

**Civil Engineering and Development Department**

**Environmental Monitoring Works at  
Kai Tak Development  
Water, Sediment & Odour Quality Report  
July and August 2011**

## TABLE OF CONTENTS

	Page
<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
Introduction .....	1
General water quality monitoring works .....	1
Odour Sampling Works.....	1
Odour Patrol Works .....	1
Sediment Monitoring Works.....	1
1. Introduction .....	2
Background .....	2
2. General Water Quality monitoring .....	3
Monitoring Requirements .....	3
Monitoring Locations .....	3
Monitoring Equipment .....	4
Monitoring Parameters .....	7
Monitoring Frequency .....	7
Monitoring Methodology .....	8
Laboratory Analytical Methods .....	8
QA/QC Requirements .....	10
Results and Observation.....	10
3. Odour Sampling .....	12
Sampling Requirements .....	12
Monitoring Requirements .....	12
Monitoring Locations .....	13
Monitoring Equipment .....	13
Monitoring Parameters and Frequency .....	15
Laboratory Analytical Methods .....	16
<i>Olfactometry Analysis in Laboratory (The Hong Kong Polytechnic University)</i> .....	16
QA/QC Requirements .....	17
Results and Observation.....	17
4. Odour Patrol .....	18
Monitoring Methodology .....	18
Odour Patrol Survey.....	18
Monitoring Equipment .....	19
Calibration of In Situ Instruments .....	19
Odour Patrol Results and On-Site Observations .....	19
5. Sediment monitoring .....	20
Monitoring Locations .....	20
Monitoring Parameters and Frequency .....	21
Sampling Procedure .....	21
Details of Testing .....	22
QA/QC Requirements .....	22
Monitoring Equipment .....	23
Results and Observation.....	23
6. Conclusion.....	25

## LIST OF TABLES

Table 2.1	Water Quality Monitoring Stations
Table 2.2	Water Quality Monitoring Equipment
Table 2.3	Water Quality Monitoring Parameters
Table 2.4	Methods for Laboratory Analysis for Water Samples
Table 2.5	Water Depth of Water Quality Monitoring Stations
Table 3.1	Odour Sampling Stations
Table 3.2	Equipment for Odour Monitoring Program
Table 3.3	Odour Sampling Parameters and Frequency
Table 5.1	Sediment Monitoring Stations
Table 5.2	Sediment Monitoring Parameters and Frequency
Table 5.3	Testing Parameters, Reporting Limit and Analytical Method
Table 5.4	Equipment for Sediment Monitoring Program
Table 5.5	Water Depth at Sediment Monitoring Stations

## LIST OF FIGURES

Figure 1	Locations of Water Quality Monitoring Stations
Figure 2	Locations of Odour and Sediment Monitoring Stations
Figure 3	Locations of Odour Patrol Route and Sniffing Locations

## LIST OF APPENDIX

Appendix A1	Copies of calibration certificates for Water Quality Monitoring
Appendix A2	Copies of calibration certificates for Odour Sampling
Appendix A3	Copies of calibration certificates for Sediment Monitoring
Appendix B	Environmental Monitoring Schedule
Appendix C1	Laboratory Testing Report for Water Quality Monitoring
Appendix C2	Laboratory Testing Report for Odour Sampling
Appendix C3	Laboratory Testing Report for Sediment Monitoring
Appendix D1	Quality Control Report for Water Quality Monitoring
Appendix D2	Quality Control Report for Sediment Monitoring
Appendix E1	<i>In-situ</i> Measurement Results for Marine Water Quality Monitoring
Appendix E2	<i>In-situ</i> Measurement Results for Odour Sampling
Appendix E3	<i>In-situ</i> Measurement Results for Sediment Monitoring
Appendix F	Meteorological data from Hong Kong Observatory Station during Odour Sampling

## **EXECUTIVE SUMMARY**

### **Introduction**

1. This is the 1<sup>st</sup> Water, Sediment & Odour Report for Environmental Monitoring Works for Kai Tak Development during construction phase (the Project). This report documents the results and findings of the 1<sup>st</sup> general water quality monitoring works, odour sampling and sediment monitoring conducted for the Project in July and August 2011.

### **General water quality monitoring works**

2. General marine water quality monitoring shall be carried out quarterly at the designated locations to give adequate coverage of different tidal states during both wet and dry seasons. During each survey event, sampling shall be taken at 2 tide conditions (mid-flood and mid-ebb). The 1<sup>st</sup> General Water Quality Monitoring for the Project was performed on 18<sup>th</sup> August 2011 and the monitoring results were checked and reviewed.

### **Odour Sampling Works**

3. Odour sampling shall be carried out within Kai Tak Approach Channel (KTAC) and Kowloon Tong Typhoon Shelter (KTTS) as well as along To Kwa Wan (TKW) and Ma Tau Kok (MTK) waterfront half-yearly interval to determine the odour emissions from water surface throughout the Contract and Maintenance Period. The first odour sampling shall be carried within the August of 2011 or as agreed with the Engineer. One of the sampling events within each calendar year shall be undertaken during summer season (i.e. July or August). The 1<sup>st</sup> Odour Sampling for the Project was performed on 12<sup>th</sup> August 2011 and the monitoring results were checked and reviewed.

### **Odour Patrol Works**

4. Odour patrol shall be carried out in the month of February, May, July, August, September and November along the same odour route and at the same sniffing locations. The first odour patrol shall be carried out within November 2011. No Odour Patrol for the Project was performed in the reporting period.

### **Sediment Monitoring Works**

5. Sediment monitoring shall be carried out at the same locations of the odour sampling stations half-yearly interval throughout the Contract Period. The first sediment sampling shall be carried out within the August of 2011 or as agreed with the Engineer. The 1<sup>st</sup> Sediment Monitoring for the Project was performed on 26<sup>th</sup> August 2011 and the monitoring results were also checked and reviewed.
6. In addition, no environmental monitoring works were conducted in July 2011.

## **1. Introduction**

### **Background**

- 1.1 In accordance with the approved Kai Tak Development (KTD) Schedule 3 EIA, improvements works have been proposed to alleviate the potential odour impact from Kai Tak Approach Channel (KTAC) and Kwan Tong Typhoon Shelter (KTTS). In order to monitor the effectiveness and impacts of the proposed works, environmental monitoring works of water, sediment and odour quality were conducted for Kai Tak Development (the Project).
- 1.2 This is the 1<sup>st</sup> Water, Sediment & Odour Quality Monitoring Reports summarizing the general water quality monitoring works, odour and sediment monitoring works for the Project in July and August 2011.

## 2. General Water Quality monitoring

### Monitoring Requirements

- 2.1 General marine water quality monitoring shall be carried out quarterly at the designated locations to give adequate coverage of different tidal states during both wet and dry seasons.
- 2.2 The first general marine water quality monitoring during construction phase shall be carried out within the summer season of 2011 or as agreed with the Engineer.
- 2.3 For all the monitoring stations, sampling was taken 3 water depths, namely 1m below the water surface, mid depth and 1m above the sea bed. For stations that are less than 3m in depth, only the mid depth sample was taken. Mid-depth was omitted in case the water depth is less than 6m. During each survey event, sampling was taken at 2 tide conditions (mid-flood and mid-ebb).
- 2.4 For the WSD intake points, the monitoring was conducted at the appropriate vertical levels of the abstraction points of these intakes to collect water quality information.
- 2.5 At each monitoring station, duplicate samples were collected at each water depth.
- 2.6 Sufficient volume of each water sample (not less than 1 litre) was collected for analysis to achieve the required detection limit. *In-situ* measurements at DO, pH, salinity, temperature and turbidity were taken at 0.5m depth intervals at all the marine water quality monitoring stations.

### Monitoring Locations

- 2.7 The monitoring locations include seven stations within the approach channel (AC1-7), one station at the KTTS (KT1), three stations at inner Kowloon Bay (IB1-3), one station at outer Kowloon Bay (OB1), two stations in the Victoria Harbour adjacent to the Kowloon Bay (VH1-2), one station in the vicinity of Jordan Valley Culvert (JVC), one station Kai Tak Nullah (KTN) and four stations at the WSD flushing water intakes. The locations are also summarized in Table 2.1 and shown on **Figure 1**.

**Table 2.1 Water Quality Monitoring Stations**

Monitoring Stations	Coordinates	
	Northing	Easting
AC1	820147.04	838736.55
AC2	820218.32	838807.83
AC3	819920.71	838952.22
AC4	819988.82	839030.88
AC5	819690.85	839214.12
AC6	819755.00	839278.27
AC7	819545.62	839418.24
KT1	819010.57	840260.66
IB1	819861.53	838265.60
IB2	819465.93	838456.29
IB3	819176.01	838054.63
OB1	819134.25	839182.22
VH1	817553.42	837739.09
VH2	817588.53	840243.13
KTN	820399.67	838776.18
JVC	819940.86	839165.73
WSD Intake at Tai Wan	818268.40	837952.00
WSD Intake at Cha Kwo Ling	817836.40	841544.20
WSD Intake at Quarry Bay	817056.00	839752.00
WSD Intake at Sai Wan Ho	816451.38	841215.41

## Monitoring Equipment

### Dissolved Oxygen (DO) and Temperature Measuring Equipment

- 2.8 The instrument for measuring dissolved oxygen and temperature was portable and weatherproof complete with cable, sensor, comprehensive operation manuals and use DC power source. It was capable of measuring:
- a dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation; and
  - a temperature of 0-45 degree Celsius.
- 2.9 It has a membrane electrode with automatic temperature compensation complete with a cable.
- 2.10 Sufficient stocks of spare electrodes and cables were available for replacement where necessary.
- 2.11 Salinity compensation was built-in in the DO equipment.

### Turbidity

- 2.12 Turbidity was measured *in situ* by the nephelometric method. The instrument was portable and weatherproof using a DC power source complete with cable, sensor and comprehensive operation manuals. The equipment was capable of measuring turbidity

between 0-1000 NTU. The probe cable was not less than 25m in length. The meter was calibrated in order to establish the relationship between NTU units and the levels of suspended solids. The turbidity measurement was carried out on split water sample collected from the same depths of suspended solids samples.

### **Sampler**

- 2.13 A water sampler, consisting of a transparent PVC or glass cylinder of a capacity of not less than two litres which can be effectively sealed with caps at both ends was used. The water sampler has a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler was at the selected water depth.

### **Water Depth Detector**

- 2.14 A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring station.

### **pH**

- 2.15 The instrument was consisting of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It was readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 were used for calibration of the instrument before and after use.

### **Salinity**

- 2.16 A portable salinometer capable of recording salinity within the range of 0-40 ppt was used for salinity measurements.

### **Position System**

- 2.17 A hand held differential Global Positioning System (GPS) was used during water quality monitoring to ensure the monitoring vessel is at the correct location before taking measurements. GPS was calibrated at checkpoint (Quarry Bay Survey Nail at Easting 840683.49 and Northing 816709.55) to ensure the monitoring station was at the correct position before taking measurement and water samples.

### **Sample Container and Storage**

- 2.18 Following collection, water samples for laboratory analysis were stored in high density polythene bottles with appropriate preservatives added, packed in ice (cooled to 4°C without being frozen), delivered to the laboratory and analysed as soon as possible. Sufficient volume of samples was collected to achieve the detection limit.
- 2.19 For the sample containers for *E. coli*, the water samples were collected in sterile bottles with leakproof lids.



### **Calibration of *In Situ* Instruments**

- 2.20 All *in situ* monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring programme. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring event.
- 2.21 For the on site calibration of field equipment (Multi-parameter Water Quality System), the BS 1427:2009, "Guide to on-site test methods for the analysis of waters" was observed.
- 2.22 Sufficient stocks of spare parts were maintained for replacements when necessary. Backup monitoring equipment was also being made available so that monitoring can proceed uninterrupted even when some equipment was under maintenance, calibration, etc.
- 2.23 Table 2.2 summarizes the equipment used in the water quality monitoring program. Copies of the calibration certificates of the equipment are shown in **Appendix A1**.

**Table 2.2 Water Quality Monitoring Equipment**

<b>Equipment</b>	<b>Model and Make</b>	<b>Qty.</b>
Water Sampler	Kahlsico Water-Bottle Model 135DW 150	2
Multi-parameter Water Quality System	YSI 6820-C-M	2
Monitoring Position Equipment	"Magellan" Handheld GPS Model GPS-320	2
Water Depth Detector	Fishfinder 140	2

## Monitoring Parameters

- 2.24 The monitoring parameters to be measured *in-situ* and in laboratory are summarized in Table 2.3.

**Table 2.3 Water Quality Monitoring Parameters**

<i>In-situ</i> Measurement	Laboratory Measurement
Dissolved Oxygen	Suspended Solids (SS)
pH	<i>E. coli</i>
Water Temperature	5-day Biochemical Oxygen Demand (BOD <sub>5</sub> )
Salinity	Ammonia Nitrogen (NH <sub>3</sub> -N)
Secchi disc depth	Unionized Ammonia (UIA)
Turbidity	Total Kjeldahl Nitrogen (TKN)
	Nitrite-nitrogen (NO <sub>2</sub> -N)
	Nitrate-nitrogen (NO <sub>3</sub> -N)
	Ortho-phosphate (PO <sub>4</sub> )
	Total Phosphorous (TP)
	Cadmium (Cd)
	Chromium (Cr)
	Copper (Cu)
	Mercury (Hg)
	Nickel (Ni)
	Lead (Pb)
	Silver (Ag)
	Zinc (Zn)

- 2.25 Monitoring location/position, time, water depth, sampling depth, pH, salinity, DO saturation, water temperature, tidal stages, weather conditions and any special phenomena or work underway nearby were recorded.

## Monitoring Frequency

- 2.26 General marine water quality monitoring shall be carried out quarterly at the designated locations to give adequate coverage of different tidal states during both wet and dry seasons.
- 2.27 During each survey event, sampling will be taken at 2 tide conditions (mid-flood and mid-ebb) to give adequate coverage of different tidal states during both wet and dry seasons. The water quality sampling was undertaken within a 3 hour window of 1.5

hours before and 1.5 hours after mid-flood and mid-ebb tides. The monitoring period had covered the mid-flood tide and/or mid-ebb tide.

- 2.28 The monitoring will be ceased in the events of any emergency sewage discharges from the preliminary treatment works (PTWs) on both sides of the Victoria Harbour. Monitoring will be avoided during and after any storm events where sewage overflow may be anticipated from the PTWs. There will not be any marine construction activities in the vicinity of the stations during the monitoring.
- 2.29 The water quality monitoring schedule in the reporting period is provided in **Appendix B**.

### **Monitoring Methodology**

- 2.30 The monitoring stations were accessed using survey boat to within 3 m by the guide of a hand-held Global Positioning System (GPS). The depth of the monitoring location was measured using depth meter in order to determine the sampling depths. Afterwards, the probes of the in-situ measurement equipment were lowered to the predetermined depths (1 m below water surface, mid-depth and 1 m above seabed) and the measurements were carried out accordingly. The in-situ measurements at predetermined depths were carried out in duplicate. In case the difference in the duplicate in-situ measurement results was larger than 25%, the third set of in-situ measurement would be carried out for result confirmation purpose.
- 2.31 Water sampler was lowered into the water to the required depths of sampling. Upon reaching the pre-determined depth, a messenger to activate the sampler was then released to travel down the wire. The water sample was sealed within the sampler before retrieving. At each station, water samples at three depths (1 m below water surface, mid-depth and 1 m above seabed) were collected accordingly. Water samples were stored in a cool box and kept at less than 4°C but without frozen and sent to the laboratory as soon as possible. In addition, field information as described in Section 2.25 was also recorded.

### **Laboratory Analytical Methods**

- 2.32 The testing of all parameters was conducted by Wellab Ltd. (HOKLAS Registration No.083) and comprehensive quality assurance and control procedures in place in order to ensure quality and consistency in results. The testing method, lowest detection limit and limit of reporting are provided in Table 2.4.

**Table 2.4 Methods for Laboratory Analysis for Water Samples**

Determinant	Proposed Method	Limit of Reporting	Lowest Detection Limit
Cadmium (Cd)	In-house Method SOP 053 (ICP-ES) and SOP 076 (ICP-MS) [Ref. Method: APHA 19e 3030F 3b and 3120B, USEPA 3005A & 6020A]	0.1 µg/L	0.1 µg/L
Chromium (Cr)		0.2 µg/L	0.2 µg/L
Copper (Cu)		0.2 µg/L	0.2 µg/L
Silver (Ag)		0.2 µg/L	0.2 µg/L
Nickel (Ni)		0.2 µg/L	0.2 µg/L
Zinc (Zn)		0.4 µg/L	0.4 µg/L
Lead (Pb)		0.2 µg/L	0.2 µg/L
Mercury (Hg)		0.2 µg/L	0.2 µg/L
Suspended Solids (SS)		APHA 17ed 2540 D	0.5 mg/L
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> )	APHA 19ed 5210 B	2 mg-O <sub>2</sub> /L	0.4 mg-O <sub>2</sub> /L
Ammonia Nitrogen (NH <sub>3</sub> -N)	In-house method SOP057 (FIA) [Ref. Method: APHA 20e 4500-NH <sub>3</sub> H (FIA)]	0.01mg NH <sub>3</sub> -N/L	0.01mg NH <sub>3</sub> -N/L
Unionized Ammonia (UIA)	By Calculation	0.001mg/L	-
Total Kjeldahl Nitrogen (TKN)	In-house method SOP058(FIA) [Ref. Method: APHA 20e 4500-Norg A,B,D (FIA)]	0.1mg N/L	0.1mg N/L
Nitrite-nitrogen (NO <sub>2</sub> -N)	In-house Method SOP068 (FIA) [Ref. Method: APHA 20e 4500-NO <sub>2</sub> <sup>-</sup> B (FIA)]	0.002 mg NO <sub>2</sub> <sup>-</sup> -N/L	0.002 mg NO <sub>2</sub> <sup>-</sup> -N/L
Nitrate-nitrogen (NO <sub>3</sub> -N)	In-house Method SOP056 (FIA) [Ref. Method: APHA 20e 4500-NO <sub>3</sub> <sup>-</sup> F (FIA)]	0.01 mg NO <sub>3</sub> <sup>-</sup> -N/L	0.01 mg NO <sub>3</sub> <sup>-</sup> -N/L
<i>E. coli</i>	In-house method SOP069 (Membrane Filtration Method by CHROMagar) [Ref. Method: APHA 20e 9221E & 9222D]	1 cfu/100mL	1 cfu/100mL
Ortho-phosphate (PO <sub>4</sub> )	In-house Method SOP054 (FIA) [Ref. Method: APHA 20e 4500-P A,F,G (FIA)]	0.01mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.01mg PO <sub>4</sub> <sup>3-</sup> -P/L
Total Phosphorous (TP)	In-house Method SOP 055 (FIA) [Ref. Method: APHA 20e 4500-P B,E,F,H (FIA)]	0.01 mg-P/L	0.01 mg-P/L

2.33 To calculate the amount of unionized ammonia present (UIA), the Total Ammonia Nitrogen (TAN) must be multiplied by the appropriate factor based on the pH and temperature from the water sample. The calculation is in accordance with Ambient Water Quality Criteria for Ammonia published by United States Environmental Protection Agency. The lowest reporting limit of UIA is 0.001mg/L.

## QA/QC Requirements

### Decontamination Procedures

- 2.34 Water sampling equipment used during the course of the monitoring programme was decontaminated by manual washing and rinsed clean seawater/distilled water after each sampling event. All disposal equipment was discarded after sampling.

### Sampling Management and Supervision

- 2.35 Water samples were dispatched to the testing laboratory for analysis as soon as possible after the sampling. All samples were stored in a cool box and kept at less than 4°C but without frozen. All water samples were handled under chain of custody protocols and relinquished to the laboratory representatives at locations specified by the laboratory.

### Quality Control Measures for Sample Testing

- 2.36 The samples testing were performed by HOKLAS accredited laboratories. The following quality control programme was performed by the laboratories for each batch of samples:
- ✧ Method blank;
  - ✧ Sample duplicate (at 5% level i.e. one for every 20 samples);
  - ✧ Sample spike (at 5% level i.e. one for every 20 samples); and
  - ✧ Quality control samples.

## Results and Observation

- 2.37 The general water quality monitoring was conducted on 18<sup>th</sup> August 2011.
- 2.38 No notification of emergency sewage discharges from the preliminary treatment works (PTWs) on both sides of the Victoria Harbour and marine construction activities in the vicinity of the stations during the monitoring works. No Monitoring was conducted during and after any storm events where sewage overflow may be anticipated from the PTWs.
- 2.39 The weather during the sampling at mid-ebb tide and mid-flood tide was mainly sunny.
- 2.40 No marine activities were conducted in the vicinity of the stations during the monitoring.
- 2.41 The laboratory testing report and QC report are provided in **Appendix C1 and Appendix D1 respectively**.

2.42 The water depth of each monitoring station at mid-ebb and mid flood tide is shown in Table 2.5 and the *in-situ* measurement results including dissolved oxygen, turbidity, salinity, pH, secchi disc depth and temperature of the general water quality monitoring are provided in **Appendix E1**.

**Table 2.5 Water Depth of Water Quality Monitoring Stations**

Water Quality Monitoring Stations	Water Depth (m)	
	Mid-Ebb	Mid-Flood
AC1	2.0	2.0
AC2	3.0	3.0
AC3	2.0	2.0
AC4	4.5	5.0
AC5	2.5	3.0
AC6	5.0	5.5
AC7	6.0	6.0
KT1	6.5	7.5
IB1	6.0	6.0
IB2	6.5	7.5
IB3	8.0	9.0
OB1	7.0	7.5
VH1	23.0	23.0
VH2	16.0	17.0
KTN	2.0	2.0
JVC	3.5	4.0
WSD Intake at Tai Wan	9.0	10.0
WSD Intake at Cha Kwo Ling	10.0	10.0
WSD Intake at Quarry Bay	8.0	8.0
WSD Intake at Sai Wan Ho	13.0	14.0

### 3. Odour Sampling

#### **Sampling Requirements**

- 3.1 The odour sampling shall be carried out within Kai Tak Approach Channel (KTAC) and Kwun Tong Typhoon Shelter (KTTS) as well as To Kwa Wan (TKW) and Ma Tau Kok (MTK) waterfront at half-yearly interval to determine the odour emissions from water surface throughout the Contract Period.
- 3.2 The first odour sampling shall be carried within the August of 2011 or as agreed with the Engineer. One of the sampling events within each calendar year shall be undertaken during summer season (i.e. July or August).
- 3.3 In order to capture more representative results, measurements and sampling will be conducted during low tide periods with reference to the tidal chart of Hong Kong Observatory for KTAC, KTTS and TKW.
- 3.4 The relevant meteorological data (e.g. ambient temperature, wind speed and direction, etc.) from the Hong Kong Observatory station during the measurement/sampling period were recorded for reference.
- 3.5 The odour sample was not contaminated, lost, or altered during storage. In this regard, the odour sampling bag was:
- Odour-free, i.e. they will not add odours to the sample;
  - Made of materials which does not absorb or react with odorous samples;
  - Sufficiently impervious to prevent any significant loss of odour components;
  - Reasonably robust;
  - Leak-free;
  - Equipped with leak-free fittings, compatible with olfactometer and other sampling equipment; and
  - Of sufficient capacity to enable the completion of the tests.
- 3.6 Exposure of samples to direct sunlight was avoided to minimize photochemical reactions.

#### **Monitoring Requirements**

- 3.7 The following parameters were also monitored at each of the measurement locations.
- Dissolved oxygen (DO) (% saturation) in the water column at depth 1m above seabed;
  - Dissolved oxygen (DO) (mg/L) in the water column at depth 1m above seabed;
  - Water Temperature (°C) at depth 1m above seabed;
  - Ambient Air Temperature (°C)
  - Water depth (m)
  - Salinity (parts per thousand) at depth 1m above seabed;
  - Redox Potential (mV) at depth 1m above seabed; and

- pH at depth 1m above seabed.

### **Monitoring Locations**

3.8 Thirteen monitoring stations are proposed for the odour sampling. The locations are also summarized in Table 3.1 and shown on **Figure 2**.

**Table 3.1 Odour Sampling Stations**

Location ID	Sampling Location	Coordinates	
		Easting	Northing
SA1	Northern KTAC, in the vicinity of Kai Tak Nullah (KTN)	838744.13	820311.91
SA2	Northern KTAC	838840.95	820030.07
SA3	Northern KTAC, in the vicinity of Jordan Valley Culvert (JVC) Outfall	839163.99	819942.90
SA4	Southern KTAC	839407.66	819537.90
SA5		839580.35	819512.47
SA6		839647.87	819329.45
SA7	KTTS	840122.60	819275.72
SA8		840270.71	819015.35
SA9		840479.55	818798.14
SA10	Kowloon Bay (between runway opening and TKWTS)	838694.90	819582.080
SA11	MTK waterfront, at the end of Ma Tau Kok Road	838138.20	820038.77
SA12	TKW waterfront, near Vehicle Examination Centre	837982.97	819704.84
SA13	Hoi Sham Park waterfront	837857.15	819436.94

### **Monitoring Equipment**

#### **Dissolved Oxygen (DO) and Temperature Measuring Equipment**

- 3.9 The instrument for measuring dissolved oxygen and temperature was portable and weatherproof complete with cable, sensor, comprehensive operation manuals and use DC power source. It was capable of measuring:
- a dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation; and
  - a temperature of 0-45 degree Celsius.
- 3.10 It has a membrane electrode with automatic temperature compensation complete with a cable.
- 3.11 Sufficient stocks of spare electrodes and cables were available for replacement where necessary.
- 3.12 Salinity compensation is built-in in the DO equipment.



### **Water Depth Detector**

- 3.13 A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring station.

### **pH**

- 3.14 The instrument was consisting of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It was readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 were used for calibration of the instrument before and after use.

### **TM39 (mV meter)**

- 3.15 The meter features high accuracy, rugged plastic enclosure, microprocessor controlled evaluation and operation with pH or redox combination electrodes. The measuring range was from -1999 to 1999 mV.

### **Thermo-Anemometer**

- 3.16 The meter capable of record up to 2-hour air velocity averaging for measurements and temperature measurement via built-in thermistor.

### **Salinity**

- 3.17 A portable salinometer capable of recording salinity within the range of 0-40 ppt was be used for salinity measurements.

### **Position System**

- 3.18 A hand held differential Global Positioning System (GPS) was used during odour sampling to ensure the monitoring vessel is at the correct location before taking measurements. GPS was calibrated at checkpoint (Quarry Bay Survey Nail at Easting 840683.49 and Northing 816709.55) to ensure the monitoring station was at the correct position before taking measurement and odour samples.
- 3.19 Table 3.2 summarizes the equipment used in the odour monitoring program. Copies of the calibration certificates of the equipment are shown in **Appendix A2**.

**Table 3.2 Equipment for Odour Monitoring Program**

Equipment	Model and Make	Qty.
Multi-parameter Water Quality System	YSI 6820-C-M	1
mV Meter	TM39	1
Monitoring Position Equipment	“Magellan” Handheld GPS Model GPS-320	1
Thermo-Anemometer	Extech 451104	1
Water Depth Detector	Fishfinder 140	1

### **Calibration of *In Situ* Instruments**

- 3.20 All *in situ* monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring programme. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring event.
- 3.21 The thermo-anemometer was checked and calibrated at yearly intervals.
- 3.22 The BS 1427:2009, "Guide to on-site test methods for the analysis of waters" was observed for the on site calibration of field equipment (Multi-parameter Water Quality System).
- 3.23 Sufficient stocks of spare parts were maintained for replacements when necessary. Backup monitoring equipment was also made available so that monitoring can proceed uninterrupted even when some equipment was under maintenance, calibration, etc.

### **Monitoring Parameters and Frequency**

- 3.24 Table 3.3 summarizes the monitoring parameters and frequencies of the odour sampling at each of the measurement locations.

**Table 3.3 Odour Sampling Parameters and Frequency**

Monitoring Stations	Parameters, unit	Frequency
SA1 SA2 SA3 SA4 SA5 SA6 SA7 SA8 SA9 SA10 SA11 SA12 SA13	<ul style="list-style-type: none"> <li>• Dissolved oxygen (DO) (% saturation) in the water column at depth 1m above seabed;</li> <li>• Dissolved oxygen (DO) (mg/L) in the water column at depth 1m above seabed;</li> <li>• Water Temperature (°C) at depth 1m above seabed;</li> <li>• Ambient Air Temperature (°C)</li> <li>• Water depth (m)</li> <li>• Salinity (parts per thousand) at depth 1m above seabed;</li> <li>• Redox Potential (mV) at depth 1m above seabed; and</li> <li>• pH at depth 1m above seabed.</li> </ul> <hr/> <ul style="list-style-type: none"> <li>• One odour sample was collected at each measurement location for olfactometry analysis in laboratory</li> </ul>	<ul style="list-style-type: none"> <li>• Half-yearly</li> </ul>

### **Laboratory Analytical Methods**

#### ***Olfactometry Analysis in Laboratory (The Hong Kong Polytechnic University)***

- 3.25 The odour samples were collected using a hood method such as a wind tunnel system with the inflow rate with speed of 0.01 m/s and the odour concentration of the collected air samples were determined by a forced-choice dynamic olfactometer with a panel of human assessors being the sensor in accordance with the European Standard Method: Air Quality – Determination of Odour Concentration by Dynamic Olfactometry (EN13725) within 24 hours after collection. About 60L of gas sample was collected at the selected sampling location.
- 3.26 The collected odour samples were delivered to the laboratory (PolyU) within 24 hours after collection.
- 3.27 The odour laboratory was ventilated to maintain an odour-free environment and to provide fresh air to the panel members. Each odour testing session comprised at least five qualified panelists. All of the panelists were screened beforehand by using 48ppm solution/mixture of certified n-butanol standard gas.
- 3.28 The olfactometry method was normally used for a source odour concentration analysis with a detection limit of 10ou/m<sup>3</sup>.

### **QA/QC Requirements**

- 3.29 During each odour sampling day, one blank sample was collected for quality control. The sample was taken by purging pure nitrogen gas into odour sampling bag directly on site as a blank sample.
- 3.30 The olfactometry analysis was conducted by laboratory (PolyU) complying with the European Standard EN13725:2003.
- 3.31 The results of blank sample was below the threshold of olfactometry measurement, which means the on-site filling gas used in this case had no background odour to interfere the results of real odour samples. The laboratory QA/QC results are provided in the laboratory analysis report.

### **Results and Observation**

- 3.32 The odour sampling schedule in the reporting period is provided in **Appendix B**. The odour sampling for 13 locations was conducted during the period of low water level.
- 3.33 The odour sampling was conducted on 12<sup>th</sup> August 2011.
- 3.34 The weather during the sampling was mainly fine.
- 3.35 No marine activities were conducted in the vicinity of the stations during the monitoring.
- 3.36 The following observation near the monitoring stations were recorded during the field works:
- (a) Smell of sewage was noticed during the sampling at SA1, SA2 and SA3.
- 3.37 The on-site odour sampling and laboratory olfactometry measurement report prepared by PolyU are provided in **Appendix C2**. The calibration records for the dilution apparatus used for olfactometry measurement are provided in **Appendix A2**.
- 3.38 The *in-situ* measurement results including dissolved oxygen, water and ambient temperature, water depth, salinity, pH and redox potential are provided in **Appendix E2**.
- 3.39 The relevant meteorological data including ambient temperature, wind speed and wind direction from the Hong Kong Observatory Station during the measurement/sampling period are provided in **Appendix F**.

#### 4. Odour Patrol

##### Monitoring Methodology

- 4.1 During the patrol, the patrol members shall conduct the odour intensity analysis. The sequence shall generally start from less odorous locations to stronger odorous locations. The independent trained personnel/competent persons shall use their nose (olfactory sensors) to sniff odours at different locations. The main odour emission sources and the areas to be affected by the odour nuisance shall be identified. No odour patrol shall be conducted during rainy days.
- 4.2 The odour intensity should be determined at 5 different levels according to the criteria below:
- 0 - Not detected. No odour perceived or an odour so weak that it cannot be easily characterised or described;
  - 1 - Slight Identifiable odour, and slight chance to have odour nuisance;
  - 2 - Moderate Identifiable odour, and moderate chance to have odour nuisance;
  - 3 - Strong Identifiable, likely to have odour nuisance;
  - 4 - Extreme Severe odour, and unacceptable odour level.

