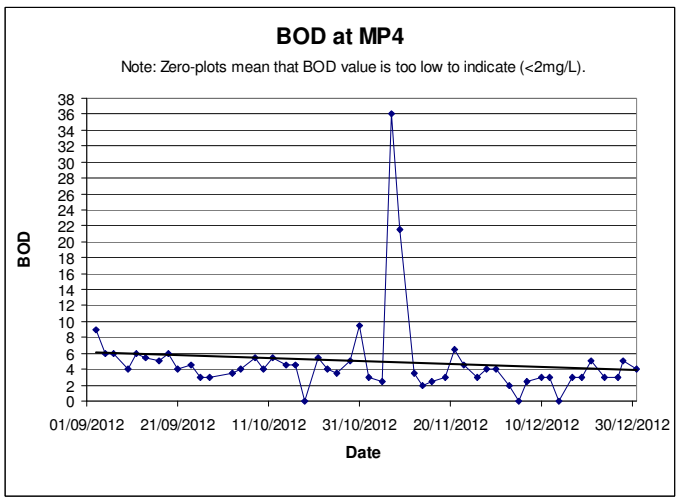
Water Quality

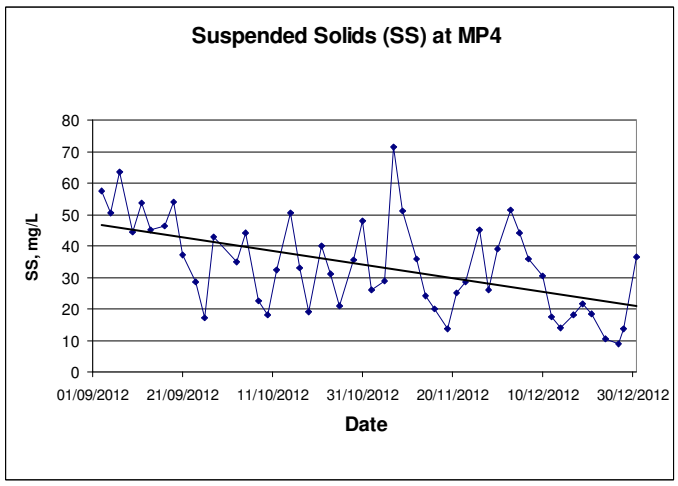




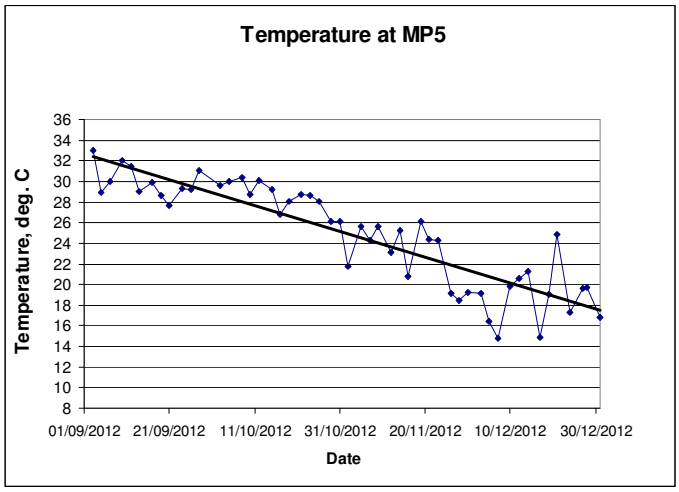


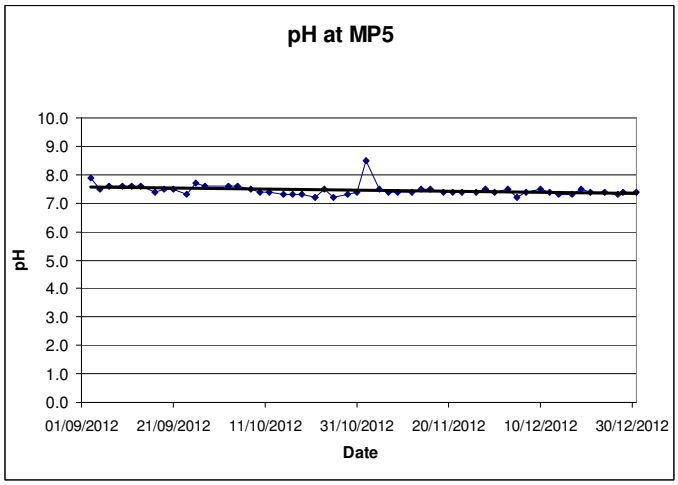


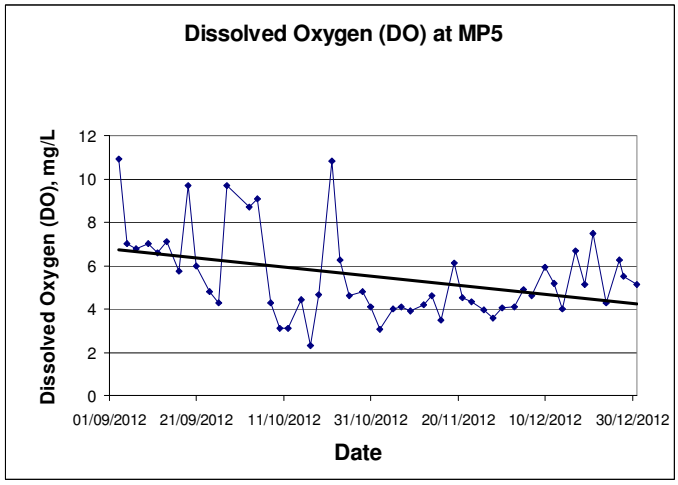


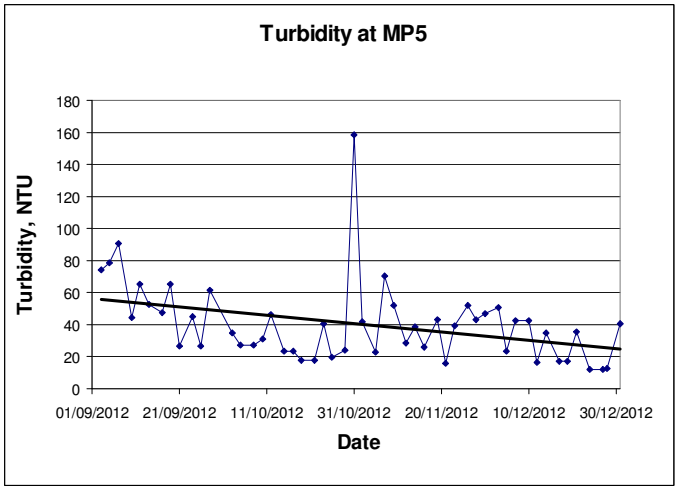


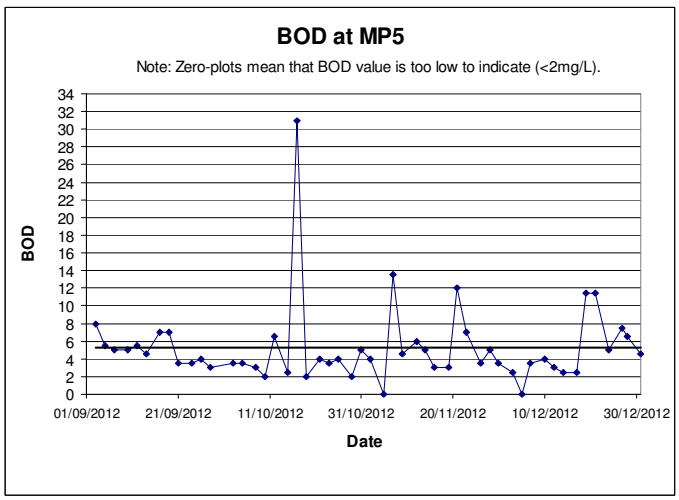
Water Quality

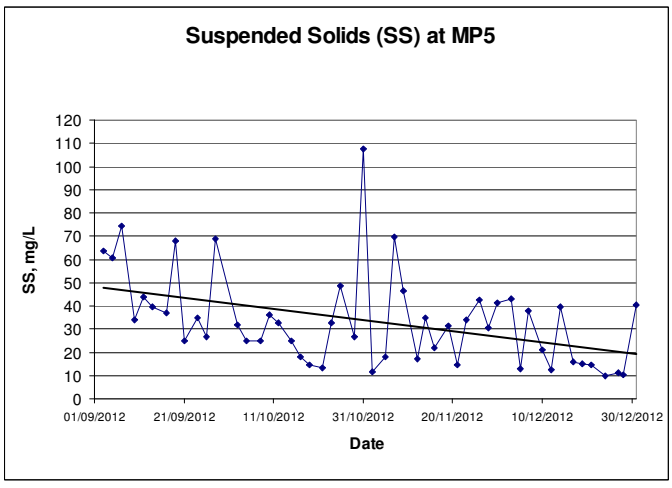




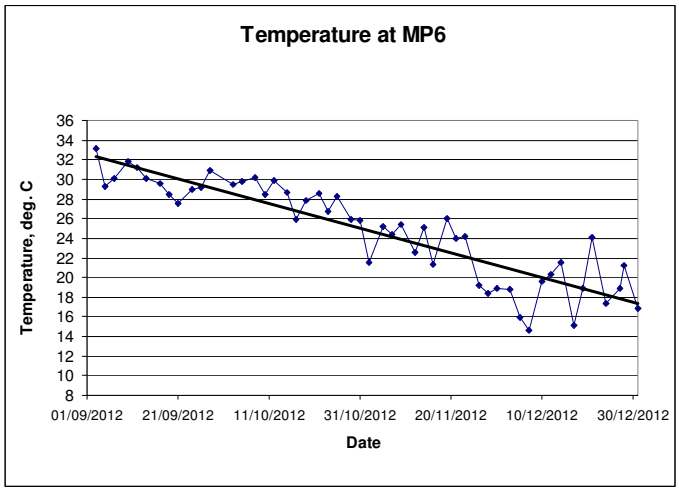


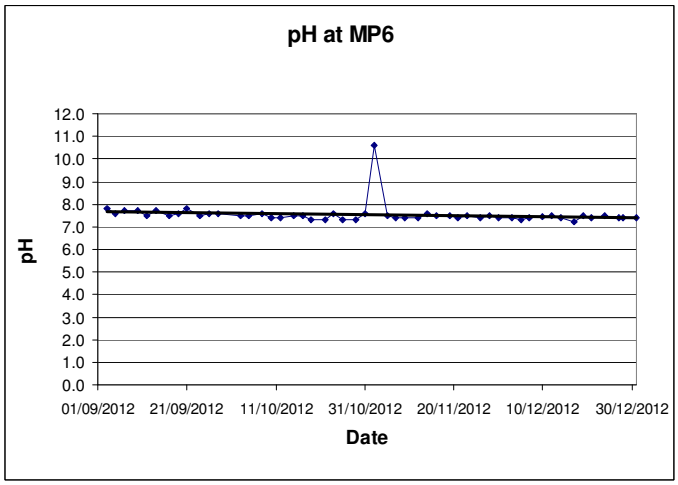


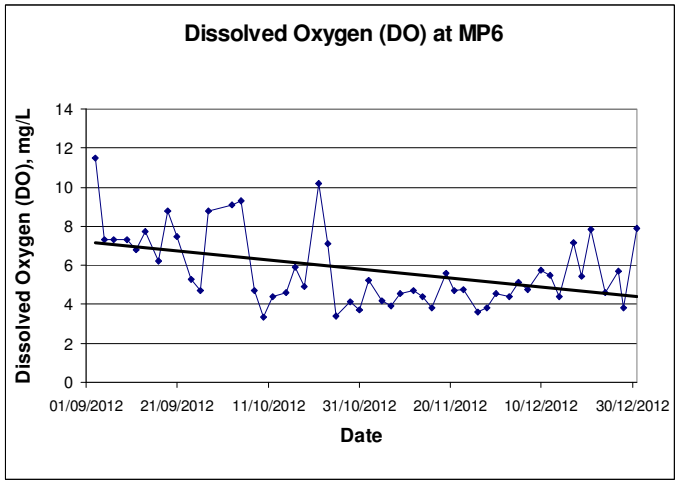


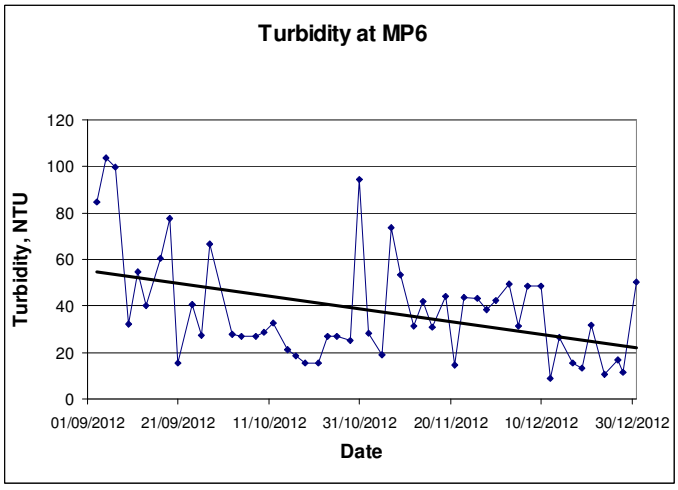


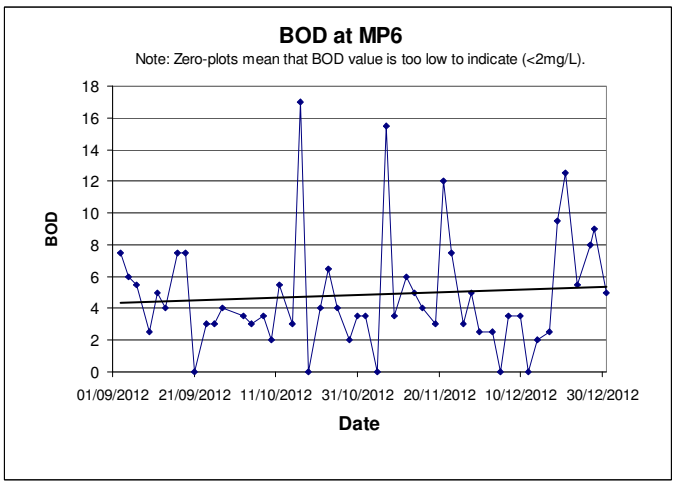
Water Quality

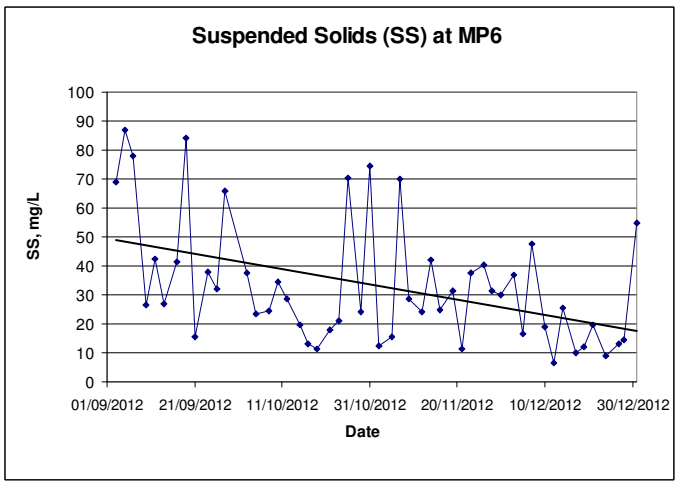












CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3		
Contact	: MR THOMAS WONG	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1232131		
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@alsglobal.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-DEC-2012		
Order number	: ----			Date of issue	: 17-DEC-2012		
C-O-C number	: ----			No. of samples	- Received :	8	
Site	: ----				- Analysed :	8	

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1232131 supersedes any previous reports with this reference. The completion date of analysis is 10-DEC-2012. 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 HK1232131 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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

Analytical Results

Sub-Matrix: **WATER**

Compound			**EA025: Suspended Solids (SS)**	**EP030: Biochemical Oxygen Demand**			
LOR Unit			2 mg/L	2 mg/L			
Client sample ID	*Client sampling date / time*	*Laboratory sample ID*	EA/ED: Physical and Aggregate Properties	EP: Aggregate Organics			
MP3-1	[03-DEC-2012]	HK1232131-001	**34**	**3**			
MP3-2	[03-DEC-2012]	HK1232131-002	**37**	**3**			
MP4-1	[03-DEC-2012]	HK1232131-003	**53**	**2**			
MP4-2	[03-DEC-2012]	HK1232131-004	**50**	**2**			
MP5-1	[03-DEC-2012]	HK1232131-005	**42**	**2**			
MP5-2	[03-DEC-2012]	HK1232131-006	**44**	**3**			
MP6-1	[03-DEC-2012]	HK1232131-007	**36**	**3**			
MP6-2	[03-DEC-2012]	HK1232131-008	**38**	**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: 2638847)								
HK1232019-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	4	4	0.0
HK1232131-001	MP3-1	EA025: Suspended Solids (SS)	----	2	mg/L	34	35	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: 2638847)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	99.0	----	85	113	----	----
EP: Aggregate Organics (QCLot: 2638097)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	101	----	82	116	----	----

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 SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3		
Contact	: MR THOMAS WONG	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1232132		
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@alsglobal.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-DEC-2012		
Order number	: ----			Date of issue	: 17-DEC-2012		
C-O-C number	: ----			No. of samples	- Received :	8	
Site	: ----				- Analysed :	8	

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1232132 supersedes any previous reports with this reference. The completion date of analysis is 11-DEC-2012. 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 HK1232132 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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

Analytical Results

Sub-Matrix: **WATER**

Compound			**EA025: Suspended Solids (SS)**	**EP030: Biochemical Oxygen Demand**			
LOR Unit			2 mg/L	2 mg/L			
Client sample ID	*Client sampling date / time*	*Laboratory sample ID*	EA/ED: Physical and Aggregate Properties	EP: Aggregate Organics			
MP3-1	[05-DEC-2012]	HK1232132-001	**12**	**3**			
MP3-2	[05-DEC-2012]	HK1232132-002	**13**	**2**			
MP4-1	[05-DEC-2012]	HK1232132-003	**43**	<2			
MP4-2	[05-DEC-2012]	HK1232132-004	**45**	<2			
MP5-1	[05-DEC-2012]	HK1232132-005	**14**	<2			
MP5-2	[05-DEC-2012]	HK1232132-006	**12**	<2			
MP6-1	[05-DEC-2012]	HK1232132-007	**16**	<2			
MP6-2	[05-DEC-2012]	HK1232132-008	**17**	<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: 2640904)								
HK1232109-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1232132-007	MP6-1	EA025: Suspended Solids (SS)	----	2	mg/L	16	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: 2640904)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	99.0	----	85	113	----	----
EP: Aggregate Organics (QCLot: 2638097)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	101	----	82	116	----	----
EP: Aggregate Organics (QCLot: 2638098)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	101	----	82	116	----	----

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 SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3		
Contact	: MR THOMAS WONG	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1232546		
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@alsglobal.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	: 10-DEC-2012		
Order number	: ----			Date of issue	: 18-DEC-2012		
C-O-C number	: ----			No. of samples	- Received :	8	
Site	: ----				- Analysed :	8	