##### Odour Patrol Survey

- 4.3 Two qualified odour patrol members will be conducted. The qualified odour patrol members have their individual n-butanol thresholds complied with the requirement of European Standard Method (EN13725) in the range of 20 to 80 ppb.
- 4.4 The odour patrol along with the odour route with 60 sniffing locations will be conducted by the 2 qualified odour patrol members during daytime and evening/night time covering high tide and low tide conditions.
- 4.5 In general, the proposed odour patrol route and the proposed sniffing locations is in the vicinity of the planned ASRs within the Kai Tak Development to determine any potential operational odour impacts arising from Kai Tak Approach Channel (KTAC) and Kwun Tong Typhoon Shelter (KTTS). Additional sniffing locations shall be conducted for the place where odour likely detected by the odour patrol members.
- 4.6 In addition, sniffing location no. 35 is shifted to the right side about 100m in compare with the EM&A Manual due to the access problem. The final odour patrol route and sniffing locations is shown in **Figure 3**.
- 4.7 During the odour patrol survey, the following findings shall be recorded:
- the prevailing weather condition (sunny, fine, cloudy and rainy);
  - the wind direction;
  - the local wind speed;

- odour intensity;
- any odour detected during sampling and the flavors of odour with detail description of characteristics (e.g. sewage or rotten egg smell, decayed vegetables, ammonical, dischargeable odour, putrefaction, sharp, pungent, fish, irritating, fruit, vinegar, etc);
- potential odour source (exposed sediment, water or sewage; floating debris or material, others (to be specified));
- downwind or upwind direction from the odour source;
- duration of odour (intermittent or continuous) during sampling;
- tidal conditions; and
- time of survey.

4.8 Odour intensity at each location shall be assessed by the 2 odour patrol members, respectively, and all locations are shown in **Figure 3**.

#### **Monitoring Equipment**

##### *Thermo-Anemometer*

4.9 The meter capable of record up to 2-hour air velocity averaging for measurements and temperature measurement via built-in thermistor.

#### **Calibration of In Situ Instruments**

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

4.11 The thermo-anemometer shall be checked and calibrated at yearly intervals.

4.12 Backup monitoring equipment shall be available so that monitoring can proceed uninterrupted even when some equipment was under maintenance, calibration, etc.

#### **Odour Patrol Results and On-Site Observations**

4.13 No odour patrol works were conducted in the reporting period.

## 5. Sediment monitoring

### Monitoring Locations

5.1 Thirteen monitoring stations are proposed for the sediment monitoring. The locations are also summarized in Table 5.1 and shown on **Figure 2**.

**Table 5.1 Sediment Monitoring Stations**

Location ID	Sampling Location	Coordinates	
		Easting	Northing
SA1	Northern KTAC, in the vicinity of Kai Tak Nullah (KTN)	838744.13	820311.91
SA2	Northern KTAC	838840.95	820030.07
SA3	Northern KTAC, in the vicinity of Jordan Valley Culvert (JVC) Outfall	839163.99	819942.90
SA4	Southern KTAC	839407.66	819537.90
SA5		839580.35	819512.47
SA6		839647.87	819329.45
SA7	KTTS	840122.60	819275.72
SA8		840270.71	819015.35
SA9		840479.55	818798.14
SA10	Kowloon Bay (between runway opening and TKWTS)	838694.90	819582.08
SA11	MTK waterfront, at the end of Ma Tau Kok Road	838138.20	820038.77
SA12	TKW waterfront, near Vehicle Examination Centre	837892.97	819704.84
SA13	Hoi Sham Park waterfront	837857.15	819436.94

## Monitoring Parameters and Frequency

5.2 Table 5.2 summarizes the monitoring parameters and frequencies of the sediment monitoring.

**Table 5.2 Sediment Monitoring Parameters and Frequency**

Monitoring Stations	Parameters, unit	Frequency
SA1 SA2 SA3 SA4 SA5 SA6 SA7 SA8 SA9 SA10 SA11 SA12 SA13	<p><b>Laboratory Testing:</b></p> <ul style="list-style-type: none"> <li>• Acid Volatile Sulphides (AVS), (mg/kg dry weight)</li> <li>• Residual Nitrate, (mg NO<sub>3</sub>-N/L wet weight)</li> <li>• Reduction – Oxidation (Redox) Potential, (mV)/pH</li> </ul>	<ul style="list-style-type: none"> <li>• Half-yearly</li> </ul>

## Sampling Procedure

5.3 A hand held differential Global Positioning System (GPS) was used during the sediment monitoring to ensure the sampling and monitoring are at the correct location. The depth of water, in metres below the Principal datum (mPD), was measured.

5.4 At each designated monitoring station, the undisturbed surface sediment core samples were collected by manual or gravity pushing the corer into the sediment. Care was taken in collecting the core to prevent contact with air or excessive mixing of the sample. The core was at least 0.8m in length. Core recovery was at least 60% and the core was immediately sealed after collection to prevent leakage of odour and liquids. Care was taken in sealing the core in order to prevent any gas leakage and to minimize the amount of air inside the core.

5.5 The core was properly labeled with information such as sampling ID, sample length, diameter and depth as well as sampling date and time.

## Decontamination Procedures

5.6 Sampling equipment used during the course of the investigation programme was decontaminated by manual washing and fresh water rinsing after each sampling event. All disposable equipment was discarded after each use.

## Method of Sample Handling Storage and Transportation

5.7 The core samples were immediately stored, transported and maintained at 4°C or lower without being frozen in dark prior to any laboratory testing. All core samples were packed and transported in such a manner as to avoid shock, vibration or any other



disturbance of the samples. Core samples were delivered to Wellab Ltd. (HOKLAS Registration No.083) after collection on the same day. All samples were handled under chain of custody protocols, delivered to Wellab Ltd.

### **Details of Testing**

- 5.8 The collected sediment core samples with diameter of 100mm (from top to approximately 10cm in depth) were tested. The reporting limit, preparation method, determination method and the parameters to be tested are shown in Table 5.3.

**Table 5.3 Testing Parameters, Reporting Limit and Analytical Method**

Parameters, unit	Reporting Limit	Preparation Method USEPA Method	Determination Method USEPA Method
Acid Volatile Sulphides (mg/kg dry weight)	1	N/A	Draft Analytical Method for Determination of Acid Volatile Sulfide in Sediment. Office of Water Regulations and Standards (1991), (USEPA 821-R-91-100)
Redox (mV)	1	N/A	WTW pH/redox meter (or equivalent) calibrated to ISO9002 Standards
pH	0.1	N/A	
Residual Nitrate (mg NO <sub>3</sub> -N/L wet weight)	0.05	N/A	APHA 4500 NO <sub>3</sub> -E and 4500 NO <sub>2</sub> -B

### **QA/QC Requirements**

- 5.9 All laboratory tests were conducted by laboratory accredited by Hong Kong Laboratory Accreditation Scheme (HOKLAS) - Wellab Ltd. (HOKLAS Registration No.083).
- 5.10 The following quality control programme was performed for laboratory testing:
- ✧ Method blank;
  - ✧ Duplicate (at 5% level i.e. one for every 20 samples); and
  - ✧ Matrix Spike (at 5% level i.e. one for every 20 samples).

Quality Controls	Acceptance Criteria
Method Blank	Less than method detection limit (MDL)
Duplicate	Confine within $\pm 25\%$ of the mean of duplicated results
Matrix Spike	Confine within $\pm 25\%$ of the recovery of spike concentration

## **Monitoring Equipment**

### **Water Depth Detector**

- 5.11 A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring station.

### **Position System**

- 5.12 A hand held differential Global Positioning System (GPS) was used during sediment monitoring to ensure the monitoring vessel is at the correct location before taking measurements.
- 5.13 Table 5.4 summarizes the equipment used in the sediment monitoring program. Copies of the calibration/performance check records of the equipments used in the sediment monitoring and calibration certificates of mV Meter shown in **Appendix A3**. The equipments of flow injection analyzer and UV/Vis Spectrophotometer were checked/calibrated regularly every six months and three months regularly.

**Table 5.4 Equipment for Sediment Monitoring Program**

<b>Equipment</b>	<b>Model and Make</b>	<b>Qty.</b>
Monitoring Position Equipment	"Magellan" Handheld GPS Model GPS-320	1
Water Depth Detector	Fishfinder 140	1

## **Results and Observation**

- 5.14 The sediment monitoring schedule in the reporting period is provided in **Appendix B**.
- 5.15 The sediment monitoring was conducted on 26<sup>th</sup> August 2011.
- 5.16 The weather during the sampling was mainly fine.
- 5.17 No marine activities were conducted in the vicinity of the stations during the monitoring.
- 5.18 The laboratory testing report of the collected sediment samples and QC report are provided in **Appendix C3 and Appendix D2 respectively**.
- 5.19 The sediment sampling data record sheet is provided in **Appendix E3**.
- 5.20 The depth of water at each of the sediment monitoring stations is shown in Table 5.5.

**Table 5.5 Water Depth at Sediment Monitoring Stations**

<b>Location ID</b>	<b>Sampling Location</b>	<b>Water Depth, mPD</b>
SA1	Northern KTAC, in the vicinity of Kai Tak Nullah (KTN)	1.8
SA2	Northern KTAC	1.3
SA3	Northern KTAC, in the vicinity of Jordan Valley Culvert (JVC) Outfall	2.3
SA4	Southern KTAC	4.5
SA5		2.9
SA6		5.8
SA7	KTTS	4.8
SA8		5.7
SA9		6.1
SA10	Kowloon Bay (between runway opening and TKWTS)	5.6
SA11	MTK waterfront, at the end of Ma Tau Kok Road	3.6
SA12	TKW waterfront, near Vehicle Examination Centre	5.1
SA13	Hoi Sham Park waterfront	4.1

## **6. Conclusion**

- 6.1 Environmental monitoring works for water quality, odour and sediment were performed in August 2011 and all monitoring results were checked and reviewed.
- 6.2 The next general water quality monitoring will be conducted in November 2011 and the sediment and odour monitoring will be conducted in February 2012.

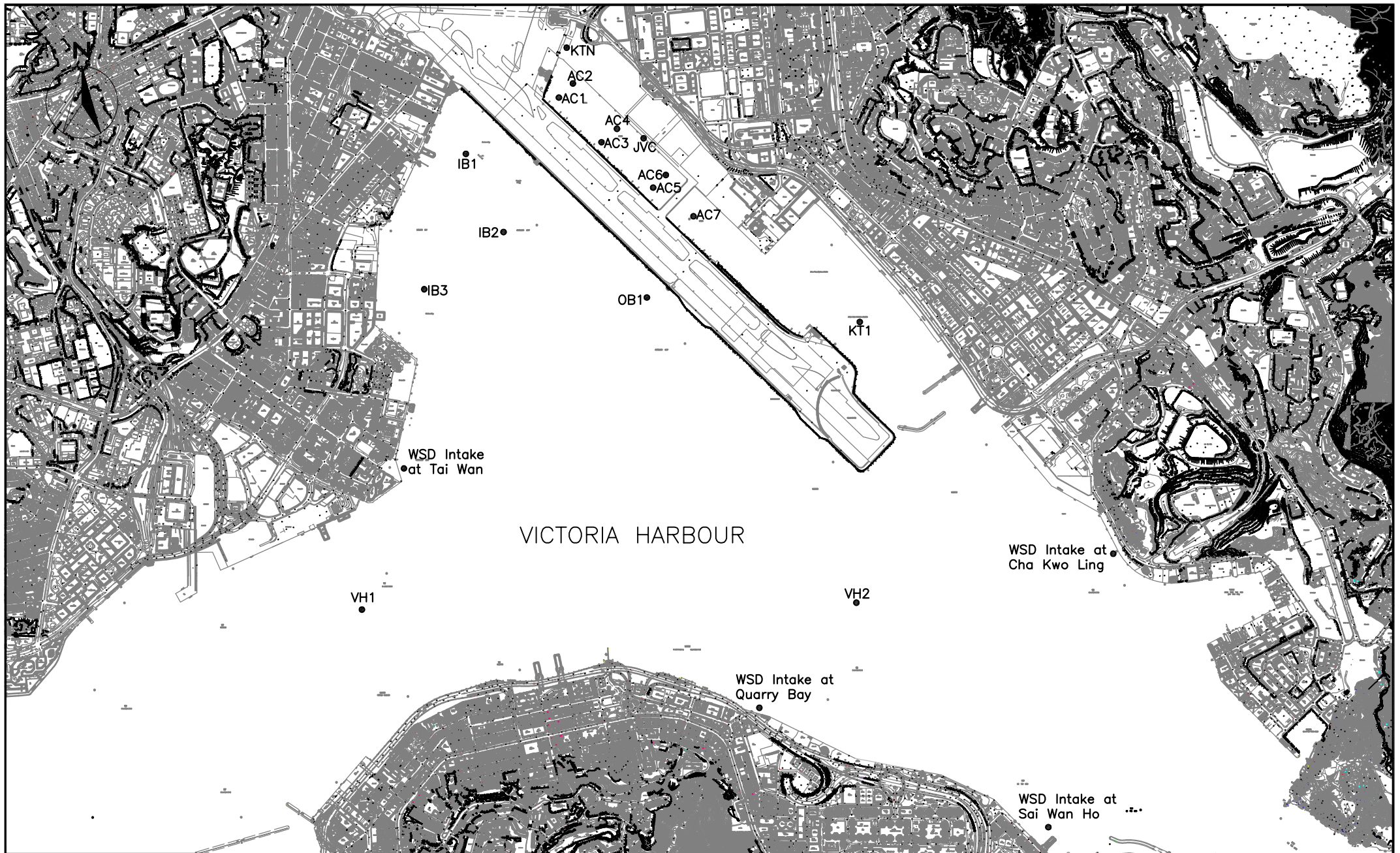
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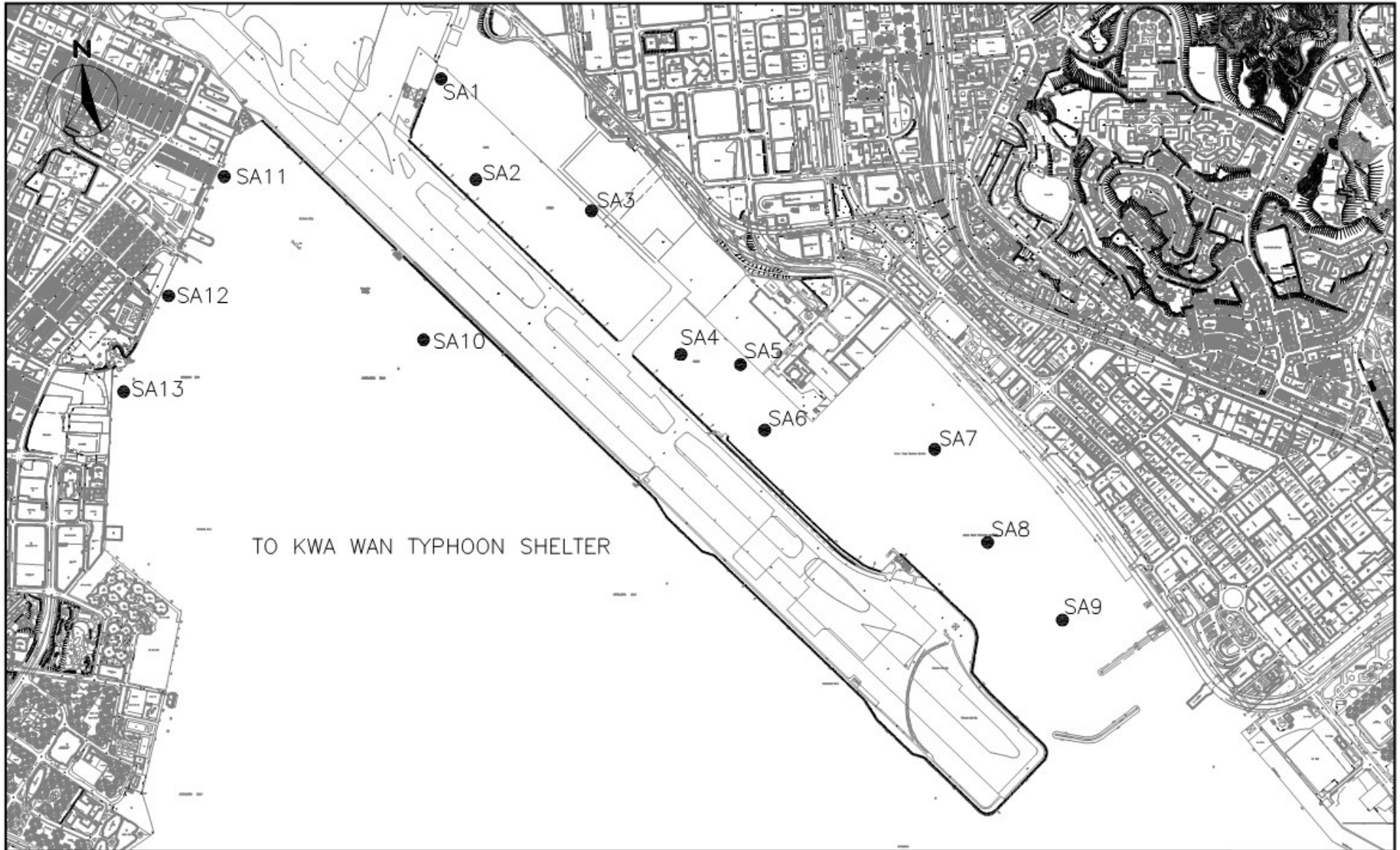
## FIGURES

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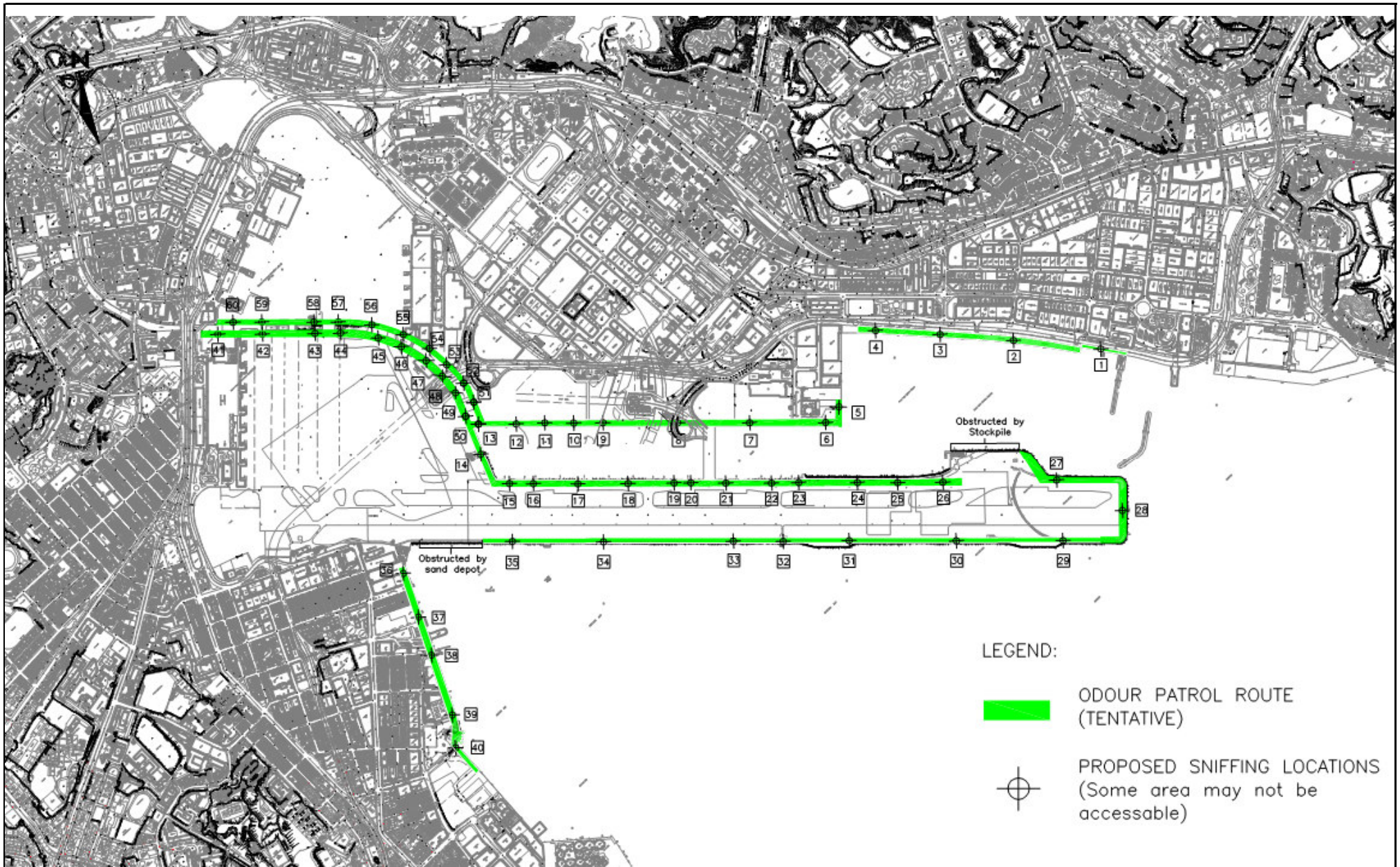


SCALE	N.T.S	DATE	3 AUG 2011	
CHECK	IT	DRAWN	TW	
PROJECT NO.	MA11017	FIGURE NO.	1	REV —



Contract No. KL /2010/02  
 Kai Tak Development – Kai Tak Approach Channel and Kwun Tong  
 Typhoon Shelter Improvement Works (Phase 1)  
 Location of Odour Sampling and Sediment Monitoring Stations

SCALE	N.T.S.	DATE	AUG 2011
CHECK	IT	DRAWN	TW
JOB No.	MA11017	FIGURE NO.	FIG 2
		REV	-



Contract No. KL/2010/02 Kai Tak Development - Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Scale

N.T.S

Project No.

MA11017

Proposed Odour Patrol Route and Sniffing Locations

Date

Aug-11

Figure

3

CINOTECH



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**APPENDIX A1  
COPIES OF CALIBRATION  
CERTIFICATES FOR WATER  
QUALITY MONITORING**

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## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/W/110617-1
Date of Issue:	2011-06-18
Date Received:	2011-06-17
Date Tested:	2011-06-17
Date Completed:	2011-06-18
Next Due Date:	2011-09-17

**ATTN:** Mr. Henry Leung

Page: 1 of 2

### Certificate of Calibration

**Item for calibration:**

Description : Sonde Environmental Monitoring System  
Manufacturer : YSI  
Model No. : 6820-C-M  
Serial No. : 02D0126AA  
Equipment No. : W.03.01  
Project No. : C013

**Test conditions:**

Room Temperature : 24 degree Celsius  
Relative Humidity : 56%

**Test Specifications:**

Conductivity & Salinity Sensor, Model: 6560, S/N: 05A1209  
1. Conductivity performance check with Potassium Chloride standard solution  
2. Salinity performance check with Sodium Chloride standard solution  
Dissolved Oxygen Sensor, Model: 6562, S/N: 04A0145  
1. Performance check against Winkler titration  
Turbidity Sensor, Model: 6136, S/N: 05A1610AJ  
1. Calibration check with Formazin standard solution  
pH Meter, Model: 6561, S/N: 01J  
1. Calibration check with standard pH buffer  
Depth Meter  
1. Calibration check at 1m water level depth

**Methodologies:**

1. YSI 6-Series Sonde Environmental Monitoring System Instruction Manual  
2. In-house method with reference to APHA and ISO standards

**PREPARED AND CHECKED BY:**

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

Test Report No.:	C/W/110617-1
Date of Issue:	2011-06-18
Date Received:	2011-06-17
Date Tested:	2011-06-17
Date Completed:	2011-06-18
Next Due Date:	2011-09-17

Page: 2 of 2

**Results:**

1. Conductivity performance check

Specific Conductivity, $\mu\text{S}/\text{cm}$		Correction, $\mu\text{S}/\text{cm}$	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	$D = C1 - C2$	
1421	1420	2	$1420 \pm 20$

2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.0	30.0	0.0	$30.0 \pm 3$

3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O <sub>2</sub> /L		Correction, mg O <sub>2</sub> /L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.1	9.1	0.0	$\pm 0.2$
Half-saturated	5.6	5.6	0.0	$\pm 0.2$
Zero	0.0	0.0	0.0	$\pm 0.2$

4. Turbidity check

Turbidity value in solution, NTU	Calibration Value, NTU	Correction, NTU	Acceptable range
0.00	0.00	0.00	$0.00 \pm 0.05$
100	100	0	$100 \pm 5$

5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error $\Delta\text{pH}_j$ , pH unit	0.01	Less than 0.05
Shift on stirring $\Delta\text{pH}_s$ , pH unit	0.01	Less than 0.02
Noise $\Delta\text{pH}_n$ , pH unit	0.00	Less than 0.02

6. Depth Meter check

Instrument Reading, m	Calibration Value, m	Correction, m	Acceptable range
1.0	1.00	0.00	$1.00 \pm 0.05$

\*\*\*\*\*END OF REPORT\*\*\*\*\*

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/W/110617-2
Date of Issue:	2011-06-18
Date Received:	2011-06-17
Date Tested:	2011-06-17
Date Completed:	2011-06-18
Next Due Date:	2011-09-17

**ATTN:** Mr. Henry Leung

Page: 1 of 2

### Certificate of Calibration

**Item for calibration:**

Description : Sonde Environmental Monitoring System  
Manufacturer : YSI  
Model No. : 6820-C-M  
Serial No. : 02D0293AA  
Equipment No. : W.03.02  
Project No. : C013

**Test conditions:**

Room Temperature : 24 degree Celsius  
Relative Humidity : 56%

**Test Specifications:**

Conductivity & Salinity Sensor, Model: 6560, S/N: 02C0886  
1. Conductivity performance check with Potassium Chloride standard solution  
2. Salinity performance check with Sodium Chloride standard solution  
Dissolved Oxygen Sensor, Model: 6562, S/N: 0261137  
1. Performance check against Winkler titration  
Turbidity Sensor, Model: 6136, S/N: 05F2030AQ  
1. Calibration check with Formazin standard solution  
pH Meter, Model: 6561, S/N: 02A  
1. Calibration check with standard pH buffer  
Depth Meter  
1. Calibration check at 1m water level depth

**Methodologies:**

1. YSI 6-Series Sonde Environmental Monitoring System Instruction Manual  
2. In-house method with reference to APHA and ISO standards

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

Test Report No.:	C/W/110617-2
Date of Issue:	2011-06-18
Date Received:	2011-06-17
Date Tested:	2011-06-17
Date Completed:	2011-06-18
Next Due Date:	2011-09-17

Page: 2 of 2

### Results:

#### 1. Conductivity performance check

Specific Conductivity, $\mu\text{S}/\text{cm}$		Correction, $\mu\text{S}/\text{cm}$	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	$D = C1 - C2$	
1420	1420	0	$1420 \pm 20$

#### 2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.1	30.0	0.1	$30.0 \pm 3$

#### 3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O <sub>2</sub> /L		Correction, mg O <sub>2</sub> /L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.0	9.0	0.0	$\pm 0.2$
Half-saturated	5.8	5.8	0.0	$\pm 0.2$
Zero	0.0	0.0	0.0	$\pm 0.2$

#### 4. Turbidity check

Turbidity value in solution, NTU	Calibration Value, NTU	Correction, NTU	Acceptable range
0.00	0.00	0.00	$0.00 \pm 0.05$
100	100	0	$100 \pm 5$

#### 5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error $\Delta\text{pH}_j$ , pH unit	0.01	Less than 0.05
Shift on stirring $\Delta\text{pH}_s$ , pH unit	0.01	Less than 0.02
Noise $\Delta\text{pH}_n$ , pH unit	0.01	Less than 0.02

#### 6. Depth Meter check

Instrument Reading, m	Calibration Value, m	Correction, m	Acceptable range
1.0	1.00	0.00	$1.00 \pm 0.05$

\*\*\*\*\*END OF REPORT\*\*\*\*\*

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**APPENDIX A2  
COPIES OF CALIBRATION  
CERTIFICATES FOR ODOUR  
SAMPLING**

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## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/W/110617-1
Date of Issue:	2011-06-18
Date Received:	2011-06-17
Date Tested:	2011-06-17
Date Completed:	2011-06-18
Next Due Date:	2011-09-17

**ATTN:** Mr. Henry Leung

Page: 1 of 2

### Certificate of Calibration

**Item for calibration:**

Description : Sonde Environmental Monitoring System  
Manufacturer : YSI  
Model No. : 6820-C-M  
Serial No. : 02D0126AA  
Equipment No. : W.03.01  
Project No. : C013

**Test conditions:**

Room Temperature : 24 degree Celsius  
Relative Humidity : 56%

**Test Specifications:**

Conductivity & Salinity Sensor, Model: 6560, S/N: 05A1209  
1. Conductivity performance check with Potassium Chloride standard solution  
2. Salinity performance check with Sodium Chloride standard solution  
Dissolved Oxygen Sensor, Model: 6562, S/N: 04A0145  
1. Performance check against Winkler titration  
Turbidity Sensor, Model: 6136, S/N: 05A1610AJ  
1. Calibration check with Formazin standard solution  
pH Meter, Model: 6561, S/N: 01J  
1. Calibration check with standard pH buffer  
Depth Meter  
1. Calibration check at 1m water level depth

**Methodologies:**

1. YSI 6-Series Sonde Environmental Monitoring System Instruction Manual  
2. In-house method with reference to APHA and ISO standards

**PREPARED AND CHECKED BY:**

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

Test Report No.:	C/W/110617-1
Date of Issue:	2011-06-18
Date Received:	2011-06-17
Date Tested:	2011-06-17
Date Completed:	2011-06-18
Next Due Date:	2011-09-17

Page: 2 of 2

**Results:**

1. Conductivity performance check

Specific Conductivity, $\mu\text{S}/\text{cm}$		Correction, $\mu\text{S}/\text{cm}$	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	$D = C1 - C2$	
1421	1420	2	$1420 \pm 20$

2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.0	30.0	0.0	$30.0 \pm 3$

3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O <sub>2</sub> /L		Correction, mg O <sub>2</sub> /L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.1	9.1	0.0	$\pm 0.2$
Half-saturated	5.6	5.6	0.0	$\pm 0.2$
Zero	0.0	0.0	0.0	$\pm 0.2$

4. Turbidity check

Turbidity value in solution, NTU	Calibration Value, NTU	Correction, NTU	Acceptable range
0.00	0.00	0.00	$0.00 \pm 0.05$
100	100	0	$100 \pm 5$

5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error $\Delta\text{pH}_j$ , pH unit	0.01	Less than 0.05
Shift on stirring $\Delta\text{pH}_s$ , pH unit	0.01	Less than 0.02
Noise $\Delta\text{pH}_n$ , pH unit	0.00	Less than 0.02

6. Depth Meter check

Instrument Reading, m	Calibration Value, m	Correction, m	Acceptable range
1.0	1.00	0.00	$1.00 \pm 0.05$

\*\*\*\*\*END OF REPORT\*\*\*\*\*



## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/W/110617-4
Date of Issue:	2011-06-18
Date Received:	2011-06-17
Date Tested:	2011-06-17
Date Completed:	2011-06-18
Next Due Date:	2011-09-17

**ATTN:** Mr. Henry Leung

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

Description	: Portable pH/Temp/Redox TM39 Meter with Redox (ORP) combination electrode for TM39
Model No.	: TM39
Serial No.	: 020139
Equipment No.	: W.06.01, W.06.02

**Test conditions:**

Room Temperature	: 24 degree Celsius
Relative Humidity	: 56%

**Test Specifications & Methodology:**

1. pH performance check: ISO 9002 Standards
2. Redox performance check: ISO 9002 Standards

\*\*\*\*\*

**Results:**

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error $\Delta pH_l$ , pH unit	0.01	<0.05
Shift on stirring $\Delta pH_s$ , pH unit	0.00	<0.02
Noise $\Delta pH_n$ , pH unit	0.00	<0.02
Temperature, °C	20	20±1

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
\_\_\_\_\_  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/A/110527
Date of Issue:	2011-05-28
Date Received:	2011-05-27
Date Tested:	2011-05-27
Date Completed:	2011-05-28
Next Due Date:	2012-05-27

**ATTN:** Mr. Henry Leung

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

Description : Vane Thermo-Anemometer  
Manufacturer : Extech Instrument  
Model No. : 451104  
Serial No. : 9020746  
Equipment No. : A-03-02

**Test conditions:**

Room Temperature : 22 degree Celsius  
Relative Humidity : 68%  
Pressure : 101.2 kPa

**Methodology:**

The anemometer has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

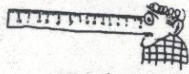
**Results:**

	Reference Set Point	Instrument Readings
Measuring Air Velocity, m/s	2.00	2.00
Temperature, °C	21.0	21.0

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
\_\_\_\_\_  
**PATRICK TSE**  
Laboratory Manager



www.odournet.com  
PRA OdourNet BV  
Singel 97  
1012 VG Amsterdam  
telephone 020 6255104  
fax 020 6201514  
nl@odournet.com



## certificate of calibration

number 05-11-03 11:13 AS

Client The calibration was commissioned by:

Organisation **Hong Kong Polytechnic University**  
Contact **Mr Xiang Zhong Li**  
Address **Hung Hom, Kowloon**  
City **HONG KONG**  
Country **HONG KONG**  
Telephone **+852 2766 6016**  
Fax **+852 2334 6389**

Order The order to carry out the calibration was issued with the following references:

	Issue of order		Order acceptance
Date of order	10-08-2005	Project number	HKPT05A
Order reference	ECS / 2500773 and 2500855	Project manager	Mr Jan van Galen
Signed by	Mr Xiang Zhong Li	Operator	Mr Jan van Galen

Investigated item A dilution apparatus manufactured by PRA OdourNet B.V. type Olf-N2.