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1232546 supersedes any previous reports with this reference. The completion date of analysis is 13-DEC-2012. 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 HK1232546 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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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			
MP3-1	[07-DEC-2012]	HK1232546-001		**16**	**4**			
MP3-2	[07-DEC-2012]	HK1232546-002		**14**	**3**			
MP4-1	[07-DEC-2012]	HK1232546-003		**35**	**2**			
MP4-2	[07-DEC-2012]	HK1232546-004		**37**	**3**			
MP5-1	[07-DEC-2012]	HK1232546-005		**38**	**4**			
MP5-2	[07-DEC-2012]	HK1232546-006		**38**	**3**			
MP6-1	[07-DEC-2012]	HK1232546-007		**48**	**3**			
MP6-2	[07-DEC-2012]	HK1232546-008		**47**	**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: 2645926)								
HK1232457-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1232546-008	MP6-2	EA025: Suspended Solids (SS)	----	2	mg/L	47	47	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: 2645926)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	100	----	85	113	----	----
EP: Aggregate Organics (QCLot: 2643995)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	101	----	82	116	----	----

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3		
Contact	: MR THOMAS WONG	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1232798		
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@alsglobal.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	: 12-DEC-2012		
Order number	: ----			Date of issue	: 20-DEC-2012		
C-O-C number	: ----			No. of samples	- Received :	8	
Site	: ----				- Analysed :	8	

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1232798 supersedes any previous reports with this reference. The completion date of analysis is 18-DEC-2012. 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 HK1232798 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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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			
MP3-1	[10-DEC-2012]	HK1232798-001		**25**	**3**			
MP3-2	[10-DEC-2012]	HK1232798-002		**26**	**4**			
MP4-1	[10-DEC-2012]	HK1232798-003		**30**	**3**			
MP4-2	[10-DEC-2012]	HK1232798-004		**31**	**3**			
MP5-1	[10-DEC-2012]	HK1232798-005		**21**	**4**			
MP5-2	[10-DEC-2012]	HK1232798-006		**21**	**4**			
MP6-1	[10-DEC-2012]	HK1232798-007		**18**	**3**			
MP6-2	[10-DEC-2012]	HK1232798-008		**20**	**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: 2648397)								
HK1232731-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	4	4	0.0
HK1232754-005	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	6	8	19.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2648398)								
HK1232798-005	MP5-1	EA025: Suspended Solids (SS)	----	2	mg/L	21	20	6.8
HK1232829-006	Anonymous	EA025: Suspended Solids (SS)	----	0.1	mg/L	2.8	3.6	23.6

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: 2648397)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	102	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 2648398)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	95.5	----	85	113	----	----
EP: Aggregate Organics (QCLot: 2648568)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	100	----	82	116	----	----

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 SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3		
Contact	: MR THOMAS WONG	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1233273		
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E-mail	: thomas.wong@eno.com.hk	E-mail	: Godfrey.Chan@alsglobal.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	: 17-DEC-2012		
Order number	: ----			Date of issue	: 27-DEC-2012		
C-O-C number	: ----			No. of samples	- Received :	8	
Site	: ----				- Analysed :	8	

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1233273 supersedes any previous reports with this reference. The completion date of analysis is 20-DEC-2012. 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 HK1233273 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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

Analytical Results

Sub-Matrix: **WATER**

Compound			**EA025: Suspended Solids (SS)**	**EP030: Biochemical Oxygen Demand**			
LOR Unit			2 mg/L	2 mg/L			
Client sample ID	*Client sampling date / time*	*Laboratory sample ID*	EA/ED: Physical and Aggregate Properties	EP: Aggregate Organics			
MP3-1	[12-DEC-2012]	HK1233273-001	**15**	**4**			
MP3-2	[12-DEC-2012]	HK1233273-002	**17**	**4**			
MP4-1	[12-DEC-2012]	HK1233273-003	**18**	**3**			
MP4-2	[12-DEC-2012]	HK1233273-004	**17**	**3**			
MP5-1	[12-DEC-2012]	HK1233273-005	**12**	**3**			
MP5-2	[12-DEC-2012]	HK1233273-006	**13**	**3**			
MP6-1	[12-DEC-2012]	HK1233273-007	**6**	<2			
MP6-2	[12-DEC-2012]	HK1233273-008	**7**	<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: 2656111)								
HK1233267-003	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	39	37	4.2
HK1233273-008	MP6-2	EA025: Suspended Solids (SS)	----	2	mg/L	7	7	0.0

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

Matrix: **WATER**

Method: 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: 2656111)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	106	----	85	113	----	----
EP: Aggregate Organics (QCLot: 2656765)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	92.0	----	82	116	----	----

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 SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3		
Contact	: MR THOMAS WONG	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1233274		
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@alsglobal.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	: 17-DEC-2012		
Order number	: ----			Date of issue	: 27-DEC-2012		
C-O-C number	: ----			No. of samples	- Received :	8	
Site	: ----				- Analysed :	8	

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1233274 supersedes any previous reports with this reference. The completion date of analysis is 20-DEC-2012. 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 HK1233274 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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

Analytical Results

Sub-Matrix: **WATER**

Compound			**EA025: Suspended Solids (SS)**	**EP030: Biochemical Oxygen Demand**			
LOR Unit			2 mg/L	2 mg/L			
Client sample ID	*Client sampling date / time*	*Laboratory sample ID*	EA/ED: Physical and Aggregate Properties	EP: Aggregate Organics			
MP3-1	[14-DEC-2012]	HK1233274-001	**18**	**4**			
MP3-2	[14-DEC-2012]	HK1233274-002	**18**	**3**			
MP4-1	[14-DEC-2012]	HK1233274-003	**13**	<2			
MP4-2	[14-DEC-2012]	HK1233274-004	**15**	<2			
MP5-1	[14-DEC-2012]	HK1233274-005	**39**	**3**			
MP5-2	[14-DEC-2012]	HK1233274-006	**40**	**2**			
MP6-1	[14-DEC-2012]	HK1233274-007	**25**	**2**			
MP6-2	[14-DEC-2012]	HK1233274-008	**26**	**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: 2656111)								
HK1233267-003	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	39	37	4.2
HK1233273-008	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	7	7	0.0

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

Matrix: **WATER**

Method: 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: 2656111)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	106	----	85	113	----	----
EP: Aggregate Organics (QCLot: 2656765)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	92.0	----	82	116	----	----

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: **ENOVATIVE ENVIRONMENTAL SERVICE LTD**	*Laboratory*	: **ALS Technichem HK Pty Ltd**	*Page*	: **1 of 3**		
Contact	: **MR THOMAS WONG**	*Contact*	: **Chan Kwok Fai, Godfrey**	*Work Order*	: **HK1233651**		
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@alsglobal.com**				
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Facsimile	: **+852 27143612**	*Facsimile*	: **+852 2610 2021**				
Project	: **PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI YUEN LONG**	*Quote number*	: **HK/1577/2009****	*Date received*	: **19-DEC-2012**		
Order number	: **----**			*Date of issue*	: **31-DEC-2012**		
C-O-C number	: **----**			*No. of samples*	- *Received* : **8**		
Site	: **----**				- *Analysed* : **8**		

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1233651 supersedes any previous reports with this reference. The completion date of analysis is 24-DEC-2012. 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 HK1233651 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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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			
MP3-1	[17-DEC-2012]	HK1233651-001		**29**	**7**			
MP3-2	[17-DEC-2012]	HK1233651-002		**31**	**7**			
MP4-1	[17-DEC-2012]	HK1233651-003		**28**	**4**			
MP4-2	[17-DEC-2012]	HK1233651-004		**8**	**2**			
MP5-1	[17-DEC-2012]	HK1233651-005		**16**	**3**			
MP5-2	[17-DEC-2012]	HK1233651-006		**16**	**2**			
MP6-1	[17-DEC-2012]	HK1233651-007		**12**	**2**			
MP6-2	[17-DEC-2012]	HK1233651-008		**8**	**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: 2660908)								
HK1233651-001	MP3-1	EA025: Suspended Solids (SS)	----	2	mg/L	29	31	4.4
HK1233672-002	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	10	10	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: 2660908)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	101	----	85	113	----	----
EP: Aggregate Organics (QCLot: 2661143)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	90.8	----	82	116	----	----
EP: Aggregate Organics (QCLot: 2664450)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	93.9	----	82	116	----	----

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: **ENOVATIVE ENVIRONMENTAL SERVICE LTD**	*Laboratory*	: **ALS Technichem HK Pty Ltd**	*Page*	: **1 of 3**		
Contact	: **MR THOMAS WONG**	*Contact*	: **Chan Kwok Fai, Godfrey**	*Work Order*	: **HK1233938**		
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@alsglobal.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*	: **21-DEC-2012**		
Order number	: **----**			*Date of issue*	: **04-JAN-2013**		
C-O-C number	: **----**			*No. of samples*	- *Received* : **8**		
Site	: **----**				- *Analysed* : **8**		

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1233938 supersedes any previous reports with this reference. The completion date of analysis is 24-DEC-2012. 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 HK1233938 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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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			
MP3-1	[19-DEC-2012]	HK1233938-001		**19**	**5**			
MP3-2	[19-DEC-2012]	HK1233938-002		**20**	**4**			
MP4-1	[19-DEC-2012]	HK1233938-003		**22**	**3**			
MP4-2	[19-DEC-2012]	HK1233938-004		**21**	**3**			
MP5-1	[19-DEC-2012]	HK1233938-005		**16**	**12**			
MP5-2	[19-DEC-2012]	HK1233938-006		**14**	**11**			
MP6-1	[19-DEC-2012]	HK1233938-007		**12**	**9**			
MP6-2	[19-DEC-2012]	HK1233938-008		**12**	**10**			

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: 2664075)								
HK1233847-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	3	4	0.0
HK1233920-001	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: 2664075)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	109	----	85	113	----	----
EP: Aggregate Organics (QCLot: 2664453)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	97.1	----	82	116	----	----

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: **ENOVATIVE ENVIRONMENTAL SERVICE LTD**	*Laboratory*	: **ALS Technichem HK Pty Ltd**	*Page*	: **1 of 3**		
Contact	: **MR THOMAS WONG**	*Contact*	: **Chan Kwok Fai, Godfrey**	*Work Order*	: **HK1233939**		
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@alsglobal.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*	: **21-DEC-2012**		
Order number	: **----**			*Date of issue*	: **04-JAN-2013**		
C-O-C number	: **----**			*No. of samples*	- *Received* : **8**		
Site	: **----**				- *Analysed* : **8**		

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1233939 supersedes any previous reports with this reference. The completion date of analysis is 28-DEC-2012. 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 HK1233939 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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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			
MP3-1	[21-DEC-2012]	HK1233939-001		**12**	**5**			
MP3-2	[21-DEC-2012]	HK1233939-002		**12**	**4**			
MP4-1	[21-DEC-2012]	HK1233939-003		**19**	**5**			
MP4-2	[21-DEC-2012]	HK1233939-004		**18**	**5**			
MP5-1	[21-DEC-2012]	HK1233939-005		**15**	**11**			
MP5-2	[21-DEC-2012]	HK1233939-006		**14**	**12**			
MP6-1	[21-DEC-2012]	HK1233939-007		**20**	**14**			
MP6-2	[21-DEC-2012]	HK1233939-008		**19**	**11**			

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: 2667118)								
HK1233926-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	3	4	0.0
HK1233952-002	Anonymous	EA025: Suspended Solids (SS)	----	2.0	mg/L	5.9	6.8	13.8

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: 2667118)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	102	----	85	113	----	----
EP: Aggregate Organics (QCLot: 2664453)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	97.1	----	82	116	----	----

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: **ENOVATIVE ENVIRONMENTAL SERVICE LTD**	*Laboratory*	: **ALS Technichem HK Pty Ltd**	*Page*	: **1 of 3**		
Contact	: **MR THOMAS WONG**	*Contact*	: **Chan Kwok Fai, Godfrey**	*Work Order*	: **HK1234196**		
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@alsglobal.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*	: **27-DEC-2012**		
Order number	: **----**			*Date of issue*	: **07-JAN-2013**		
C-O-C number	: **----**			*No. of samples*	- *Received* : **8**		
Site	: **----**				- *Analysed* : **8**		

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1234196 supersedes any previous reports with this reference. The completion date of analysis is 31-DEC-2012. 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 HK1234196 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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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			
MP3-1	[24-DEC-2012]	HK1234196-001		**20**	**3**			
MP3-2	[24-DEC-2012]	HK1234196-002		**21**	**3**			
MP4-1	[24-DEC-2012]	HK1234196-003		**10**	**3**			
MP4-2	[24-DEC-2012]	HK1234196-004		**11**	<2			
MP5-1	[24-DEC-2012]	HK1234196-005		**10**	**5**			
MP5-2	[24-DEC-2012]	HK1234196-006		**10**	**5**			
MP6-1	[24-DEC-2012]	HK1234196-007		**9**	**6**			
MP6-2	[24-DEC-2012]	HK1234196-008		**9**	**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: 2668942)								
HK1234185-011	Anonymous	EA025: Suspended Solids (SS)	----	2.0	mg/L	<2.0	<2.0	0.0
HK1234205-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	15	13	8.1

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: 2668942)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	94.0	----	85	113	----	----
EP: Aggregate Organics (QCLot: 2669107)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	100	----	82	116	----	----

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: **ENOVATIVE ENVIRONMENTAL SERVICE LTD**	*Laboratory*	: **ALS Technichem HK Pty Ltd**	*Page*	: **1 of 3**		
Contact	: **MR THOMAS WONG**	*Contact*	: **Chan Kwok Fai, Godfrey**	*Work Order*	: **HK1234372**		
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@alsglobal.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-DEC-2012**		
Order number	: **----**			*Date of issue*	: **09-JAN-2013**		
C-O-C number	: **----**			*No. of samples*	- *Received* : **8**		
Site	: **----**				- *Analysed* : **8**		

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1234372 supersedes any previous reports with this reference. The completion date of analysis is 02-JAN-2013. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1234372 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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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			
MP3-1	[27-DEC-2012]	HK1234372-001		**32**	**3**			
MP3-2	[27-DEC-2012]	HK1234372-002		**31**	**4**			
MP4-1	[27-DEC-2012]	HK1234372-003		**8**	**3**			
MP4-2	[27-DEC-2012]	HK1234372-004		**10**	**3**			
MP5-1	[27-DEC-2012]	HK1234372-005		**11**	**7**			
MP5-2	[27-DEC-2012]	HK1234372-006		**11**	**8**			
MP6-1	[27-DEC-2012]	HK1234372-007		**13**	**8**			
MP6-2	[27-DEC-2012]	HK1234372-008		**13**	**8**			

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: 2669954)								
HK1234207-003	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	4760	4630	2.7
HK1234372-007	MP6-1	EA025: Suspended Solids (SS)	----	2	mg/L	13	14	8.1

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: 2669954)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	93.5	----	85	113	----	----
EP: Aggregate Organics (QCLot: 2669108)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	105	----	82	116	----	----
EP: Aggregate Organics (QCLot: 2669109)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	105	----	82	116	----	----

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: **ENOVATIVE ENVIRONMENTAL SERVICE LTD**	*Laboratory*	: **ALS Technichem HK Pty Ltd**	*Page*	: **1 of 3**		
Contact	: **MR THOMAS WONG**	*Contact*	: **Chan Kwok Fai, Godfrey**	*Work Order*	: **HK1234473**		
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@alsglobal.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-DEC-2012**		
Order number	: **----**			*Date of issue*	: **09-JAN-2013**		
C-O-C number	: **----**			*No. of samples*	- *Received* :		**8**
Site	: **----**				- *Analysed* :		**8**

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1234473 supersedes any previous reports with this reference. The completion date of analysis is 07-JAN-2013. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1234473 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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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			
MP3-1	[28-DEC-2012]	HK1234473-001		**26**	**4**			
MP3-2	[28-DEC-2012]	HK1234473-002		**26**	**4**			
MP4-1	[28-DEC-2012]	HK1234473-003		**13**	**5**			
MP4-2	[28-DEC-2012]	HK1234473-004		**14**	**5**			
MP5-1	[28-DEC-2012]	HK1234473-005		**10**	**6**			
MP5-2	[28-DEC-2012]	HK1234473-006		**11**	**7**			
MP6-1	[28-DEC-2012]	HK1234473-007		**15**	**9**			
MP6-2	[28-DEC-2012]	HK1234473-008		**14**	**9**			

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: 2674376)								
HK1234425-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1234425-011	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2674377)								
HK1234473-008	MP6-2	EA025: Suspended Solids (SS)	----	2	mg/L	14	15	7.6
HK1234563-005	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	4	5	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: 2674376)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	100	----	88	110	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 2674377)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	97.0	----	88	110	----	----
EP: Aggregate Organics (QCLot: 2670238)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	104	----	82	116	----	----
EP: Aggregate Organics (QCLot: 2670239)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	97.6	----	82	116	----	----

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3		
Contact	: MR THOMAS WONG	Contact	: Chan Kwok Fai, Godfrey	Work Order	: HK1234589		
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@alsglobal.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	: 31-DEC-2012		
Order number	: ----			Date of issue	: 08-JAN-2013		
C-O-C number	: ----			No. of samples	- Received :	8	
Site	: ----				- Analysed :	8	

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1234589 supersedes any previous reports with this reference. The completion date of analysis is 07-JAN-2013. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1234589 : Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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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			
MP3-1	[31-DEC-2012]	HK1234589-001		**36**	**4**			
MP3-2	[31-DEC-2012]	HK1234589-002		**34**	**4**			
MP4-1	[31-DEC-2012]	HK1234589-003		**35**	**4**			
MP4-2	[31-DEC-2012]	HK1234589-004		**38**	**4**			
MP5-1	[31-DEC-2012]	HK1234589-005		**40**	**5**			
MP5-2	[31-DEC-2012]	HK1234589-006		**41**	**4**			
MP6-1	[31-DEC-2012]	HK1234589-007		**55**	**5**			
MP6-2	[31-DEC-2012]	HK1234589-008		**55**	**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: 2674377)								
HK1234473-008	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	14	15	7.6
HK1234563-005	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	4	5	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2674378)								
HK1234589-003	MP4-1	EA025: Suspended Solids (SS)	----	2	mg/L	35	37	5.2
HK1234620-005	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	11	12	0.0

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

Matrix: **WATER**

Method: 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: 2674377)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	97.0	----	88	110	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 2674378)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	93.0	----	88	110	----	----
EP: Aggregate Organics (QCLot: 2670239)											
EP030: Biochemical Oxygen Demand	----	2	mg/L	----	198 mg/L	97.6	----	82	116	----	----