Identification The instrument was identified by serial number Olf-N2-A.

Calibration method The calibration was performed using cylinders of Sulphur Hexafluoride ( $\text{SF}_6$ ) in nitrogen as a tracer. The concentration of these cylinders was checked on location according to ISO 6143, by comparison to a Certified Reference Material of  $\text{SF}_6$  in nitrogen. The  $\text{SF}_6$  concentration before and after dilution was measured using a photo acoustic monitor manufactured by Bruel & Kjaer type 1302. These measurements were performed at distinct settings of the investigated instrument, with the objective to determine the quality parameters as defined in the European Standard EN13725:2003 'Air quality - Determination of odour concentration by dynamic olfactometry':

- The measured dilution factor Z
- Accuracy, as defined in EN13725, paragraph 5.4.2.1.
- Repeatability as defined in EN13725, paragraph 5.4.2.2.

Environment The measurements were performed in the measuring room of the laboratory of PRA OdourNet BV in Amsterdam. The temperature was  $20 \leq T \leq 25^\circ\text{C}$ . Special arrangements were made to vent the tracer gas mixtures. A qualified operator operated the dilution apparatus.

Date(s) of calibration The measurements were performed on 14 October 2005.

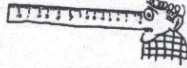
Results The results of the calibration measurements are presented in Table 1 on this certificate.

The Council for Accreditation is one of the signatories of the Multilateral Agreement of the European cooperation for Accreditation (EA) for the mutual recognition of calibration certificates.

Reproduction of the complete certificate is allowed. Partial reproduction is allowed only after obtaining written authorisation from the issuing laboratory.

The Council for Accreditation accepts no liability for the contents of this certificate.

File  
HKTP05A\_20051410\_OLF-N2-  
A release 3  
Page 1 of 3



## certificate of calibration

number 05-11-03 11:13 AS

**Uncertainty** The reported expanded uncertainty of the measurement of dilution factor  $Z$  is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of the measurement has been determined in accordance with EA publication EA-4/02. The best uncertainty of the calibration method is stated in the table below:

Investigated item	Measuring range [dilution factor $Z$ ]	Expanded uncertainty	Remarks
Dilution apparatus	$1 \leq Z \leq 60\,000$	3%	Measured using SF <sub>6</sub> as tracer
Dilution apparatus	$60\,000 \leq Z \leq 500\,000$	10%	Measured using SF <sub>6</sub> as tracer

**Traceability** The measurements were performed using reference materials for which the traceability to (inter)national standards has been demonstrated. The SF<sub>6</sub> monitor of the calibration unit is calibrated at least once a year. Before each calibration of a dilution apparatus the calibration status and response of the SF<sub>6</sub> monitor unit is checked using a zero gas and two reference gases (either Certified or Internal Reference Material gas, CRM or IRM).

Amsterdam, 7 november, 2005,

Anouk Snik  
Head of Olfactometry

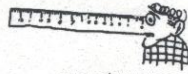


Table 1: Results of calibration and quality parameters calculated according to EN13725

Setting	Concentration		n	Dilution Factor Z		Repeatability	Step Factor
	Observed value $\bar{x}$	Uncertainty		Mean observed value Z	Uncertainty u(Zi) for k = 2		
	[ppm]	[ppm]					
1	42.7 ± 0.6		5	9.4 ± 0.1		2.5%	1.52
2	28.1 ± 0.2		5	14.3 ± 0.1		0.2%	1.82
3	15.4 ± 0.1		5	26.0 ± 0.2		0.8%	1.78
4	8.7 ± 0.1		5	46.2 ± 0.4		0.1%	1.65
5	5.3 ± 0.0		5	76.2 ± 0.6		0.4%	1.60
6	3.3 ± 0.0		5	122.2 ± 1.0		2.1%	1.84
7	67.9 ± 0.8		5	224.8 ± 2.5		1.6%	1.61
8	42.3 ± 0.6		5	361.0 ± 5.0		2.6%	1.78
9	23.8 ± 0.2		5	641.1 ± 5.1		0.9%	1.94
10	12.3 ± 0.1		5	1244.6 ± 9.9		0.7%	1.78
11	6.9 ± 0.1		5	2219.0 ± 17.7		1.8%	1.67
12	4.1 ± 0.0		5	3708.8 ± 29.8		1.0%	1.79
13	2.3 ± 0.0		5	6635.6 ± 54.4		0.6%	1.63
14	1.4 ± 0.0		5	10787.0 ± 92.4		0.9%	1.63
15	0.9 ± 0.0		5	17531.8 ± 138.3		4.1%	

Calibration Date: 17 May 2011

Settings	15	14	13	12	11	10	9 (3940 ppm)	9 (102.5 ppm)	8 (3940 ppm)	8 (102.5 ppm)	7	6	5	4	3	2	1
Dilution Factor	18593.3	11407.2	6948.7	3604.6	2424.3	1320.3	667.1	593.0	406.1	365.7	217.5	115.3	71.2	42.6	23.7	12.8	8.5
	18526.6	11378.8	6946.5	3619.7	2426.3	1316.2	667.4	603.0	405.9	363.1	218.5	115.6	71.1	42.6	23.7	12.8	8.5
	18581.6	11477.1	6926.6	3607.9	2417.5	1318.7	668.4	604.0	406.0	367.5	216.6	115.4	71.5	42.6	23.7	12.8	8.5
	18340.8	11492.7	6911.7	3615.7	2414.3	1317.7	668.6	595.0	405.0	363.6	216.6	115.8	71.3	42.6	23.7	12.8	8.5
	18601.9	11638.4	6930.9	3609.6	2420.5	1320.2	668.2	600.3	404.5	362.9	219.5	115.3	71.0	42.7	23.7	12.8	8.5
	18546.9	11367.4	6903.7	3586.0	2405.9	1318.4	669.1	602.0	405.4	365.2	215.2	115.9	71.6	42.6	23.7	12.8	8.5
	18480.5	11464.4	6924.6	3614.8	2405.0	1317.9	668.5	607.7	405.4	360.0	221.2	115.6	71.3	42.6	23.7	12.8	8.5
	18525.2	11580.6	6957.0	3609.7	2420.9	1318.1	670.1	605.7	405.1	369.1	215.8	115.2	70.9	42.6	23.7	12.8	8.5
	18558.4	11540.7	6929.0	3615.2	2407.6	1316.7	668.8	615.3	405.4	361.4	218.1	115.3	71.3	42.6	23.7	12.8	8.5
	18843.8	11561.4	6958.5	3611.9	2415.3	1318.2	668.5	633.2	405.1	366.7	215.0	115.9	71.3	42.5	23.7	12.8	8.5
	18509.2	11401.2	6991.0	3596.6	2423.6	1318.1	668.9	601.4	405.5	367.4	219.8	115.7	71.3	42.5	23.7	12.8	8.5
	18660.4	11335.9	6983.6	3588.2	2416.6	1318.6	669.2	592.7	405.5	379.4	221.3	117.0	71.3	42.6	23.7	12.8	8.5
	18440.4	11398.4	7057.6	3590.8	2423.8	1320.9	668.2	592.1	405.9	360.9	217.7	115.8	71.1	42.6	23.7	12.8	8.5
	18997.4	11688.2	6983.8	3595.4	2421.7	1320.7		593.6	405.6	367.2	221.5	115.4	71.2	42.5	23.7	12.8	8.5
	18441.8	11390.3	6941.8	3604.0	2420.9	1319.1		599.2		360.3	218.8	116.0		42.6	23.7		
	18319.6	11518.3	6951.7			1321.3				361.9	218.2	116.2		42.6	23.7		
	18294.2	11486.0				1321.1				367.4		115.1		42.6	23.7		
	18599.0	11397.3				1320.4				362.3		115.8		42.6	23.7		
	18449.0	11341.4				1320.9				362.1		115.2		42.6	23.7		
	18306.9	11310.1				1320.0				365.3		115.9			23.7		
	18769.4	11419.3				1320.6											
Average	18542.2	11456.9	6952.9	3604.7	2417.6	1319.3	668.5	602.5	405.5	365.0	218.2	115.7	71.2	42.6	23.7	12.8	8.5
Standard Deviation (STDEV)	175.6	102.0	37.6	10.8	6.8	1.53	0.76	10.67	0.45	4.37	2.08	0.448	0.185	0.0370	0.0166	0.0076	0.0073
Instability (%)	1.86	1.745	1.060	0.589	0.554	0.227	0.223	3.47	0.216	2.347	1.87	0.760	0.509	0.170	0.138	0.117	0.169
Coefficient of Variation (%)							10.4		10.5								
Average for Coefficient of Variation (%)							10.4		10.4								
Average for Coefficient of Variation (%) / 2							<b>5.22</b>		<b>5.22</b>								
Adjusted Dilution Factor	<b>17574.3</b>	<b>10858.9</b>	<b>6590.0</b>	<b>3416.5</b>	<b>2291.4</b>	<b>1250.4</b>	<b>633.6</b>	<b>634.0</b>	<b>384.3</b>	<b>384.0</b>	<b>229.6</b>	<b>121.7</b>	<b>74.9</b>	<b>44.8</b>	<b>24.9</b>	<b>13.5</b>	<b>8.9</b>
<b>Settings</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>		
<b>Final Dilution Factor</b>	<b>17574.3</b>	<b>10858.9</b>	<b>6590.0</b>	<b>3416.5</b>	<b>2291.4</b>	<b>1250.4</b>	<b>633.8</b>	<b>384.2</b>	<b>229.6</b>	<b>121.7</b>	<b>74.9</b>	<b>44.8</b>	<b>24.9</b>	<b>13.5</b>	<b>8.9</b>		

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**APPENDIX A3  
COPIES OF CALIBRATION  
CERTIFICATES FOR SEDIMENT  
MONITORING**

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**TEST REPORT**

**APPLICANT:** Cinotech Consultants Limited  
Room 1710, Technology Park,  
18 On Lai Street,  
Shatin, NT, Hong Kong

Test Report No.:	C/W/110617-4
Date of Issue:	2011-06-18
Date Received:	2011-06-17
Date Tested:	2011-06-17
Date Completed:	2011-06-18
Next Due Date:	2011-09-17

**ATTN:** Mr. Henry Leung

Page: 1 of 1

**Certificate of Calibration**

**Item for calibration:**

Description : Portable pH/Temp/Redox TM39 Meter with Redox (ORP) combination electrode for TM39  
Model No. : TM39  
Serial No. : 020139  
Equipment No. : W.06.01, W.06.02

**Test conditions:**

Room Temperature : 24 degree Celsius  
Relative Humidity : 56%

**Test Specifications & Methodology:**

1. pH performance check: ISO 9002 Standards
2. Redox performance check: ISO 9002 Standards

**Results:**

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error $\Delta pH_l$ , pH unit	0.01	<0.05
Shift on stirring $\Delta pH_s$ , pH unit	0.00	<0.02
Noise $\Delta pH_n$ , pH unit	0.00	<0.02
Temperature, °C	20	20±1

*PREPARED AND CHECKED BY:*

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
Laboratory Manager



# Calibration Record

WELLAB

Analyst : Pinky Date Analysed : 17/16/2011  
 Checked By : Jim Date Checked : 17/6/2011

## Performance Check of UV/Vis Spectrophotometer (CMP020)

Equipment No. : E020

### Record:

#### Wavelength check

SRM Band No.	Certified Wavelength, nm	Instrument Reading, nm	Derivation, nm
1	241.13	241.61	0.48
2	249.87	249.43	0.44
3	278.10	278.51	0.41
4	287.18	287.56	0.38
5	333.44	333.85	0.41
6	345.47	345.75	0.28
7	361.31	361.62	0.31
8	385.66	385.10	0.65
9	416.28	416.58	0.30
10	451.30	452.13	0.17
11	467.83	468.10	0.23
12	485.29	485.22	0.07
13	536.64	536.80	0.24
14	640.52	640.66	0.14

Criteria: Derivation of  $\lambda_{max}$  for Holmium Oxide solution should be less than  $\pm 1$  nm

#### Linearity check

Analytical wavelength: 512 nm

Concentration of cobalt chloride solution, N	Absorbance
0.0000	0.0000
0.0050	0.0453
0.0100	0.0881
0.0500	0.4421
0.1000	0.8843
0.2000	1.7911

Regression coefficient: |

Note : Regression coefficient of calibration curve should be at least 0.9999.

**Calibration Record****WELLAB**

Analyst : Pinky Date Analysed : 17/6/2011  
 Checked By : Jim Date Checked : 17/6/2011

**Stray radiation**

Spectral Range, nm	Test Wavelength, nm	Liquid	Stray radiation, %
210 - 259	220	10g/L aqueous NaI or KI	< 1
250 - 320	285	Acetone	< 1
300 - 385	350	50g/L aqueous NaNO <sub>2</sub>	< 1

Criteria: less than 1%

**Absorbance accuracy**

Wavelength, nm	Expected Absorbance	Measured Absorbance
235	0.747	0.7467
257	0.864	0.8644
313	0.292	0.2915
350	0.640	0.6433

Criteria: ±0.01 Abs

**Zero absorbance line flatness**

Maximum value - minimum value = 0.0000 - 0.0000 = 0.0000 (D)

Criteria: D should be less than 0.01 Abs

Status of instrument: Pass

**Wavelength and Absorbance(Visible region) check**

Wavelength, nm	Expected Absorbance	Measured Absorbance
600	0.068	0.0723
650	0.224	0.2342
700	0.527	<del>0.5363</del> 0.5383
750	0.817	0.8400

Criteria: > 2% of expected absorbance

**Calibration/ Performance Check Requested:** Flow Injection Analyzer (FIA)

**Method Used:** CMP 022

I. Pump

Equipment No.: E222

Timer used: E051

Time the pump takes to make 10 revolutions: 50 seconds (Pass/Fail)

**Acceptance Criteria:** 50 ±1second for 10 revolutions

Heating modules

Equipment No.: E223

Thermocouple used: E550

Channel No.	Set Temp °C	Measured Temp, °C	Difference	Pass/Fail
1	60	60.1	+ 0.1	PASS
2	37	36.9	- 0.1	PASS
3	60	59.8	- 0.2	PASS

**Acceptance Criteria:** ± 2°C for the set temperature

Analyst: Pinky

Date: 19/5/2011

Checked by: Jim

Date: 19/5/2011

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**APPENDIX B**  
**ENVIRONMENTAL MONITORING**  
**SCHEDULE**

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**Contract No. KL/2010/02 Kai Tak Development - Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)**  
**Odour, Sediment and General Water Quality Monitoring Schedule for August 2011**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug
<b>7-Aug</b>	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug
					<u>Odour Sampling (1st)</u> Low Tide            15:12	
<b>14-Aug</b>	15-Aug	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug
				<u>Water Quality Monitoring (1st)</u> Mid-Flood            08:41 Mid-Ebb                14:50		
<b>21-Aug</b>	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug
					Sediment Monitoring (1st)	
<b>28-Aug</b>	29-Aug	30-Aug	31-Aug			

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)  
 Remark: Reference was made to the tidal information of Hong Kong Observatory

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**APPENDIX C1  
LABORATORY TESTING REPORT  
FOR WATER QUALITY  
MONITORING**

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## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
RM 1710, Technology Park,  
18 On Lai Street,  
Shatin, N.T., Hong Kong

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

**ATTN:** Miss Mei Ling Tang

Page: 1 of 28

**Sample Description** : 162 liquid samples as received by customer said to be water  
**Project No.** : MA11017  
**Project Name** : Contract No. KL/2010/02 Kai Tak Development – Kai Tak Approach Channel  
 & Kwun Tong Typhoon Shelter Improvement Works (Phase 1)  
**Custody No.** : MA11017/110818  
**Sampling Date** : 2011-08-18

**Test Requested & Methodology:**

Item	Parameters	Ref. Method	Limit of Reporting
1	Suspended Solids (SS)	APHA 17ed 2540 D	*0.5 mg/L
2	<i>E. coli</i>	In-house method SOP069 (Membrane Filtration Method by CHROMagar)	1 cfu/100mL
3	5-day Biochemical Oxygen Demand (BOD <sub>5</sub> )	APHA 19ed 5210 B	2 mg-O <sub>2</sub> /L
4	Ammonia Nitrogen (NH <sub>3</sub> -N)	In-house method SOP057 (FIA)	*0.01 mg NH <sub>3</sub> -N/L
5	Unionized Ammonia (UIA)	By Calculation	0.001 mg/L
6	Total Kjeldahl Nitrogen (TKN)	In-house Method SOP058 (FIA)	*0.1 mg N/L
7	Nitrite-nitrogen (NO <sub>2</sub> -N)	In-house Method SOP068 (FIA)	*0.002 mg NO <sub>2</sub> <sup>-</sup> -N/L
8	Nitrate-nitrogen (NO <sub>3</sub> -N)	In-house Method SOP056 (FIA)	*0.01 mg NO <sub>3</sub> <sup>-</sup> -N/L
9	Ortho-phosphate (PO <sub>4</sub> )	In-house Method SOP054 (FIA)	*0.01 mg PO <sub>4</sub> <sup>3-</sup> -P/L
10	Total Phosphorous (TP)	In-house Method SOP 055 (FIA)	*0.01 mg-P/L
11	Cadmium (Cd)	In-house Method SOP 053 (ICP-ES) and SOP 076 (ICP-MS)	*0.1 µg/L
12	Chromium (Cr)		*0.2 µg/L
13	Copper (Cu)		*0.2 µg/L
14	Mercury (Hg)		*0.2 µg/L
15	Nickel (Ni)		*0.2 µg/L
16	Lead (Pb)		*0.2 µg/L
17	Silver (Ag)		*0.2 µg/L
18	Zinc (Zn)		*0.4 µg/L

Remark: 1) \* Limit of Reporting is reported as Detection Limit

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REPAIRED AND CHECKED BY:

For and On Behalf of WELLAB Ltd.

  
**PATRICK TSE**  
 Laboratory Manager

## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 2 of 28

### Results:

Sample ID	AC1-a	AC1-b	AC2-a	AC2-b	AC2-a	AC2-b
Sampling Depth	M	M	S	S	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-2	13893-106	13893-4	13893-108	13893-6	13893-110
Suspended Solids (SS), mg/L	51	53	11	11	11	11
<i>E. coli</i> , cfu/100mL	12,000	12,000	5,000	5,000	2,800	2,800
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	6	6	5	5	5	5
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.34	0.33	0.39	0.39	0.42	0.41
Unionized Ammonia (UIA), mg/L	0.022	0.022	0.016	0.026	0.016	0.015
Total Kjeldahl Nitrogen (TKN), mg N/L	2.2	2.1	1.9	2.0	1.9	1.9
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.19	0.19	0.19	0.19	0.21	0.21
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	1.54	1.49	3.11	3.02	4.44	4.42
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.52	0.52	0.87	0.81	1.15	1.19
Total Phosphorous (TP), mg-P/L	1.73	1.71	1.6	1.56	1.71	1.65
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.0	2.9	3.8	3.8	3.0	3.0
Copper (Cu), µg/L	8.1	7.7	10	10	6.3	6.3
Mercury (Hg), µg/L	1.0	1.0	2.8	2.8	0.6	0.5
Nickel (Ni), µg/L	7.2	7.4	9.4	9.4	7.1	7.1
Lead (Pb), µg/L	1.3	1.3	1.3	1.3	0.8	0.8
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	11	12	14	15	13	13

Remark: 1) < = less than

2) S = Surface, M = Middle, B = Bottom

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 3 of 28

### Results:

Sample ID	AC3-a	AC3-b	AC4-a	AC4-b	AC4-a	AC4-b
Sampling Depth	M	M	S	S	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-8	13893-112	13893-10	13893-114	13893-12	13893-116
Suspended Solids (SS), mg/L	18	18	21	21	28	28
<i>E. coli</i> , cfu/100mL	2,900	2,800	2,100	2,100	700	700
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	5	6	6	6	8	8
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.30	0.30	0.51	0.49	0.77	0.72
Unionized Ammonia (UIA), mg/L	0.020	0.020	0.033	0.032	0.028	0.027
Total Kjeldahl Nitrogen (TKN), mg N/L	1.6	1.6	1.4	1.5	1.9	1.9
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.17	0.16	0.22	0.21	0.057	0.056
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	3.5	3.5	5.1	5.1	0.31	0.31
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.89	0.82	1.3	1.3	0.24	0.24
Total Phosphorous (TP), mg-P/L	0.95	0.98	1.7	1.7	0.34	0.35
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.3	3.3	3.4	3.6	3.8	3.8
Copper (Cu), µg/L	7.4	7.7	6.9	7.1	6.6	6.7
Mercury (Hg), µg/L	0.2	0.2	<0.2	<0.2	0.4	0.4
Nickel (Ni), µg/L	7.2	7.6	7.5	7.3	8.8	8.9
Lead (Pb), µg/L	1.3	1.4	1.1	1.1	1.2	1.2
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	15	14	13	13	15	15

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 4 of 28

**Results:**

Sample ID	AC5-a	AC5-b	AC6-a	AC6-b	AC6-a	AC6-b
Sampling Depth	M	M	S	S	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-14	13893-118	13893-16	13893-120	13893-18	13893-122
Suspended Solids (SS), mg/L	16	16	16	16	12	12
<i>E. coli</i> , cfu/100mL	40,000	40,000	2,900	2,900	3,200	3,400
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	7	6	10	10	5	5
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.64	0.67	0.77	0.76	0.45	0.46
Unionized Ammonia (UIA), mg/L	0.004	0.004	0.050	0.050	0.014	0.015
Total Kjeldahl Nitrogen (TKN), mg N/L	1.8	1.8	1.1	1.1	2.5	2.5
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.13	0.12	0.55	0.56	0.18	0.18
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	1.1	1.0	5.1	5.2	1.1	1.2
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.39	0.40	1.4	1.4	0.36	0.37
Total Phosphorous (TP), mg-P/L	0.48	0.48	1.5	1.5	1.4	1.4
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.6	3.5	3.2	3.4	3.9	4.2
Copper (Cu), µg/L	6.9	6.8	6.4	6.3	5.2	5.5
Mercury (Hg), µg/L	2.7	2.6	0.6	0.5	0.8	0.8
Nickel (Ni), µg/L	7.5	7.7	8.0	8.0	8.7	9.0
Lead (Pb), µg/L	1.8	1.8	0.8	0.8	0.9	0.9
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	20	21	15	16	12	12

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 5 of 28

### Results:

Sample ID	AC7-a	AC7-b	AC7-a	AC7-b	AC7-a	AC7-b
Sampling Depth	S	S	M	M	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-19	13893-123	13893-20	13893-124	13893-21	13893-125
Suspended Solids (SS), mg/L	11	12	11	12	17	18
<i>E. coli</i> , cfu/100mL	8,600	8,500	1,500	1,400	880	890
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	7	7	5	5	9	9
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	1.3	1.4	0.72	0.69	0.03	0.03
Unionized Ammonia (UIA), mg/L	0.088	0.088	0.027	0.026	0.001	0.001
Total Kjeldahl Nitrogen (TKN), mg N/L	1.4	1.4	1.4	1.4	1.5	1.4
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.42	0.45	0.024	0.023	0.13	0.13
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.55	0.59	0.07	0.07	0.92	0.89
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	1.1	1.1	0.16	0.15	0.20	0.21
Total Phosphorous (TP), mg-P/L	1.4	1.4	0.22	0.23	0.26	0.26
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.2	3.2	3.7	3.6	3.8	3.7
Copper (Cu), µg/L	6.5	6.5	4.1	4.1	5.8	5.6
Mercury (Hg), µg/L	0.6	0.6	0.8	0.8	1.3	1.3
Nickel (Ni), µg/L	7.6	7.9	6.8	6.9	7.3	7.5
Lead (Pb), µg/L	1.3	1.3	1.0	0.9	1.1	1.1
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	16	15	9.4	9.0	10	10

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 6 of 28

### Results:

Sample ID	KT1-a	KT1-b	KT1-a	KT1-b	KT1-a	KT1-b
Sampling Depth	S	S	M	M	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-22	13893-126	13893-23	13893-127	13893-24	13893-128
Suspended Solids (SS), mg/L	19	18	14	14	13	12
<i>E. coli</i> , cfu/100mL	660	640	970	990	1,100	1,200
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	8	8	9	9	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.05	0.05	0.01	0.01	0.04	0.05
Unionized Ammonia (UIA), mg/L	0.003	0.003	0.001	0.001	0.001	0.002
Total Kjeldahl Nitrogen (TKN), mg N/L	1.3	1.3	1.1	1.1	1.9	2.0
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.22	0.23	0.14	0.14	0.16	0.16
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	2.0	1.9	1.0	1.1	1.2	1.2
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.46	0.45	0.23	0.24	0.29	0.29
Total Phosphorous (TP), mg-P/L	0.61	0.61	0.36	0.35	0.96	0.92
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.4	3.3	3.7	4.0	4.3	4.4
Copper (Cu), µg/L	5.6	5.3	5.9	5.8	4.8	4.8
Mercury (Hg), µg/L	0.2	0.2	0.2	0.2	0.7	0.7
Nickel (Ni), µg/L	7.3	6.8	7.3	7.0	8.1	8.1
Lead (Pb), µg/L	0.8	0.8	1.6	1.6	0.9	0.9
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	11	12	12	13	13	13

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 7 of 28

**Results:**

Sample ID	IB1-a	IB1-b	IB1-a	IB1-b	IB1-a	IB1-b
Sampling Depth	S	S	M	M	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-25	13893-129	13893-26	13893-130	13893-27	13893-131
Suspended Solids (SS), mg/L	4.6	4.6	11	11	13	13
<i>E. coli</i> , cfu/100mL	19	19	1,900	1,900	1,800	1,800
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.07	0.07	0.10	0.09	0.10	0.10
Unionized Ammonia (UIA), mg/L	0.005	0.005	0.006	0.005	0.004	0.006
Total Kjeldahl Nitrogen (TKN), mg N/L	0.5	0.5	0.7	0.7	0.6	0.6
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.057	0.056	0.052	0.052	0.052	0.053
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.25	0.26	0.22	0.21	0.22	0.22
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	<0.01	<0.01	<0.01	<0.01	0.05	0.05
Total Phosphorous (TP), mg-P/L	0.06	0.05	0.07	0.07	0.06	0.06
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.9	4.0	4.3	4.2	4.5	4.4
Copper (Cu), µg/L	5.7	5.7	8.0	7.6	6.6	6.7
Mercury (Hg), µg/L	2.2	2.2	0.9	0.9	<0.2	<0.2
Nickel (Ni), µg/L	7.3	7.6	7.4	7.2	7.5	7.9
Lead (Pb), µg/L	3.1	3.1	1.5	1.5	1.7	1.7
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	17	16	10	10	12	12

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 8 of 28

**Results:**

Sample ID	IB2-a	IB2-b	IB2-a	IB2-b	IB2-a	IB2-b
Sampling Depth	S	S	M	M	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-28	13893-132	13893-29	13893-133	13893-30	13893-134
Suspended Solids (SS), mg/L	9.3	9.2	4.5	4.4	19	18
<i>E. coli</i> , cfu/100mL	210	200	240	240	220	210
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.12	0.11	0.09	0.09	0.10	0.10
Unionized Ammonia (UIA), mg/L	0.007	0.006	0.005	0.005	0.006	0.006
Total Kjeldahl Nitrogen (TKN), mg N/L	0.7	0.7	0.6	0.6	0.5	0.5
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> -N/L	0.053	0.055	0.051	0.050	0.051	0.052
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> -N/L	0.24	0.23	0.25	0.24	0.27	0.27
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.05	0.04	0.05	0.05
Total Phosphorous (TP), mg-P/L	0.06	0.06	0.06	0.05	0.06	0.06
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	0.2	0.2
Chromium (Cr), µg/L	5.7	5.8	3.6	3.6	3.6	3.8
Copper (Cu), µg/L	4.5	4.4	8.5	8.4	3.8	3.7
Mercury (Hg), µg/L	0.3	0.3	1.3	1.3	<0.2	<0.2
Nickel (Ni), µg/L	8.1	7.7	8.2	8.5	6.7	6.9
Lead (Pb), µg/L	0.6	0.6	0.9	0.8	0.9	1
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	14	14	8.9	9.2	7.2	7.1

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 9 of 28

### Results:

Sample ID	IB3-a	IB3-b	IB3-a	IB3-b	IB3-a	IB3-b
Sampling Depth	S	S	M	M	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-31	13893-135	13893-32	13893-136	13893-33	13893-137
Suspended Solids (SS), mg/L	9.7	9.4	5.3	5.4	12	13
<i>E. coli</i> , cfu/100mL	1,300	1,300	130	130	230	240
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.02	0.02	0.11	0.10	0.09	0.09
Unionized Ammonia (UIA), mg/L	0.001	0.001	0.006	0.006	0.003	0.003
Total Kjeldahl Nitrogen (TKN), mg N/L	0.7	0.7	0.5	0.5	0.5	0.5
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.054	0.056	0.052	0.052	0.038	0.039
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.25	0.25	0.23	0.24	0.19	0.19
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.04	0.05	0.05	0.05	0.05	0.05
Total Phosphorous (TP), mg-P/L	0.08	0.07	0.06	0.06	0.05	0.05
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.6	3.7	3.7	3.7	3.6	3.7
Copper (Cu), µg/L	4.4	4.3	3.2	3.0	4.1	4.3
Mercury (Hg), µg/L	0.3	0.3	<0.2	<0.2	0.3	0.3
Nickel (Ni), µg/L	7.4	7.6	7.1	7.1	6.9	7.0
Lead (Pb), µg/L	1.2	1.3	0.9	0.9	0.9	0.8
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	9.0	8.9	7.8	8.3	7.1	6.8

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 10 of 28

### Results:

Sample ID	OB1-a	OB1-b	OB1-a	OB1-b	OB1-a	OB1-b
Sampling Depth	S	S	M	M	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-34	13893-138	13893-35	13893-139	13893-36	13893-140
Suspended Solids (SS), mg/L	12	12	6.7	6.3	9.6	8.9
<i>E. coli</i> , cfu/100mL	320	320	400	410	270	270
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.1	0.1	0.1	0.1	0.1	0.1
Unionized Ammonia (UIA), mg/L	0.006	0.006	0.006	0.006	0.006	0.006
Total Kjeldahl Nitrogen (TKN), mg N/L	0.6	0.6	0.6	0.6	0.6	0.6
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.055	0.055	0.056	0.056	0.052	0.05
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.24	0.24	0.24	0.23	0.23	0.22
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.04	0.05	0.05	0.05	0.05
Total Phosphorous (TP), mg-P/L	0.06	0.06	0.06	0.05	0.06	0.05
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	0.2	0.2
Chromium (Cr), µg/L	3.8	3.8	3.6	3.4	4.3	4.6
Copper (Cu), µg/L	4.2	4.0	4.0	4.2	6.1	6.3
Mercury (Hg), µg/L	0.2	0.2	<0.2	<0.2	0.1	0.1
Nickel (Ni), µg/L	7.2	7.1	7.4	7.5	13	12
Lead (Pb), µg/L	1.0	1.0	0.9	0.9	2.1	2.1
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	9.0	8.9	10	10	13	12

Remark: 1) < = less than

2) S = Surface, M = Middle, B = Bottom

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 11 of 28

### Results:

Sample ID	VH1-a	VH1-b	VH1-a	VH1-b	VH1-a	VH1-b
Sampling Depth	S	S	M	M	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-37	13893-141	13893-38	13893-142	13893-39	13893-143
Suspended Solids (SS), mg/L	4.4	4.3	4.2	4.2	18	19
<i>E. coli</i> , cfu/100mL	210	200	2,500	2,500	700	690
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.09	0.10	0.13	0.14	0.01	0.01
Unionized Ammonia (UIA), mg/L	0.005	0.006	0.007	0.008	<0.001	<0.001
Total Kjeldahl Nitrogen (TKN), mg N/L	0.7	0.7	0.7	0.7	0.6	0.6
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.065	0.067	0.046	0.047	0.041	0.04
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.27	0.25	0.22	0.21	0.2	0.2
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.04	0.04	0.05	0.05	<0.01	<0.01
Total Phosphorous (TP), mg-P/L	0.06	0.06	0.06	0.05	0.06	0.06
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.6	3.6	3.9	3.8	4.1	4.2
Copper (Cu), µg/L	10	11	3.1	3.2	5.3	5.4
Mercury (Hg), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel (Ni), µg/L	12	12	7.0	6.8	7.4	7.6
Lead (Pb), µg/L	1.5	1.5	0.9	0.9	1.7	1.7
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	11	11	7.5	7.5	10	10