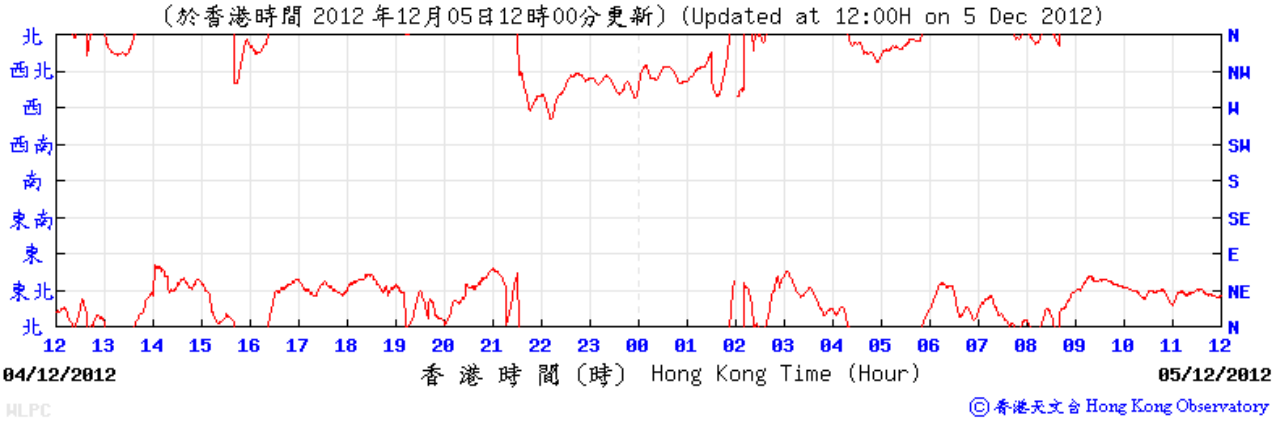
Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

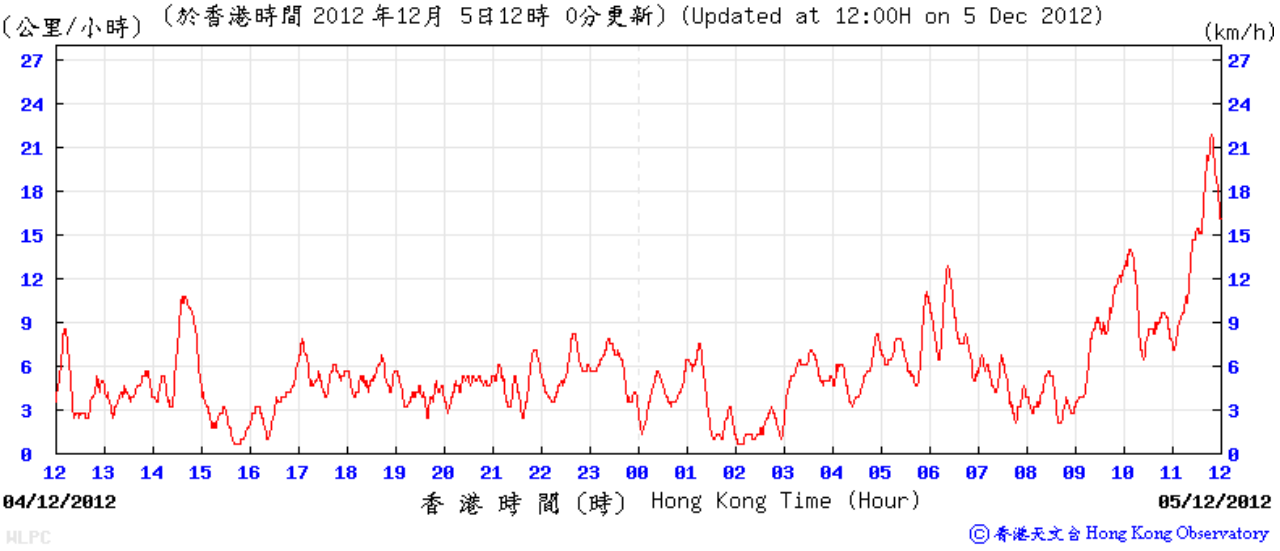
- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

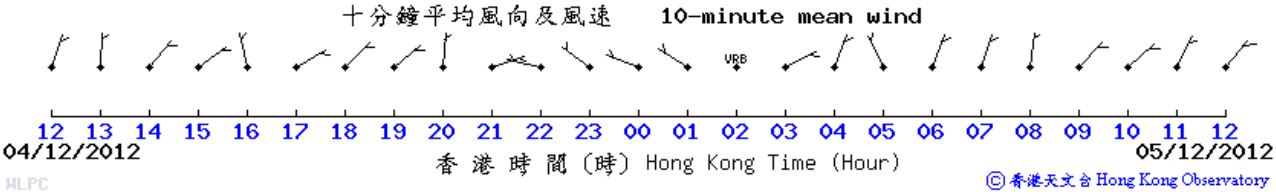
Appendix G. Weather conditions during the monitoring period