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 12 of 28

### Results:

Sample ID	VH2-a	VH2-b	VH2-a	VH2-b	VH2-a	VH2-b
Sampling Depth	S	S	M	M	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-40	13893-144	13893-41	13893-145	13893-42	13893-146
Suspended Solids (SS), mg/L	29	29	8.3	8.0	5.2	5.1
<i>E. coli</i> , cfu/100mL	2,100	2,100	1,600	1,600	3,900	4,100
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	7	7
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.11	0.11	0.14	0.14	0.11	0.11
Unionized Ammonia (UIA), mg/L	0.006	0.006	0.008	0.008	0.004	0.004
Total Kjeldahl Nitrogen (TKN), mg N/L	0.5	0.5	0.6	0.6	0.5	0.5
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.063	0.061	0.052	0.053	0.043	0.043
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.26	0.24	0.23	0.24	0.21	0.19
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.05	0.05	0.05	0.05
Total Phosphorous (TP), mg-P/L	0.06	0.05	0.06	0.06	0.06	0.05
Cadmium (Cd), µg/L	<0.1	<0.1	0.1	0.1	0.2	0.1
Chromium (Cr), µg/L	3.3	3.3	3.6	3.6	3.8	3.6
Copper (Cu), µg/L	3.2	3.3	3.5	3.4	3.7	3.9
Mercury (Hg), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel (Ni), µg/L	7.4	7.3	7.0	6.7	7.1	6.7
Lead (Pb), µg/L	0.7	0.7	1.2	1.2	2.0	2.0
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	7.8	8.2	15	15	8.9	8.9

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 13 of 28

### Results:

Sample ID	KTN-a	KTN-b	JVC-a	JVC-b	JVC-a	JVC-b
Sampling Depth	M	M	S	S	B	B
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-44	13893-148	13893-46	13893-150	13893-48	13893-152
Suspended Solids (SS), mg/L	9.0	8.9	14	13	11	12
<i>E. coli</i> , cfu/100mL	9,200	8,700	2,400	2,500	2,300	2,400
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	8	8	9	9	4	4
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.71	0.67	0.46	0.44	0.77	0.82
Unionized Ammonia (UIA), mg/L	0.046	0.044	0.03	0.029	0.044	0.047
Total Kjeldahl Nitrogen (TKN), mg N/L	2.0	1.9	2.7	2.7	1.4	1.4
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.22	0.22	0.24	0.23	0.34	0.35
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	6.4	6.4	2.9	3.0	3.4	3.5
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	1.6	1.7	0.78	0.79	0.99	0.99
Total Phosphorous (TP), mg-P/L	1.7	1.7	1.2	1.2	1.4	1.4
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	0.2	0.2
Chromium (Cr), µg/L	4.1	4.2	3.7	3.8	3.0	3.0
Copper (Cu), µg/L	7.2	7.0	4.1	3.9	5.2	4.9
Mercury (Hg), µg/L	0.9	1.0	<0.2	<0.2	<0.2	<0.2
Nickel (Ni), µg/L	7.9	7.5	7.2	7.5	7.2	7.3
Lead (Pb), µg/L	1.1	1.1	0.8	0.8	1.5	1.5
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	18	17	11	11	13	13

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 14 of 28

### Results:

Sample ID	WSD Intake at Tai Wan-a	WSD Intake at Tai Wan-b	WSD Intake at Cha Kwo Ling-a	WSD Intake at Cha Kwo Ling-b	WSD Intake at Quarry Bay-a	WSD Intake at Quarry Bay-b
Sampling Depth	N/A	N/A	N/A	N/A	N/A	N/A
Tide	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb	Mid-Ebb
Sample Number	13893-49	13893-153	13893-50	13893-154	13893-51	13893-155
Suspended Solids (SS), mg/L	6.0	6.1	7.3	7.2	6.9	6.7
<i>E. coli</i> , cfu/100mL	340	350	770	750	760	760
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.08	0.08	0.09	0.09	0.10	0.10
Unionized Ammonia (UIA), mg/L	0.005	0.005	0.005	0.005	0.006	0.006
Total Kjeldahl Nitrogen (TKN), mg N/L	0.7	0.7	0.6	0.6	0.6	0.6
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.053	0.055	0.055	0.052	0.047	0.048
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.24	0.25	0.24	0.25	0.23	0.23
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.05	0.05	0.05	0.05
Total Phosphorous (TP), mg-P/L	0.06	0.06	0.06	0.06	0.06	0.06
Cadmium (Cd), µg/L	0.1	0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	5.5	5.7	3.5	3.3	3.3	3.5
Copper (Cu), µg/L	4.5	4.2	3.2	3.1	10	10
Mercury (Hg), µg/L	0.7	0.7	<0.2	<0.2	0.8	0.8
Nickel (Ni), µg/L	11	10	7.0	7.2	10	10
Lead (Pb), µg/L	1.3	1.4	0.8	0.8	0.9	1.0
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	13	13	7.9	7.4	10	10

Remark: 1) < = less than

2) S = Surface, M = Middle, B = Bottom

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received: *	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 15 of 28

### Results:

Sample ID	WSD Intake at Sai Wan Ho-a	WSD Intake at Sai Wan Ho-b	AC1-a	AC1-b	AC2-a	AC2-b
Sampling Depth	N/A	N/A	M	M	S	S
Tide	Mid-Ebb	Mid-Ebb	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-52	13893-156	13893-54	13893-158	13893-56	13893-160
Suspended Solids (SS), mg/L	8.5	8.7	17	17	23	24
<i>E. coli</i> , cfu/100mL	2,300	2,300	260	260	1,300	1,400
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	10	10	10	9
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.11	0.10	0.05	0.05	0.03	0.03
Unionized Ammonia (UIA), mg/L	0.006	0.006	0.002	0.002	0.001	0.001
Total Kjeldahl Nitrogen (TKN), mg N/L	0.5	0.5	1.6	1.6	1.4	1.4
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.042	0.040	0.13	0.14	0.15	0.15
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.21	0.20	0.77	0.77	1.4	1.4
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.22	0.23	0.35	0.36
Total Phosphorous (TP), mg-P/L	0.05	0.05	1.7	1.6	0.4	0.41
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.6	3.4	3.0	3.0	3.7	3.7
Copper (Cu), µg/L	4.0	4.0	6.9	7.3	6.4	6.3
Mercury (Hg), µg/L	0.9	0.9	<0.2	<0.2	0.6	0.6
Nickel (Ni), µg/L	7.6	7.3	10	10	8.7	9.2
Lead (Pb), µg/L	1.0	1.1	0.8	0.8	1.4	1.4
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	10	11	14	13	21	22

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 16 of 28

### Results:

Sample ID	AC2-a	AC2-b	AC3-a	AC3-b	AC4-a	AC4-b
Sampling Depth	B	B	M	M	S	S
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-58	13893-162	13893-60	13893-164	13893-62	13893-166
Suspended Solids (SS), mg/L	16	16	20	20	14	14
<i>E. coli</i> , cfu/100mL	2,200	2,300	980	950	780	760
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	7	7	7	7	7	7
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.07	0.07	0.04	0.04	0.03	0.03
Unionized Ammonia (UIA), mg/L	0.003	0.003	0.002	0.002	0.001	0.001
Total Kjeldahl Nitrogen (TKN), mg N/L	1.7	1.7	1.8	1.9	1.5	1.5
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.21	0.21	0.18	0.17	0.11	0.11
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	3.7	3.6	1.8	1.7	0.75	0.75
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.83	0.81	0.43	0.43	0.17	0.17
Total Phosphorous (TP), mg-P/L	1.4	1.3	0.50	0.58	0.43	0.43
Cadmium (Cd), µg/L	0.2	0.1	<0.1	<0.1	0.1	0.1
Chromium (Cr), µg/L	3.6	3.5	3.6	3.7	3.4	3.4
Copper (Cu), µg/L	6.2	5.9	6.0	6.1	6.6	7.0
Mercury (Hg), µg/L	0.5	0.6	0.4	0.3	0.3	0.3
Nickel (Ni), µg/L	8.1	8.2	8.7	8.6	9.9	10
Lead (Pb), µg/L	1.5	1.5	1.4	1.5	1.8	1.9
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	12	12	18	18	31	31

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 17 of 28

### Results:

Sample ID	AC4-a	AC4-b	AC5-a	AC5-b	AC5-a	AC5-b
Sampling Depth	B	B	S	S *	B	B
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-64	13893-168	13893-65	13893-169	13893-67	13893-171
Suspended Solids (SS), mg/L	2.6	2.6	12	12	3.6	3.5
<i>E. coli</i> , cfu/100mL	880	870	1,000	1,000	33	34
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	19	19	7	7	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	1.8	1.8	0.66	0.68	0.08	0.09
Unionized Ammonia (UIA), mg/L	0.067	0.066	0.043	0.044	0.003	0.003
Total Kjeldahl Nitrogen (TKN), mg N/L	2.7	2.6	1.0	1.0	0.8	0.8
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.016	0.016	0.54	0.57	0.046	0.046
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.02	0.02	3.2	3.4	0.26	0.26
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.34	0.32	0.99	0.98	0.05	0.05
Total Phosphorous (TP), mg-P/L	1.3	1.3	1.3	1.3 *	0.07	0.07
Cadmium (Cd), µg/L	0.1	0.1	0.1	0.1	0.1	0.1
Chromium (Cr), µg/L	3.5	3.7	3.4	3.4	3.4	3.4
Copper (Cu), µg/L	5.1	5.3	6.6	6.7	4.7	4.7
Mercury (Hg), µg/L	0.3	0.3	0.5	0.5	0.4	0.4
Nickel (Ni), µg/L	7.8	7.8	8.5	8.9	8.2	8.2
Lead (Pb), µg/L	1.7	1.6	2.0	1.9	2.6	2.6
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	52	51	30	29	26	26

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 18 of 28

### Results:

Sample ID	AC6-a	AC6-b	AC6-a	AC6-b	AC7-a	AC7-b
Sampling Depth	S	S	B	B	S	S
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-68	13893-172	13893-70	13893-174	13893-71	13893-175
Suspended Solids (SS), mg/L	18	17	12	12	13	13
<i>E. coli</i> , cfu/100mL	2,400	2,500	170	170	2,400	2,400
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	8	8	<2	<2	7	7
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.05	0.04	0.09	0.09	0.04	0.04
Unionized Ammonia (UIA), mg/L	0.003	0.003	0.003	0.003	0.003	0.003
Total Kjeldahl Nitrogen (TKN), mg N/L	2.5	2.4	0.5	0.5	1.5	1.6
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.15	0.15	0.047	0.046	0.15	0.15
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	1.1	1.1	0.23	0.22	1.0	0.97
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.25	0.25	0.05	0.05	0.23	0.22
Total Phosphorous (TP), mg-P/L	1.3	1.2	0.06	0.05	0.50	0.50
Cadmium (Cd), µg/L	0.1	0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.7	3.9	3.7	3.7	3.2	3.4
Copper (Cu), µg/L	6.7	6.6	3.0	3.0	4.6	4.7
Mercury (Hg), µg/L	0.4	0.3	0.9	0.9	0.3	0.3
Nickel (Ni), µg/L	11	11	7.6	7.2	7.6	7.5
Lead (Pb), µg/L	2.4	2.4	0.8	0.8	0.8	0.7
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	40	42	8.5	8.7	12	12

Remark: 1) < = less than

2) S = Surface, M = Middle, B = Bottom

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 19 of 28

### Results:

Sample ID	AC7-a	AC7-b	AC7-a	AC7-b	KT1-a	KT1-b
Sampling Depth	M	M	B	B	S	S
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-72	13893-176	13893-73	13893-177	13893-74	13893-178
Suspended Solids (SS), mg/L	5.9	5.5	11	11	14	14
<i>E. coli</i> , cfu/100mL	180	170	220	220	290	290
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	7	7
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.04	0.04	0.08	0.08	0.14	0.14
Unionized Ammonia (UIA), mg/L	0.001	0.001	0.003	0.003	0.009	0.009
Total Kjeldahl Nitrogen (TKN), mg N/L	0.5	0.5	0.5	0.4	1.6	1.6
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.027	0.027	0.047	0.047	0.21	0.22
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.15	0.14	0.24	0.22	2.0	2.1
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	<0.01	<0.01	0.05	0.05	0.48	0.49
Total Phosphorous (TP), mg-P/L	0.07	0.07	0.06	0.07	0.67	0.67
Cadmium (Cd), µg/L	<0.1	<0.1	0.1	0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.6	3.4	4.0	4.0	3.9	3.8
Copper (Cu), µg/L	3.9	3.7	5.3	5.3	6.0	6.4
Mercury (Hg), µg/L	0.4	0.4	0.3	0.3	<0.2	<0.2
Nickel (Ni), µg/L	7.8	8.0	9.0	9.1	8.4	8.5
Lead (Pb), µg/L	1.2	1.2	2.2	2.2	1.9	1.9
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	14	14	28	27	31	29

Remark: 1) < = less than

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**TEST REPORT**

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 20 of 28

**Results:**

Sample ID	KT1-a	KT1-b	KT1-a	KT1-b	IB1-a	IB1-b
Sampling Depth	M	M	B	B	S	S
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-75	13893-179	13893-76	13893-180	13893-77	13893-181
Suspended Solids (SS), mg/L	6.2	6.3	3.7	3.5	4.4	4.4
<i>E. coli</i> , cfu/100mL	81	81	160	160	700	680
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	3	3	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.06	0.06	0.09	0.09	0.12	0.12
Unionized Ammonia (UIA), mg/L	0.003	0.003	0.005	0.005	0.008	0.008
Total Kjeldahl Nitrogen (TKN), mg N/L	0.5	0.5	0.6	0.6	0.9	0.8
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.030	0.031	0.052	0.053	0.074	0.077
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.16	0.16	0.25	0.24	<0.01	<0.01
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.04	0.05	0.05	0.04
Total Phosphorous (TP), mg-P/L	0.11	0.12	0.06	0.07	0.07	0.07
Cadmium (Cd), µg/L	0.1	0.1	0.1	0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.6	3.5	4.0	3.8	3.3	3.2
Copper (Cu), µg/L	5.9	6.0	5.5	5.4	2.6	2.7
Mercury (Hg), µg/L	0.2	0.2	0.4	0.4	<0.2	<0.2
Nickel (Ni), µg/L	8.5	8.6	8.6	8.6	6.8	6.5
Lead (Pb), µg/L	1.9	1.8	1.7	1.7	0.8	0.7
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	28	29	28	28	9.0	8.4

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 21 of 28

### Results:

Sample ID	IB1-a	IB1-b	IB1-a	IB1-b	IB2-a	IB2-b
Sampling Depth	M	M	B	B	S	S
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-78	13893-182	13893-79	13893-183	13893-80	13893-184
Suspended Solids (SS), mg/L	9.3	9.0	5.4	5.6	7.1	7.2
<i>E. coli</i> , cfu/100mL	690	690	380	370	650	640
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.13	0.14	0.14	0.13	0.14	0.15
Unionized Ammonia (UIA), mg/L	0.007	0.008	0.008	0.007	0.008	0.009
Total Kjeldahl Nitrogen (TKN), mg N/L	0.5	0.5	0.6	0.6	0.5	0.6
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.066	0.065	0.057	0.057	0.056	0.057
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.24	0.24	0.24	0.23	0.25	0.26
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.05	0.05	0.05	0.04
Total Phosphorous (TP), mg-P/L	0.05	0.05	0.05	0.05	0.05	0.05
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.4	3.6	3.6	3.6	3.6	3.7
Copper (Cu), µg/L	6.1	6.3	3.6	3.6	3.2	3.1
Mercury (Hg), µg/L	<0.2	<0.2	0.3	0.3	<0.2	<0.2
Nickel (Ni), µg/L	12	13	7.2	7.6	9.3	9.7
Lead (Pb), µg/L	0.8	0.7	1.2	1.1	0.8	0.8
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	7.9	7.9	14	15	12	12

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 22 of 28

**Results:**

Sample ID	IB2-a	IB2-b	IB2-a	IB2-b	IB3-a	IB3-b
Sampling Depth	M	M	B	B	S	S
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-81	13893-185	13893-82	13893-186	13893-83	13893-187
Suspended Solids (SS), mg/L	4.3	4.5	11	11	5.2	5.1
<i>E. coli</i> , cfu/100mL	340	320	540	530	320	320
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.14	0.14	0.14	0.14	0.12	0.12
Unionized Ammonia (UIA), mg/L	0.008	0.008	0.008	0.008	0.007	0.007
Total Kjeldahl Nitrogen (TKN), mg N/L	0.5	0.5	0.7	0.7	0.7	0.7
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.058	0.059	0.056	0.055	0.055	0.053
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.26	0.26	0.25	0.27 *	0.25	0.26
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.05	0.05	0.05	0.05
Total Phosphorous (TP), mg-P/L	0.05	0.05	0.06	0.06	0.05	0.06
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.3	3.1	3.3	3.4	3.6	3.4
Copper (Cu), µg/L	3.5	3.4	2.7	2.6	4	3.9
Mercury (Hg), µg/L	0.3	0.2	<0.2	<0.2	1.4	1.4
Nickel (Ni), µg/L	7.0	6.8	6.6	6.6	7.2	7.5
Lead (Pb), µg/L	0.9	0.9	1.1	1.1	0.8	0.8
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	15	14	11	11	9.1	10

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 23 of 28

### Results:

Sample ID	IB3-a	IB3-b	IB3-a	IB3-b *	OB1-a	OB1-b
Sampling Depth	M	M	B	B	S	S
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-84	13893-188	13893-85	13893-189	13893-86	13893-190
Suspended Solids (SS), mg/L	11	11	9.4	9.1	6.2	6.1
<i>E. coli</i> , cfu/100mL	150	140	2,000	2,000	590	610
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.13	0.12	0.13	0.13	0.13	0.13
Unionized Ammonia (UIA), mg/L	0.007	0.007	0.007	0.007	0.007	0.007
Total Kjeldahl Nitrogen (TKN), mg N/L	0.6	0.6	0.5	0.5	0.5	0.6
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.053	0.052	0.051	0.052	0.063	0.061
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.24	0.23	0.23	0.24	0.26	0.26
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.05	0.05	0.05	0.05
Total Phosphorous (TP), mg-P/L	0.06	0.06	0.05	0.05	0.05	0.05
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.3	3.3	3.3	3.4	3.5	3.6
Copper (Cu), µg/L	2.1	2.1	2.3	2.1	2.9	2.9
Mercury (Hg), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel (Ni), µg/L	6.5	6.4	6.8	6.9	6.7	6.4
Lead (Pb), µg/L	0.6	0.6	0.8	0.8	0.8	0.8
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	7.5	7.5	7.7	7.3	10	9.5

Remark: 1) < = less than

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 24 of 28

### Results:

Sample ID	OB1-a	OB1-b	OB1-a	OB1-b	VH1-a	VH1-b
Sampling Depth	M	M	B	B	S	S
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-87	13893-191	13893-88	13893-192	13893-89	13893-193
Suspended Solids (SS), mg/L	9.0	9.2	8.3	7.9	6.9	6.9
<i>E. coli</i> , cfu/100mL	400	380	600	600	340	350
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.12	0.12	0.13	0.13	0.11	0.12
Unionized Ammonia (UIA), mg/L	0.006	0.006	0.007	0.007	0.006	0.007
Total Kjeldahl Nitrogen (TKN), mg N/L	0.6	0.6	0.7	0.7	0.6	0.7
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.054	0.054	0.048	0.048	0.055	0.052
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.24	0.26	0.23	0.22	0.26	0.27
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.05	0.05	0.05	0.05
Total Phosphorous (TP), mg-P/L	0.09	0.08	0.05	0.05	0.06	0.05
Cadmium (Cd), µg/L	0.6	0.6	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.7	3.7	3.6	3.7	3.6	3.7
Copper (Cu), µg/L	4.3	4.5	3.2	3.2	1.9	1.9
Mercury (Hg), µg/L	<0.2	<0.2	<0.2	<0.2	1.1	1.1
Nickel (Ni), µg/L	6.9	7.1	6.7	6.4	6.8	7.2
Lead (Pb), µg/L	1.3	1.3	2.0	1.9	0.5	0.6
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	12	11	23	24	8.1	8.1

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 25 of 28

### Results:

Sample ID	VH1-a	VH1-b	VH1-a	VH1-b	VH2-a	VH2-b
Sampling Depth	M	M	B	B	S	S
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-90	13893-194	13893-91	13893-195	13893-92	13893-196
Suspended Solids (SS), mg/L	12	12	6.7	6.2	7.2	7.2
<i>E. coli</i> , cfu/100mL	250	250	260	250	39	40
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.12	0.12	0.12	0.12	0.05	0.05
Unionized Ammonia (UIA), mg/L	0.006	0.006	0.006	0.006	0.003	0.003
Total Kjeldahl Nitrogen (TKN), mg N/L	0.6	0.6	0.8	0.8	0.6	0.6
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.038	0.038	0.055	0.058	0.033	0.033
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.19	0.19	0.26	0.25	0.17	0.16
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.05	0.05	0.06	0.07
Total Phosphorous (TP), mg-P/L	0.05	0.05	0.06	0.06	0.08	0.08
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	4.0	3.9	3.4	3.5	3.7	3.6
Copper (Cu), µg/L	2.8	2.8	3.8	3.8	2.3	2.2
Mercury (Hg), µg/L	1.2	1.1	0.8	0.8	<0.2	<0.2
Nickel (Ni), µg/L	7.1	7.3	6.7	6.9	7.5	7.0
Lead (Pb), µg/L	0.8	0.8	1.2	1.2	0.6	0.6
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	11	11	10	10	8.4	8.1

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## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 26 of 28

### Results:

Sample ID	VH2-a	VH2-b	VH2-a	VH2-b	KTN-a	KTN-b
Sampling Depth	M	M	B	B	M	M
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-93	13893-197	13893-94	13893-198	13893-96	13893-200
Suspended Solids (SS), mg/L	9.7	9.9	6.0	6.0	16	15
<i>E. coli</i> , cfu/100mL	130	130	120	120	2,100	2,200
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	9	9
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.05	0.05	0.05	0.05	0.03	0.03
Unionized Ammonia (UIA), mg/L	0.003	0.003	0.003	0.003	0.001	0.001
Total Kjeldahl Nitrogen (TKN), mg N/L	0.5	0.5	0.5	0.5	1.3	1.4
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.024	0.025	0.029	0.029	0.097	0.094
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.15	0.15	<0.01	<0.01	0.58	0.60
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.06	0.06	0.06	0.06	0.13	0.13
Total Phosphorous (TP), mg-P/L	0.08	0.08	0.08	0.08	0.27	0.26
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.5	3.3	4.0	4.0	3.4	3.3
Copper (Cu), µg/L	3.6	3.7	2.8	2.7	4.4	4.1
Mercury (Hg), µg/L	0.6	0.6	<0.2	<0.2	<0.2	<0.2
Nickel (Ni), µg/L	6.9	6.6	7.1	7.1	7.6	7.7
Lead (Pb), µg/L	0.6	0.6	0.9	0.9	0.8	0.7
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	8.7	8.9	9.4	9.6	18	18

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**TEST REPORT**

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 27 of 28

**Results:**

Sample ID	JVC-a	JVC-b	JVC-a	JVC-b	WSD Intake at Tai Wan-a	WSD Intake at Tai Wan-b
Sampling Depth	S	S	B	B	N/A	N/A
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-98	13893-202	13893-100	13893-204	13893-101	13893-205
Suspended Solids (SS), mg/L	8.9	9.2	5.4	5.2	8.6	8.3
<i>E. coli</i> , cfu/100mL	200	210	300	300	1,200	1,200
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	4	3	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.05	0.05	0.07	0.07	0.12	0.12
Unionized Ammonia (UIA), mg/L	0.003	0.003	0.004	0.004	0.004	0.004
Total Kjeldahl Nitrogen (TKN), mg N/L	0.6	0.5	0.6	0.6	0.5	0.5
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.042	0.043	0.057	0.055	0.038	0.038
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.22	0.21	0.23	0.22	0.19	0.20
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.05	0.05	0.05	0.05
Total Phosphorous (TP), mg-P/L	0.06	0.06	0.06	0.06	0.05	0.05
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.3	3.3	3.4	3.5	3.6	3.6
Copper (Cu), µg/L	2.5	2.5	1.9	1.9	2.4	2.3
Mercury (Hg), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel (Ni), µg/L	6.5	6.7	7.2	7.5	7.1	6.9
Lead (Pb), µg/L	0.9	1.0	1.0	1.0	0.9	0.8
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	12	12	7.5	7.6	6.7	7.0

Remark: 1) < = less than

2) S = Surface, M = Middle, B = Bottom

\*\*\*\*\*

## TEST REPORT

Laboratory No.:	13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 28 of 28

### Results:

Sample ID	WSD Intake at Cha Kwo Ling-a	WSD Intake at Cha Kwo Ling-b	WSD Intake at Quarry Bay-a	WSD Intake at Quarry Bay-b	WSD Intake at Sai Wan Ho-a	WSD Intake at Sai Wan Ho-b
Sampling Depth	N/A	N/A	N/A	N/A	N/A	N/A
Tide	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood	Mid-Flood
Sample Number	13893-102	13893-206	13893-103	13893-207	13893-104	13893-208
Suspended Solids (SS), mg/L	6.5	6.5	9.2	8.8	4.5	4.6
<i>E. coli</i> , cfu/100mL	250	250	620	600	260	260
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	<2	<2	<2	<2	<2	<2
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	0.05	0.05	0.09	0.09	0.06	0.06
Unionized Ammonia (UIA), mg/L	0.002	0.002	0.003	0.003	0.002	0.002
Total Kjeldahl Nitrogen (TKN), mg N/L	0.5	0.5	0.5	0.5	0.5	0.5
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	0.041	0.042	0.034	0.034	0.024	0.025
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	0.22	0.20	0.18	0.18	0.18	0.18
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	0.05	0.05	0.05	0.05	0.06	0.06
Total Phosphorous (TP), mg-P/L	0.05	0.05	0.05	0.06	0.08	0.08
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	3.7	3.8	3.9	3.8	3.9	3.8
Copper (Cu), µg/L	2.1	2.2	2.7	2.8	2.7	2.6
Mercury (Hg), µg/L	<0.2	<0.2	<0.2	<0.2	0.7	0.7
Nickel (Ni), µg/L	6.9	7.0	6.7	6.4	9.7	10
Lead (Pb), µg/L	0.7	0.8	1.3	1.2	0.9	0.9
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	8.1	7.7	8.7	8.5	11	11

Remark: 1) < = less than

2) S = Surface, M = Middle, B = Bottom

\*\*\*\*\*END OF REPORT\*\*\*\*\*

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**APPENDIX C2  
LABORATORY TESTING REPORT  
FOR ODOUR SAMPLING**

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**For CINOTECH Consultants Limited**

# **On-site Odour Sampling and Laboratory Olfactometry Measurement**

First Report

17 August 2011

By Odour Research Laboratory  
Department of Civil & Structural Engineering  
The Hong Kong Polytechnic University

On behalf of  
PolyU Technology & Consultancy Co. Ltd

## Table of Contents

1.	Background .....	3
2.	Scope of the Work.....	3
3.	Methodology .....	3
	3.1. Odour Sampling .....	3
	3.2. Odour Measurement by Olfactometry .....	4
	3.3. Specific Odour Emission Rate .....	5
4.	Odour Sampling and Olfactometry Measurement .....	5
	4.1. Sampling Activities .....	5
	4.2. Olfatometry Measurements .....	8
	4.3. Determination of Specific Odour Emission Rate .....	8
	Appendix A: Sampling Locations .....	10
	Appendix B: Procedure of Dynamic Olfactometry Used at PolyU .....	11

## 1. Background

An odour assessment service was required by CINOTECH Consultants Limited to collect odour samples from seawater surface at the areas of Kai Tak Airport Channel (KTAC) and Kwun Tong Typhoon Shelter (KTTS) using a hood method and to conduct laboratory olfactometry measurement with the European Standard Method (EN13725) to determine the specific odour emission rate (SOER) from the water surface.

## 2. Scope of the Work

Thirteen sampling locations (SA1-SA13) were previously identified by the client and a sampling map with the exact sampling locations is shown in Appendix A. A total of 13 odour samples plus 1 QA/QC sample need to be collected from the 13 designated sampling locations in August 2011.

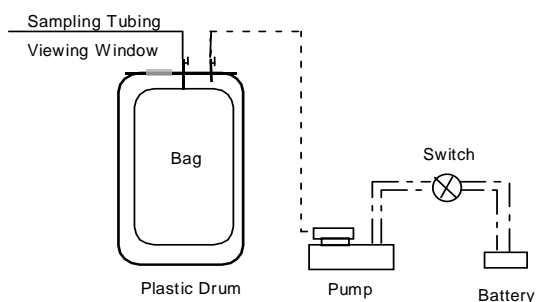
The scope of the work is:

- to collect odour samples from water surface at the above locations and deliver the collected samples to laboratory for olfactometry analysis;
- to measure and record the weather conditions including air temperature, relative humidity, wind direction and wind speed on site during the sampling time;
- to conduct laboratory olfactometry analysis to determine the odour concentration of the collected odour samples;
- to calculate the specific odour emission rates at the 13 sampling locations
- to prepare an analytical report.

## 3. Methodology

### 3.1. Odour Sampling

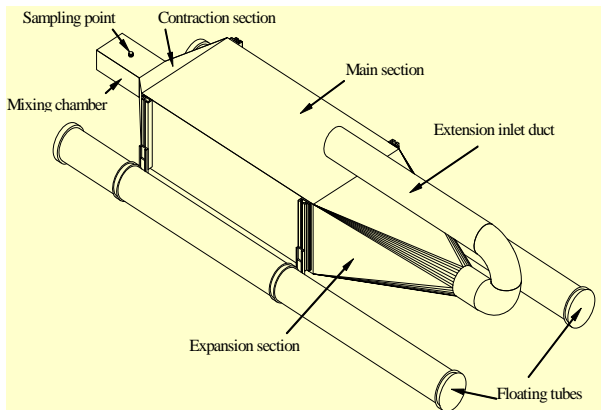
Gaseous odour sample is collected using an odour sampling system, which includes a battery-operated air pump, a sampling vessel, and a Nalophane (NA<sup>TM</sup>) odour bag as shown below. During air sampling, an empty sample bag is placed in the vessel, a rigid plastic container, and the container is then evacuated at a controlled rate and the bag is filled with foul gas. About 60 L of foul gas is collected for each sample.



A scheme of odour sampling system

In order to determine a specific odour emission rate from an area source such as water surface, air sampling can use a “hood” method, whereby a wind tunnel is placed on the odour emission surface

of selected locations and a stream of odour-free nitrogen gas from a certified gas cylinder is supplied into the wind tunnel to simulate a parallel wind blowing on the main section of sampling hood. The emission rate is then determined by the air flow through the hood and the odour concentration of the exit air. Air samples shall be collected using the above sampling vessel and odour bags. The wind tunnel system is shown below.

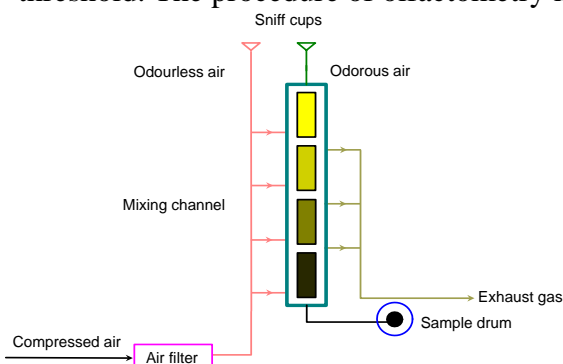


Wind tunnel for odour sampling

Dimension: L = 0.80 m, W = 0.40 m, and H = 0.13 m (Effective height above water surface = 0.10 m)

### 3.2 Odour Measurement by Olfactometry

Odour concentration is determined by a Forced-choice Dynamic Olfactometer (Olfakton-n2) in accordance with the European Standard Method (EN13725). This European Standard specifies a method for the objective determination of the odour concentration of a gaseous sample using dynamic olfactometry with human assessors and the emission rate of odours emanating from point sources, area sources with outward flow and area sources without outward flow. This European Standard is applicable to the measurement of odour concentration of pure substances, defined mixtures and undefined mixtures of gaseous odorants in air or nitrogen, using dynamic olfactometry with a panel of human assessors being the sensor. The unit of measurement is the odour unit per cubic metre: ou/m<sup>3</sup>. The odour concentration is measured by determining the dilution factor required to reach the detection threshold. The odour concentration at the detection threshold is defined as 1 ou/m<sup>3</sup>. The odour concentration is then expressed in terms of multiples of the detection threshold. The procedure of olfactometry measurement is attached as Appendix B.