Wind Data for Wetland Park

5 December 2012

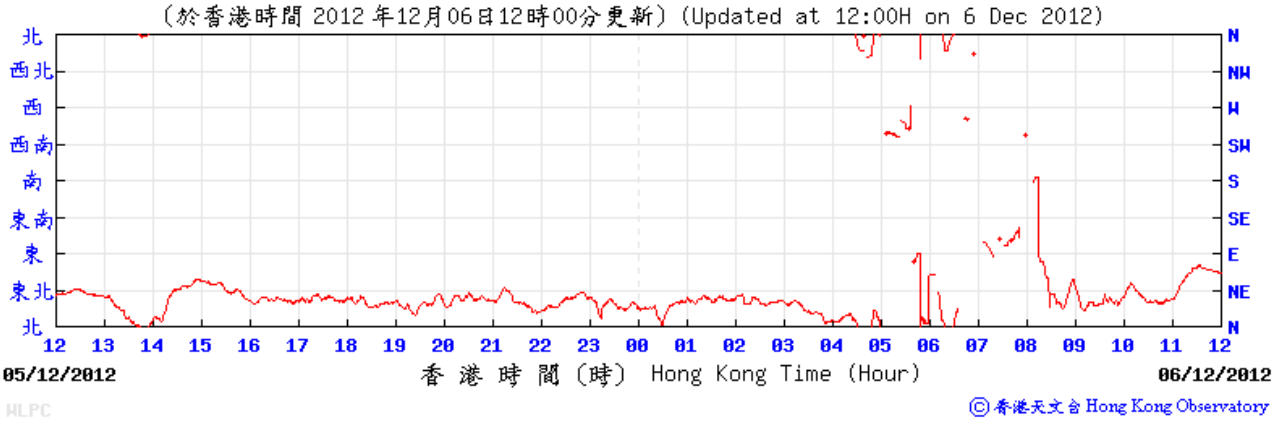


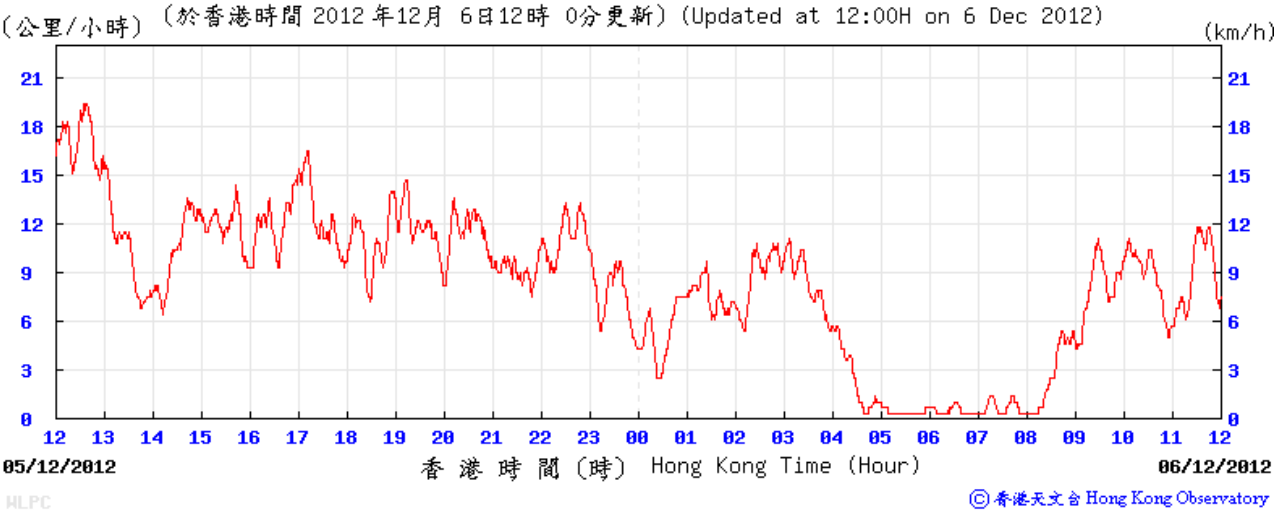


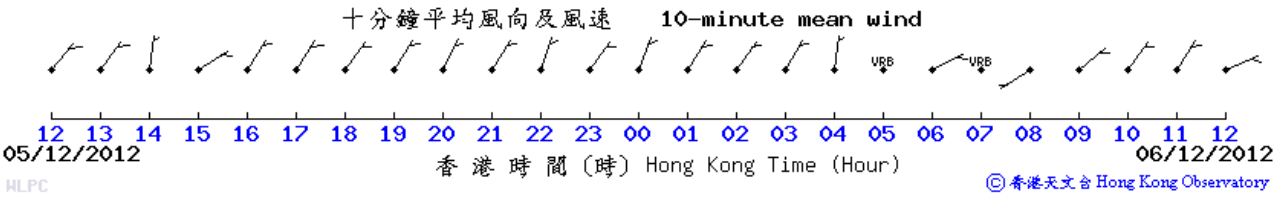


Wind Data for Wetland Park

6 December 2012

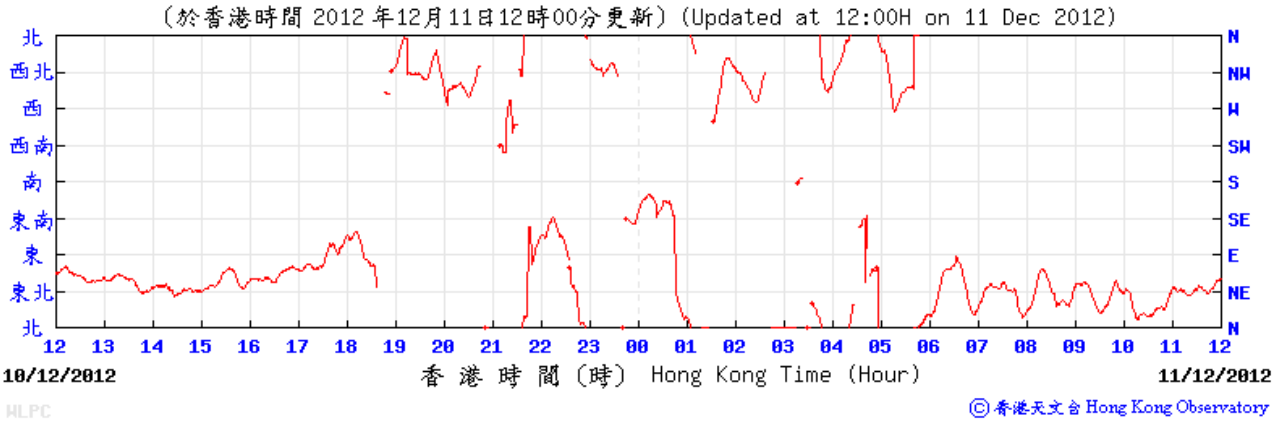


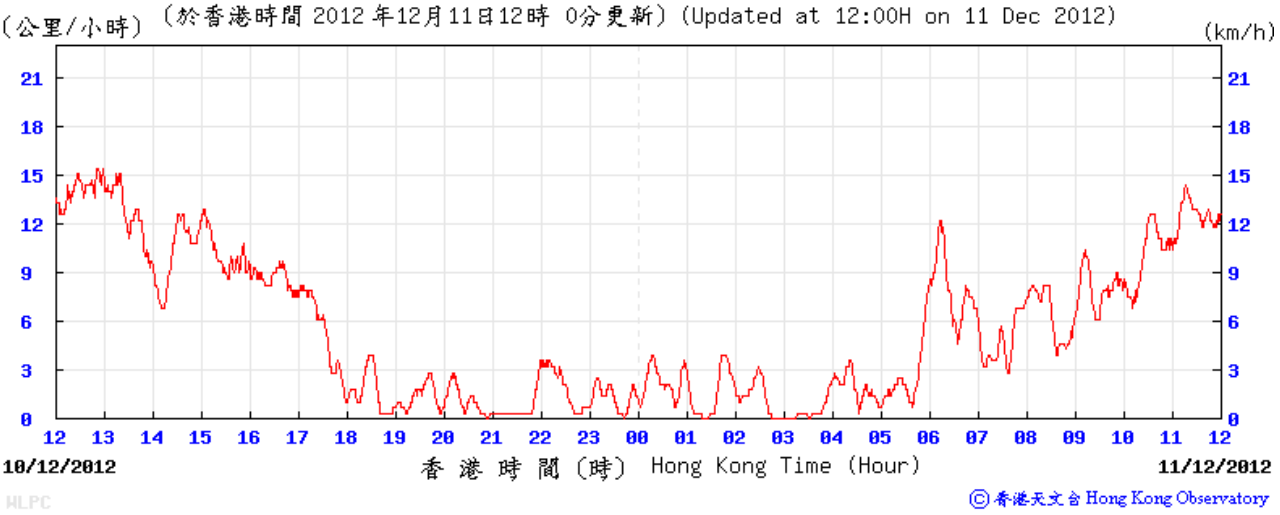


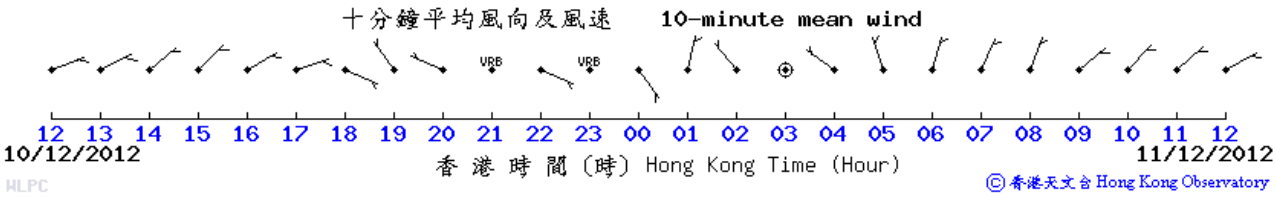


Wind Data for Wetland Park

11 December 2012

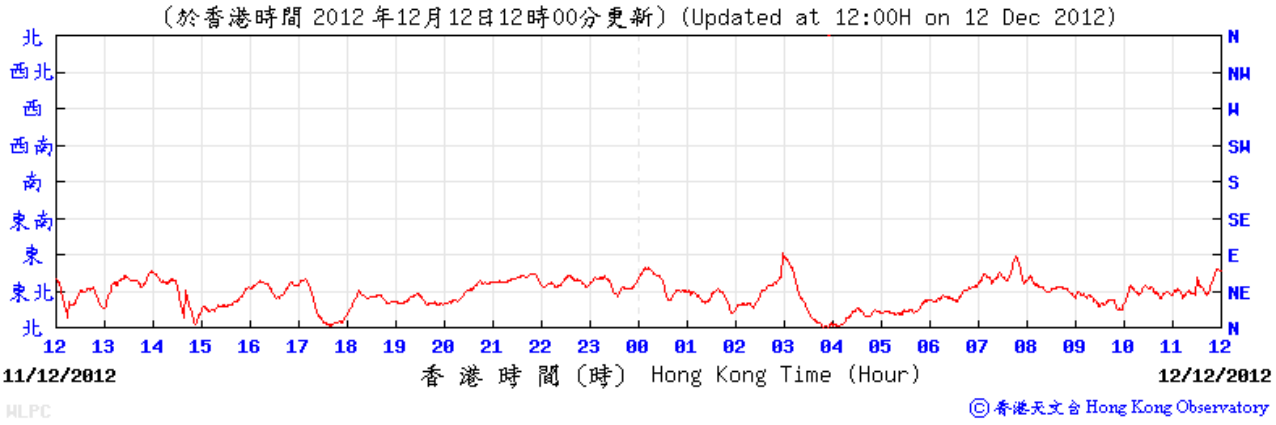


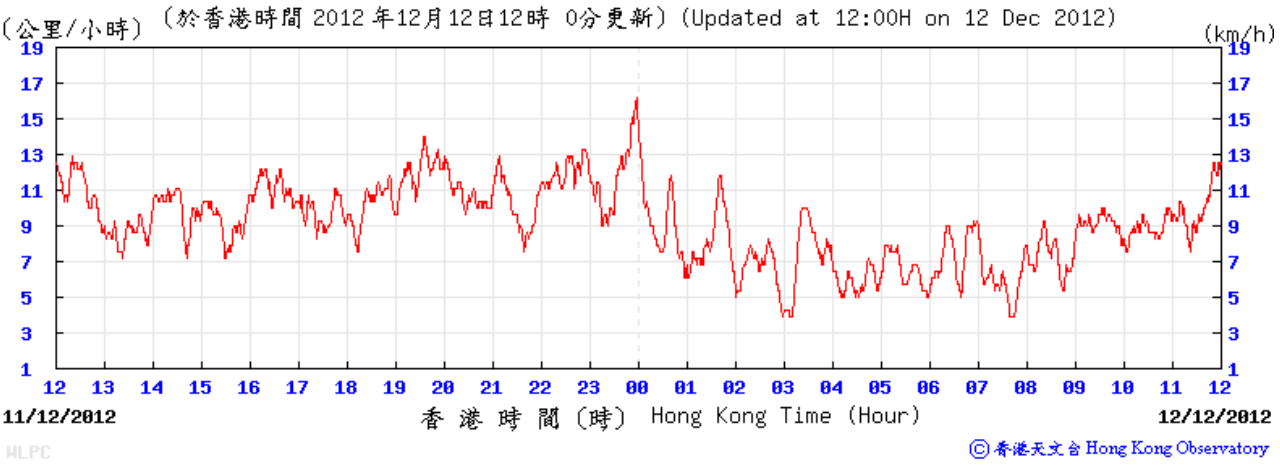


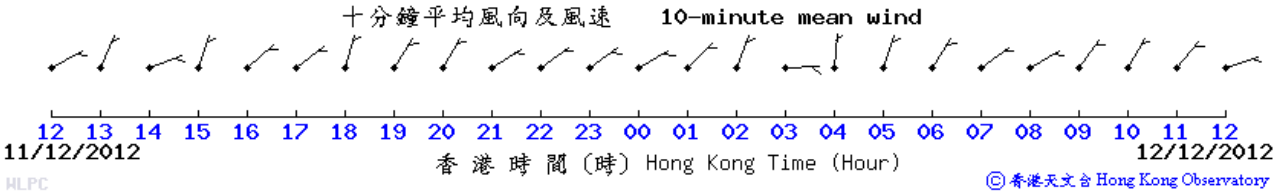


Wind Data for Wetland Park

12 December 2012

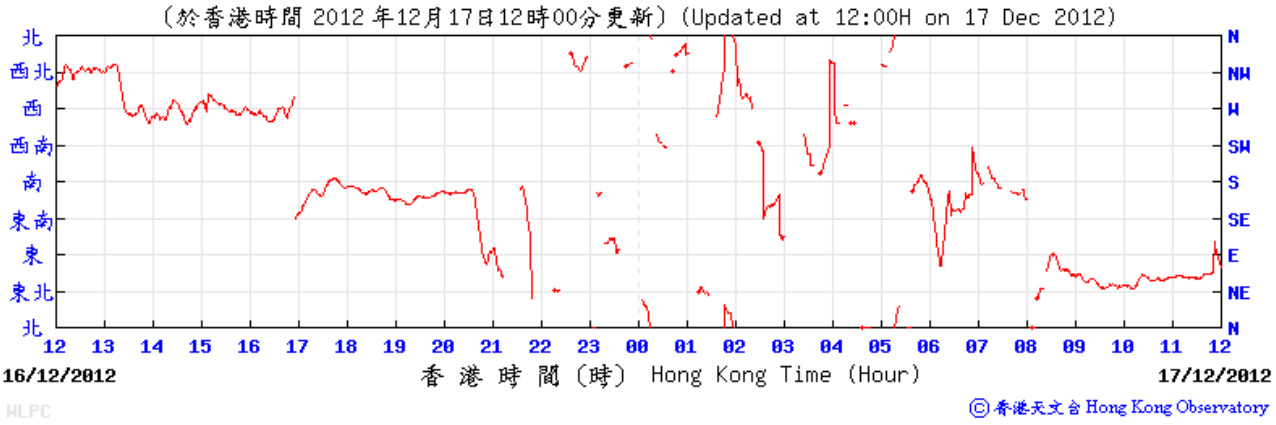


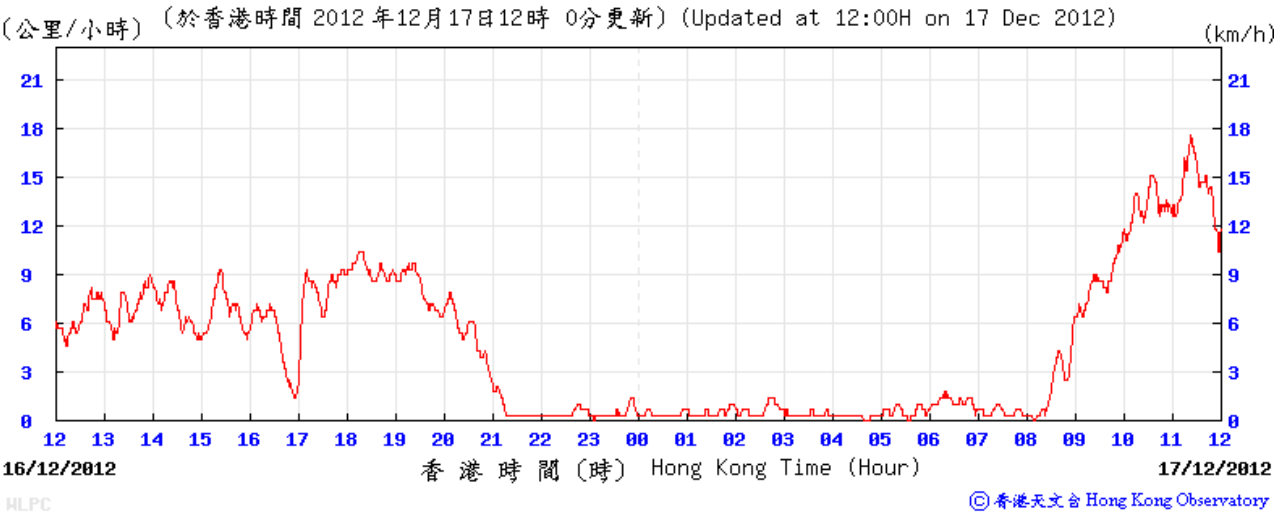


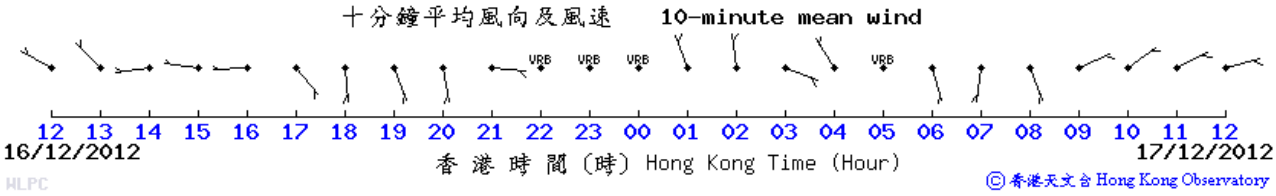


Wind Data for Wetland Park

17 December 2012

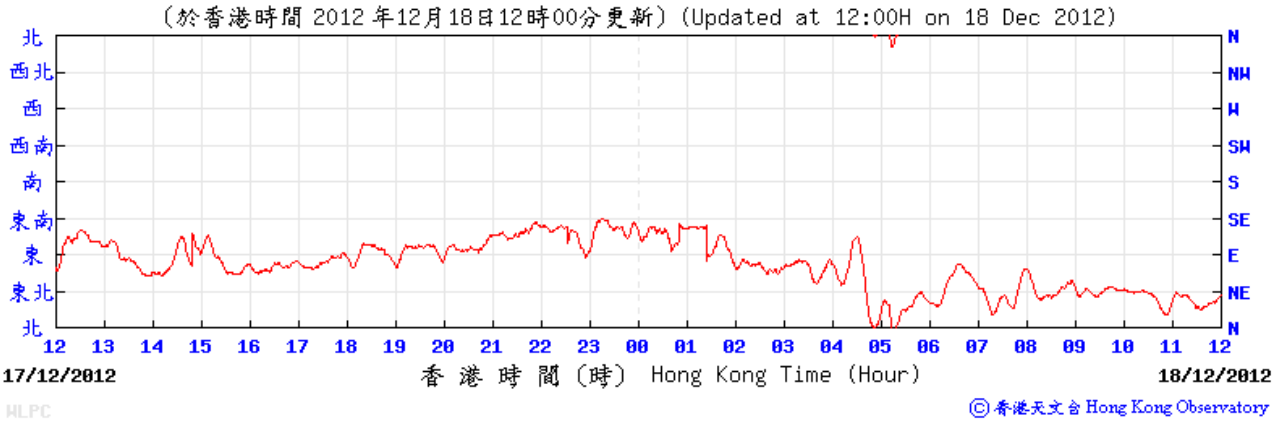


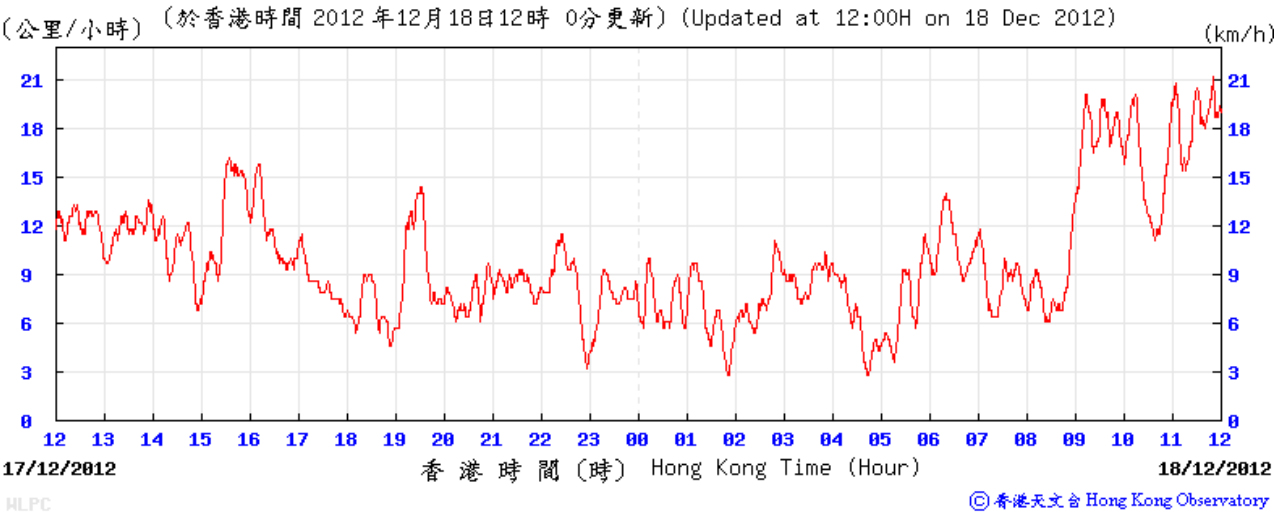


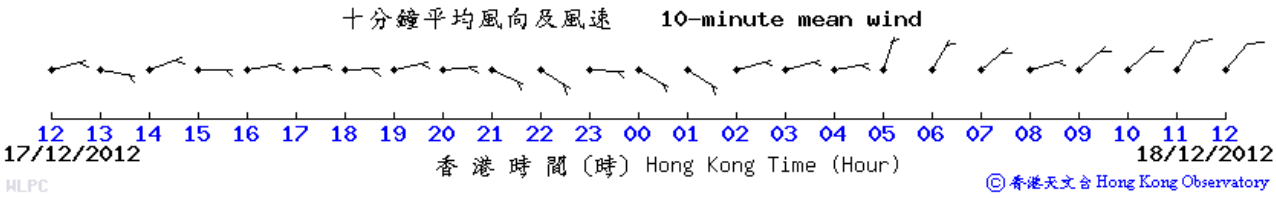


Wind Data for Wetland Park

18 December 2012

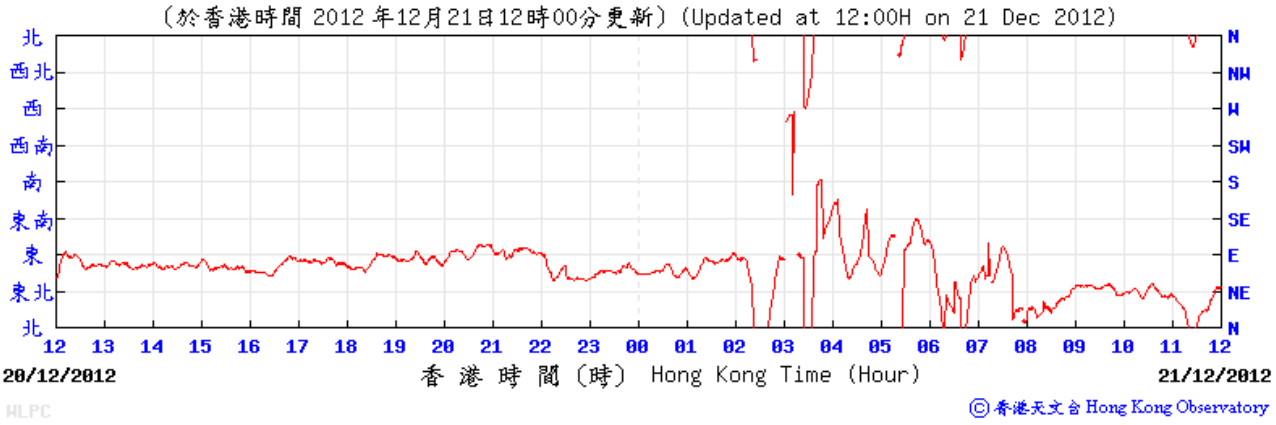


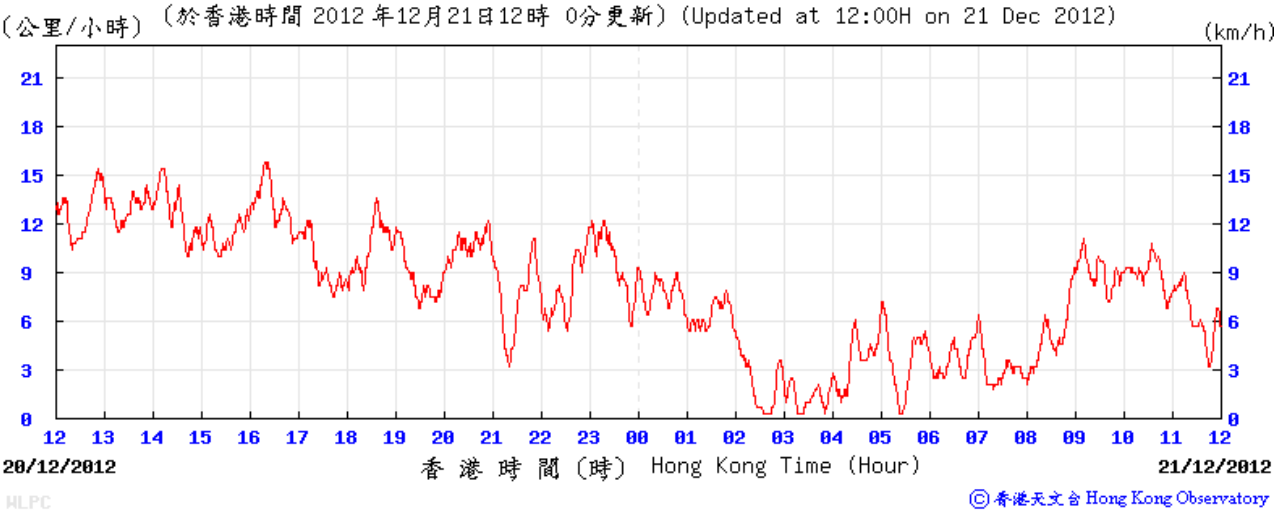


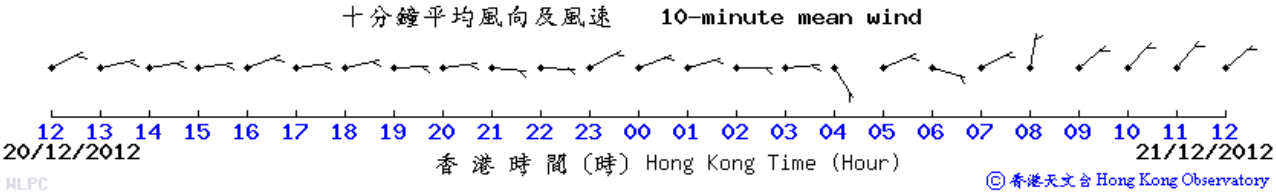


Wind Data for Wetland Park

21 December 2012

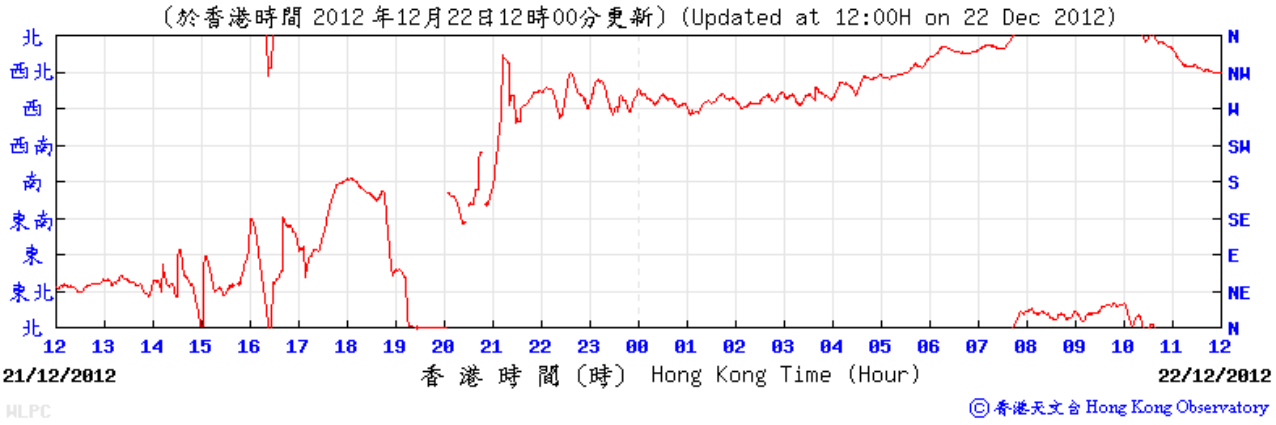


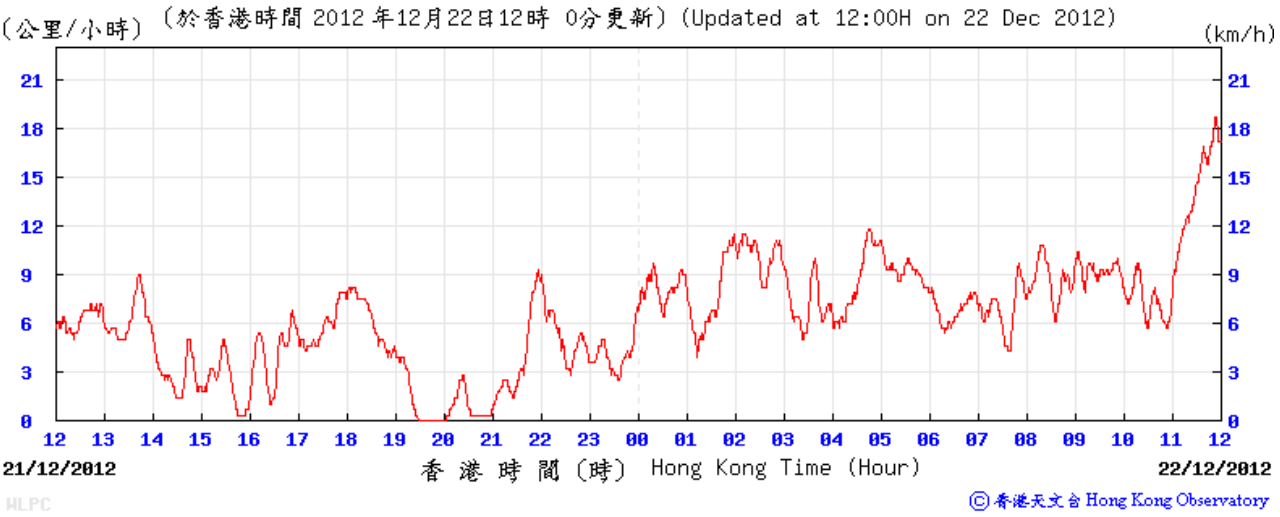


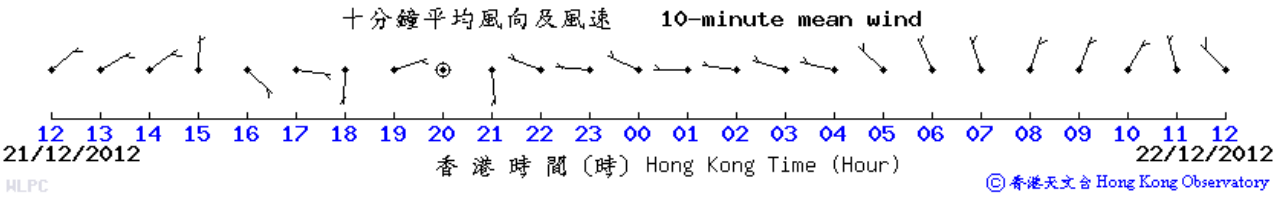


Wind Data for Wetland Park

22 December 2012

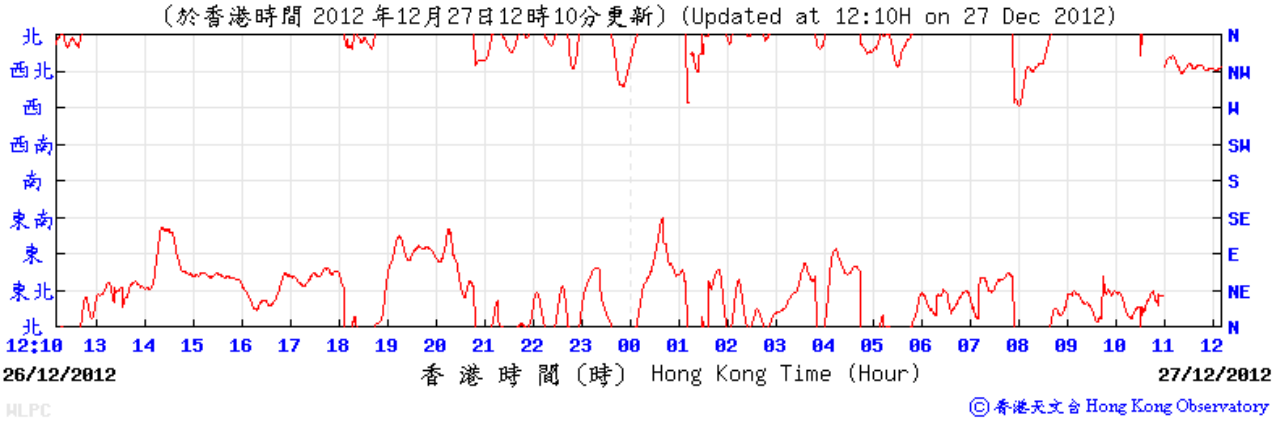


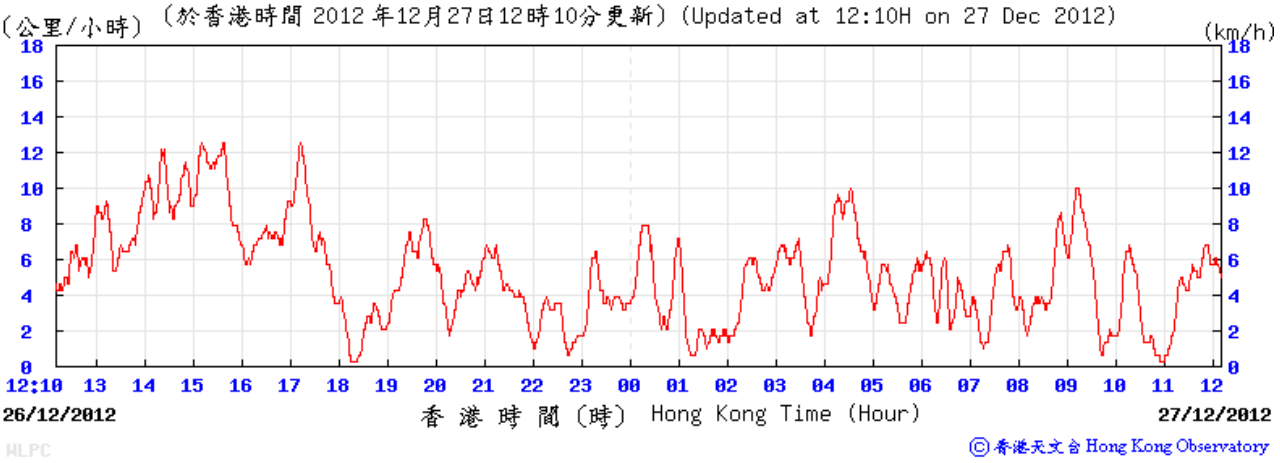


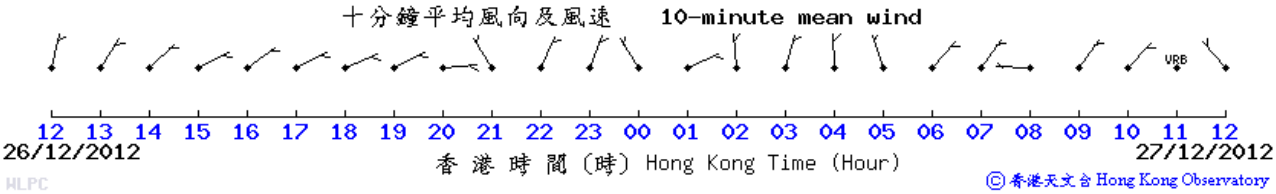


Wind Data for Wetland Park

27 December 2012

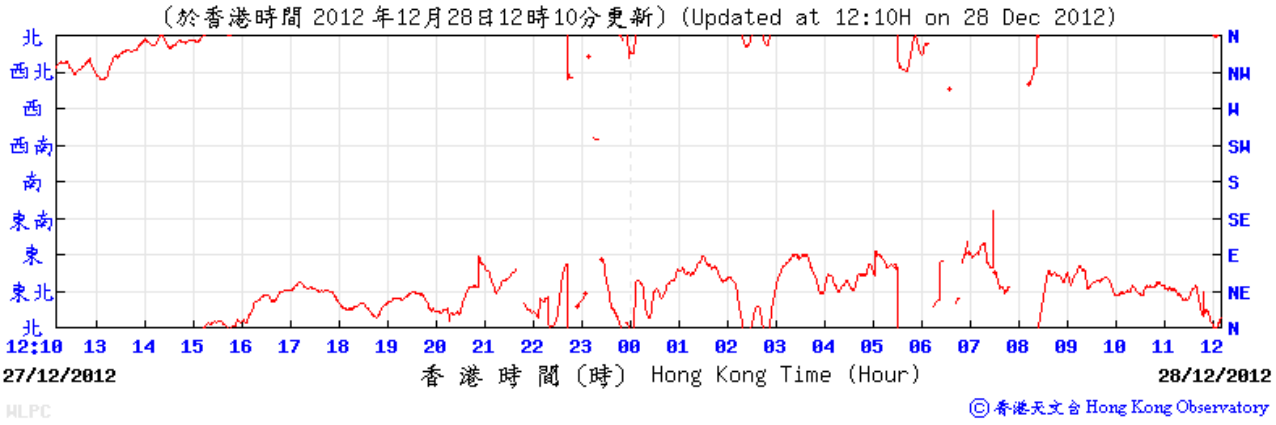


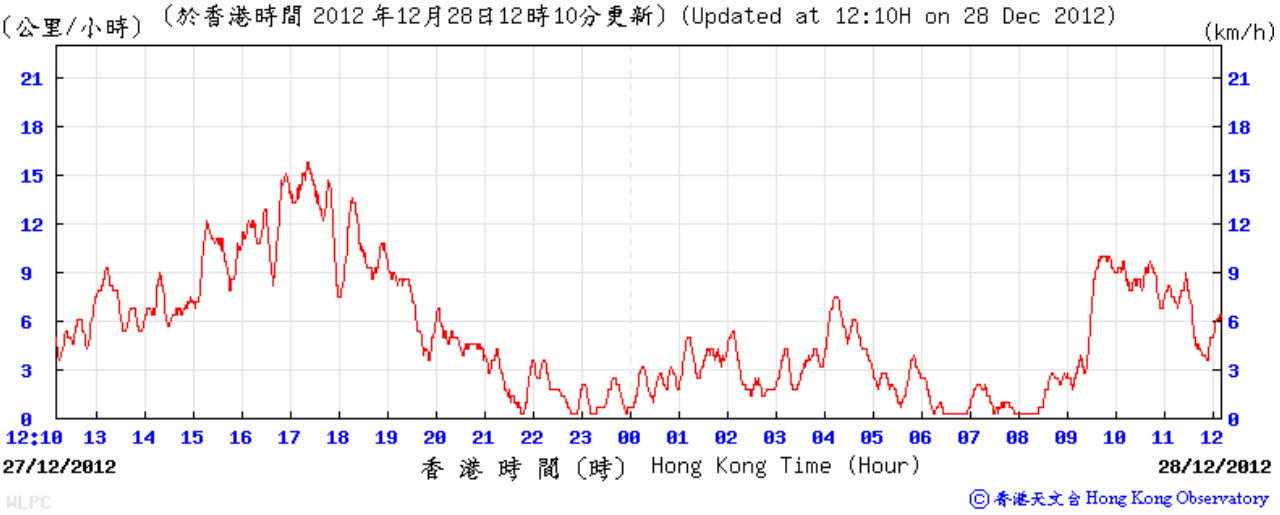


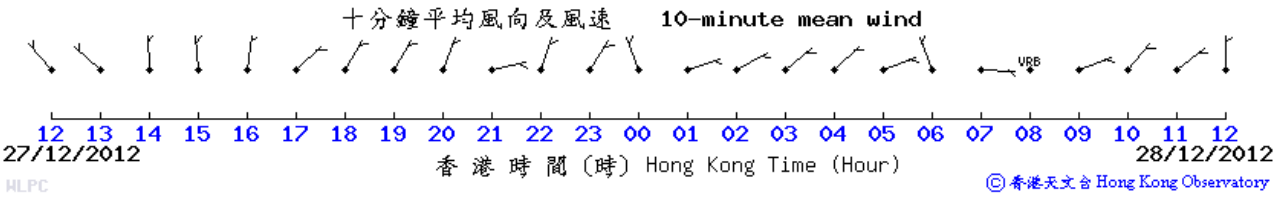


Wind Data for Wetland Park

28 December 2012

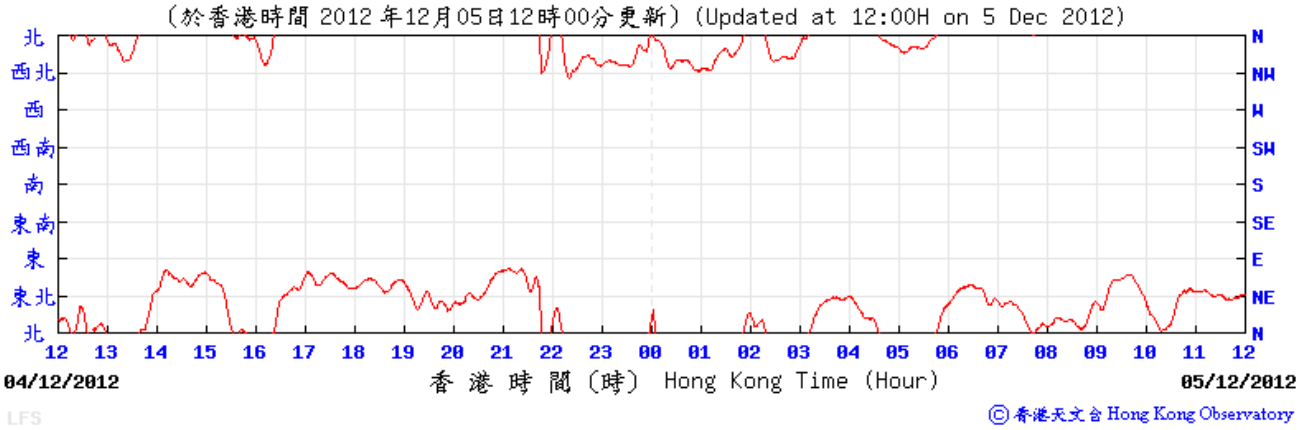


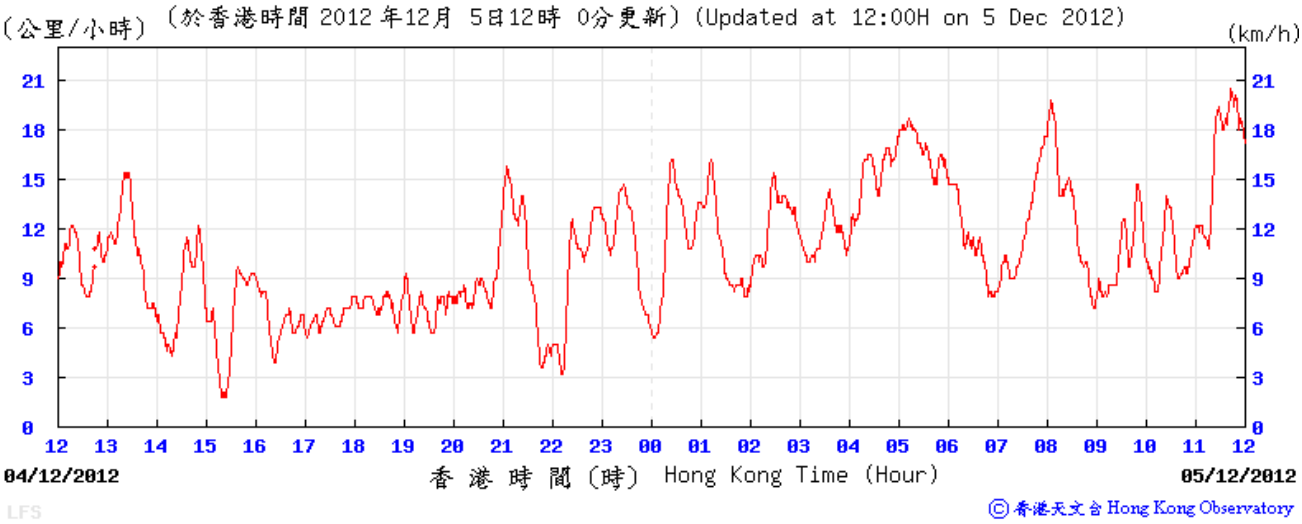


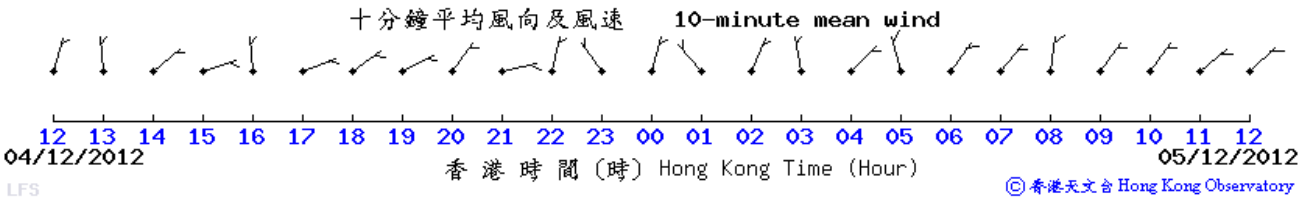


Wind Data for Lau Fau Shan

5 December 2012

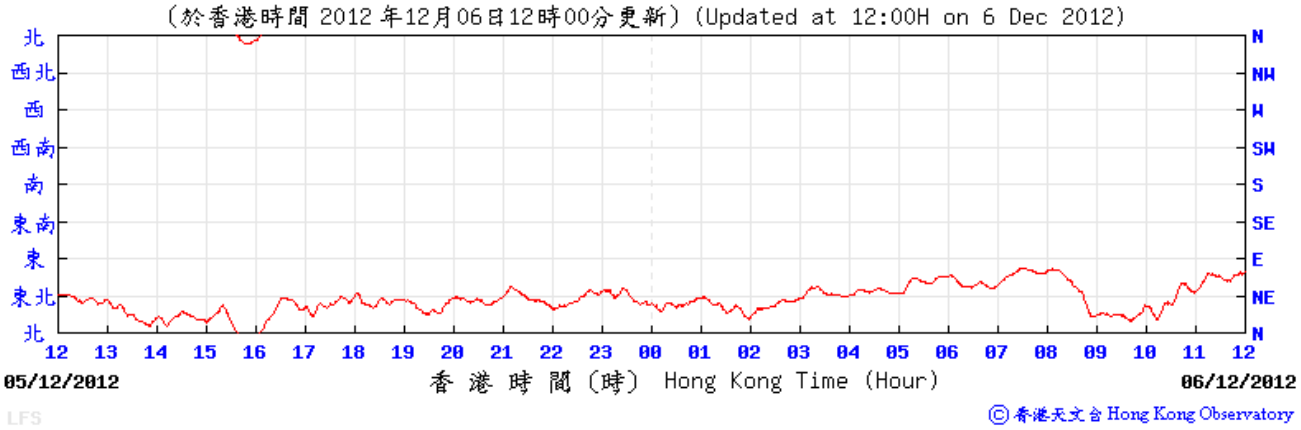


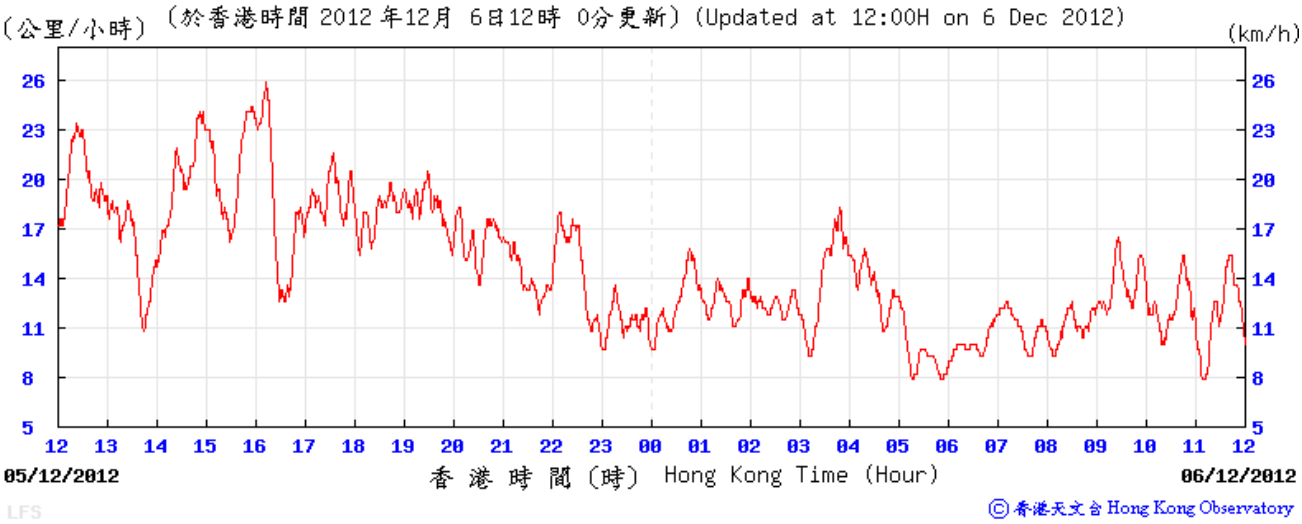


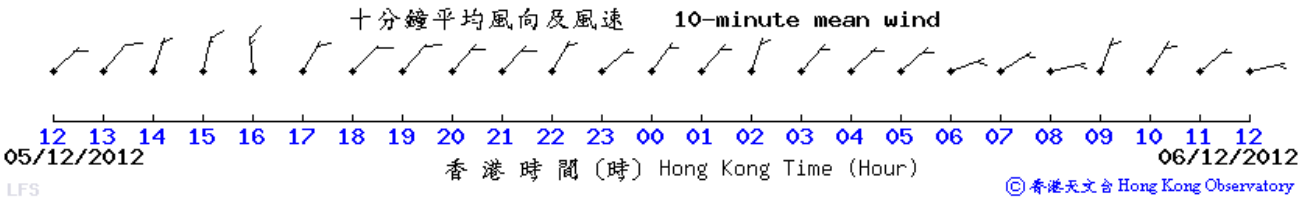


Wind Data for Lau Fau Shan

6 December 2012

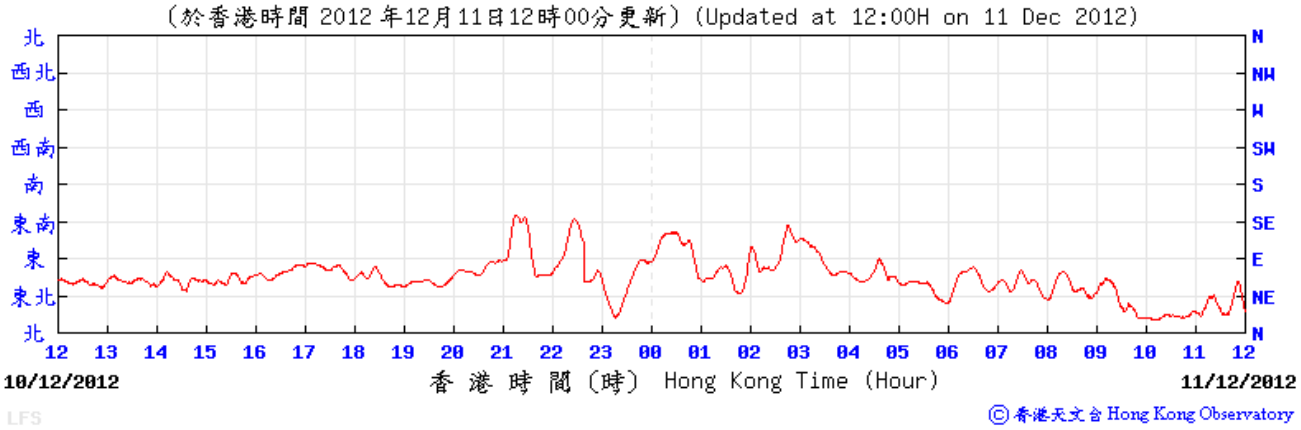


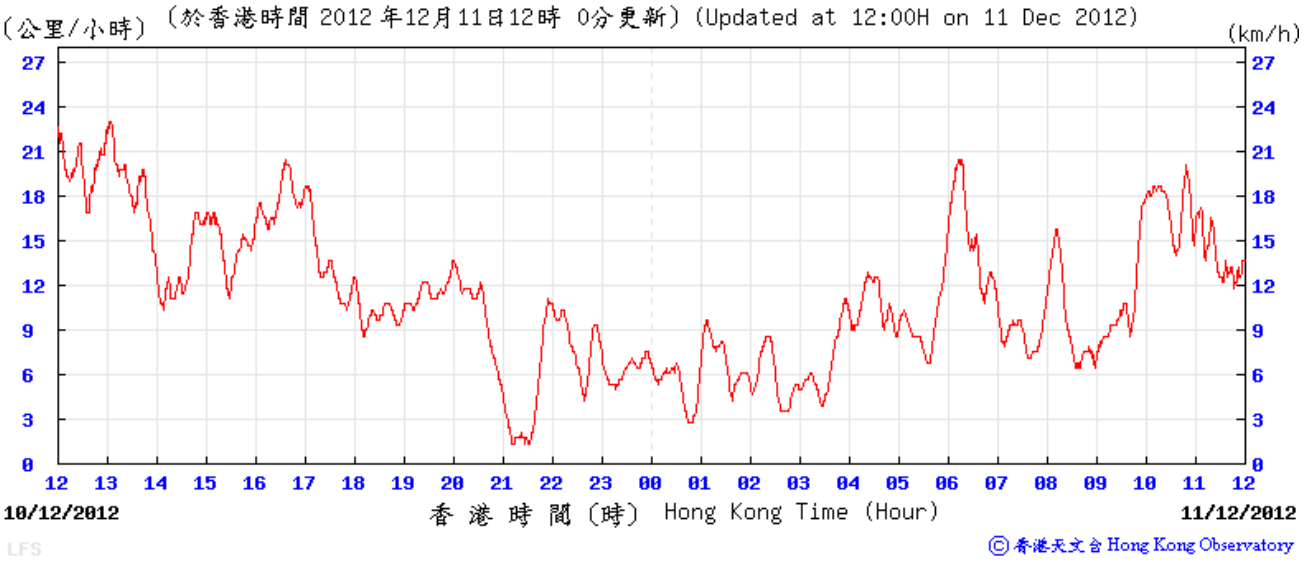


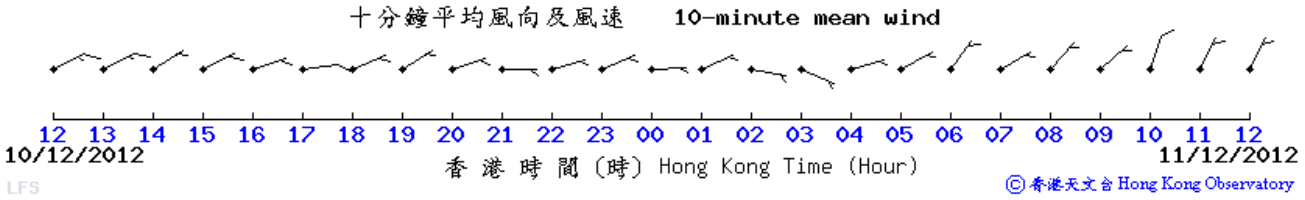


Wind Data for Lau Fau Shan

11 December 2012

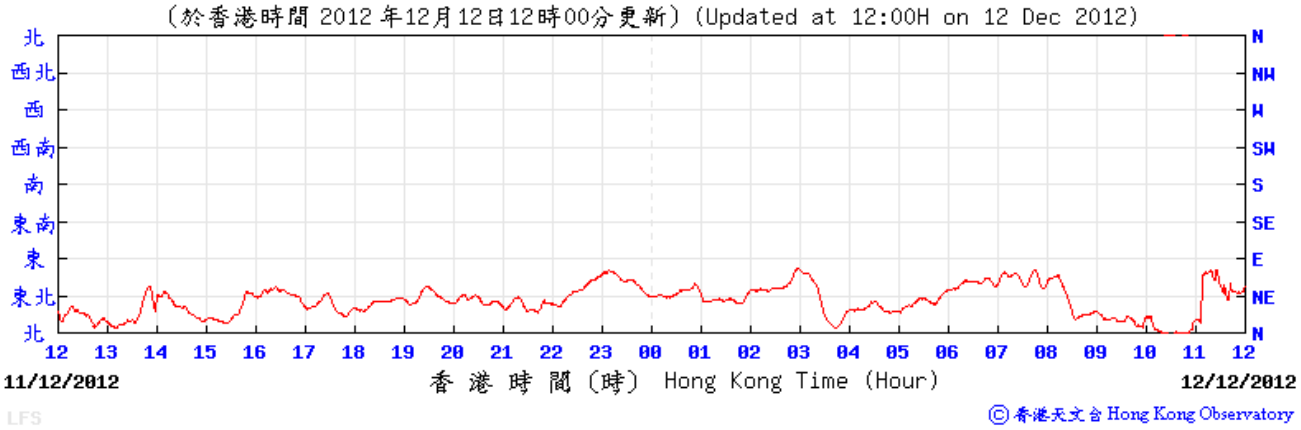


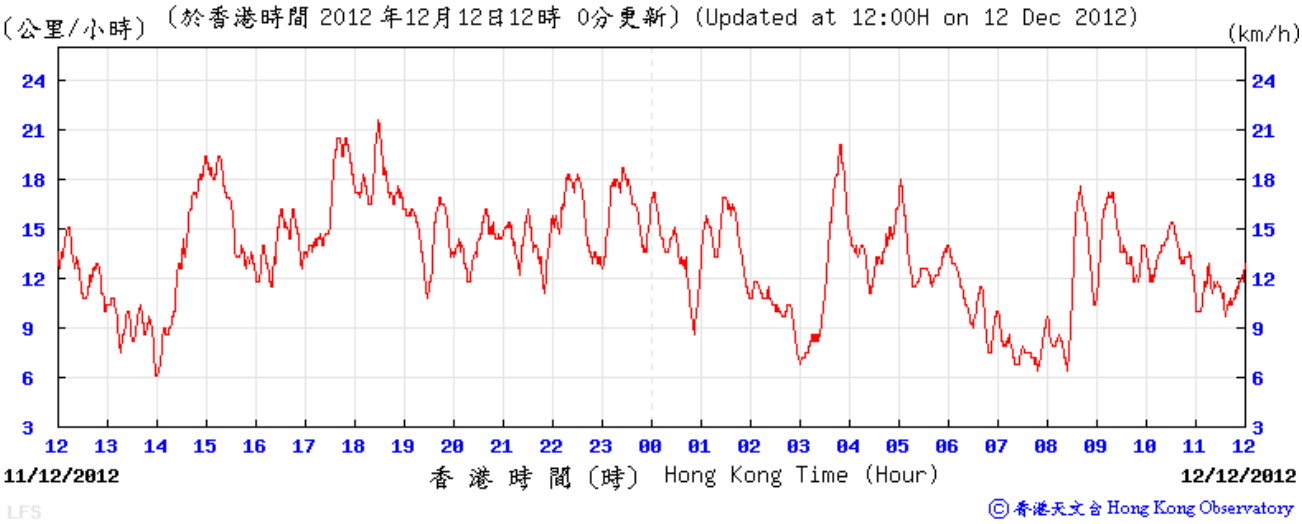


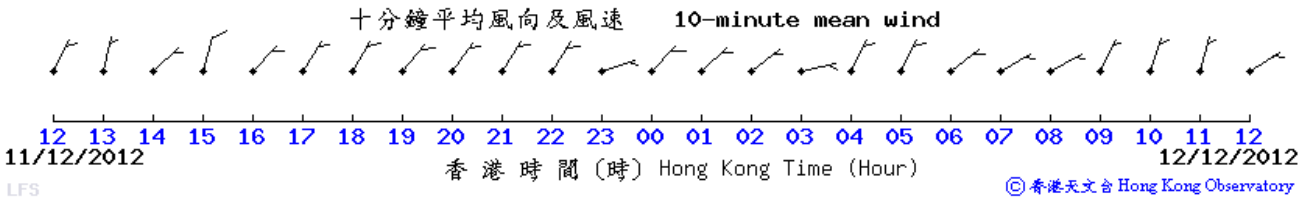


Wind Data for Lau Fau Shan

12 December 2012

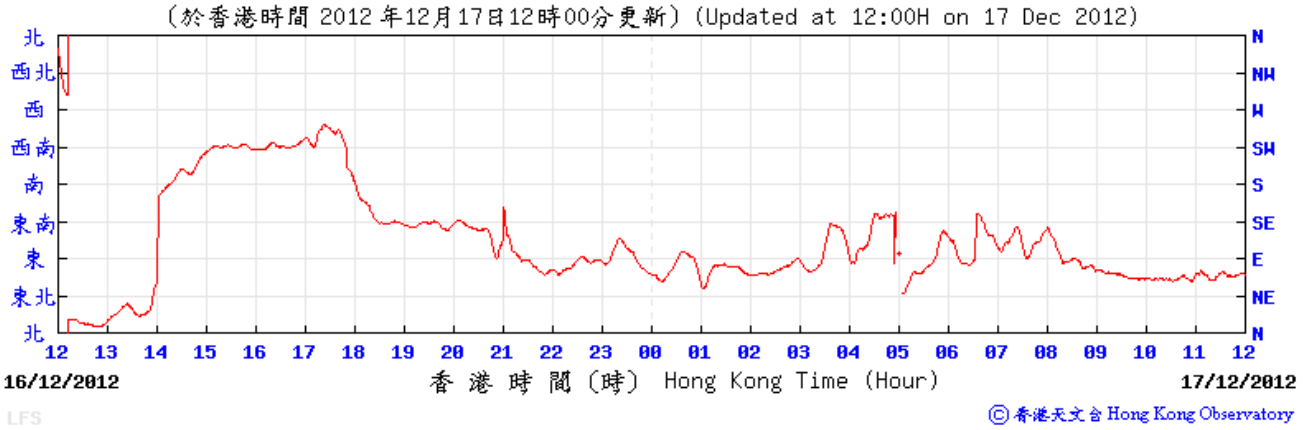


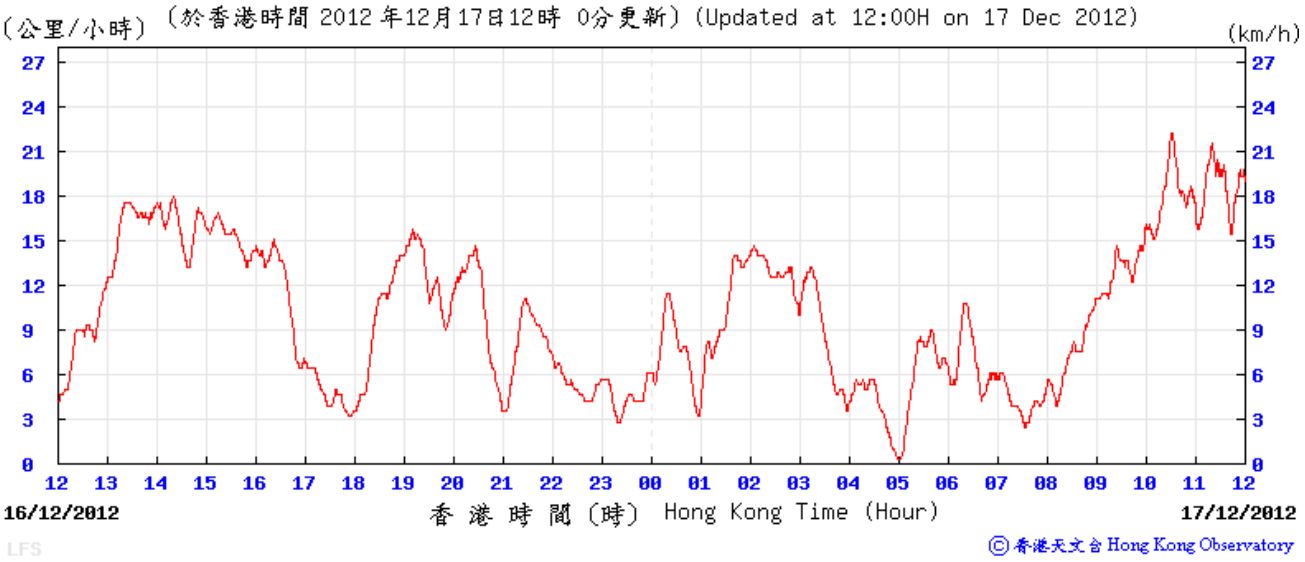


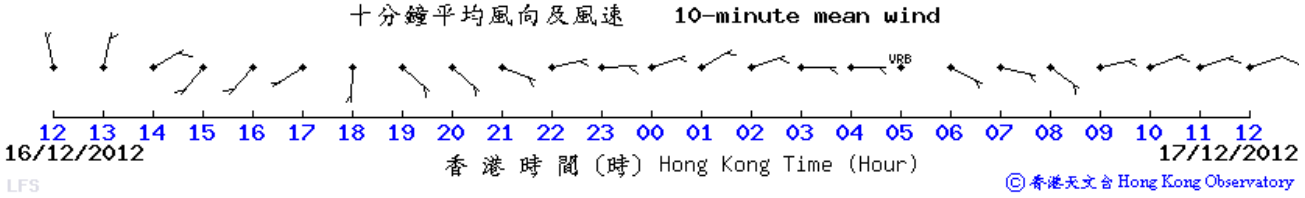


Wind Data for Lau Fau Shan

17 December 2012

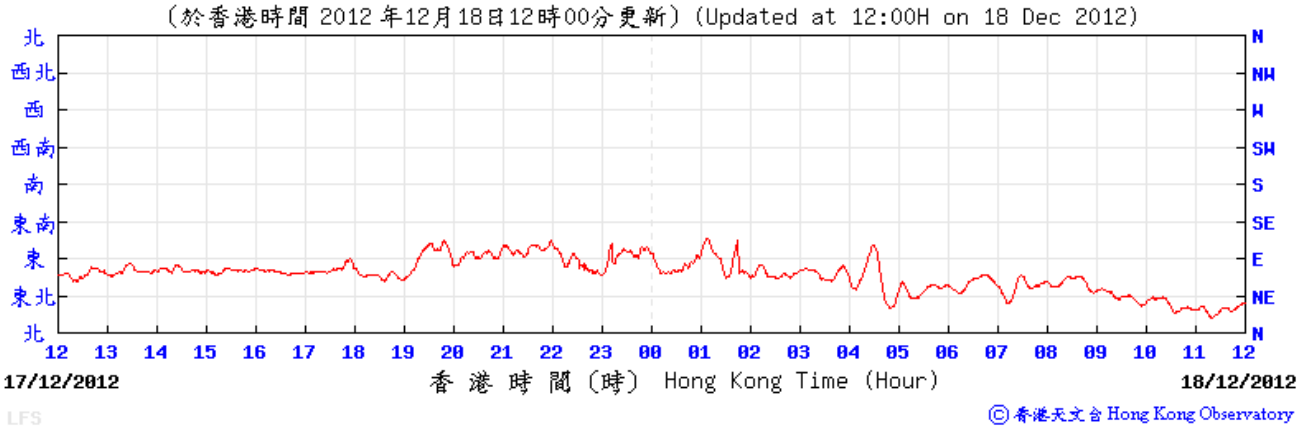


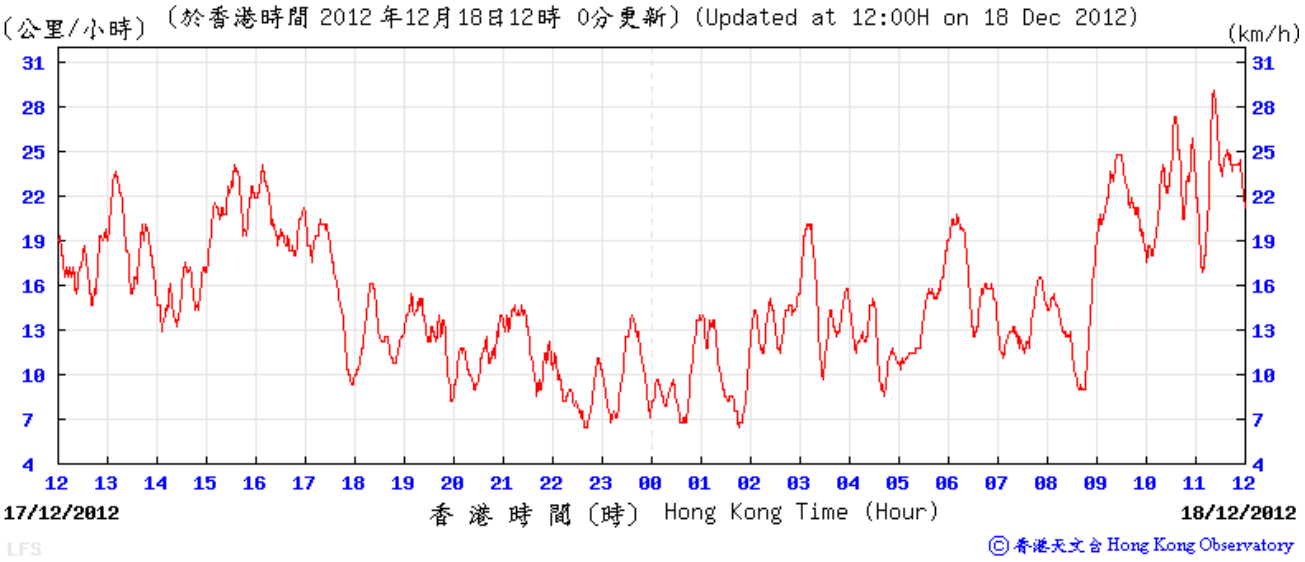


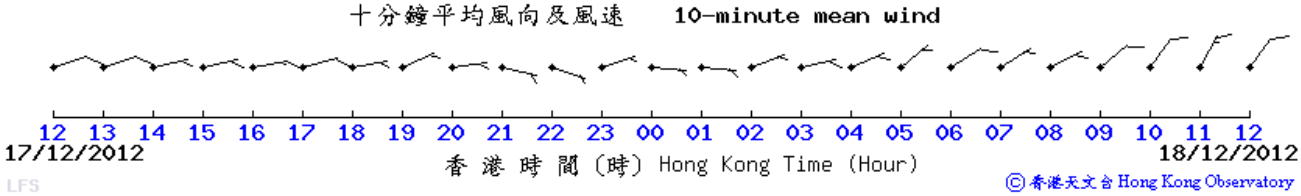


Wind Data for Lau Fau Shan

18 December 2012

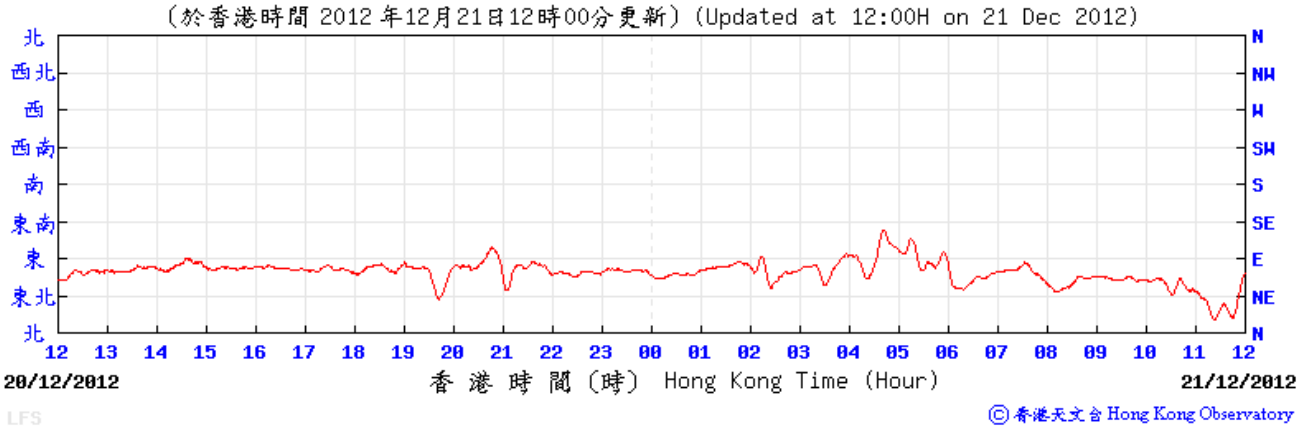


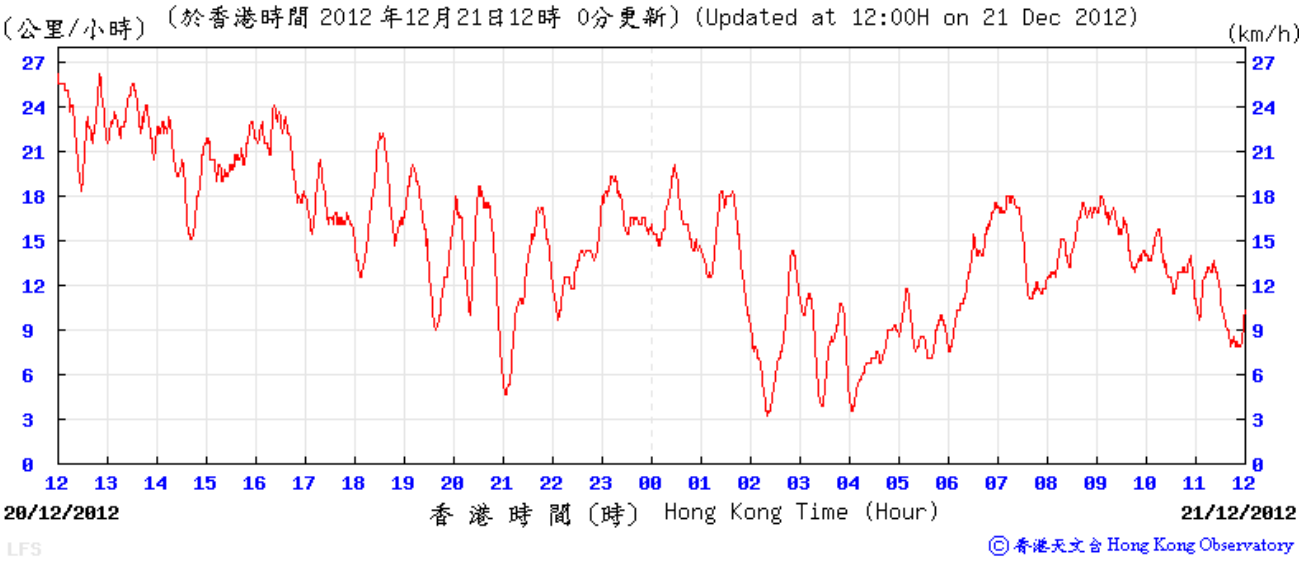


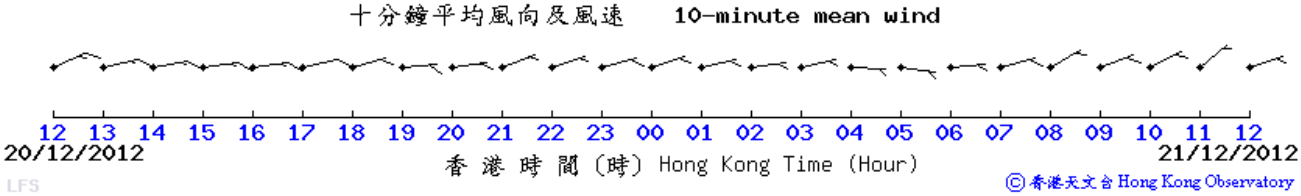


Wind Data for Lau Fau Shan

21 December 2012

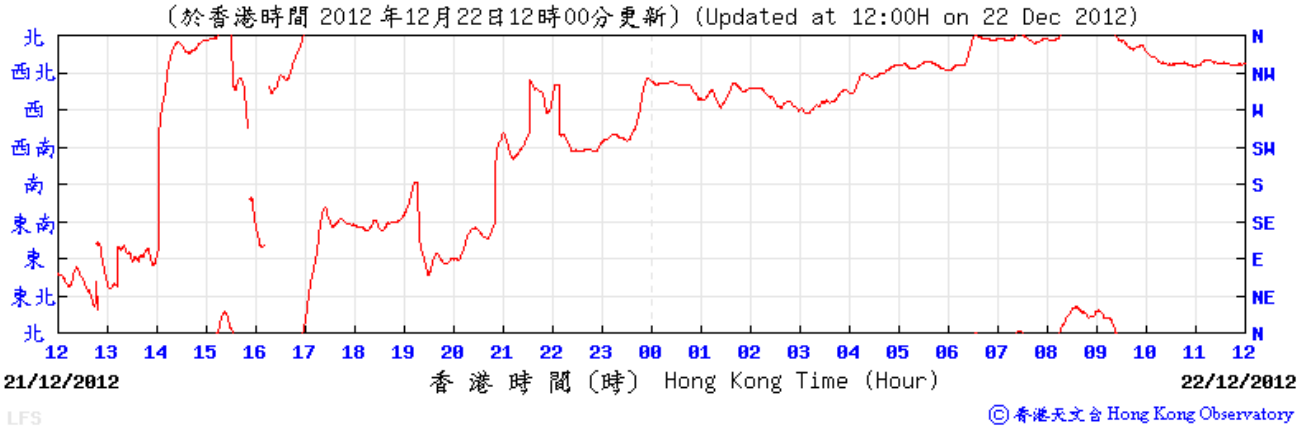


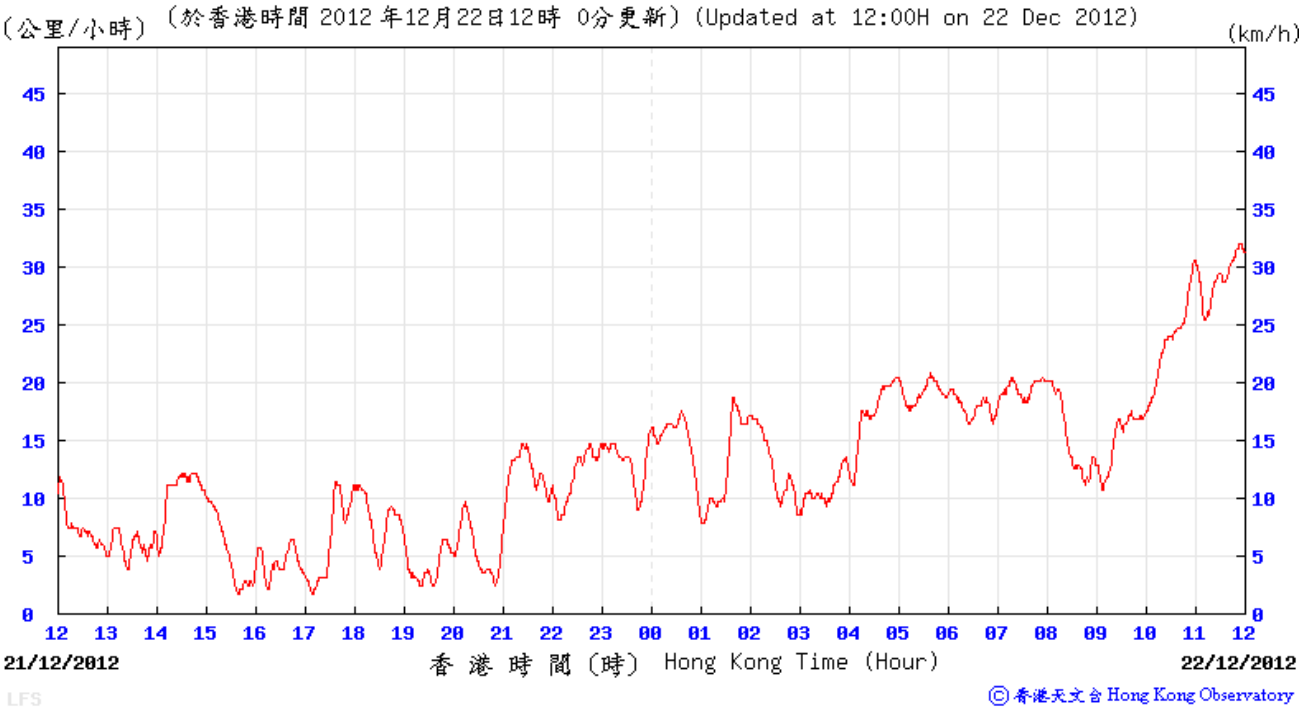


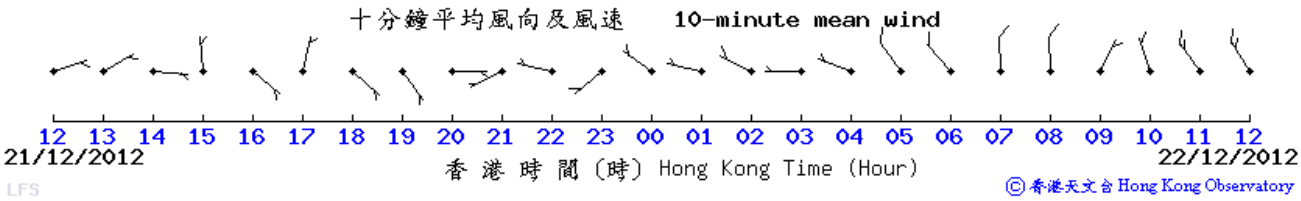


Wind Data for Lau Fau Shan

22 December 2012

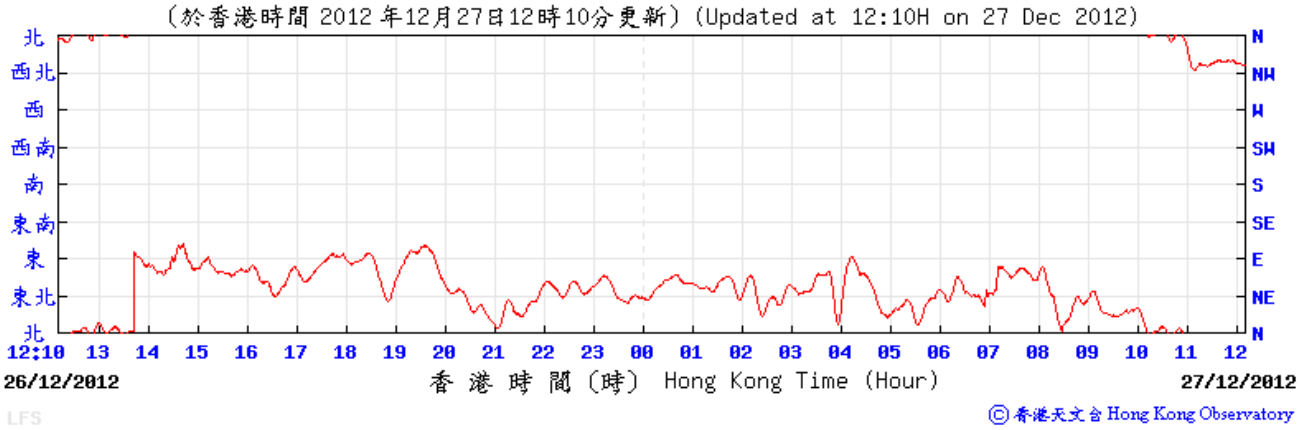


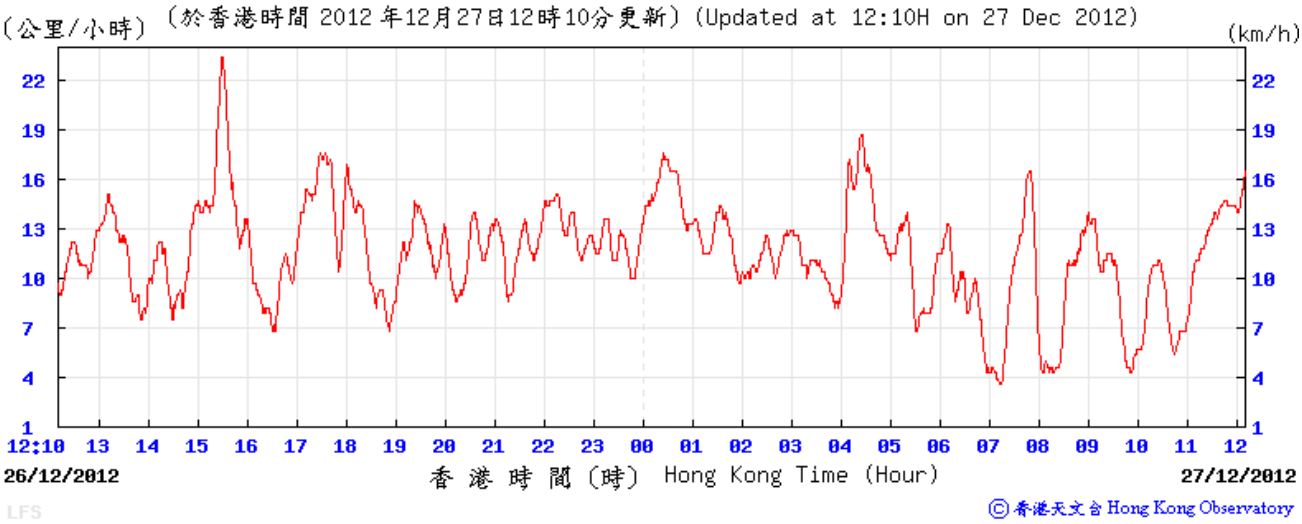


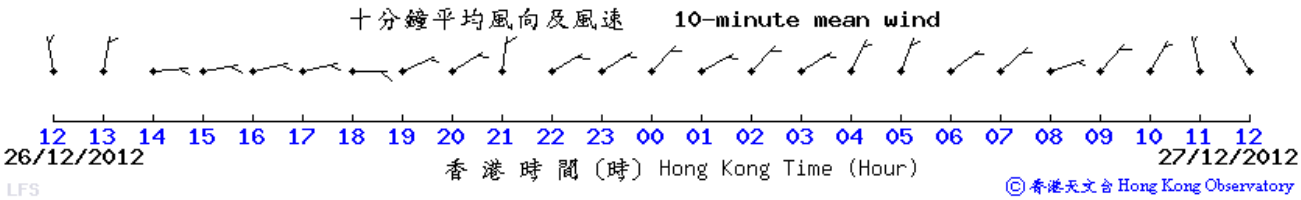


Wind Data for Lau Fau Shan

27 December 2012

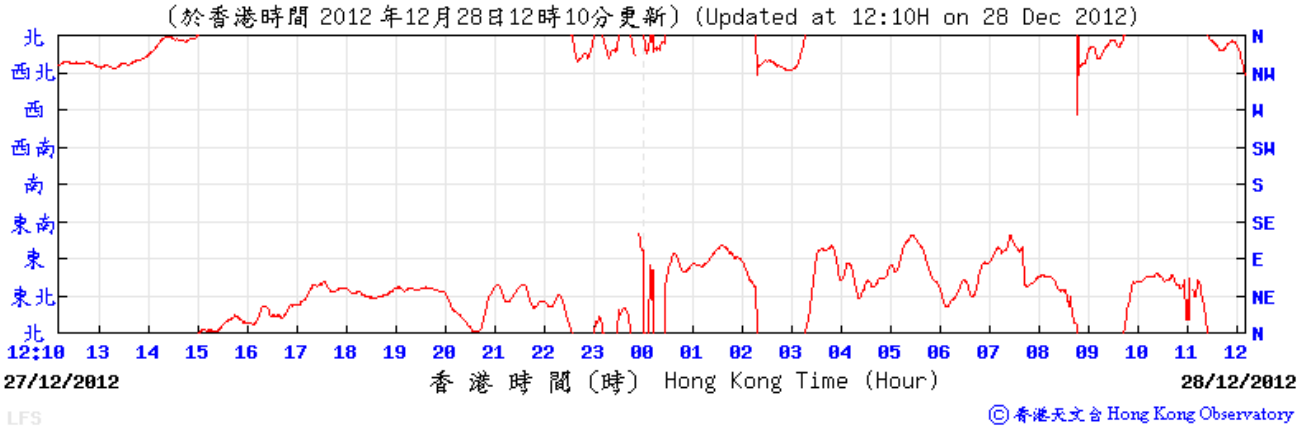


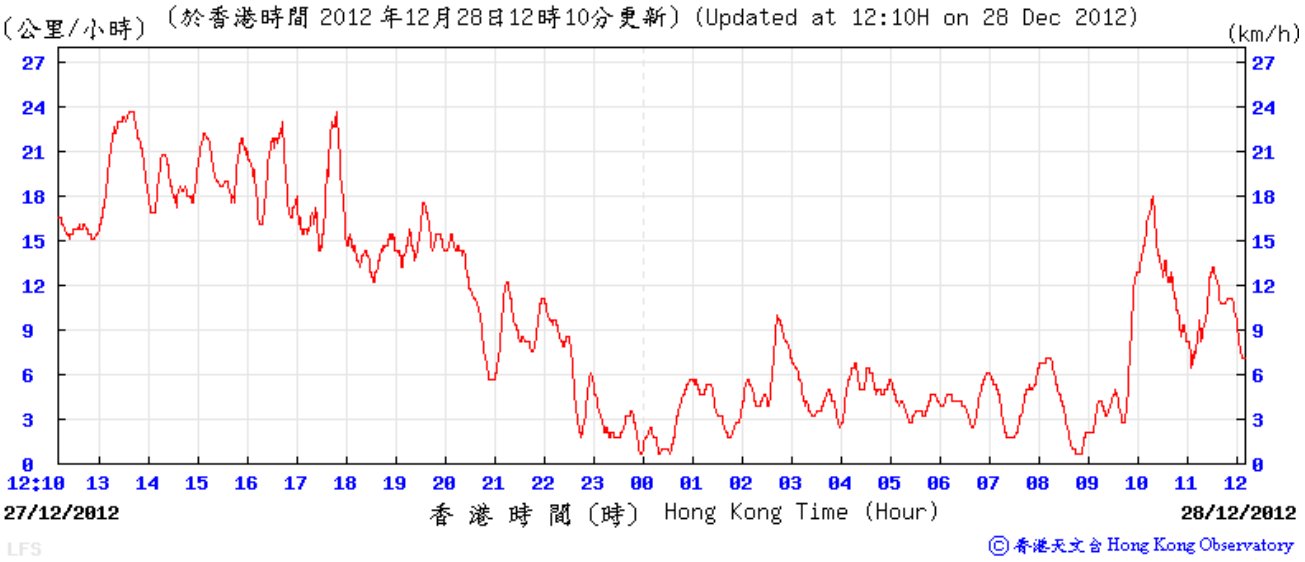


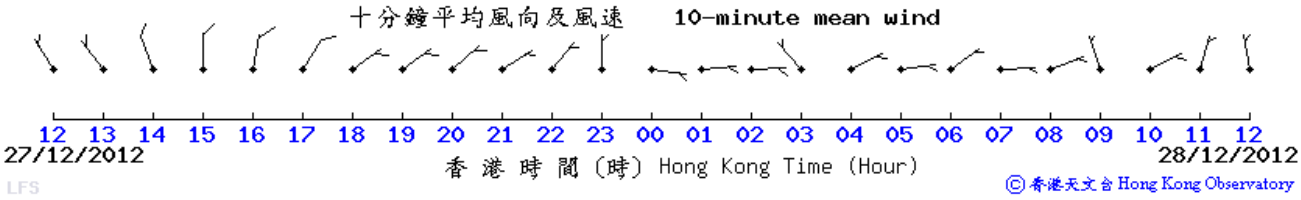


Wind Data for Lau Fau Shan

28 December 2012







香港天文台
HONG KONG OBSERVATORY

EXTRACT OF METEOROLOGICAL OBSERVATIONS FOR HONG KONG, DECEMBER 2012 (Table 1)

Date DECEMBER	Mean Pressure (hPa)	Air Temperature			Mean Dew Point Temperature (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)				
1	1015.0	21.4	20.8	20.1	19.5	92	97	0.3
2	1015.6	20.9	18.1	16.8	15.9	87	90	3.2
3	1017.3	18.3	17.1	16.6	15.6	91	90	10.9
4	1016.3	17.9	17.3	16.5	15.3	88	88	8.7
5	1017.6	17.8	16.2	14.9	13.9	86	89	6.5
6	1018.2	18.3	16.9	14.6	11.8	72	74	-
7	1017.8	20.3	18.4	16.2	14.5	78	80	Trace
8	1016.3	19.8	18.8	17.0	15.0	79	86	0.9
9	1016.1	21.1	19.0	17.3	14.8	77	47	-
10	1016.8	19.5	18.3	17.6	13.7	74	71	-
11	1018.2	20.9	18.7	17.4	14.1	75	73	-
12	1020.7	19.9	17.9	16.6	13.3	74	69	-
13	1020.0	20.6	18.9	16.7	14.7	77	49	-
14	1018.6	23.1	21.0	19.0	17.6	81	69	-
15	1015.4	24.2	22.3	20.6	20.2	88	73	-
16	1015.2	26.2	23.5	22.1	21.2	87	70	-
17	1016.5	22.8	21.7	20.7	19.1	85	84	-
18	1020.3	20.8	17.1	13.7	13.4	79	79	2.3
19	1020.0	17.3	15.1	13.0	11.5	79	88	1.1
20	1017.4	19.1	17.8	16.1	15.4	86	88	-
21	1016.2	22.8	20.7	18.9	18.9	89	76	Trace
22	1019.0	21.2	18.4	14.6	13.6	74	64	-
23	1025.0	16.0	13.3	10.3	4.1	54	40	-
24	1023.6	15.4	13.3	10.1	7.5	68	47	-
25	1020.3	18.7	17.0	14.8	12.2	73	88	-
26	1018.8	20.2	18.7	17.5	14.2	75	88	Trace
27	1017.0	19.3	18.6	18.0	14.8	79	83	Trace
28	1015.9	22.0	19.7	18.0	15.1	75	64	Trace
29	1016.3	19.7	18.0	12.6	15.2	84	90	22.1
30	1022.0	12.6	10.4	9.0	1.8	57	85	Trace
31	1022.6	13.2	10.2	7.1	-0.7	47	28	-
Mean/Total	1018.3	19.7	17.8	15.9	13.8	78	74	56.0
Normal*	1020.5	20.2	17.9	15.9	11.9	69	52	26.8
Station	Hong Kong Observatory							

EXTRACT OF METEOROLOGICAL OBSERVATIONS FOR HONG KONG,

DECEMBER 2012 (Table 2)

Date DECEMBER	Number of hours of Reduced Visibility# (hours)	Total Bright Sunshine (hours)	Daily Global Solar Radiation (MJ/m^2)	Total Evaporation (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
1	0	-	4.71	1.6	070	32.1
2	0	0.1	4.10	1.2	020	21.8
3	1	-	2.83	0.9	020	22.3
4	2	-	3.03	0.9	060	33.3
5	2	-	2.69	2.5	020	36.0
6	0	1.5	5.01	1.2	070	34.4
7	0	2.3	9.09	1.2	060	26.6
8	0	1.0	6.33	2.9	060	28.5
9	0	8.9	16.26	2.0	090	33.8
10	0	3.8	10.42	2.3	080	39.1
11	4	3.6	10.84	2.8	070	29.4
12	0	7.7	15.02	3.7	060	37.7
13	0	8.6	16.12	2.6	070	38.3
14	3	4.1	10.42	1.5	050	20.8
15	4	3.6	10.19	1.5	040	10.0
16	6	7.1	12.87	2.5	050	7.9
17	3	1.0	7.28	2.3	070	34.8
18	0	-	1.91	1.9	020	38.1
19	0	-	3.35	0.7	050	40.0
20	18	-	2.60	0.4	070	43.8
21	11	1.9	8.66	1.4	070	23.3
22	2	8.8	15.31	6.3	020	25.0
23	0	7.6	15.32	3.2	020	46.1
24	0	7.6	15.02	2.5	060	27.7
25	15	-	4.90	1.0	050	24.3
26	7	1.3	8.74	2.4	080	46.8
27	4	0.1	2.67	2.0	020	33.5
28	6	8.3	15.61	3.7	060	19.3
29	0	0.5	4.77	2.3	070	37.3
30	0	2.3	10.06	4.2	020	52.3
31	0	9.3	16.86	2.7	020	25.8
Mean/Total	88	101.0	8.81	68.3	070	31.3
Normal*	243.4§	172.2	10.89	83.7	070	26.0
Station	Hong Kong International Airport	King's Park			Waglan Island	

The minimum pressure recorded at the Hong Kong Observatory was 1013.3 hectopascals at 1525 HKT on 1 December and at 1512 HKT on 16 December.

The maximum air temperature recorded at the Hong Kong Observatory was 26.2 degrees C at 1253 HKT on 16 December.

The minimum air temperature recorded at the Hong Kong Observatory was 7.1 degrees C at 0650 HKT on 31 December.

The maximum gust peak speed recorded at Waglan Island was 85 kilometres per hour from 010 degrees at 0230 HKT on 30 December.

The maximum instantaneous rate of rainfall recorded at King's Park was 62 millimetres per hour at 1937 HKT on 29 December.

Reduced visibility refers to visibility below 8 kilometres when there is no fog, mist, or precipitation.

-The visibility readings at the Hong Kong International Airport are based on hourly observations by professional meteorological observers in 2004 and before, and average readings over the 10-minute period before the clock hour of the visibility meter near the middle of the south runway from 2005 onwards. The change of the data source in 2005 is an improvement of the visibility assessment using instrumented observations following the international trend.