Forced-choice dynamic olfactometer



Olfactometer in PolyU (Olfakton-n2)

### 3.3. Specific Odour Emission Rate

A wind tunnel system as a “hood” is employed in sampling work to collect odour samples from water surface, in which an odour-free gas from a nitrogen gas cylinder is supplied to generate an air inflow at a fixed velocity of 0.01 m/s inside the hood. A specific odour emission rate (SOER) at each area source can be calculated by the following equation:

$$\text{SOER (ou/m}^2\text{/s)} = \frac{\text{Odour concentration (ou/m}^3\text{)} \times \text{Air flow rate inside hood ( m}^3\text{/s)}}{\text{Covered water surface area (m}^2\text{)}}$$

#### 4. Odour Sampling and Olfactometry Measurements

##### 4.1. Sampling Activities

The first odour sampling at the KTAC area was conducted on 12<sup>th</sup> August 2011, in which a M4 class marine vessel (wooden boat) was used to reach the designated sampling locations on seawater surface, as specified by the Engineer to carry out sampling work under the guidance/observation from the representatives of the Engineer. All sampling locations are summarized in the following table:

Table 2: Summary of Sampling Locations

		East	North
SA1	Northern KTAC, in the vicinity of Kai Tak Nullah (KTN)	838744.13	820311.91
SA2	Northern KTAC	838840.95	820030.07
SA3	Northern KTAC, in the vicinity of Jordan Valley Culvert (JVC) Outfall	839163.99	819942.90
SA4	Southern KTAC	839407.66	819537.90
SA5	Southern KTAC	839580.35	819512.47
SA6	Southern KTAC	839647.87	819329.45
SA7	KTTS	840122.60	819275.72
SA8	KTTS	840270.71	819015.35
SA9	KTTS	840479.55	818798.14
SA10	Kowloon Bay (between runway opening and TKWTS)	838694.90	819582.08
SA11	MTK waterfront, at the end of Ma Tau Kok Road	838138.20	820038.77
SA12	TKW waterfront, near Vehicle Examination Centre	837982.97	819704.84
SA13	Hoi Sham Park waterfront	837857.15	819436.94

At each location, one odour sample was taken from water surface using the wind tunnel, where a stream of odour-free nitrogen gas from a certified gas cylinder is supplied into the wind tunnel to simulate parallel winds blowing on the main section of sampling hood at a gas flow velocity of 0.01 m/s and about 60 L of outlet gas from the wind tunnel was taken as odour samples.

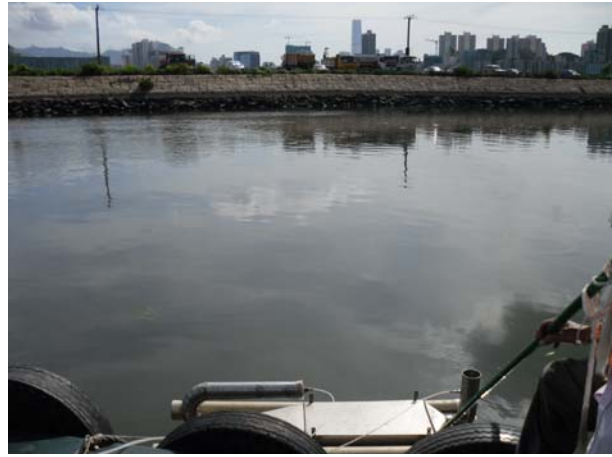
During the sampling period, relevant weather conditions including air temperature, relative humidity, wind direction and wind speed were measured on site using an anemometer (Lutron AM-4201) and recorded accordingly for references. In the meantime, one blank sample by purging odour-free nitrogen gas from the certified gas cylinder was also prepared on the site for a purpose of QA/QC.



A total of 14 gas samples (13 odour samples plus one blank sample for QA/QC) on 12<sup>th</sup> August 2011 were collected and immediately transported to the Odour Laboratory of PolyU after the sampling. Some photos about the on-site sampling activities are presented below.



SA1



SA2



SA3



SA4



SA5



SA6



SA7



SA8



SA9



SA10



SA11



SA12



SA13

#### 4.2 . Olfactometry Measurements

A total of 14 odour samples were transported to the Odour Laboratory of PolyU and olfactometry analysis was conducted within 24 hours after sampling using a forced-choice dynamic olfactometer in accordance with the European Standard Method (EN13725).

Five qualified panellists participated in the odour testing session, who were previously selected through a set of screening tests using a certified n-butanol gas (50 ppm/v) as a standard reference.

#### 4.3. Determination of Specific Odour Emission Rate

From the odour concentrations determined by olfactometry, the specific odour emission rates (SOER) at 9 sampling locations were calculated by the following equation and the final results are shown in the following table:

$$\text{SOER (ou/m}^2\text{/s)} = \frac{\text{Odour concentration (ou/m}^3\text{)} \times \text{Air flow rate inside hood (0.0004 m}^3\text{/s)}}{\text{Covered water surface area (0.32 m}^2\text{)}}$$

Where air flow rate inside hood = 0.01 m/s (Flow velocity) x 0.4 m (W) x 0.1 m (H) = 0.0004 m<sup>3</sup>/s, and covered surface area = 0.8 m (L) x 0.4 m (W) = 0.32 m<sup>2</sup>.

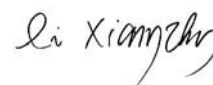
Table 4: Results of olfactometry measurement in August 2011

Sample ID	Sampling						Measurement		
	Date	Time	AT (°C)	RH (%)	WS (m/s)	WD	Time	OC (ou/m <sup>3</sup> )	SOER (ou/m <sup>2</sup> /s)
SA1	12-8-2011	16:05	31.2	63.9	2.5	S	13:43	223	0.27
SA2	12-8-2011	15:50	31.0	65.0	2.0	S	13:01	58	0.07
SA3	12-8-2011	15:30	30.6	68.5	1.6	S	13:21	233	0.29
SA4	12-8-2011	16:30	31.3	62.9	1.3	S	9:17	18	0.023
SA5	12-8-2011	16:40	31.7	61.2	1.7	S	12:49	29	0.036
SA6	12-8-2011	16:55	31.9	62.4	1.9	S	12:30	21	0.026
SA7	12-8-2011	17:10	31.4	65.9	2.8	S	9:54	18	0.023
SA8	12-8-2011	17:25	31.1	68.0	2.5	S	10:06	25	0.031
SA9	12-8-2011	17:40	30.8	69.6	2.8	S	10:28	<10	<0.013
SA10	12-8-2011	14:50	30.5	68.2	1.9	S	9:34	<10	<0.013
SA11	12-8-2011	14:30	30.5	68.9	1.3	S	12:09	344	0.43
SA12	12-8-2011	13:55	30.4	70.8	2.3	S	9:00	<10	<0.013
SA13	12-8-2011	13:30	30.9	69.3	1.2	S	11:49	159	0.20
Blank(QA/QC)	12-8-2011	13:20	-	-	-	-	8:49	<10	-

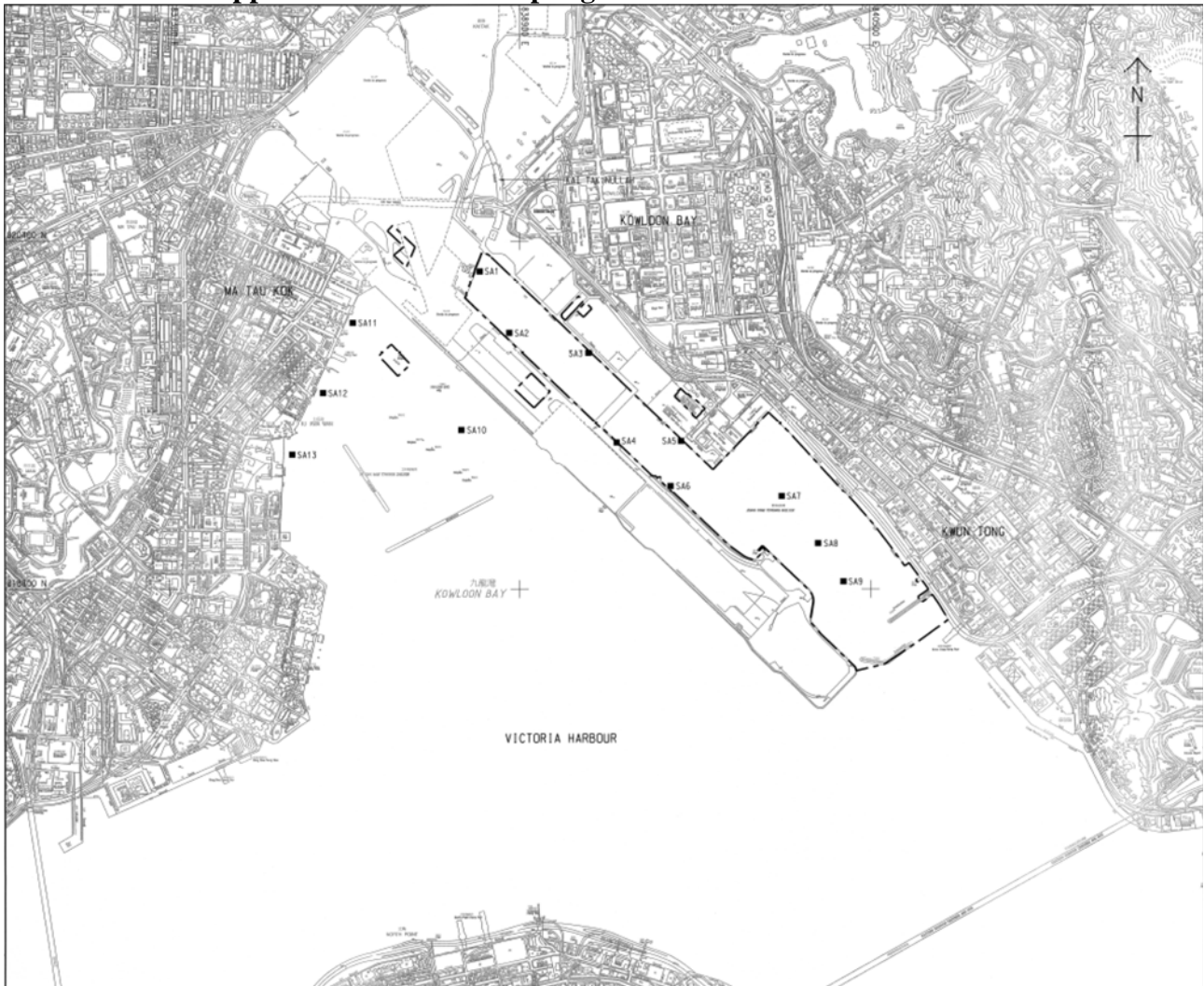
Remark: AT: Air temperature; RH: Relative humidity; WS: Wind speed; WD: Wind direction; OC: Odour concentration; SOER: Specific odour emission rate

Prepared by: Professor X. Z. LI

Signed:



**Appendix A: Odour Sampling Locations at KTAC and KTTS**



## Appendix B: Procedure of Dynamic Olfactometry Used at PolyU

### 1. Introduction

The method of odour measurement in our odour research lab follows the European Standard Method (EN13725). The scope of the method includes the measurements of odour concentration of pure substances, defined mixtures and undefined mixtures of gaseous odorants in air or nitrogen, using dynamic olfactometry with a panel of human assessors being the sensor. The unit of measurement is the odour unit per cubic meter ( $\text{OU}/\text{m}^3$ ). The odour concentration is measured by determining the dilution factor required reaching the detection threshold. The odour concentration at the detection threshold is by definition  $1 \text{ OU}/\text{m}^3$ . The odour concentration is then expressed in terms of multiples of the detection threshold. The range of measurement is typically from  $10^1$  to  $10^7 \text{ OU}/\text{m}^3$  (including pre-dilution). The Olfactomat-n1 (olfactometer) is a dilution apparatus designed to perform one-out-of-two forced choice odour threshold measurements. One measurement, using a panel of 8 persons, can be completed in less than an hour.

### 2. Principle of odour measurement

The odor concentration of a gaseous sample is measured by determining the dilution factor required reaching the detection threshold. The odor concentration at the detection threshold is by definition  $1 \text{ ou}_E/\text{m}^3$ , which has a probability of 50%, being detected under the conditions of the test. The odor concentration of the examined sample is then expressed in terms of multiples of one  $\text{ou}_E$  in a cubic of neutral gas at standard conditions. The range of measurement is typically from  $10^1$  to  $10^7 \text{ ou}_E/\text{m}^3$  (including predilution).

The quality assurance for the performance of the analytical method as a whole and of equipment used to present the sample to the assessor is the core of the standard method. The principal indicators of data quality are its bias and precision, which when combined, express its accuracy which indicates the closeness of agreement between the test results and the accepted reference value. In addition, the instrumental calibration of olfactometers is done using a tracer gas ( $\text{SF}_6$ ) at regular intervals and if the results of the calibration show that the instrument is not functioning within the requirements, technical intervention, such as maintenance or adjustment of settings may be required. The instability of dilutions produced by olfactometers is also determined. The calibration of the sensor of the sensory measurement, in this case the odor panel, is done on the basis of the reference odorant, n-butanol.

### 3. Odour measurement

#### 3.1. Materials and apparatus

Olfactometer; Carbon filter,  $\text{SF}_6$  monitor; tubing for connecting gas cylinders, and vent lines; flow meter; Window 95 PC; Winose software, Odor free dry air; standard n-butanol gas (50 ppm); high purity  $\text{N}_2$  gas; standard  $\text{SF}_6$  gases in  $\text{N}_2$  (500 ppm, 4% and pure  $\text{SF}_6$ )

#### 3.2. Procedure of odour measurement

a. Procedure for operator

1. Assign a number to each panelist, start from 1, then 2 and so on;
2. Install the sample into the sample drum;
3. Start Winose by double click on the corresponding icon;
4. Login as “student” with password “student”;
5. Click on the “measure” icon;
6. Select appropriate number of panelists by adding “temp1”, “temp2”,etc;
7. Click on “start”;
8. Select an initial setting and a final setting;
9. Click on “start” and wait for the beep sound to start;
10. When the test is completed, print out the results and related information from the Winose.

b. Procedure for panelists

1. The sequence starts with panelist No.1;
2. When No.1 hears a beep sound, the sequence starts;
3. The panelists should walk into the testing room;
4. Type his/her corresponding panel number on the screen;
5. Smell the two ports and decide which port has the odorous substance;
6. Input the result onto the screen;
7. Input the result onto the screen;
8. Answer the certainty question on the screen;
9. Walk out the testing room and ask the next panelist with the accessible number to begin;
10. The next panelist repeats step 3 to 9;
11. The sequence completes when the last panelist finishes his operation.

3.3. Flushing the olfactometer

After the completion of a testing run, the olfactometer should be flushed with clean air for a period in excess of required to purge all odorous air form the system of the olfactometer. Prior to the commencement of a run with an odour sample it is essential that the olfactometer is purged with the odour sample for a time sufficient to ensure that all odour free air, or any previous sample is completely purged form the olfactometer.

3.4. Method of calculation

In the sessions, panelist are asked to indicate both the position of the odor stimulus and if they are “certain”, “inkling” or “guessing” about their indication of position. The results are presented as the following coded system.

Result code	Choice result	Certainty	Response
1	Wrong	Guess	False
2	Correct	Guess	False
3	Wrong	Inkling	False
4	Correct	Inkling	False
5	Wrong	Certain	False
6	Correct	Certain	True

The dilution factor at the panel threshold  $\bar{Z}_{IET,pan}$  is calculated as the geometric mean of the individual threshold estimates of the panel members, after retrospective screening. The individual threshold estimate ( $Z_{ITE}$ ) is defined by the two presentations in one dilution series, sorted on descending odor concentration, where a significant (certain) change in responses from consistently TRUE response to a FALSE response occurs. The individual threshold estimate ( $Z_{ITE}$ ) is calculated as the geometric mean of the dilution factors of the two defined presentations.

For example:

Setting	5	6	7	8	9	10	11	12	Z
Dilution	128	256	512	1024	2048	4096	8192	16384	
Panel-1			6	<b>6</b>	4	2	1	1	1448
Panel-2	6	<b>6</b>	5	3	1	2	1	1	362
:	:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:	:
Panel-n					6	<b>6</b>	4	2	2896

$\bar{Z}_{IET} = 1961 \text{OU/m}^3$

Where:  $Z_{temp1} = (1024 \times 2048)^{1/2} = 1448$ , etc.

and  $\bar{Z}_{IET} = \text{Geometric mean of Z's} = (1448 \times 362 \times \dots \times 2896)^{1/8} = 1961$

### 3.5 Presentation of results

The results should be presented on a sheet and an example calculation supplied. The results should be available for scrutiny and should include the number of panellists, their responses to each dilution for both the odour sample and the responses to the reference gas employed on that day.

## 4. Panel selection and control

### 4.1. Panel selection

In order to ensure repeatability of the sensor, composed of individual panel members, their olfactory sensitivity should be within a narrow bandwidth. To achieve this aim, assessors with a specific sensitivity to a reference odour are selected to be panel members. The screening is on reference material n-butanol with the concentration of 50 ppm in nitrogen (v/v).

At least 10 individual thresholds for the reference gas are collected for selection purposes. These data are collected in at least 3 sessions on separate days with a pause of at least one-day between sessions. To become a panel member, the data collected for that assessor must comply with certain criteria:

- The geometric mean of the individual thresholds must fall between 20 and 80 ppb, when n-butanol standard gas is used.
- A measuring history for each panel member is continuously recorded in following performance and compared with the selection criteria. If the panel member does not comply, he/she is excluded from all further measurements.



#### 4.2. Panel control

- Panellist must not eat or smoke for one hour prior to the session
- Panellists should be in odour room 15 minutes before measurements.
- Do not use perfumes, after shave lotions or any other fragrant essences before the session
- Do not attend a session if you have a cold, influenza or any other health problem, which will affect your nose. If you don't tell us, we will tell you that your performance is not satisfactory
- Eating, drinking or smoking is not permitted while a session is in progress. The exception is during the mid-session break when water can be taken. If a lunch break is taken food can also be eaten, one hour before the session. Smoking is **NOT** permitted during any break.
- Panellists should not leave the room during a session, without the consent of the operator.
- Panellists should never discuss their results with other panellists or comment on their perceptions of the odour run in progress. Remember, there is no right or wrong answer. You are not being judged
- Panellist will be expected to stay until the end of each session.
- No panellist should be involved for more than 4 hours of odour testing. Within this period at least 2 ten minutes breaks for olfactory rest should occur.
- The panel should be housed in an air-conditioned room that ensures it is odour free and comfortable. The flushing from the olfactometer should be exhausted from the room in which testing is being performed without contaminating the room air.

#### 5. Quality requirement

To assess compliance with the overall quality criterion for accuracy of odour concentration measurements within one laboratory, a series of ten measurements should be carried out using 50 ppm n-butanol in nitrogen as a reference material in two days.

Geometric Repeatability  $r' = e^{(t \cdot s_r \cdot \sqrt{2})} < 3$

Where  $t$  – a factor from the Student's  $t$ -distribution for  $n-1$  degrees of freedom with a confidence level of 95%

$s_r$  – standard deviation of odour measurement under constant conditions

The value of  $r'$  is the greatest ratio between two single measurement values obtained (with the same method, with an identical sample, under constant conditions as regards the laboratory, investigator and apparatus, and with a short interval of time) will, with a probability of 95%, be smaller than that value.

$$\text{Geometric Reproducibility } R' = e^{(t \cdot s_R \cdot \sqrt{2})} < 4$$

Where  $t$  – a factor from the Student's  $t$ -distribution for  $n-1$  degrees of freedom with a

*confidence level of 95%*

$s_R$  – standard deviation of odour measurement under different conditions

The value of  $R'$  is the greatest ratio between two single measurement values obtained (with the same method, with an identical sample, under different conditions as regards the laboratory, investigator and apparatus, and with a short interval of time) will, with a probability of 95%, be smaller than that value.

This implies that two measurement values will differ from each other by no more than a factor of 3 and 4 respectively, with a probability of 95%.

## 6. Instrumental Calibration

The instrumental calibration of the olfactometer is required in EN13725. The objective of the calibration is to check the accuracy and repeatability of the dilution settings of the olfactometer at a regular interval (every year) and to establish a calibration history of the olfactometer. The calibration uses SF<sub>6</sub> as a tracer gas and a SF<sub>6</sub> monitor. The accuracy and repeatability of the olfactometer are calculated from two carbon monoxide concentrations: one measured at the sniffing port of the olfactometer and one with certified SF<sub>6</sub> concentrations.

### 6.1. Procedure of SF<sub>6</sub> calibration

1. Activate the sampling system, measure and record the SF<sub>6</sub> concentration of the room air in the lab;
2. Connect the sampling line to one port of the olfactometer;
3. Take a measure of reference air from the olfactometer. If this air contains over 1ppm SF<sub>6</sub>, check for the cause before starting the calibration;
4. Continue with the calibration, taking five measurements for each dilution setting. Between measurements all controls of the instrument should be changed. Preferably use series of increasing concentration, as is done in normal olfactometry sessions. Mark exactly when the operator, or the control software, signals that the dilution that has been set is ready for “sniffing”, this is the mark for the start of the calculation of results;
5. Check regularly the background concentrations in the neutral gas from the olfactometer and the room air;
6. Each measurement should provide about 12 individual readings. The time between subsequent readings should be a minimum of the lag-time of the calibration unit (about 5s);

7. The accuracy criterion requires that the averaged SF<sub>6</sub> concentration measured at the sniffing port is within 20% of the expected SF<sub>6</sub> value for each dilution setting. The repeatability criterion requires that the deviation of the measured SF<sub>6</sub> concentration must be less than 5 % in any dilution setting with a probability of 95%;
8. Spot checks of the dilution produced in the different ports of a single diluting channel multi-port machine should be made to ensure that no systematic differences occur between the ports. Multiple diluting channel machines must have each channel and each dilution individually measured;
9. Take notes of all observations that may in any way be relevant;
10. Ensure safe storage of all data;
11. After completing measurements, check the neural gas from the olfactometer and the room air. If SF<sub>6</sub> concentrations are higher than 1ppm, check the zero of the calibration unit using zero gas. If the zero has not drifted, check for any recycling of vented SF<sub>6</sub> mixture back through the compressor or air conditioning unit.

## 6.2. Instrumental quality requirement

The accuracy criterion requires that the averaged SF<sub>6</sub> concentration measured at the sniffing port is within 20% of the designed SF<sub>6</sub> value for each dilution setting. The repeatability criterion requires that the deviation of the measured SF<sub>6</sub> concentration must be less than 5% in any dilution setting with a probability of 95%.

Calibration Date: 17 May 2011

Settings	15	14	13	12	11	10	9 (3940 ppm)	9 (102.5 ppm)	8 (3940 ppm)	8 (102.5 ppm)	7	6	5	4	3	2	1
Dilution Factor	18593.3	11407.2	6948.7	3604.6	2424.3	1320.3	667.1	593.0	406.1	365.7	217.5	115.3	71.2	42.6	23.7	12.8	8.5
Average	18542.2	11456.9	6952.9	3604.7	2417.6	1319.3	668.5	602.5	405.5	365.0	218.2	115.7	71.2	42.6	23.7	12.8	8.5
Standard Deviation (STDEV)	175.6	102.0	37.6	10.8	6.8	1.53	0.76	10.67	0.45	4.37	2.08	0.448	0.185	0.0370	0.0166	0.0076	0.0073
Instability (%)	1.86	1.745	1.060	0.589	0.554	0.227	0.223	3.47	0.216	2.347	1.87	0.760	0.509	0.170	0.138	0.117	0.169
Coefficient of Variation (%)							10.4		10.5								
Average for Coefficient of Variation (%)							10.4		10.4								
Average for Coefficient of Variation (%) / 2							5.22		5.22								
Adjusted Dilution Factor	17574.3	10858.9	6590.0	3416.5	2291.4	1250.4	633.6	634.0	384.3	384.0	229.6	121.7	74.9	44.8	24.9	13.5	8.9
Settings	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
Final Dilution Factor	17574.3	10858.9	6590.0	3416.5	2291.4	1250.4	633.8	384.2	229.6	121.7	74.9	44.8	24.9	13.5	8.9		

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**APPENDIX C3  
LABORATORY TESTING REPORT  
FOR SEDIMENT MONITORING**

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## TEST REPORT

**APPLICANT:** **Cinotech Consultants Limited**  
**RM 1710, Technology Park,**  
**18 On Lai Street,**  
**Shatin, N.T., Hong Kong**

Laboratory No.:	13981
Date of Issue:	2011-09-05
Date Received:	2011-08-26
Date Tested:	2011-08-26
Date Completed:	2011-09-05

**ATTN:** **Miss Mei Ling Tang**

Page: 1 of 2

**Sample Description** : 13 vibrocore samples as received by customer said to be sediment  
**Project No.** : MA11017  
**Project Name** : Contract No. KL/2010/02 Kai Tak Development – Kai Tak Approach Channel  
 & Kwun Tong Typhoon Shelter Improvement Works (Phase 1)  
**Custody No.** : MA11017/110826  
**Sampling Date** : 2011-08-26

**Test Requested & Methodology:**

Item	Parameters	Ref. Method	Limit of Reporting
1	Acid volatile sulphides	USEPA 821/R-91-100	1 mg/kg <sup>2</sup>
2	Redox	Instrumental, pH/Redox Meter (electrodeometric)	1 mV
3	pH value at 25°C		0.1 pH unit
4	Residual Nitrate	In-house Method SOP056 (FIA)	0.05 mg NO <sub>3</sub> <sup>-</sup> -N/L <sup>3</sup>

**Results:**

Sample ID	SA1	SA2	SA3	SA4	SA5
Sample Number	13981-1	13981-2	13981-3	13981-4	13981-5
Acid volatile sulphides, mg/kg <sup>2</sup>	4300	5200	3900	3300	3200
Redox, mV	-388	-364	-320	-362	-328
pH value at 25°C, pH unit	7.19	7.09	6.97	7.58	7.48
Residual Nitrate, mg NO <sub>3</sub> <sup>-</sup> -N/L <sup>3</sup>	0.66	0.33	0.32	0.54	0.51

Sample ID	SA6	SA7	SA8	SA9	SA10
Sample Number	13981-6	13981-7	13981-8	13981-9	13981-10
Acid volatile sulphides, mg/kg <sup>2</sup>	1600	2700	3300	2600	1100
Redox, mV	-327	-361	-336	-333	-350
pH value at 25°C, pH unit	7.35	7.48	7.56	7.4	7.16
Residual Nitrate, mg NO <sub>3</sub> <sup>-</sup> -N/L <sup>3</sup>	0.52	0.44	0.47	0.56	0.53

Remark: 1) <= less than

2) Results reported as dry weight basis

3) Results reported as wet weight basis

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REPAIRED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**  
 Laboratory Manager

## TEST REPORT

Laboratory No.:	13981
Date of Issue:	2011-09-05
Date Received:	2011-08-26
Date Tested:	2011-08-26
Date Completed:	2011-09-05

Page: 2 of 2

**Results:**

Sample ID	SA11	SA12	SA13
Sample Number	13981-11	13981-12	13981-13
Acid volatile sulphides, mg/kg <sup>2</sup>	450	3500	2600
Redox, mV	-225	-330	-323
pH value at 25°C, pH unit	7.29	7.43	7.13
Residual Nitrate, mg NO <sub>3</sub> <sup>-</sup> -N/L <sup>3</sup>	0.36	0.41	0.43

Remark: 1) < = less than

2) Results reported as dry weight basis

3) Results reported as wet weight basis

\*\*\*\*\*END OF REPORT\*\*\*\*\*

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**APPENDIX D1  
QUALITY CONTROL REPORT FOR  
WATER QUALITY MONITORING**

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## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
RM 1710, Technology Park,  
18 On Lai Street,  
Shatin, N.T., Hong Kong

Laboratory No.:	QC13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

**ATTN:** Miss Mei Ling Tang  
**QC report:**  
**Method Blank**

Page: 1 of 8

Parameter	Method Blank 1	Method Blank 2	Method Blank 3	Method Blank 4	Method Blank 5	Acceptance
Suspended Solids (SS), mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<i>E. coli</i> , cfu/100mL	<1	<1	<1	<1	<1	<1
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	N/A	N/A	N/A	N/A	N/A	N/A
Ammonia Nitrogen (NH <sub>3</sub> -N), mg NH <sub>3</sub> -N/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Unionized Ammonia (UIA), mg/L	N/A	N/A	N/A	N/A	N/A	N/A
Total Kjeldahl Nitrogen (TKN), mg N/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite-nitrogen (NO <sub>2</sub> -N), mg NO <sub>2</sub> <sup>-</sup> -N/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nitrate-nitrogen (NO <sub>3</sub> -N), mg NO <sub>3</sub> <sup>-</sup> -N/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ortho-phosphate (PO <sub>4</sub> ), mg PO <sub>4</sub> <sup>3-</sup> -P/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Phosphorous (TP), mg-P/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium (Cd), µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Cr), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper (Cu), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury (Hg), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel (Ni), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Lead (Pb), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Silver (Ag), µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc (Zn), µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

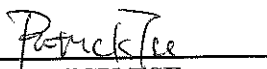
Remark: 1) < = less than

2) N/A = Not applicable

\*\*\*\*\*

PREPARED AND CHECKED BY:

For and On Behalf of WELLAB Ltd.