-Before 10 October 2007, the number of hours of reduced visibility at the Hong Kong International Airport in 2005 and thereafter displayed in this web page was based on hourly visibility observations by professional meteorological observers. Since 10 October 2007, the data have been revised using the average visibility readings over the 10- minute period before the clock hour, as recorded by the visibility meter near the middle of the south runway.

* 1981 - 2010 Climatological Normal, unless otherwise specified

§ 1997-2011 Mean value

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HKO Warnings and Signals Database

Strong Monsoon Signal

Searching period : [201212 - 201212]
Total number of records : [7]

Direction	Issuing		Cancelling		Duration hh mm
	hh mm	dd/mon/yyyy	hh mm	dd/mon/yyyy	
North	07:10	02/Dec/2012	10:45	02/Dec/2012	03 35
North	11:15	05/Dec/2012	16:20	05/Dec/2012	05 05
North	13:40	18/Dec/2012	05:20	19/Dec/2012	15 40
East	21:00	19/Dec/2012	08:40	21/Dec/2012	35 40
North	02:45	23/Dec/2012	16:00	23/Dec/2012	13 15
East	22:20	26/Dec/2012	09:45	27/Dec/2012	11 25
North	18:45	29/Dec/2012	07:45	31/Dec/2012	37 00

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Last revision date: <27 Aug 2012>

Appendix H. Ecological Monitoring conducted

December 2012	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Mammals				✓							✓				
Birds				✓							✓				
Herpetofauna															
Dragonflies & butterflies															
Water Quality															
Inspection Visits							✓							✓	

December 2012	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Mammals			✓						✓							
Birds			✓						✓							
Herpetofauna																
Dragonflies & butterflies																
Water Quality				✓												
Inspection Visits						✓							✓			

Note:
* Light grey cells indicate public holidays, Saturdays or Sundays.

Appendix I. Summary of Bird Surveys conducted

Table I1. Summary of bird species of conservation importance and/or wetland-dependence recorded in the Survey Area (excluding the WRA)

Species Name[5]	Scientific Name[5]	Conservation Status [2]	Dec 2012	
			Occurrence[3]	Mean[4]
Little Grebe	*Tachybaptus ruficollis*	LC, (1)	4	20.5
Great Cormorant	*Phalacrocorax carbo*	PRC, (1)	4	4.0
Grey Heron	*Ardea cinerea*	PRC, (1)	4	6.5
Great Egret	*Egretta alba*	PRC, (RC), (1)	4	2.8
Intermediate Egret	*Egretta intermedia*	RC, (1)	2	0.8
Little Egret	*Egretta garzetta*	PRC, (RC), (1)	4	10.0
Chinese Pond Heron	*Ardeola bacchus*	PRC, (RC), (1)	4	3.8
Black-faced Spoonbill	*Platalea minor*	PGC, EN, (1)	1	0.8
Northern Shoveler	*Anas clypeata*	RC, (1)	2	0.8
Tufted Duck	*Aythya fuligula*	LC, (1)	4	9.0
Black Kite	*Milvus migrans*	(RC)	2	0.8
White-breasted Waterhen	*Amaurornis phoenicurus*	(1)	2	0.5
Pied Avocet	*Recurvirostra avosetta*	RC, (1)	2	10.3
Little Ringed Plover	*Charadrius dubius*	LC, (1)	2	3.0
Spotted Redshank	*Tringa erythropus*	RC, (1)	2	1.5
Common Sandpiper	*Actitis hypoleucos*	(1)	4	6.5
Green Sandpiper	*Tringa ochropus*	(1)	4	2.8
Common Kingfisher	*Alcedo atthis*	(1)	4	1.8
White-throated Kingfisher	*Halcyon smyrnensis*	(LC), 1	2	0.8
White Wagtail	*Motacilla alba*	(1)	4	14.0
Grey Wagtail	*Motacilla cinerea*	(1)	1	0.3
Eastern Yellow Wagtail	*Motacilla tschutschensis*	(1)	3	2.0
Collared Crow	*Corvus torquatus*	LC, NT	3	1.3
Red-billed Starling	*Spodiopsar sericeus*	GC	2	1.3
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 (2011).

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

(4) Refers to the mean number of individuals recorded in the reporting period (excluding the WRA)

(5) Follows HK bird list (dated 2012-11-22).

Table I2. Summary of bird species of conservation importance and/or wetland-dependence recorded in the WRA

Species Name[5]	Scientific Name[5]	Conservation Status [2]	Dec 2012		Records Outside Surveys
			Occurrence[3]	Mean[4]	
Little Grebe	*Tachybaptus ruficollis*	LC, (1)	3	0.8	✓
Great Cormorant	*Phalacrocorax carbo*	PRC, (1)	4	3.8	✓
Grey Heron	*Ardea cinerea*	PRC, (1)	3	1.3	✓
Great Egret	*Egretta alba*	PRC, (RC), (1)	2	0.5	✓
Intermediate Egret	*Egretta intermedia*	RC, (1)	0	0	✓
Little Egret	*Egretta garzetta*	PRC, (RC), (1)	4	1.8	✓
Chinese Pond Heron	*Ardeola bacchus*	PRC, (RC), (1)	3	1.0	-
Black Kite	*Milvus migrans*	(RC)	1	0.3	-
Peregrine Falcon	*Falco peregrinus*	LC	0	0.0	✓
Pied Avocet	*Recurvirostra avosetta*	RC, (1)	1	0.3	-
Common Greenshank	*Tringa nebularia*	LC, (1)	0	0	✓
Wood Sandpiper	*Tringa glareola*	LC, (1)	0	0	✓
Common Sandpiper	*Actitis hypoleucos*	(1)	0	0	✓
Little Ringed Plover	*Charadrius dubius*	LC, (1)	0	0	✓

Species Name[5]	Scientific Name[5]	Conservation Status [2]	Dec 2012		Records Outside Surveys
			Occurrence[3]	Mean[4]	
Common snipe	*Gallinago gallinago*	(1)	0	0	✓
Common Kingfisher	*Alcedo atthis*	(1)	1	0.3	-
White Wagtail	*Motacilla alba*	(1)	3	1.3	✓
Eastern Yellow Wagtail	*Motacilla tschutschensis*	(1)	1	0.3	✓
Zitting Cisticola	*Cisticola juncidis*	LC	1	0.3	✓
No. of Species Recorded			**19**		

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

(2) Conservation status follows that of Fellowes *et al.* (2002) and BirdLife International listing (2011).

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

(4) Refers to the mean number of individuals recorded in the reporting period at WRA.

(5) Follows HK bird list (dated 2012-11-22).

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]	Dec 2012	
			Occurrence[2]	Mean[3]
Amphibian	**No. of Species Recorded**		**0**	
(No survey scheduled in December 2012)				
			Occurrence[2]	Mean[3]
Reptile	**No. of Species Recorded**		**0**	
(No survey scheduled in December 2012)				

(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 the reporting period (excluding the WRA).

Table J2. Summary of herpetofauna monitoring in the WRA

Species Name	Scientific Name	Conservation Status[1]	Dec 2012	
			Occurrence[2]	Mean[3]
Amphibian	**No. of Species Recorded**		**0**	
(No survey scheduled in December 2012)				
			Occurrence[2]	Mean[3]
Reptiles	**No. of Species Recorded**		**0**	
(No survey scheduled in December 2012)				

(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 the reporting period in the WRA.

Table J3. Summary of mammal monitoring in the Survey Area (excluding the WRA)

Species Name	Scientific Name	Conservation Status[1]	Dec 2012	
			Occurrence[2]	Mean[3]
Mammal	**No. of Species Recorded**		**0**	
(No Records in December 2012)				

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

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

(3) Refers to the mean number of individuals recorded in the reporting period (excluding the WRA).

Table J4. Summary of mammal monitoring in the WRA

Species Name	Scientific Name	Conservation Status[1]	Dec 2012		Records Outside Surveys
			Occurrence[2]	Mean[3]	
Mammal	**No. of Species Recorded**		**0**		
(No Records in December 2012)					

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

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

(3) Refers to the mean number of individuals recorded in the reporting period in the WRA.