  
PATRICK TSE

Laboratory Manager

## TEST REPORT

Laboratory No.:	QC13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 2 of 8

**QC report:  
Method Blank**

Parameter	Method Blank 6	Method Blank 7	Method Blank 8	Method Blank 9	Acceptance
Total Suspended Solids, mg/L	<0.5	<0.5	<0.5	<0.5	<0.5
<i>E. coli</i> , cfu/100mL	<1	<1	<1	<1	<1
Biochemical Oxygen Demand, mg-O <sub>2</sub> /L	N/A	N/A	N/A	N/A	N/A
Ammonia Nitrogen, mg NH <sub>3</sub> -N/L	<0.01	<0.01	<0.01	<0.01	<0.01
Unionized Ammonia, mg/L	N/A	N/A	N/A	N/A	N/A
Total Kjeldahl Nitrogen, mg N/L	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite Content, mg NO <sub>2</sub> <sup>-</sup> -N/L	<0.002	<0.002	<0.002	<0.002	<0.002
Nitrate Content, mg NO <sub>3</sub> <sup>-</sup> -N/L	<0.01	<0.01	<0.01	<0.01	<0.01
Ortho-phosphate, mg PO <sub>4</sub> <sup>3-</sup> -P/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Phosphorus, mg-P/L	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium, µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium, µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Copper, µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury, µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel, µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Lead, µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Silver, µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Zinc, µg/L	<0.4	<0.4	<0.4	<0.4	<0.4

Remark: 1) < = less than

2) N/A = Not applicable

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## TEST REPORT

Laboratory No.:	QC13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 3 of 8

**QC report:  
Method QC**

Parameter	MQC1	MQC2	MQC3	MQC4	MQC5	Acceptance
Suspended Solids (SS), %	98	97	101	98	97	80-120
<i>E. coli</i>	N/A	N/A	N/A	N/A	N/A	N/A
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	183	189	186	188	181	170-220
Ammonia Nitrogen (NH <sub>3</sub> -N), %	97	92	96	98	97	80-120
Unionized Ammonia (UIA)	N/A	N/A	N/A	N/A	N/A	N/A
Total Kjeldahl Nitrogen (TKN), %	97	99	95	94	99	80-120
Nitrite-nitrogen (NO <sub>2</sub> -N), %	92	98	94	95	94	80-120
Nitrate-nitrogen (NO <sub>3</sub> -N), %	99	92	96	95	96	80-120
Ortho-phosphate (PO <sub>4</sub> ), %	100	95	98	91	99	80-120
Total Phosphorous (TP), %	98	96	95	97	96	80-120
Cadmium (Cd), %	95	97	99	95	93	80-120
Chromium (Cr), %	92	96	96	94	91	80-120
Copper (Cu), %	99	91	95	98	99	80-120
Mercury (Hg), %	99	96	95	98	96	80-120
Nickel (Ni), %	95	96	98	96	95	80-120
Lead (Pb), %	90	95	95	99	95	80-120
Silver (Ag), %	94	95	97	96	94	80-120
Zinc (Zn), %	97	96	95	99	96	80-120

Remark: 1) < = less than

2) N/A = Not applicable

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## TEST REPORT

Laboratory No.:	QC13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 4 of 8

**QC report:  
Method QC**

Parameter	MQC6	MQC7	MQC8	MQC9	Acceptance
Suspended Solids (SS), %	93	93	95	92	80-120
<i>E. coli</i>	N/A	N/A	N/A	N/A	N/A
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	179	186	183	183	170-220
Ammonia Nitrogen (NH <sub>3</sub> -N), %	96	97	99	96	80-120
Unionized Ammonia (UIA)	N/A	N/A	N/A	N/A	N/A
Total Kjeldahl Nitrogen (TKN), %	94	96	94	98	80-120
Nitrite-nitrogen (NO <sub>2</sub> -N), %	98	101	98	94	80-120
Nitrate-nitrogen (NO <sub>3</sub> -N), %	100	97	100	100	80-120
Ortho-phosphate (PO <sub>4</sub> ), %	99	97	94	91	80-120
Total Phosphorous (TP), %	94	95	95	93	80-120
Cadmium (Cd), %	94	97	96	95	80-120
Chromium (Cr), %	95	99	94	95	80-120
Copper (Cu), %	96	96	96	97	80-120
Mercury (Hg), %	97	94	93	93	80-120
Nickel (Ni), %	96	100	98	93	80-120
Lead (Pb), %	95	91	94	101	80-120
Silver (Ag), %	97	90	98	96	80-120
Zinc (Zn), %	97	98	91	97	80-120

Remark: 1) < = less than

2) N/A = Not applicable

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## TEST REPORT

Laboratory No.:	QC13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 5 of 8

**QC report:  
Sample Spike**

Parameter	13893-2 spk	13893-30 spk	13893-54 spk	13893-81 spk	13893-104 spk	Acceptance
Suspended Solids (SS), %	N/A	N/A	N/A	N/A	N/A	N/A
<i>E. coli</i>	N/A	N/A	N/A	N/A	N/A	N/A
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	91	91	87	91	97	N/A
Ammonia Nitrogen (NH <sub>3</sub> -N), %	95	97	94	92	90	80-120
Unionized Ammonia (UIA)	N/A	N/A	N/A	N/A	N/A	N/A
Total Kjeldahl Nitrogen (TKN), %	89	93	92	86	95	80-120
Nitrite-nitrogen (NO <sub>2</sub> -N), %	91	88	96	92	90	80-120
Nitrate-nitrogen (NO <sub>3</sub> -N), %	90	92	93	92	90	80-120
Ortho-phosphate (PO <sub>4</sub> ), %	93	88	94	93	88	80-120
Total Phosphorous (TP), %	89	97	90	94	93	80-120
Cadmium (Cd), %	94	97	92	93	92	80-120
Chromium (Cr), %	90	93	90	93	91	80-120
Copper (Cu), %	89	86	97	96	94	80-120
Mercury (Hg), %	89	90	93	94	92	80-120
Nickel (Ni), %	93	95	92	92	96	80-120
Lead (Pb), %	88	96	88	89	94	80-120
Silver (Ag), %	92	86	98	92	92	80-120
Zinc (Zn), %	95	98	87	97	89	80-120

Remark: 1) < = less than

2) N/A = Not applicable

\*\*\*\*\*

## TEST REPORT

Laboratory No.:	QC13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 6 of 8

**QC report:  
Sample Spike**

Parameter	13893-133 spk	13893-156 spk	13893-184 spk	13893-207 spk	Acceptance
Suspended Solids (SS), %	N/A	N/A	N/A	N/A	N/A
<i>E. coli</i>	N/A	N/A	N/A	N/A	N/A
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), mg-O <sub>2</sub> /L	96	93	92	96	N/A
Ammonia Nitrogen (NH <sub>3</sub> -N), %	87	87	95	94	80-120
Unionized Ammonia (UIA)	N/A	N/A	N/A	N/A	N/A
Total Kjeldahl Nitrogen (TKN), %	98	94	93	97	80-120
Nitrite-nitrogen (NO <sub>2</sub> -N), %	92	90	90	97	80-120
Nitrate-nitrogen (NO <sub>3</sub> -N), %	90	90	89	93	80-120
Ortho-phosphate (PO <sub>4</sub> ), %	92	89	90	95	80-120
Total Phosphorous (TP), %	88	85	91	96	80-120
Cadmium (Cd), %	93	93	88	89	80-120
Chromium (Cr), %	90	95	92	97	80-120
Copper (Cu), %	96	94	95	93	80-120
Mercury (Hg), %	91	94	98	102	80-120
Nickel (Ni), %	88	97	94	94	80-120
Lead (Pb), %	88	93	88	93	80-120
Silver (Ag), %	91	90	85	96	80-120
Zinc (Zn), %	91	95	99	97	80-120

Remark: 1) < = less than

2) N/A = Not applicable

\*\*\*\*\*

## TEST REPORT

Laboratory No.:	QC13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 7 of 8

**QC report:**  
**Sample Duplicate**

Parameter	13893-2 chk	13893-30 chk	13893-54 chk	13893-81 chk	13893-104 chk	Acceptance
Suspended Solids (SS), %	3	4	3	6	5	RPD <sub>≤</sub> 20
<i>E. coli</i> , %	N/A	N/A	N/A	N/A	N/A	N/A
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), %	5	N/A	6	N/A	N/A	RPD <sub>≤</sub> 20
Ammonia Nitrogen (NH <sub>3</sub> -N), %	6	4	5	7	4	RPD <sub>≤</sub> 20
Unionized Ammonia (UIA)	N/A	N/A	N/A	N/A	N/A	N/A
Total Kjeldahl Nitrogen (TKN), %	3	5	8	7	5	RPD <sub>≤</sub> 20
Nitrite-nitrogen (NO <sub>2</sub> -N), %	4	4	6	5	4	RPD <sub>≤</sub> 20
Nitrate-nitrogen (NO <sub>3</sub> -N), %	4	5	3	5	7	RPD <sub>≤</sub> 20
Ortho-phosphate (PO <sub>4</sub> ), %	4	7	6	3	3	RPD <sub>≤</sub> 20
Total Phosphorous (TP), %	5	4	5	4	5	RPD <sub>≤</sub> 20
Cadmium (Cd), %	N/A	4	N/A	N/A	N/A	RPD <sub>≤</sub> 20
Chromium (Cr), %	4	4	5	3	6	RPD <sub>≤</sub> 20
Copper (Cu), %	5	4	6	6	3	RPD <sub>≤</sub> 20
Mercury (Hg), %	4	N/A	N/A	5	6	RPD <sub>≤</sub> 20
Nickel (Ni), %	5	5	6	4	6	RPD <sub>≤</sub> 20
Lead (Pb), %	5	3	7	3	3	RPD <sub>≤</sub> 20
Silver (Ag), %	N/A	N/A	N/A	N/A	N/A	RPD <sub>≤</sub> 20
Zinc (Zn), %	7	3	4	5	5	RPD <sub>≤</sub> 20

Remark: 1) < = less than

2) N/A = Not applicable

\*\*\*\*\*

## TEST REPORT

Laboratory No.:	QC13893
Date of Issue:	2011-10-07
Date Received:	2011-08-18
Date Tested:	2011-08-18
Date Completed:	2011-10-07

Page: 8 of 8

**QC report:**  
**Sample Duplicate**

Parameter	13893-133 chk	13893-156 chk	13893-184 chk	13893-207 chk	Acceptance
Suspended Solids (SS), %	7	4	5	6	RPD $\leq$ 20
<i>E. coli</i> , %	N/A	N/A	N/A	N/A	N/A
5-day Biochemical Oxygen Demand (BOD <sub>5</sub> ), %	N/A	N/A	N/A	N/A	RPD $\leq$ 20
Ammonia Nitrogen (NH <sub>3</sub> -N), %	4	4	6	4	RPD $\leq$ 20
Unionized Ammonia (UIA)	N/A	N/A	N/A	N/A	N/A
Total Kjeldahl Nitrogen (TKN), %	7	4	5	5	RPD $\leq$ 20
Nitrite-nitrogen (NO <sub>2</sub> -N), %	5	4	4	6	RPD $\leq$ 20
Nitrate-nitrogen (NO <sub>3</sub> -N), %	4	5	5	5	RPD $\leq$ 20
Ortho-phosphate (PO <sub>4</sub> ), %	4	4	5	7	RPD $\leq$ 20
Total Phosphorous (TP), %	4	6	4	5	RPD $\leq$ 20
Cadmium (Cd), %	N/A	N/A	N/A	N/A	RPD $\leq$ 20
Chromium (Cr), %	7	5	3	4	RPD $\leq$ 20
Copper (Cu), %	3	6	3	5	RPD $\leq$ 20
Mercury (Hg), %	7	6	N/A	N/A	RPD $\leq$ 20
Nickel (Ni), %	5	6	6	6	RPD $\leq$ 20
Lead (Pb), %	4	4	4	5	RPD $\leq$ 20
Silver (Ag), %	N/A	N/A	N/A	N/A	RPD $\leq$ 20
Zinc (Zn), %	6	6	4	5	RPD $\leq$ 20

Remark: 1)  $\leq$  = less than

2) N/A = Not applicable

\*\*\*\*\*END OF REPORT\*\*\*\*\*



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**APPENDIX D2  
QUALITY CONTROL REPORT FOR  
SEDIMENT MONITORING**

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## TEST REPORT

**APPLICANT:** Cinotech Consultants Limited  
RM 1710, Technology Park,  
18 On Lai Street,  
Shatin, N.T., Hong Kong

Laboratory No.:	QC13981
Date of Issue:	2011-09-05
Date Received:	2011-08-26
Date Tested:	2011-08-26
Date Completed:	2011-09-05

**ATTN:** Miss Mei Ling Tang

Page: 1 of 1

**QC report:**  
**Method Blank**

Parameter	Method Blank	Acceptance
Acid volatile sulphides, mg/kg	<0.2	<0.2
Redox, mV	N/A	N/A
pH value at 25°C, pH unit	N/A	N/A
Residual Nitrate, mg NO <sub>3</sub> <sup>-</sup> -N/L	N/A	N/A

**Method QC**

Parameter	Method QC, %	Acceptance
Acid volatile sulphides, %	98	80-120%
Redox, %	N/A	N/A
pH value at 25°C, %	N/A	N/A
Residual Nitrate, %	95	80-120%

**Sample Spike**

Parameter	Spike Recovery, %	Acceptance
Acid volatile sulphides, %	90	80-120%
Redox, %	N/A	N/A
pH value at 25°C, %	N/A	N/A
Residual Nitrate, %	96	80-120%

**Sample Duplicate**

Parameter	RPD, %	Acceptance
Acid volatile sulphides, %	5	RPD ≤ 20%
Redox, %	N/A	N/A
pH value at 25°C, %	N/A	N/A
Residual Nitrate, %	N/A	RPD ≤ 20%

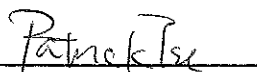
Remark: 1) < = less than

2) N/A = Not applicable

\*\*\*\*\*END OF REPORT\*\*\*\*\*

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**

  
**PATRICK TSE**

Laboratory Manager

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**APPENDIX E1  
IN-SITU MEASUREMENT RESULTS  
FOR MARINE WATER QUALITY  
MONITORING**

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Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at AC1 - Mid-Ebb Tide

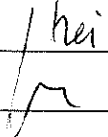

Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	13:30	32.1	8.4	12.0	101.5	6.9	4.4
			13:30	31.9	8.3	12.2	101.7	7.0	4.8
1.0	Sunny	Moderate	13:31	28.0	8.0	27.7	96.0	6.4	7.9
			13:31	28.0	8.0	27.8	95.3	6.4	8.2
1.5	Sunny	Moderate	13:31	26.5	7.9	31.2	16.5	1.1	12.8
			13:31	26.5	7.9	31.2	14.7	1.0	13.3

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	13:31	28.0	8.0	27.7	96.0	6.4	7.9
			13:31	28.0	8.0	27.8	95.3	6.4	8.2

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at AC2 - Mid-Ebb Tide



Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	13:19	32.1	8.3	12.1	96.1	6.6	5.8
			13:19	32.2	8.3	12.1	97.1	6.6	5.6
1.0	Sunny	Moderate	13:20	27.8	7.9	26.3	13.3	0.9	12.9
			13:20	28.7	8.0	23.9	12.7	0.8	12.9
1.5	Sunny	Moderate	13:20	26.5	7.9	30.9	9.8	0.7	24.4
			13:20	26.5	7.9	30.9	8.8	0.6	24.4
2.0	Sunny	Moderate	13:20	26.2	7.9	31.4	6.5	0.4	22.9
			13:20	26.2	7.9	31.4	6.0	0.4	23.0
2.5	Sunny	Moderate	13:21	26.3	7.9	31.5	12.5	0.9	22.8
			13:21	26.2	7.9	31.5	11.5	0.8	21.3

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	13:20	27.8	7.9	26.3	13.3	0.9	12.9
			13:20	28.7	8.0	23.9	12.7	0.8	12.9
2.0	Sunny	Moderate	13:20	26.2	7.9	31.4	6.5	0.4	22.9
			13:20	26.2	7.9	31.4	6.0	0.4	23.0

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at AC3 - Mid-Ebb Tide



Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	13:39	32.0	8.3	12.6	95.2	6.5	3.0
			13:40	32.0	8.3	12.7	94.5	6.5	3.1
1.0	Sunny	Moderate	13:40	28.1	8.0	27.3	116.4	7.8	7.1
			13:40	27.9	8.0	27.6	116.2	7.8	7.0
1.5	Sunny	Moderate	13:40	26.6	7.9	31.1	14.4	1.0	13.8
			13:40	26.6	7.9	31.1	13.7	0.9	13.9

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	13:40	28.1	8.0	27.3	116.4	7.8	7.1
			13:40	27.9	8.0	27.6	116.2	7.8	7.0

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at AC4 - Mid-Ebb Tide

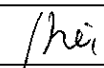

Sampling Date: 18 August 2011

Secchi Disc Depth: 1.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	13:52	32.0	8.3	13.3	104.5	7.1	3.1
			13:52	32.1	8.3	13.3	105.4	7.2	3.3
1.0	Sunny	Moderate	13:52	28.0	8.0	28.4	177.2	11.9	5.4
			13:52	28.0	8.0	28.4	177.2	11.8	5.4
1.5	Sunny	Moderate	13:52	27.1	8.0	30.0	155.5	10.5	4.6
			13:52	26.9	8.0	30.2	156.0	10.5	4.5
2.0	Sunny	Moderate	13:53	26.1	7.9	31.6	40.0	2.7	15.7
			13:53	26.1	7.9	31.6	36.2	2.5	15.6
2.5	Sunny	Moderate	13:53	25.8	7.9	31.9	12.0	0.8	21.9
			13:54	25.8	7.9	31.9	12.3	0.8	19.1
3.0	Sunny	Moderate	13:54	25.5	7.9	32.3	7.5	0.5	10.1
			13:54	25.5	7.9	32.3	7.4	0.5	10.0
3.5	Sunny	Moderate	13:54	25.2	7.9	32.7	7.5	0.5	7.7
			13:54	25.2	7.9	32.7	6.9	0.5	7.5
4.0	Sunny	Moderate	13:54	25.0	7.9	32.9	6.8	0.5	6.4
			13:54	25.0	7.9	32.9	6.7	0.5	6.3

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	13:52	28.0	8.0	28.4	177.2	11.9	5.4
			13:52	28.0	8.0	28.4	177.2	11.8	5.4
3.5	Sunny	Moderate	13:54	25.2	7.9	32.7	7.5	0.5	7.7
			13:54	25.2	7.9	32.7	6.9	0.5	7.5

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

**Water Quality Monitoring Results at AC5 - Mid-Ebb Tide**



Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	14:32	31.3	8.3	14.6	103.3	7.1	11.4
			14:32	31.3	8.3	14.5	103.9	7.1	11.1
1.0	Sunny	Moderate	14:33	27.3	8.0	28.3	82.0	5.6	15.5
			14:33	27.3	8.0	28.3	82.0	5.5	14.9
1.5	Sunny	Moderate	14:33	26.3	8.0	31.3	19.7	1.3	23.0
			14:33	28.3	8.0	31.3	17.8	1.2	26.0
2.0	Sunny	Moderate	14:34	25.8	8.0	31.7	18.4	1.3	15.6
			14:34	25.8	8.0	31.8	20.3	1.4	13.0

**Water Quality Monitoring Results (Sampling Depth)**

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.25	Sunny	Moderate	14:33	26.5	7.0	30.9	52.1	3.5	21.2
			14:33	26.6	7.0	30.9	48.6	3.3	21.0

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11



Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at AC6 - Mid-Ebb Tide



Sampling Date: 18 August 2011

Secchi Disc Depth: 0.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	14:18	31.9	8.3	14.5	156.7	10.6	6.4
			14:18	31.9	8.3	14.6	160.2	10.8	6.6
1.0	Sunny	Moderate	14:18	28.1	8.1	26.3	137.2	9.3	8.6
			14:18	28.0	8.1	26.4	140.1	9.5	8.2
1.5	Sunny	Moderate	14:18	26.1	8.0	31.5	24.1	1.6	7.9
			14:18	26.2	8.0	31.5	22.0	1.5	7.9
2.0	Sunny	Moderate	14:18	25.9	8.0	31.7	19.0	1.3	9.3
			14:19	25.9	8.0	31.7	19.0	1.3	10.0
2.5	Sunny	Moderate	14:19	25.7	7.9	31.9	10.2	0.7	14.5
			14:19	25.7	7.9	31.9	9.6	0.7	14.6
3.0	Sunny	Moderate	14:19	25.4	7.9	32.3	9.4	0.6	16.2
			14:19	25.4	7.9	32.4	8.5	0.6	15.3
3.5	Sunny	Moderate	14:19	25.0	7.9	32.9	5.4	0.4	11.6
			14:19	24.9	7.9	32.9	5.2	0.4	11.6
4.0	Sunny	Moderate	14:20	24.7	7.9	33.2	4.5	0.3	11.8
			14:20	24.7	7.9	33.3	4.6	0.3	11.8
4.5	Sunny	Moderate	14:20	24.6	7.9	33.4	3.8	0.3	15.8
			14:20	24.6	7.9	33.4	3.7	0.3	15.8

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	14:18	28.1	8.1	26.3	137.2	9.3	8.6
			14:18	28.0	8.1	26.4	140.1	9.5	8.2
4.0	Sunny	Moderate	14:20	24.7	7.9	33.2	4.5	0.3	11.8
			14:20	24.7	7.9	33.3	4.6	0.3	11.8

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at AC7 - Mid-Ebb Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	14:45	29.5	8.2	20.5	60.0	4.1	15.1
			14:45	29.4	8.2	20.4	55.8	3.8	13.5
1.0	Sunny	Moderate	14:46	27.2	8.0	30.0	127.4	8.6	5.7
			14:46	27.1	8.0	30.0	130.2	8.8	5.9
1.5	Sunny	Moderate	14:46	26.5	8.0	31.1	79.8	5.4	4.2
			14:48	26.5	8.0	31.1	77.0	5.2	4.0
2.0	Sunny	Moderate	14:46	26.0	8.0	31.5	57.9	3.9	4.7
			14:46	26.0	8.0	31.5	56.8	3.9	4.3
2.5	Sunny	Moderate	14:46	25.7	7.9	31.9	30.7	2.1	12.4
			14:48	25.7	7.9	31.9	30.7	2.1	13.6
3.0	Sunny	Moderate	14:47	25.3	7.9	32.5	10.8	0.7	15.0
			14:47	25.3	7.9	32.5	10.2	0.7	15.0
3.5	Sunny	Moderate	14:47	25.0	7.9	32.9	5.8	0.4	12.6
			14:47	24.9	7.9	32.9	5.5	0.4	12.5
4.0	Sunny	Moderate	14:47	24.7	7.9	33.1	8.8	0.6	13.6
			14:47	24.7	7.9	33.1	8.1	0.6	16.0
4.5	Sunny	Moderate	14:47	24.6	7.9	33.3	5.5	0.4	19.9
			14:48	24.6	7.9	33.3	5.2	0.4	20.0
5.0	Sunny	Moderate	14:48	24.4	7.9	33.5	4.3	0.3	18.9
			14:48	24.4	7.9	33.5	4.1	0.3	18.7
5.5	Sunny	Moderate	14:48	24.4	7.9	33.5	5.0	0.3	22.2
			14:48	24.4	7.9	33.5	4.5	0.3	22.7

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	14:46	27.2	8.0	30.0	127.4	8.6	5.7
			14:46	27.1	8.0	30.0	130.2	8.8	5.9
3.0	Sunny	Moderate	14:47	25.3	7.9	32.5	10.8	0.7	15.0
			14:47	25.3	7.9	32.5	10.2	0.7	15.0
5.0	Sunny	Moderate	14:48	24.4	7.9	33.5	4.3	0.3	18.9
			14:48	24.4	7.9	33.5	4.1	0.3	18.7

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02  
 Kai Tak Development  
 – Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at KT1 - Mid-Ebb Tide


Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	15:05	30.8	8.1	24.6	167.7	10.9	4.3
			15:05	30.5	8.1	26.1	167.9	10.9	4.4
1.0	Sunny	Moderate	15:05	28.6	8.0	28.2	154.5	10.2	4.6
			15:05	28.9	8.0	28.0	161.3	10.7	4.6
1.5	Sunny	Moderate	15:05	26.4	8.0	30.8	131.4	8.9	3.1
			15:05	26.4	8.0	30.8	130.1	8.8	3.0
2.0	Sunny	Moderate	15:06	25.9	8.0	31.5	87.1	5.9	2.2
			15:06	25.9	8.0	31.5	84.3	5.7	2.3
2.5	Sunny	Moderate	15:08	25.8	8.0	31.7	65.9	4.5	2.2
			15:06	25.8	8.0	31.7	64.4	4.4	2.2
3.0	Sunny	Moderate	15:06	25.7	8.0	31.8	52.7	3.6	1.9
			15:06	25.7	8.0	31.8	52.1	3.6	1.9
3.5	Sunny	Moderate	15:07	25.3	7.9	32.4	36.9	2.5	2.2
			15:07	25.3	7.9	32.5	33.4	2.3	2.3
4.0	Sunny	Moderate	15:07	25.1	7.9	32.6	18.2	1.2	3.2
			15:07	25.1	7.9	32.6	16.9	1.2	3.2
4.5	Sunny	Moderate	15:07	24.8	7.9	33.0	17.0	1.2	3.4
			15:07	24.8	7.9	33.1	19.4	1.3	3.4
5.0	Sunny	Moderate	15:08	24.5	7.9	33.3	31.5	2.2	2.3
			15:08	24.5	7.9	33.3	32.3	2.2	2.2
5.5	Sunny	Moderate	15:08	24.3	7.9	33.6	33.7	2.3	1.9
			15:08	24.3	7.9	33.6	34.0	2.4	1.9
6.0	Sunny	Moderate	15:08	24.2	7.9	33.7	32.6	2.3	7.5
			15:08	24.2	7.9	33.7	31.5	2.2	7.9

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	15:05	28.6	8.0	28.2	154.5	10.2	4.6
			15:05	28.9	8.0	28.0	161.3	10.7	4.6
3.25	Sunny	Moderate	15:07	25.7	8.0	31.9	44.7	2.8	2.2
			15:07	25.6	7.9	31.9	45.1	2.9	2.3
5.5	Sunny	Moderate	15:08	24.3	7.9	33.6	33.7	2.3	1.9
			15:08	24.3	7.9	33.6	34.0	2.4	1.9

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at IB1 - Mid-Ebb Tide

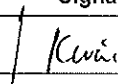

Sampling Date: 18 August 2011

Secchi Disc Depth: 3.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	14:17	27.3	8.0	30.9	109.5	7.3	2.6
			14:20	27.3	8.1	30.9	102.6	6.8	2.8
1.0	Sunny	Moderate	14:17	27.2	8.0	30.9	108.7	7.3	2.5
			14:20	27.3	8.1	31.0	103.3	6.9	2.7
1.5	Sunny	Moderate	14:17	27.2	8.0	30.9	109.4	7.3	2.7
			14:20	27.3	8.1	31.0	104.1	7.0	2.7
2.0	Sunny	Moderate	14:18	27.1	8.0	30.9	110.8	7.4	3.3
			14:20	27.2	8.1	31.0	104.9	7.0	2.9
2.5	Sunny	Moderate	14:18	26.3	8.0	31.4	108.1	7.3	3.8
			14:21	27.0	8.1	31.1	105.5	7.1	3.3
3.0	Sunny	Moderate	14:18	26.1	7.9	31.5	103.0	7.0	4.2
			14:21	26.8	8.1	31.2	105.6	7.1	3.6
3.5	Sunny	Moderate	14:18	26.0	7.9	31.6	99.6	6.8	4.1
			14:21	26.4	8.1	31.4	103.1	7.0	4.1
4.0	Sunny	Moderate	14:18	25.8	7.9	31.7	96.4	6.6	4.6
			14:21	26.1	8.1	31.6	100.9	6.8	4.5
4.5	Sunny	Moderate	14:18	25.8	7.9	31.8	93.7	6.4	5.6
			14:21	25.8	8.0	31.8	93.2	6.3	6.4
5.0	Sunny	Moderate	14:18	25.0	7.9	32.5	91.5	6.3	5.8
			14:21	25.4	8.0	32.1	91.5	6.3	6.4
5.5	Sunny	Moderate	14:19	24.4	7.8	33.0	83.1	5.8	8.3
			14:21	24.8	8.0	32.7	84.1	5.8	8.8

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	14:17	27.2	8.0	30.9	108.7	7.3	2.5
			14:20	27.3	8.1	31.0	103.3	6.9	2.7
3.0	Sunny	Moderate	14:18	26.1	7.9	31.5	103.0	7.0	4.2
			14:21	26.8	8.1	31.2	105.6	7.1	3.6
5.0	Sunny	Moderate	14:18	25.0	7.9	32.5	91.5	6.3	5.8
			14:21	25.4	8.0	32.1	91.5	6.3	6.4

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at IB2 - Mid-Ebb Tide

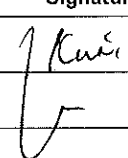

Sampling Date: 18 August 2011

Secchi Disc Depth: 3.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	16:48	26.1	7.9	31.3	80.4	5.5	4.5
			16:51	26.1	7.9	31.3	81.1	5.5	5.0
1.0	Sunny	Moderate	16:49	26.1	7.9	31.3	79.6	5.4	4.4
			16:51	26.1	7.9	31.3	79.8	5.4	4.9
1.5	Sunny	Moderate	16:49	26.1	7.9	31.3	79.7	5.4	4.5
			16:52	26.1	7.9	31.3	78.7	5.3	4.8
2.0	Sunny	Moderate	16:49	26.0	7.9	31.3	79.3	5.4	4.3
			16:52	26.1	7.9	31.3	78.4	5.3	4.4
2.5	Sunny	Moderate	16:49	26.0	7.9	31.4	79.5	5.4	4.3
			16:52	26.1	7.9	31.3	78.1	5.3	4.3
3.0	Sunny	Moderate	16:49	26.0	7.9	31.4	78.0	5.3	4.3
			16:52	26.1	7.9	31.3	78.2	5.3	4.7
3.5	Sunny	Moderate	16:49	25.9	7.9	31.5	77.1	5.2	4.6
			16:52	26.0	7.9	31.4	77.8	5.3	4.9
4.0	Sunny	Moderate	16:49	25.9	7.9	31.5	76.2	5.2	4.7
			16:52	25.8	7.9	31.6	76.2	5.2	5.2
4.5	Sunny	Moderate	16:50	25.8	7.9	31.6	74.5	5.1	4.9
			16:52	25.8	7.9	31.7	74.0	5.0	5.2
5.0	Sunny	Moderate	16:50	25.8	7.9	31.7	73.7	5.0	5.2
			16:52	25.7	7.9	31.7	72.9	5.0	5.5
5.5	Sunny	Moderate	16:50	25.7	7.9	31.7	72.8	5.0	5.3
			16:53	25.6	7.9	31.8	70.8	4.8	5.7
6.0	Sunny	Moderate	16:50	25.7	7.9	31.7	72.5	5.0	5.0
			16:53	25.6	7.9	31.8	70.7	4.8	5.9

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	16:49	26.1	7.9	31.3	79.6	5.4	4.4
			16:51	26.1	7.9	31.3	79.8	5.4	4.9
3.25	Sunny	Moderate	16:49	26.0	7.9	31.4	78.7	5.2	4.3
			16:52	26.0	7.9	31.4	77.5	5.3	4.6
5.5	Sunny	Moderate	16:50	25.7	7.9	31.7	72.8	5.0	5.3
			16:53	25.6	7.9	31.8	70.8	4.8	5.7

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at IB3 - Mid-Ebb Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	14:35	27.1	8.0	31.1	99.6	6.7	2.5
			14:41	27.3	8.0	31.1	97.3	6.5	2.6
1.0	Sunny	Moderate	14:35	27.1	8.0	31.1	99.2	6.6	2.5
			14:41	27.1	8.0	31.2	97.8	6.5	2.7
1.5	Sunny	Moderate	14:36	27.1	8.0	31.1	99.8	6.7	2.5
			14:41	27.0	8.0	31.2	97.3	6.5	2.6
2.0	Sunny	Moderate	14:36	27.1	8.0	31.1	100.1	6.7	2.5
			14:42	27.0	8.1	31.2	97.4	6.5	2.6
2.5	Sunny	Moderate	14:36	27.0	8.0	31.1	100.0	6.7	2.6
			14:42	26.9	8.1	31.2	97.5	6.5	2.6
3.0	Sunny	Moderate	14:36	26.6	8.0	31.2	99.1	6.7	2.6
			14:42	26.9	8.1	31.2	97.9	6.6	2.6
3.5	Sunny	Moderate	14:36	26.5	8.0	31.3	98.3	6.5	2.6
			14:42	26.6	8.1	31.2	97.7	6.6	2.6
4.0	Sunny	Moderate	14:37	26.2	8.0	31.4	88.3	6.0	2.8
			14:43	26.1	8.0	31.6	93.9	6.4	3.1
4.5	Sunny	Moderate	14:37	24.9	7.9	32.4	70.8	4.9	4.1
			14:43	25.3	8.0	32.1	85.5	5.9	3.8
5.0	Sunny	Moderate	14:37	24.9	7.9	32.5	68.2	4.7	4.3
			14:43	25.0	8.0	32.4	79.6	5.5	4.3
5.5	Sunny	Moderate	14:37	24.8	7.9	32.6	63.5	4.4	4.8
			14:43	24.8	8.0	32.6	67.8	4.7	4.7
6.0	Sunny	Moderate	14:38	24.6	7.9	32.8	59.7	4.1	5.6
			14:43	24.7	7.9	32.7	63.7	4.4	5.0
6.5	Sunny	Moderate	14:38	24.3	7.9	33.1	58.7	4.1	6.2
			14:43	24.6	7.9	32.9	60.8	4.2	5.3
7.0	Sunny	Moderate	14:38	24.2	7.8	33.2	58.3	3.9	6.3
			14:43	24.4	7.9	33.0	58.7	4.1	5.8
7.5	Sunny	Moderate	14:38	24.2	7.8	33.3	54.9	3.8	6.8
			14:43	24.3	7.9	33.1	57.8	4.0	6.8

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	14:35	27.1	8.0	31.1	99.2	6.6	2.5
			14:41	27.1	8.0	31.2	97.8	6.5	2.7
4.0	Sunny	Moderate	14:37	26.2	8.0	31.4	88.3	6.0	2.8
			14:43	26.1	8.0	31.6	93.9	6.4	3.1
7.0	Sunny	Moderate	14:38	24.2	7.8	33.2	58.3	3.9	6.3
			14:43	24.4	7.9	33.0	58.7	4.1	5.8

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at OB1 - Mid-Ebb Tide

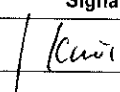

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	17:03	26.1	7.9	31.4	78.5	5.3	3.2
			17:07	26.0	7.9	31.4	80.7	5.5	3.8
1.0	Sunny	Moderate	17:03	26.1	7.9	31.4	77.8	5.3	3.4
			17:08	26.0	7.9	31.4	77.6	5.3	4.0
1.5	Sunny	Moderate	17:03	26.1	7.9	31.4	77.2	5.2	3.6
			17:08	26.0	7.9	31.5	78.5	5.2	3.8
2.0	Sunny	Moderate	17:03	26.0	7.9	31.4	76.8	5.2	3.5
			17:08	25.9	7.9	31.5	75.8	5.2	3.6
2.5	Sunny	Moderate	17:04	26.0	7.9	31.5	76.3	5.2	4.1
			17:08	25.9	7.9	31.5	75.3	5.1	3.8
3.0	Sunny	Moderate	17:04	25.9	7.9	31.5	76.4	5.2	4.0
			17:08	25.9	7.9	31.6	75.1	5.1	3.8
3.5	Sunny	Moderate	17:04	25.9	7.9	31.5	76.4	5.2	3.8
			17:08	25.9	7.9	31.6	74.7	5.1	3.7
4.0	Sunny	Moderate	17:04	25.9	7.9	31.5	76.7	5.2	4.3
			17:08	25.9	7.9	31.6	74.8	5.1	3.8
4.5	Sunny	Moderate	17:04	25.9	7.9	31.5	76.3	5.2	4.0
			17:09	25.9	7.9	31.6	74.8	5.1	3.6
5.0	Sunny	Moderate	17:05	25.9	7.9	31.6	76.1	5.2	4.2
			17:09	25.9	7.9	31.6	74.8	5.1	3.8
5.5	Sunny	Moderate	17:05	25.9	7.9	31.6	75.8	5.2	4.3
			17:09	25.9	7.9	31.6	74.9	5.1	3.9
6.0	Sunny	Moderate	17:05	25.8	7.9	31.7	75.7	5.2	5.1
			17:10	25.8	7.9	31.7	73.3	5.0	5.2
6.5	Sunny	Moderate	17:05	25.5	7.9	32.1	75.3	5.2	6.1
			17:10	25.4	7.9	32.2	73.7	5.0	6.0

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	17:03	26.1	7.9	31.4	77.8	5.3	3.4
			17:08	26.0	7.9	31.4	77.6	5.3	4.0
3.5	Sunny	Moderate	17:04	25.9	7.9	31.5	76.4	5.2	3.8
			17:08	25.9	7.9	31.6	74.7	5.1	3.7
6.0	Sunny	Moderate	17:05	25.8	7.9	31.7	75.7	5.2	5.1
			17:10	25.8	7.9	31.7	73.3	5.0	5.2

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at VH1 - Mid-Ebb Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	15:19	26.6	8.0	30.5	92.2	6.2	2.8
			15:26	26.5	7.9	30.6	94.6	6.4	3.1
1.0	Sunny	Moderate	15:19	26.6	7.9	30.5	92.1	6.2	2.7
			15:26	26.5	7.9	30.6	92.2	6.2	3.1
1.5	Sunny	Moderate	15:19	26.6	7.9	30.5	91.9	6.2	2.7
			15:26	26.5	7.9	30.6	91.5	6.2	3.0
2.0	Sunny	Moderate	15:19	26.5	7.9	30.5	91.2	6.2	2.7
			15:26	26.5	7.9	30.6	91.5	6.2	3.0
2.5	Sunny	Moderate	15:19	26.4	7.9	30.6	90.8	6.2	3.0
			15:26	26.5	7.9	30.6	90.2	6.1	3.3
3.0	Sunny	Moderate	15:19	26.3	7.9	30.7	89.0	6.1	3.0
			15:26	26.3	7.9	30.7	87.3	5.9	3.4
3.5	Sunny	Moderate	15:20	26.2	7.9	30.7	88.1	6.0	3.1
			15:27	26.2	7.9	30.7	86.2	5.9	3.3
4.0	Sunny	Moderate	15:20	26.2	7.9	30.8	86.7	5.9	3.1
			15:27	26.2	7.9	30.8	83.9	5.7	3.5
4.5	Sunny	Moderate	15:20	26.2	7.9	30.8	85.8	5.8	3.2
			15:27	26.2	7.9	30.8	83.0	5.6	3.6
5.0	Sunny	Moderate	15:20	26.1	7.9	30.8	83.9	5.7	4.1
			15:27	26.1	7.9	30.9	80.9	5.5	3.8
5.5	Sunny	Moderate	15:20	26.1	7.9	30.9	81.6	5.6	3.9
			15:27	26.1	7.9	30.9	79.9	5.4	3.8
6.0	Sunny	Moderate	15:20	26.1	7.9	30.9	80.1	5.5	3.8
			15:27	26.0	7.9	31.0	77.9	5.3	4.2
6.5	Sunny	Moderate	15:20	26.0	7.9	30.9	78.9	5.4	3.7
			15:27	25.9	7.9	31.1	75.2	5.1	4.0
7.0	Sunny	Moderate	15:20	26.0	7.9	31.0	77.5	5.3	3.6
			15:28	25.8	7.9	31.2	72.5	5.0	3.9
7.5	Sunny	Moderate	15:20	25.8	7.8	31.2	75.0	5.1	4.2
			15:28	25.7	7.9	31.3	72.5	5.0	4.0
8.0	Sunny	Moderate	15:20	25.7	7.8	31.4	70.7	4.8	4.5
			15:28	25.7	7.9	31.3	70.8	4.8	4.0
8.5	Sunny	Moderate	15:20	25.6	7.8	31.5	66.7	4.6	4.1
			15:28	25.6	7.8	31.5	68.2	4.7	3.9
9.0	Sunny	Moderate	15:21	25.5	7.8	31.6	64.0	4.4	3.8
			15:28	25.5	7.8	31.6	66.5	4.6	4.1
9.5	Sunny	Moderate	15:21	25.5	7.8	31.6	62.1	4.3	3.8
			15:28	25.4	7.8	31.7	64.8	4.4	4.4
10.0	Sunny	Moderate	15:21	25.4	7.8	31.7	61.3	4.2	3.9
			15:28	25.3	7.8	31.8	62.8	4.3	4.4
10.5	Sunny	Moderate	15:21	25.4	7.8	31.7	59.9	4.1	3.8
			15:28	25.3	7.8	31.9	60.7	4.2	4.2

Remark: \* Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher



Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at VH1 - Mid-Ebb Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

11.0	Sunny	Moderate	15:21	25.3	7.8	31.8	58.6	4.0	3.9
			15:28	25.2	7.8	31.9	60.7	4.2	4.2
11.5	Sunny	Moderate	15:21	25.2	7.8	31.9	57.5	4.0	3.9
			15:29	25.1	7.8	32.0	59.0	4.1	4.5
12.0	Sunny	Moderate	15:21	25.2	7.8	31.9	56.1	3.9	4.3
			15:29	25.0	7.8	32.1	57.2	3.9	4.4
12.5	Sunny	Moderate	15:21	25.1	7.8	32.0	54.4	3.7	4.3
			15:29	24.9	7.8	32.3	54.1	3.7	4.8
13.0	Sunny	Moderate	15:22	25.0	7.8	32.1	51.8	3.6	4.4
			15:29	24.9	7.8	32.3	51.9	3.6	4.5
13.5	Sunny	Moderate	15:22	24.9	7.8	32.4	51.2	3.5	4.2
			15:29	24.9	7.8	32.3	50.9	3.5	4.4
14.0	Sunny	Moderate	15:22	24.6	7.8	32.7	49.7	3.4	4.0
			15:29	24.9	7.8	32.3	50.7	3.5	4.5
14.5	Sunny	Moderate	15:22	24.5	7.8	32.8	49.0	3.4	4.0
			15:29	24.9	7.8	32.3	50.6	3.5	4.3
15.0	Sunny	Moderate	15:22	24.6	7.8	32.7	48.8	3.4	4.1
			15:29	24.8	7.8	32.4	50.1	3.5	4.2
15.5	Sunny	Moderate	15:22	24.6	7.8	32.7	48.2	3.3	4.0
			15:29	24.8	7.8	32.5	49.8	3.4	4.6
16.0	Sunny	Moderate	15:23	24.6	7.8	32.7	48.4	3.4	3.9
			15:30	24.8	7.8	32.4	49.9	3.4	4.4
16.5	Sunny	Moderate	15:23	24.6	7.8	32.7	48.4	3.4	4.2
			15:30	24.8	7.8	32.5	49.3	3.4	4.6
17.0	Sunny	Moderate	15:23	24.6	7.8	32.7	48.2	3.3	4.3
			15:30	24.8	7.8	32.4	49.6	3.4	4.7
17.5	Sunny	Moderate	15:23	24.4	7.8	32.9	48.1	3.3	4.3
			15:30	24.8	7.8	32.4	49.2	3.4	4.5
18.0	Sunny	Moderate	15:23	24.1	7.8	33.2	47.9	3.3	4.5
			15:30	24.8	7.8	32.5	49.3	3.4	4.5
18.5	Sunny	Moderate	15:23	24.1	7.8	33.3	47.4	3.3	4.6
			15:30	24.8	7.8	32.5	48.4	3.3	4.6
19.0	Sunny	Moderate	15:24	24.0	7.8	33.4	46.4	3.2	5.2
			15:30	24.7	7.8	32.5	48.4	3.3	4.9
19.5	Sunny	Moderate	15:24	23.9	7.8	33.4	45.0	3.1	5.5
			15:30	24.6	7.8	32.6	47.8	3.3	4.9
20.0	Sunny	Moderate	15:24	23.9	7.8	33.5	44.4	3.1	5.5
			15:31	24.6	7.8	32.6	46.8	3.2	4.9
20.5	Sunny	Moderate	15:24	23.9	7.8	33.5	43.2	3.0	5.6
			15:31	24.7	7.8	32.5	45.5	3.1	5.1
21.0	Sunny	Moderate	15:24	23.9	7.8	33.5	42.3	3.0	5.8
			15:31	24.6	7.8	32.6	45.7	3.2	5.2

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at VH1 - Mid-Ebb Tide

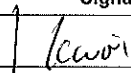

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

21.5	Sunny	Moderate	15:24	24.0	7.8	33.3	42.1	2.9	6.7
			15:31	24.7	7.8	32.6	45.5	3.1	5.9
22.0	Sunny	Moderate	15:24	24.0	7.8	33.3	41.6	2.9	6.6
			15:31	24.6	7.8	32.6	45.4	3.1	6.0
22.5	Sunny	Moderate	15:24	24.1	7.8	33.2	41.5	2.9	6.9
			15:31	24.4	7.8	32.9	44.9	3.1	6.1

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	15:19	26.6	7.9	30.5	92.1	6.2	2.7
			15:28	26.5	7.9	30.6	92.2	6.2	3.1
11.5	Sunny	Moderate	15:21	25.2	7.8	31.9	57.5	4.0	3.9
			15:29	25.1	7.8	32.0	59.0	4.1	4.5
22.0	Sunny	Moderate	15:24	24.0	7.8	33.3	41.6	2.9	6.6
			15:31	24.6	7.8	32.6	45.4	3.1	6.0

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at VH2 - Mid-Ebb Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	16:24	26.3	7.9	30.8	83.8	5.7	4.3
			16:29	26.3	7.9	30.9	85.3	5.8	4.6
1.0	Sunny	Moderate	16:24	26.3	7.9	30.8	83.8	5.7	4.4
			16:29	26.3	7.9	30.9	82.8	5.6	4.7
1.5	Sunny	Moderate	16:25	26.3	7.9	30.8	83.5	5.7	4.2
			16:30	26.3	7.9	30.9	81.5	5.5	4.6
2.0	Sunny	Moderate	16:25	26.3	7.9	30.8	83.1	5.6	4.1
			16:30	26.3	7.9	30.9	80.9	5.5	4.4
2.5	Sunny	Moderate	16:25	26.3	7.9	30.9	83.1	5.6	3.9
			16:30	26.3	7.9	30.8	80.8	5.5	4.3
3.0	Sunny	Moderate	16:25	26.1	7.9	31.0	82.3	5.6	3.9
			16:30	26.3	7.9	30.9	81.0	5.5	4.2
3.5	Sunny	Moderate	16:25	25.9	7.9	31.2	81.1	5.5	3.7
			16:30	26.0	7.9	31.1	80.1	5.5	3.9
4.0	Sunny	Moderate	16:25	25.7	7.9	31.4	78.9	5.4	3.6
			16:30	25.8	7.9	31.3	79.2	5.4	3.8
4.5	Sunny	Moderate	16:25	25.6	7.9	31.5	72.6	5.0	3.6
			16:30	25.7	7.9	31.4	73.4	5.0	3.5
5.0	Sunny	Moderate	16:25	25.5	7.9	31.6	69.9	4.8	3.4
			16:30	25.6	7.9	31.5	68.9	4.7	3.4
5.5	Sunny	Moderate	16:25	25.5	7.9	31.7	66.1	4.5	3.5
			16:30	25.6	7.9	31.6	66.3	4.5	3.5
6.0	Sunny	Moderate	16:25	25.4	7.9	31.7	65.1	4.5	3.5
			16:31	25.5	7.9	31.6	64.2	4.4	3.4
6.5	Sunny	Moderate	16:25	25.4	7.9	31.7	64.4	4.4	3.5
			16:31	25.5	7.9	31.6	63.7	4.4	3.4
7.0	Sunny	Moderate	16:26	25.4	7.9	31.8	62.6	4.3	3.6
			16:31	25.5	7.9	31.6	63.0	4.3	3.6
7.5	Sunny	Moderate	16:26	25.4	7.9	31.8	60.9	4.2	3.5
			16:31	25.5	7.9	31.7	62.5	4.3	3.6
8.0	Sunny	Moderate	16:26	25.4	7.9	31.8	60.2	4.1	3.4
			16:31	25.5	7.9	31.7	61.9	4.2	3.8
8.5	Sunny	Moderate	16:26	25.3	7.9	31.8	59.7	4.1	3.6
			16:31	25.4	7.9	31.7	61.3	4.2	3.7
9.0	Sunny	Moderate	16:26	25.3	7.9	31.9	59.3	4.1	3.4
			16:31	25.4	7.9	31.8	61.4	4.2	3.8
9.5	Sunny	Moderate	16:26	25.0	7.9	32.2	58.8	4.1	3.5
			16:31	25.3	7.9	31.9	60.5	4.2	3.7
10.0	Sunny	Moderate	16:26	24.4	7.8	32.9	57.0	3.9	3.8
			16:31	25.1	7.9	32.2	60.2	4.1	3.9
10.5	Sunny	Moderate	16:26	24.2	7.8	33.1	55.1	3.8	3.7
			16:31	24.6	7.9	32.7	58.0	4.0	4.0

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at VH2 - Mid-Ebb Tide

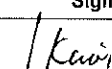

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

11.0	Sunny	Moderate	16:26	24.1	7.8	33.2	51.9	3.6	3.7
			16:32	24.2	7.9	33.1	54.6	3.8	4.0
11.5	Sunny	Moderate	16:27	24.0	7.8	33.3	50.7	3.5	3.8
			16:32	24.1	7.9	33.2	53.0	3.7	4.1
12.0	Sunny	Moderate	16:27	24.0	7.8	33.4	49.8	3.5	3.9
			16:32	24.1	7.9	33.3	50.4	3.5	4.2
12.5	Sunny	Moderate	16:27	23.9	7.8	33.4	48.9	3.4	4.2
			16:32	24.0	7.8	33.3	49.0	3.4	4.4
13.0	Sunny	Moderate	16:27	23.9	7.8	33.4	48.5	3.4	4.4
			16:32	23.9	7.8	33.4	48.1	3.4	4.4
13.5	Sunny	Moderate	16:27	23.8	7.8	33.6	48.3	3.4	4.6
			16:32	23.8	7.8	33.5	47.0	3.3	4.6
14.0	Sunny	Moderate	16:27	23.7	7.8	33.7	48.3	3.4	4.8
			16:32	23.8	7.8	33.5	46.5	3.2	4.4
14.5	Sunny	Moderate	16:27	23.7	7.8	33.7	47.9	3.3	5.0
			16:32	23.9	7.8	33.5	46.2	3.2	4.5
15.0	Sunny	Moderate	16:27	23.6	7.8	33.8	47.0	3.3	5.1
			16:33	24.0	7.8	33.3	45.6	3.2	4.7
15.5	Sunny	Moderate	16:27	23.6	7.8	33.8	46.1	3.2	5.0
			16:33	24.0	7.8	33.3	45.8	3.2	4.4

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	16:24	26.3	7.9	30.8	83.8	5.7	4.4
			16:29	26.3	7.9	30.9	82.8	5.6	4.7
8.0	Sunny	Moderate	16:26	25.4	7.9	31.8	60.2	4.1	3.4
			16:31	25.5	7.9	31.7	61.9	4.2	3.8
15.0	Sunny	Moderate	16:27	23.6	7.8	33.8	47.0	3.3	5.1
			16:33	24.0	7.8	33.3	45.6	3.2	4.7

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at KTN - Mid-Ebb Tide



Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	13:07	32.1	8.3	11.7	98.7	6.8	6.1
			13:07	31.6	8.2	12.8	95.9	6.6	6.1
1.0	Sunny	Moderate	13:07	29.0	8.0	23.7	87.8	5.9	16.4
			13:07	28.6	8.0	24.3	88.1	6.0	17.1
1.5	Sunny	Moderate	13:07	26.5	7.9	30.9	22.0	1.5	24.6
			13:07	26.5	7.9	30.9	20.9	1.4	25.2

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	13:07	29.0	8.0	23.7	87.8	5.9	16.4
			13:07	28.6	8.0	24.3	88.1	6.0	17.1

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at JVC - Mid-Ebb Tide

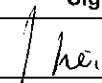
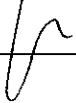
Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	14:07	31.2	8.3	13.9	63.2	4.3	13.1
			14:07	31.1	8.3	13.9	61.2	4.2	13.4
1.0	Sunny	Moderate	14:07	27.8	8.0	27.8	160.1	10.8	5.7
			14:07	28.0	8.0	26.9	159.6	10.8	5.7
1.5	Sunny	Moderate	14:07	26.3	8.0	31.2	59.3	4.0	6.2
			14:07	26.4	8.0	31.1	55.0	3.7	6.0
2.0	Sunny	Moderate	14:08	26.0	7.9	31.6	14.1	1.0	19.6
			14:08	26.0	7.9	31.6	12.8	0.9	20.0
2.5	Sunny	Moderate	14:08	25.7	7.9	32.0	7.5	0.5	18.6
			14:08	25.7	7.9	32.0	7.4	0.5	19.4
3.0	Sunny	Moderate	14:08	25.6	7.9	32.2	6.1	0.4	15.2
			14:08	25.6	7.9	32.2	5.7	0.4	14.7

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	14:07	27.8	8.0	27.8	160.1	10.8	5.7
			14:07	28.0	8.0	26.9	159.6	10.8	5.7
2.5	Sunny	Moderate	14:08	25.7	7.9	32.0	7.5	0.5	18.6
			14:08	25.7	7.9	32.0	7.4	0.5	19.4

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02  
 Kai Tak Development  
 – Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at WSD Intake at Tai Wan - Mid-Ebb Tide

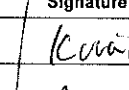
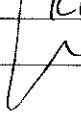
Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	14.57	26.9	8.0	31.3	93.1	6.2	2.1
			15.05	26.9	8.0	31.3	83.2	5.9	2.4
1.0	Sunny	Moderate	14.58	26.8	8.0	31.3	91.6	6.1	2.2
			15.05	26.9	8.0	31.3	89.4	6.0	2.3
1.5	Sunny	Moderate	14.58	26.8	8.0	31.3	89.5	6.0	2.2
			15.05	26.8	8.0	31.3	83.7	5.6	2.4
2.0	Sunny	Moderate	14.58	26.8	8.0	31.3	89.2	6.0	2.2
			15.05	26.8	8.0	31.3	84.3	5.7	2.3
2.5	Sunny	Moderate	14.58	26.7	8.0	31.3	88.8	6.0	2.4
			15.05	26.7	8.0	31.4	84.5	5.7	2.2
3.0	Sunny	Moderate	14.58	26.6	8.0	31.3	87.5	5.9	2.6
			15.05	26.5	8.0	31.4	84.3	5.7	2.3
3.5	Sunny	Moderate	14.58	26.6	8.0	31.3	86.8	5.8	2.5
			15.05	26.4	8.0	31.5	84.4	5.7	2.3
4.0	Sunny	Moderate	14.59	26.5	8.0	31.4	86.8	5.9	2.5
			15.05	26.3	8.0	31.5	84.2	5.7	2.3
4.5	Sunny	Moderate	14.59	26.4	8.0	31.4	87.4	5.9	2.4
			15.05	26.2	8.0	31.6	83.6	5.7	2.2
5.0	Sunny	Moderate	14.59	26.3	8.0	31.5	87.3	5.9	2.6
			15.05	26.1	8.0	31.6	83.3	5.6	2.2
5.5	Sunny	Moderate	14.59	26.0	8.0	31.7	86.6	5.9	2.5
			15.07	26.1	8.0	31.7	82.3	5.6	2.2
6.0	Sunny	Moderate	14.59	25.8	8.0	31.9	77.9	5.3	2.3
			15.07	26.0	8.0	31.7	80.7	5.5	2.2
6.5	Sunny	Moderate	14.59	25.8	8.0	31.9	74.1	5.0	2.3
			15.07	25.9	8.0	31.8	79.5	5.4	2.2
7.0	Sunny	Moderate	14.59	25.8	8.0	31.9	73.4	5.0	2.6
			15.07	25.9	7.9	31.8	78.6	5.3	2.3
7.5	Sunny	Moderate	14.59	25.7	8.0	31.9	71.9	4.9	2.5
			15.07	25.8	7.9	31.9	77.8	5.3	2.3
8.0	Sunny	Moderate	15.00	25.7	8.0	32.0	72.0	4.9	2.5
			15.07	25.7	7.9	32.0	76.9	5.2	2.3
8.5	Sunny	Moderate	15.00	25.7	8.0	32.0	72.1	4.9	2.5
			15.07	25.7	7.9	32.0	76.2	5.2	2.5

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
4.5	Sunny	Moderate	14.59	26.4	8.0	31.4	87.4	5.9	2.4
			15.05	26.2	8.0	31.6	83.6	5.7	2.2

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02  
 Kai Tak Development  
 - Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at WSD Intake at Cha Kwo Ling - Mid-Ebb Tide

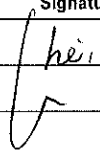
Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	15:26	26.3	8.0	31.3	82.5	5.6	6.3
			15:26	26.3	8.0	31.4	81.9	5.5	5.3
1.0	Sunny	Moderate	15:26	26.3	8.0	31.5	79.4	5.4	6.3
			15:26	26.3	8.0	31.5	79.4	5.4	6.8
1.5	Sunny	Moderate	15:27	26.3	8.0	31.5	79.3	5.4	6.2
			15:27	26.3	8.0	31.5	79.2	5.4	6.2
2.0	Sunny	Moderate	15:27	26.3	8.0	31.5	78.9	5.3	6.6
			15:27	26.3	8.0	31.5	79.0	5.3	6.5
2.5	Sunny	Moderate	15:27	26.3	8.0	31.6	79.1	5.3	6.7
			15:27	26.3	8.0	31.6	79.1	5.4	6.6
3.0	Sunny	Moderate	15:28	26.3	8.0	31.6	78.2	5.3	10.0
			15:28	26.3	8.0	31.6	78.1	5.3	9.8
3.5	Sunny	Moderate	15:28	26.2	8.0	31.6	77.6	5.3	9.1
			15:28	26.2	8.0	31.6	77.4	5.2	9.0
4.0	Sunny	Moderate	15:28	26.3	8.0	31.6	76.9	5.2	8.4
			15:28	26.3	8.0	31.6	77.1	5.2	8.3
4.5	Sunny	Moderate	15:28	26.2	8.0	31.6	76.7	5.2	7.4
			15:28	26.2	8.0	31.6	76.4	5.2	7.3
5.0	Sunny	Moderate	15:29	26.2	8.0	31.6	75.5	5.1	6.3
			15:29	26.2	8.0	31.6	75.6	5.1	6.2
5.5	Sunny	Moderate	15:29	26.2	8.0	31.6	75.7	5.1	5.5
			15:29	26.2	8.0	31.6	75.5	5.1	5.4
6.0	Sunny	Moderate	15:29	26.2	8.0	31.6	74.5	5.0	4.5
			15:29	26.2	8.0	31.6	74.0	5.0	4.4
6.5	Sunny	Moderate	15:30	26.2	8.0	31.6	73.1	5.0	4.4
			15:30	26.2	8.0	31.6	73.0	4.9	4.4
7.0	Sunny	Moderate	15:30	26.2	8.0	31.6	73.0	4.9	2.5
			15:30	26.2	8.0	31.6	72.9	4.9	2.7
7.5	Sunny	Moderate	15:30	26.1	8.0	31.6	72.4	4.9	3.4
			15:30	26.1	8.0	31.6	72.4	4.9	3.1
8.0	Sunny	Moderate	15:31	26.1	8.0	31.6	72.1	4.9	3.7
			15:31	26.1	8.0	31.6	72.0	4.9	3.7
8.5	Sunny	Moderate	15:31	26.1	8.0	31.7	71.4	4.8	4.4
			15:31	26.1	8.0	31.6	71.1	4.8	4.4
9.0	Sunny	Moderate	15:31	26.1	8.0	31.7	69.6	4.7	4.5
			15:31	26.1	8.0	31.7	69.5	4.7	4.4
9.5	Sunny	Moderate	15:32	25.8	8.0	32.0	68.2	4.6	6.1
			15:32	25.7	8.0	32.1	67.8	4.6	6.5

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
5.0	Sunny	Moderate	15:29	26.2	8.0	31.6	75.5	5.1	6.3
			15:29	26.2	8.0	31.6	75.6	5.1	6.2

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11



Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at WSD Intake at Quarry Bay - Mid-Ebb Tide


Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	15:47	26.4	7.9	31.5	86.0	5.8	2.5
			15:51	26.2	7.9	31.7	82.3	5.6	2.6
1.0	Sunny	Moderate	15:48	26.3	7.9	31.6	85.6	5.8	2.6
			15:51	26.2	7.9	31.7	81.7	5.5	2.5
1.5	Sunny	Moderate	15:48	26.3	7.9	31.6	85.5	5.8	2.5
			15:51	26.0	7.9	31.9	81.8	5.6	2.4
2.0	Sunny	Moderate	15:48	26.1	7.9	31.8	85.5	5.8	2.6
			15:51	25.7	7.9	32.1	79.9	5.4	2.5
2.5	Sunny	Moderate	15:48	26.0	7.9	31.9	84.6	5.7	2.5
			15:51	25.4	7.9	32.2	76.6	5.4	2.6
3.0	Sunny	Moderate	15:48	25.8	7.9	32.0	83.6	5.7	2.5
			15:51	25.4	7.9	32.3	76.3	5.2	2.5
3.5	Sunny	Moderate	15:48	25.5	7.9	32.2	82.8	5.7	2.7
			15:51	25.4	7.9	32.3	76.6	5.2	2.5
4.0	Sunny	Moderate	15:48	25.1	7.9	32.5	79.3	5.4	3.0
			15:51	25.4	7.9	32.3	74.6	5.1	2.6
4.5	Sunny	Moderate	15:48	25.1	7.9	32.5	73.9	5.1	2.8
			15:51	25.3	7.9	32.4	73.9	5.1	2.7
5.0	Sunny	Moderate	15:48	24.9	7.9	32.6	72.5	5.0	3.1
			15:52	25.2	7.9	32.4	72.7	5.0	2.8
5.5	Sunny	Moderate	15:49	24.8	7.9	32.8	71.7	4.9	3.3
			15:52	25.2	7.9	32.5	72.0	4.9	2.9
6.0	Sunny	Moderate	15:49	24.6	7.9	32.9	70.5	4.9	3.6
			15:52	24.9	7.9	32.7	71.5	4.9	3.1
6.5	Sunny	Moderate	15:49	24.6	7.9	32.9	69.3	4.8	3.8
			15:52	24.6	7.9	32.9	70.6	4.9	3.2
7.0	Sunny	Moderate	15:49	24.4	7.9	33.0	68.3	4.6	4.2
			15:52	24.4	7.9	33.1	68.5	4.7	3.7
7.5	Sunny	Moderate	15:49	24.4	7.9	33.1	64.1	4.4	5.3
			15:52	24.3	7.9	33.2	65.0	4.5	4.4

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
4.0	Sunny	Moderate	15:48	25.1	7.9	32.5	79.3	5.4	3.0
			15:51	25.4	7.9	32.3	74.6	5.1	2.6

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Remark: \* Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at WSD Intake at Sai Wan Ho - Mid-Ebb Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 3.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	16.03	25.9	7.8	31.8	75.5	5.1	3.0
			16.08	25.9	7.9	31.8	69.6	4.7	3.3
1.0	Sunny	Moderate	16.03	25.7	7.8	31.9	75.8	5.2	3.4
			16.08	25.8	7.9	31.9	69.3	4.7	3.4
1.5	Sunny	Moderate	16.03	25.5	7.8	32.0	74.0	5.1	3.5
			16.09	25.8	7.9	31.8	69.2	4.7	3.2
2.0	Sunny	Moderate	16.03	25.5	7.8	32.0	70.8	4.8	3.4
			16.09	25.7	7.9	31.9	69.1	4.7	3.5
2.5	Sunny	Moderate	16.03	25.5	7.8	32.1	70.2	4.8	3.3
			16.09	25.6	7.9	32.0	68.7	4.7	3.4
3.0	Sunny	Moderate	16.03	25.4	7.8	32.1	69.1	4.7	3.6
			16.09	25.6	7.9	32.0	68.4	4.7	3.2
3.5	Sunny	Moderate	16.04	25.2	7.8	32.2	68.0	4.7	3.7
			16.09	25.4	7.9	32.1	67.1	4.6	3.3
4.0	Sunny	Moderate	16.04	25.1	7.8	32.2	65.2	4.5	4.0
			16.09	25.3	7.9	32.1	65.6	4.5	3.4
4.5	Sunny	Moderate	16.04	25.1	7.8	32.3	62.9	4.3	3.9
			16.09	25.2	7.9	32.2	64.7	4.4	4.2
5.0	Sunny	Moderate	16.04	25.1	7.8	32.3	61.7	4.2	3.9
			16.09	25.2	7.9	32.2	63.9	4.4	4.4
5.5	Sunny	Moderate	16.04	25.1	7.8	32.3	61.4	4.2	3.6
			16.09	25.2	7.9	32.3	62.9	4.3	4.0
6.0	Sunny	Moderate	16.05	25.1	7.8	32.3	61.1	4.2	3.6
			16.10	25.1	7.9	32.3	62.5	4.3	4.2
6.5	Sunny	Moderate	16.05	25.1	7.8	32.3	61.3	4.2	3.6
			16.10	25.1	7.9	32.3	62.3	4.3	4.2
7.0	Sunny	Moderate	16.05	25.1	7.8	32.3	61.3	4.2	3.6
			16.10	25.1	7.9	32.3	62.1	4.3	4.3
7.5	Sunny	Moderate	16.05	25.1	7.8	32.4	61.2	4.2	3.9
			16.10	25.1	7.9	32.3	62.1	4.3	4.3
8.0	Sunny	Moderate	16.05	25.1	7.8	32.4	61.1	4.2	4.3
			16.10	25.1	7.9	32.3	62.1	4.3	4.4
8.5	Sunny	Moderate	16.05	25.0	7.8	32.4	61.8	4.3	4.6
			16.10	25.1	7.9	32.3	61.9	4.3	4.4
9.0	Sunny	Moderate	16.05	25.0	7.8	32.5	61.7	4.2	4.4
			16.10	25.1	7.9	32.3	61.9	4.3	4.2
9.5	Sunny	Moderate	16.06	25.0	7.8	32.5	62.0	4.3	4.5
			16.10	25.1	7.9	32.3	62.1	4.3	4.2
10.0	Sunny	Moderate	16.06	25.0	7.9	32.5	61.9	4.3	4.2
			16.10	25.2	7.9	32.3	62.2	4.3	4.0
10.5	Sunny	Moderate	16.06	25.0	7.9	32.5	61.9	4.3	4.6
			16.10	25.2	7.9	32.3	62.2	4.3	3.9

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

**Water Quality Monitoring Results at WSD Intake at Sai Wan Ho - Mid-Ebb Tide**

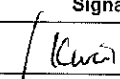

Sampling Date: 18 August 2011

Secchi Disc Depth: 3.0m

11.0	Sunny	Moderate	16:06	25.0	7.9	32.5	62.3	4.3	4.5
			16:10	25.2	7.9	32.3	62.1	4.3	4.0
11.5	Sunny	Moderate	16:06	25.0	7.9	32.5	62.3	4.3	4.6
			16:10	25.1	7.9	32.3	62.1	4.3	3.9
12.0	Sunny	Moderate	16:06	25.0	7.9	32.5	61.9	4.3	5.1
			16:11	25.1	7.9	32.4	62.2	4.3	4.5
12.5	Sunny	Moderate	16:06	25.0	7.9	32.5	61.6	4.2	6.1
			16:11	25.1	7.9	32.4	61.9	4.3	5.3