Table J5. Summary of odonate and butterfly monitoring in the Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation Status[1]	Dec 2012	
			Occurrence[2]	Mean[3]
Odonate	**No. of Species Recorded**		**0**	
(No Records in December 2012)				
Butterfly	No. of Species Recorded		0	
(No Records in December 2012)				

(1) Conservation status follows that of Fellowes *et al.* (2002), Lo & Hui (2004), Tam *et al.* (2011) and Young & Yiu (2002).

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

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

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

Common Name	Scientific Name	Conservation Status[1]	Dec 2012	
			Occurrence[2]	Mean[3]
Odonate	**No. of Species Recorded**		**0**	
(No Records in December 2012)				
Butterfly	**No. of Species Recorded**		**0**	
(No Records in December 2012)				

(1) Conservation status follows that of Fellowes *et al.* (2002), Lo & Hui (2004), Tam *et al.* (2011) and Young & Yiu (2002).

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

(3) refers to the mean number of individuals recorded in the reporting period in the WRA.

Appendix K. Summary of Monitoring of Water Quality associated with Ecological Monitoring conducted

Table K1. Water quality at WRA in Dec 2012

Cell No.	Temp. (℃)	pH	Salinity (ppt)	Turb (mg/L)	DO (mg/L)	Water Level (cm)
1	16.2	7.82	0.58	14.0	8.14	170
2	16.8	**8.13**	0.43	9.6	7.92	150
3	17.0	**8.19**	0.74	22.3	7.78	190
4	17.8	**8.14**	0.82	22.2	7.28	190

Note: Values highlighted in bold indicate that action level is reached; whereas values in bold and underline indicate that limit level is reached.

Appendix L. Environmental Mitigation Measures - Implementation Status

Environmental Mitigation Measures - Implementation Status

Air Quality – Recommended Mitigation Measures

Air Quality Mitigation Measures during construction	Implementation Status
• access roads should be sprayed with water or dust suppression chemical to maintain the entire road surface wet or paved;	P
• every stock of more than 20 bags of cement or dry PFA shold be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;	✓
• de-bagging, batching or mixing process should be carried out in sheltered areas during the use of bagged cement;	✓
• 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;	✓
• 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;	✓
• 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;	✓

Environmental Mitigation Measures - Implementation Status

• 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;	✓
• 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 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 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.	P
• Stockpiles to be covered by tarpaulin to avoid spreading of materials during rainstorms;	✓
• 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 • 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 The intention is to maximize the reuse of the excavated materials on-site as fill materials.	✓
Imported Filling Material 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 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 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 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.	P
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. 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. 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.	✓

Environmental Mitigation Measures - Implementation Status

Planning of Construction Schedule	
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 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