**Water Quality Monitoring Results (Sampling Depth)**

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
6.5	Sunny	Moderate	16:05	25.1	7.8	32.3	61.3	4.2	3.6
			16:10	25.1	7.8	32.3	62.3	4.3	4.2

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at AC1 - Mid-Flood Tide

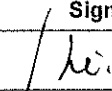

Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	8:26	28.2	8.0	20.8	56.6	3.9	5.6
			8:26	28.6	8.0	18.6	53.4	3.7	5.2
1.0	Sunny	Moderate	8:26	27.2	7.9	29.6	37.0	2.5	6.4
			8:27	27.2	7.9	29.6	37.8	2.6	6.2
1.5	Sunny	Moderate	8:27	26.6	7.9	30.9	13.8	0.9	15.0
			8:27	26.7	7.9	30.8	14.1	1.0	14.7

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	8:26	27.2	7.9	29.6	37.0	2.5	6.4
			8:27	27.2	7.9	29.6	37.8	2.6	6.2

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at AC2 - Mid-Flood Tide



Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	8:16	28.0	7.9	26.1	58.4	4.0	6.1
			8:16	28.1	7.9	25.7	56.3	3.8	6.0
1.0	Sunny	Moderate	8:17	27.0	7.9	29.8	52.3	3.5	5.9
			8:17	27.0	7.9	29.8	52.6	3.6	6.0
1.5	Sunny	Moderate	8:17	26.6	7.9	30.4	45.9	3.1	6.2
			8:17	26.6	7.9	30.4	46.5	3.1	6.1
2.0	Sunny	Moderate	8:17	26.3	7.8	31.4	10.3	0.7	13.0
			8:18	26.3	7.8	31.4	10.0	0.7	13.0
2.5	Sunny	Moderate	8:18	26.1	7.7	31.1	2.5	0.2	14.7
			8:18	26.1	7.7	31.6	2.4	0.2	16.2

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	8:17	27.0	7.9	29.8	52.3	3.5	5.9
			8:17	27.0	7.9	29.8	52.6	3.6	6.0
2.0	Sunny	Moderate	8:17	26.3	7.8	31.4	10.3	0.7	13.0
			8:18	26.3	7.8	31.4	10.0	0.7	13.0

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

**Water Quality Monitoring Results at AC3 - Mid-Flood Tide**



Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	8:35	28.7	8.1	20.5	39.7	2.7	5.2
			8:36	28.6	8.1	21.5	38.1	2.6	5.4
1.0	Sunny	Moderate	8:36	27.0	7.9	29.8	37.7	2.5	11.8
			8:36	27.0	7.9	29.8	39.9	2.7	11.3
1.5	Sunny	Moderate	8:36	26.6	7.9	31.0	11.8	0.8	32.7
			8:36	26.6	7.9	31.0	11.1	0.8	33.8

**Water Quality Monitoring Results (Sampling Depth)**

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	8:36	27.0	7.9	29.8	37.7	2.5	11.8
			8:36	27.0	7.9	29.8	39.9	2.7	11.3

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at AC4 - Mid-Flood Tide



Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	8:43	26.7	7.9	30.1	56.9	3.9	4.6
			8:44	26.4	7.9	30.8	57.1	3.9	4.4
1.0	Sunny	Moderate	8:44	26.9	7.9	29.7	63.2	4.3	3.6
			8:44	27.0	7.9	29.6	63.8	4.3	3.8
1.5	Sunny	Moderate	8:45	26.3	7.9	30.9	52.0	3.5	3.3
			8:45	26.3	7.9	30.9	51.2	3.5	3.3
2.0	Sunny	Moderate	8:45	26.3	7.9	31.3	15.5	1.1	6.3
			8:45	26.3	7.9	31.3	15.5	1.1	6.2
2.5	Sunny	Moderate	8:45	26.0	7.9	31.7	10.1	0.7	10.1
			8:45	25.9	7.9	31.7	9.5	0.6	10.7
3.0	Sunny	Moderate	8:46	25.8	7.9	31.8	6.0	0.4	13.8
			8:46	25.8	7.9	31.8	5.7	0.4	14.0
3.5	Sunny	Moderate	8:46	25.7	7.9	32.0	3.8	0.3	13.7
			8:46	25.7	7.9	32.1	3.8	0.3	13.7
4.0	Sunny	Moderate	8:46	25.2	7.9	32.7	3.5	0.2	8.3
			8:46	25.2	7.9	32.7	3.5	0.2	8.0
4.5	Sunny	Moderate	8:47	25.0	7.9	33.0	2.8	0.2	6.7
			8:47	25.0	7.9	33.0	2.6	0.2	6.6

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	8:44	26.9	7.9	29.7	63.2	4.3	3.6
			8:44	27.0	7.9	29.6	63.8	4.3	3.8
4.0	Sunny	Moderate	8:46	25.2	7.9	32.7	3.5	0.2	8.3
			8:46	25.2	7.9	32.7	3.5	0.2	8.0

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at AC5 - Mid-Flood Tide



Sampling Date: 18 August 2011

Secchi Disc Depth: 1.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	9:21	28.8	8.1	20.5	74.3	5.1	3.4
			9:22	28.7	8.1	21.3	74.4	5.1	3.5
1.0	Sunny	Moderate	9:22	27.0	8.0	29.2	94.6	6.4	3.4
			9:22	27.0	8.0	29.3	95.0	6.4	3.6
1.5	Sunny	Moderate	9:22	26.4	7.9	30.9	73.4	5.0	6.3
			9:22	26.4	7.9	30.9	73.4	5.0	6.2
2.0	Sunny	Moderate	9:22	26.2	7.9	31.3	55.5	3.8	9.2
			9:22	26.2	7.9	31.3	55.2	3.7	8.7
2.5	Sunny	Moderate	9:23	26.0	7.9	31.4	63.8	4.3	3.8
			9:23	26.0	7.9	31.4	64.4	4.4	3.6

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	9:22	27.0	8.0	29.2	94.6	6.4	3.4
			9:22	27.0	8.0	29.3	95.0	6.4	3.6
2.0	Sunny	Moderate	9:22	26.2	7.9	31.3	55.5	3.8	9.2
			9:22	26.2	7.9	31.3	55.2	3.7	8.7

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11



Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

**Water Quality Monitoring Results at AC6 - Mid-Flood Tide**



Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	9:12	28.1	8.0	22.1	69.0	4.8	3.3
			9:12	28.2	8.0	21.8	67.5	4.7	3.4
1.0	Sunny	Moderate	9:12	27.4	8.0	28.1	72.8	4.9	3.4
			9:12	27.4	8.0	28.0	75.3	5.1	3.5
1.5	Sunny	Moderate	9:12	26.5	7.9	30.7	53.2	3.6	2.6
			9:12	26.5	7.9	30.6	53.1	3.6	2.5
2.0	Sunny	Moderate	9:12	26.1	7.9	31.3	39.4	2.7	2.4
			9:12	26.1	7.9	31.3	39.5	2.7	2.2
2.5	Sunny	Moderate	9:12	25.9	7.9	31.5	35.7	2.4	3.8
			9:13	25.9	7.9	31.5	34.8	2.4	3.8
3.0	Sunny	Moderate	9:13	25.8	7.9	31.7	29.4	2.0	3.5
			9:13	25.8	7.9	31.7	29.6	2.0	3.7
3.5	Sunny	Moderate	9:13	25.7	7.9	31.8	31.2	2.1	4.0
			9:13	25.7	7.9	31.8	31.8	2.2	4.2
4.0	Sunny	Moderate	9:13	25.6	7.9	32.1	10.9	0.8	15.2
			9:13	25.6	7.9	32.1	10.3	0.7	16.0
4.5	Sunny	Moderate	9:13	25.5	7.9	32.2	2.4	0.2	10.8
			9:13	25.5	7.9	32.2	2.2	0.2	10.9
5.0	Sunny	Moderate	9:14	25.1	7.9	32.8	1.7	0.1	9.5
			9:14	25.1	7.9	32.8	1.7	0.1	9.4

**Water Quality Monitoring Results (Sampling Depth)**

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	9:12	27.4	8.0	28.1	72.8	4.9	3.4
			9:12	27.4	8.0	28.0	75.3	5.1	3.5
4.5	Sunny	Moderate	9:13	25.5	7.9	32.2	2.4	0.2	10.8
			9:13	25.5	7.9	32.2	2.2	0.2	10.9

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

**Water Quality Monitoring Results at AC7 - Mid-Flood Tide**



Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	9:34	28.7	8.1	20.5	61.9	4.3	4.4
			9:34	28.7	8.2	19.1	62.1	4.3	4.3
1.0	Sunny	Moderate	9:34	26.9	8.0	29.1	90.4	6.1	3.1
			9:34	26.9	8.0	29.3	92.0	6.2	3.1
1.5	Sunny	Moderate	9:34	26.5	8.0	30.6	75.2	5.1	2.6
			9:34	26.5	8.0	30.6	74.8	5.1	2.6
2.0	Sunny	Moderate	9:34	26.3	7.9	30.9	67.9	4.6	2.6
			9:34	26.3	8.0	30.9	66.4	4.5	2.8
2.5	Sunny	Moderate	9:35	26.0	7.9	31.3	57.2	3.9	2.5
			9:35	26.0	7.9	31.3	56.8	3.9	2.5
3.0	Sunny	Moderate	9:35	25.7	7.9	31.8	44.3	3.0	2.2
			9:35	25.7	7.9	31.8	44.0	3.0	2.2
3.5	Sunny	Moderate	9:35	25.6	7.9	31.9	38.3	2.6	1.6
			9:35	25.6	7.9	31.9	37.8	2.6	1.7
4.0	Sunny	Moderate	9:35	25.5	7.9	32.1	29.9	2.0	3.6
			9:35	25.5	7.9	32.1	29.1	2.0	3.5
4.5	Sunny	Moderate	9:36	25.5	7.9	32.2	8.6	0.6	15.3
			9:36	25.5	7.9	32.2	7.8	0.5	14.6
5.0	Sunny	Moderate	9:36	25.4	7.9	32.3	3.7	0.3	12.1
			9:36	25.4	7.9	32.4	3.6	0.3	12.1
5.5	Sunny	Moderate	9:36	25.2	7.9	32.7	2.5	0.2	12.4
			9:36	25.2	7.9	32.7	2.4	0.2	12.4

**Water Quality Monitoring Results (Sampling Depth)**

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	9:34	26.9	8.0	29.1	90.4	6.1	3.1
			9:34	26.9	8.0	29.3	92.0	6.2	3.1
3.0	Sunny	Moderate	9:35	25.7	7.9	31.8	44.3	3.0	2.2
			9:35	25.7	7.9	31.8	44.0	3.0	2.2
5.0	Sunny	Moderate	9:36	25.4	7.9	32.3	3.7	0.3	12.1
			9:36	25.4	7.9	32.4	3.6	0.3	12.1

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02  
 Kai Tak Development  
 – Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at KT1 - Mid-Flood Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	9:52	28.2	8.0	26.1	128.4	8.7	4.5
			9:52	28.2	8.0	26.3	130.2	8.8	4.5
1.0	Sunny	Moderate	9:53	27.2	8.0	29.5	136.0	9.2	3.9
			9:53	27.2	8.0	29.5	137.3	9.2	3.9
1.5	Sunny	Moderate	9:53	26.5	8.0	30.3	92.9	6.3	3.0
			9:53	26.5	8.0	30.3	91.5	6.2	3.0
2.0	Sunny	Moderate	9:54	25.7	7.9	31.6	58.7	4.0	2.4
			9:54	25.8	7.9	31.6	56.8	3.9	2.4
2.5	Sunny	Moderate	9:55	25.5	7.9	32.0	45.6	3.1	2.7
			9:55	25.5	7.9	32.0	44.1	3.0	2.7
3.0	Sunny	Moderate	9:55	25.1	7.9	32.6	30.7	2.1	2.6
			9:55	25.1	7.9	32.6	29.2	2.0	2.6
3.5	Sunny	Moderate	9:55	25.0	7.9	32.8	26.1	1.8	4.9
			9:55	25.0	7.9	32.8	25.6	1.8	5.3
4.0	Sunny	Moderate	9:56	24.9	7.9	32.8	33.5	2.3	4.3
			9:56	24.9	7.9	32.8	33.4	2.3	4.1
4.5	Sunny	Moderate	9:56	24.5	7.9	33.1	40.5	2.8	3.7
			9:56	24.5	7.9	33.1	40.7	2.8	3.7
5.0	Sunny	Moderate	9:56	24.4	7.9	33.4	36.5	2.5	3.9
			9:56	24.4	7.9	33.4	36.2	2.6	4.1
5.5	Sunny	Moderate	9:56	24.4	7.9	33.4	34.7	2.4	4.9
			9:56	24.4	7.9	33.4	34.8	2.4	4.9
6.0	Sunny	Moderate	9:56	24.3	7.9	33.6	31.6	2.2	4.3
			9:56	24.3	7.9	33.6	31.7	2.2	4.1
6.5	Sunny	Moderate	9:56	24.2	7.9	33.7	32.0	2.2	5.4
			9:57	24.2	7.9	33.7	32.0	2.2	5.4
7.0	Sunny	Moderate	9:57	24.2	7.9	33.6	33.6	2.3	6.6
			9:57	24.2	7.9	33.7	33.7	2.3	6.2

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	9:53	27.2	8.0	29.5	136.0	9.2	3.9
			9:53	27.2	8.0	29.5	137.3	9.2	3.9
3.75	Sunny	Moderate	9:55	25.0	7.9	32.8	17.6	1.2	5.9
			9:55	25.0	7.9	32.8	18.9	1.3	5.6
6.5	Sunny	Moderate	9:56	24.2	7.9	33.7	32.0	2.2	5.4
			9:57	24.2	7.9	33.7	32.0	2.2	5.4

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

**Water Quality Monitoring Results at IB1 - Mid-Flood Tide**

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	9:17	26.2	8.0	30.9	83.3	5.7	2.7
			9:20	26.2	7.9	30.9	79.9	5.4	2.4
1.0	Sunny	Moderate	9:17	26.2	8.0	30.9	83.2	5.7	2.7
			9:20	26.2	8.0	30.9	80.1	5.5	2.3
1.5	Sunny	Moderate	9:18	26.1	8.0	30.9	83.3	5.7	2.7
			9:20	26.1	8.0	30.9	80.1	5.5	2.5
2.0	Sunny	Moderate	9:18	26.1	8.0	30.9	82.4	5.6	2.6
			9:20	26.1	7.9	30.9	80.5	5.5	2.6
2.5	Sunny	Moderate	9:18	26.1	7.9	30.9	82.2	5.6	2.7
			9:20	26.1	8.0	30.9	80.0	5.5	2.5
3.0	Sunny	Moderate	9:18	26.0	7.9	31.0	81.0	5.5	2.6
			9:20	26.0	7.9	31.0	79.0	5.4	2.5
3.5	Sunny	Moderate	9:18	26.0	7.9	31.0	79.0	5.4	2.6
			9:20	26.0	7.9	31.0	78.4	5.3	2.5
4.0	Sunny	Moderate	9:18	26.0	7.9	31.0	78.4	5.3	2.6
			9:20	26.0	7.9	31.0	77.2	5.3	2.6
4.5	Sunny	Moderate	9:18	25.9	7.9	31.1	76.7	5.2	2.6
			9:20	26.0	7.9	31.0	77.0	5.3	2.7
5.0	Sunny	Moderate	9:18	25.8	7.9	31.3	75.4	5.1	2.7
			9:21	25.9	7.9	31.1	75.8	5.2	2.7
5.5	Sunny	Moderate	9:18	25.7	7.9	31.4	70.9	4.8	2.9
			9:21	25.7	7.9	31.4	72.9	5.0	2.8

**Water Quality Monitoring Results (Sampling Depth)**

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	9:17	26.2	8.0	30.9	83.2	5.7	2.7
			9:20	26.2	8.0	30.9	80.1	5.5	2.3
3.0	Sunny	Moderate	9:18	26.0	7.9	31.0	81.0	5.5	2.6
			9:20	26.0	7.9	31.0	79.0	5.4	2.5
5.0	Sunny	Moderate	9:18	25.8	7.9	31.3	75.4	5.1	2.7
			9:21	25.9	7.9	31.1	75.8	5.2	2.7

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02  
 Kai Tak Development  
 – Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at IB2 - Mid-Flood Tide



Sampling Date: 18 August 2011

Secchi Disc Depth: 3.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	8:55	26.0	7.9	30.9	71.5	4.9	2.2
			8:58	26.0	8.1	31.0	67.2	4.6	2.4
1.0	Sunny	Moderate	8:55	26.0	7.9	31.0	71.1	4.9	2.1
			8:58	25.9	8.1	31.1	67.2	4.6	2.4
1.5	Sunny	Moderate	8:55	25.9	7.9	31.0	70.6	4.8	2.2
			8:58	25.9	8.1	31.1	67.7	4.6	2.3
2.0	Sunny	Moderate	8:56	25.8	7.9	31.2	70.8	4.8	2.4
			8:59	25.8	8.1	31.2	67.3	4.6	2.4
2.5	Sunny	Moderate	8:58	25.8	8.0	31.2	70.6	4.8	2.8
			8:59	25.8	8.1	31.3	66.6	4.6	2.9
3.0	Sunny	Moderate	8:56	25.7	8.0	31.3	68.1	4.7	3.1
			8:59	25.7	8.1	31.3	65.7	4.5	3.1
3.5	Sunny	Moderate	8:56	25.7	8.0	31.3	67.2	4.6	3.3
			8:59	25.7	8.1	31.3	65.0	4.4	3.2
4.0	Sunny	Moderate	8:58	25.7	8.0	31.3	66.0	4.5	3.5
			8:59	25.7	8.1	31.4	64.7	4.4	3.7
4.5	Sunny	Moderate	8:56	25.7	8.0	31.4	65.8	4.5	3.8
			8:59	25.7	8.1	31.4	63.7	4.4	3.9
5.0	Sunny	Moderate	8:58	25.7	8.0	31.4	64.5	4.4	3.9
			8:59	25.7	8.1	31.4	63.6	4.4	4.2
5.5	Sunny	Moderate	8:56	25.6	8.0	31.4	64.4	4.4	4.8
			8:59	25.6	8.1	31.4	62.6	4.3	4.6
6.0	Sunny	Moderate	8:56	25.6	8.0	31.5	63.2	4.3	5.8
			8:59	25.6	8.1	31.5	61.4	4.2	5.6
6.5	Sunny	Moderate	8:58	25.5	8.0	31.6	61.5	4.2	5.8
			8:59	25.5	8.1	31.6	60.5	4.1	6.1
7.0	Sunny	Moderate	8:57	25.5	8.0	31.6	60.1	4.1	6.8
			9:00	25.5	8.1	31.7	59.6	4.1	6.4

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	8:55	26.0	7.9	31.0	71.1	4.9	2.1
			8:58	25.9	8.1	31.1	67.2	4.6	2.4
3.75	Sunny	Moderate	8:56	25.7	8.0	31.3	66.6	4.6	3.4
			8:59	25.7	8.1	31.3	64.7	4.4	3.4
6.5	Sunny	Moderate	8:58	25.5	8.0	31.6	61.5	4.2	5.8
			8:59	25.5	8.1	31.6	60.5	4.1	6.1

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02  
 Kai Tak Development  
 – Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at IB3 - Mid-Flood Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	9:31	26.2	7.9	31.1	78.6	5.3	2.8
			9:35	26.0	8.0	31.2	72.4	4.9	3.1
1.0	Sunny	Moderate	9:31	26.2	8.0	31.2	77.9	5.3	2.8
			9:36	26.0	8.0	31.3	72.3	4.9	2.9
1.5	Sunny	Moderate	9:31	26.0	8.0	31.2	77.7	5.3	3.0
			9:36	25.9	8.0	31.4	71.6	4.9	2.8
2.0	Sunny	Moderate	9:32	25.9	8.0	31.2	76.4	5.2	3.0
			9:36	25.8	8.0	31.5	70.6	4.8	2.7
2.5	Sunny	Moderate	9:32	25.9	8.0	31.3	75.4	5.1	3.1
			9:36	25.8	8.0	31.5	70.4	4.8	2.7
3.0	Sunny	Moderate	9:32	25.7	8.0	31.4	74.7	5.1	2.8
			9:36	25.8	8.0	31.5	69.4	4.7	2.6
3.5	Sunny	Moderate	9:32	25.7	8.0	31.5	72.6	5.0	2.6
			9:36	25.7	8.0	31.5	68.9	4.7	2.6
4.0	Sunny	Moderate	9:32	25.7	8.0	31.5	70.3	4.8	2.6
			9:37	25.7	8.0	31.5	66.9	4.6	2.5
4.5	Sunny	Moderate	9:33	25.7	8.0	31.5	68.9	4.7	2.8
			9:37	25.6	8.0	31.6	66.7	4.6	2.9
5.0	Sunny	Moderate	9:33	25.6	7.9	31.5	66.9	4.6	2.5
			9:37	25.6	8.0	31.6	65.4	4.5	2.9
5.5	Sunny	Moderate	9:33	25.6	7.9	31.6	64.7	4.4	3.0
			9:37	25.6	8.0	31.6	62.8	4.3	2.6
6.0	Sunny	Moderate	9:33	25.5	7.9	31.7	63.3	4.3	2.9
			9:37	25.5	8.0	31.7	62.5	4.3	2.6
6.5	Sunny	Moderate	9:33	25.5	7.9	31.7	62.2	4.3	3.1
			9:37	25.4	8.0	31.8	61.4	4.2	2.8
7.0	Sunny	Moderate	9:34	25.4	7.9	31.8	60.8	4.2	3.6
			9:37	25.4	8.0	31.8	59.9	4.1	3.3
7.5	Sunny	Moderate	9:34	25.4	7.9	31.8	60.1	4.1	3.5
			9:37	25.4	8.0	31.8	59.5	4.1	3.4
8.0	Sunny	Moderate	9:34	25.4	7.9	31.8	59.8	4.1	3.8
			9:38	25.3	8.0	31.9	59.2	4.1	4.7
8.5	Sunny	Moderate	9:34	25.3	7.9	31.9	59.8	4.1	4.7
			9:38	25.2	8.0	32.0	58.8	4.0	5.0

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	9:31	26.2	8.0	31.2	77.9	5.3	2.8
			9:36	26.0	8.0	31.3	72.3	4.9	2.9
4.5	Sunny	Moderate	9:33	25.7	8.0	31.5	68.9	4.7	2.8
			9:37	25.6	8.0	31.6	66.7	4.6	2.9
8.0	Sunny	Moderate	9:34	25.4	7.9	31.8	59.8	4.1	3.8
			9:38	25.3	8.0	31.9	59.2	4.1	4.7

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

- Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at OB1 - Mid-Flood Tide

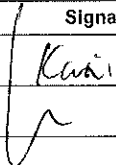

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	8:32	26.2	7.9	30.7	79.6	5.4	2.7
			8:35	26.2	8.0	30.7	80.5	5.5	2.6
1.0	Sunny	Moderate	8:32	26.1	7.9	30.7	81.4	5.5	2.6
			8:35	26.1	8.0	30.7	79.8	5.4	2.6
1.5	Sunny	Moderate	8:32	26.0	7.9	30.8	79.7	5.4	2.9
			8:35	26.1	8.0	30.8	78.0	5.3	2.9
2.0	Sunny	Moderate	8:32	26.0	7.9	30.8	78.5	5.4	3.0
			8:35	26.0	8.0	30.9	75.6	5.2	3.2
2.5	Sunny	Moderate	8:33	26.0	7.9	30.8	77.5	5.3	3.1
			8:35	26.0	8.0	30.9	73.7	5.0	3.6
3.0	Sunny	Moderate	8:33	26.0	7.9	30.8	76.3	5.2	3.3
			8:35	25.9	8.0	31.0	72.7	5.0	3.9
3.5	Sunny	Moderate	8:33	26.0	7.9	30.9	75.2	5.1	3.3
			8:35	25.9	8.0	31.0	71.4	4.9	3.7
4.0	Sunny	Moderate	8:33	25.9	7.9	30.9	74.8	5.1	3.4
			8:36	25.8	8.0	31.2	70.7	4.8	3.4
4.5	Sunny	Moderate	8:33	25.7	7.9	31.2	73.4	5.0	3.3
			8:36	25.7	8.0	31.3	69.3	4.7	3.2
5.0	Sunny	Moderate	8:33	25.6	7.9	31.4	70.6	4.8	3.4
			8:36	25.5	8.0	31.5	68.5	4.7	3.3
5.5	Sunny	Moderate	8:33	25.5	7.9	31.5	67.9	4.7	3.3
			8:36	25.3	8.0	31.9	66.2	4.5	3.8
6.0	Sunny	Moderate	8:33	25.3	7.9	31.8	66.2	4.5	3.4
			8:36	25.1	8.0	32.0	63.4	4.4	3.9
6.5	Sunny	Moderate	8:34	25.2	7.9	32.0	64.3	4.4	4.2
			8:36	25.1	8.0	32.1	60.9	4.2	4.7
7.0	Sunny	Moderate	8:34	25.1	7.9	32.1	60.9	4.2	6.0
			8:36	25.0	8.0	32.2	59.4	4.1	6.4

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	8:32	26.1	7.9	30.7	81.4	5.5	2.6
			8:35	26.1	8.0	30.7	79.8	5.4	2.6
3.75	Sunny	Moderate	8:33	26.0	7.9	30.9	75.2	5.1	3.4
			8:36	25.8	8.0	31.1	71.4	4.9	3.6
6.5	Sunny	Moderate	8:34	25.2	7.9	32.0	64.3	4.4	4.2
			8:36	25.1	8.0	32.1	60.9	4.2	4.7

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at VH1 - Mid-Flood Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	10:05	26.0	8.0	31.3	78.8	5.4	2.2
			10:14	25.8	8.0	31.4	72.7	5.0	2.4
1.0	Sunny	Moderate	10:05	26.0	8.0	31.3	77.8	5.3	2.2
			10:15	25.8	8.0	31.4	71.8	4.9	2.4
1.5	Sunny	Moderate	10:05	25.9	8.0	31.3	77.0	5.3	2.2
			10:15	25.8	8.0	31.4	70.9	4.8	2.4
2.0	Sunny	Moderate	10:05	25.8	8.0	31.4	76.9	5.3	2.6
			10:15	25.7	8.0	31.4	70.5	4.8	2.5
2.5	Sunny	Moderate	10:06	25.7	8.0	31.5	74.6	5.1	2.7
			10:15	25.7	8.0	31.5	69.4	4.7	2.5
3.0	Sunny	Moderate	10:06	25.6	7.9	31.6	73.7	5.0	2.6
			10:15	25.6	8.0	31.6	68.7	4.7	2.4
3.5	Sunny	Moderate	10:06	25.4	7.9	31.7	70.8	4.9	2.5
			10:15	25.5	8.0	31.7	67.0	4.6	2.4
4.0	Sunny	Moderate	10:06	25.4	7.9	31.8	68.5	4.7	2.4
			10:15	25.4	8.0	31.8	65.9	4.5	2.4
4.5	Sunny	Moderate	10:06	25.4	7.9	31.8	67.0	4.6	2.4
			10:15	25.3	8.0	31.9	64.6	4.4	2.4
5.0	Sunny	Moderate	10:06	25.3	7.9	31.9	66.4	4.6	2.5
			10:15	25.3	8.0	31.9	63.3	4.4	2.8
5.5	Sunny	Moderate	10:06	25.3	7.9	31.9	66.3	4.6	2.6
			10:15	25.2	8.0	32.0	63.0	4.3	2.7
6.0	Sunny	Moderate	10:06	25.2	7.9	32.0	65.6	4.5	2.6
			10:16	25.2	8.0	32.1	62.7	4.3	2.8
6.5	Sunny	Moderate	10:06	25.1	7.9	32.1	65.4	4.5	3.0
			10:16	25.1	8.0	32.2	62.2	4.3	2.9
7.0	Sunny	Moderate	10:06	25.0	7.9	32.2	64.1	4.4	3.1
			10:16	24.9	8.0	32.4	61.5	4.2	3.1
7.5	Sunny	Moderate	10:07	24.9	7.9	32.3	63.1	4.3	3.3
			10:16	24.7	8.0	32.6	60.8	4.2	3.7
8.0	Sunny	Moderate	10:07	24.9	7.9	32.3	62.2	4.3	3.5
			10:16	24.6	8.0	32.7	59.3	4.1	3.9
8.5	Sunny	Moderate	10:07	24.9	7.9	32.4	60.5	4.2	3.6
			10:16	24.5	8.0	32.8	56.1	3.9	4.0
9.0	Sunny	Moderate	10:07	25.0	7.9	32.3	59.8	4.1	3.7
			10:17	24.5	8.0	32.8	53.6	3.7	4.2
9.5	Sunny	Moderate	10:07	24.7	7.9	32.5	60.2	4.2	4.0
			10:17	24.4	8.0	32.9	53.5	3.7	4.4
10.0	Sunny	Moderate	10:08	24.8	7.9	32.5	59.1	4.1	4.3
			10:17	24.3	8.0	33.0	52.7	3.7	5.0
10.5	Sunny	Moderate	10:08	24.9	7.9	32.4	59.2	4.1	4.5
			10:17	24.3	8.0	33.0	51.6	3.6	5.0

Remark: \* Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher



Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at VH1 - Mid-Flood Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

11.0	Sunny	Moderate	10:08	24.8	7.9	32.5	59.9	4.1	4.6
			10:17	24.2	8.0	33.1	51.5	3.6	5.2
11.5	Sunny	Moderate	10:08	24.7	7.9	32.5	59.2	4.1	4.7
			10:17	24.1	8.0	33.2	51.6	3.6	5.4
12.0	Sunny	Moderate	10:08	24.6	7.9	32.7	58.7	4.1	4.7
			10:18	24.0	8.0	33.4	51.7	3.6	5.6
12.5	Sunny	Moderate	10:08	24.6	7.9	32.7	57.5	4.0	5.2
			10:18	23.9	8.0	33.5	50.9	3.5	5.9
13.0	Sunny	Moderate	10:08	24.7	7.9	32.6	56.9	3.9	5.4
			10:18	23.8	8.0	33.6	50.3	3.5	6.1
13.5	Sunny	Moderate	10:09	24.7	7.9	32.6	57.1	3.9	5.6
			10:18	23.7	8.0	33.7	50.1	3.5	6.2
14.0	Sunny	Moderate	10:09	24.5	7.9	32.8	57.5	4.0	5.9
			10:18	23.7	8.0	33.7	49.5	3.5	6.5
14.5	Sunny	Moderate	10:09	24.4	7.9	32.9	56.5	3.9	6.4
			10:18	23.6	8.0	33.8	49.0	3.4	7.1
15.0	Sunny	Moderate	10:09	24.5	7.9	32.8	56.0	3.9	6.5
			10:18	23.6	8.0	33.8	48.1	3.4	7.6
15.5	Sunny	Moderate	10:09	23.9	7.9	33.4	56.1	3.9	6.8
			10:18	23.6	8.0	33.8	47.9	3.3	8.4
16.0	Sunny	Moderate	10:10	23.8	7.9	33.6	54.3	3.8	7.9
			10:18	23.6	8.0	33.8	47.4	3.3	8.4
16.5	Sunny	Moderate	10:10	23.8	7.9	33.6	52.3	3.6	8.5
			10:18	23.6	8.0	33.8	47.3	3.3	8.6
17.0	Sunny	Moderate	10:10	23.8	7.9	33.6	51.5	3.6	9.5
			10:18	23.6	8.0	33.8	47.0	3.3	8.7
17.5	Sunny	Moderate	10:10	23.7	7.9	33.7	51.1	3.6	9.2
			10:19	23.6	7.9	33.8	47.0	3.3	8.6
18.0	Sunny	Moderate	10:10	23.7	7.9	33.7	50.3	3.5	8.9
			10:19	23.6	8.0	33.8	47.0	3.3	8.5
18.5	Sunny	Moderate	10:10	23.7	7.9	33.7	50.5	3.5	8.9
			10:19	23.6	8.0	33.8	47.0	3.3	8.4
19.0	Sunny	Moderate	10:10	23.6	7.9	33.8	50.0	3.5	9.5
			10:19	23.6	8.0	33.8	46.9	3.3	8.5
19.5	Sunny	Moderate	10:11	23.6	7.9	33.7	49.6	3.5	9.3
			10:19	23.6	7.9	33.8	46.9	3.3	8.5
20.0	Sunny	Moderate	10:11	23.6	7.9	33.8	49.6	3.5	9.9
			10:20	23.6	8.0	33.8	46.9	3.3	9.4
20.5	Sunny	Moderate	10:11	23.6	7.9	33.8	49.5	3.5	9.4
			10:20	23.6	8.0	33.8	46.9	3.3	8.2
21.0	Sunny	Moderate	10:11	23.6	7.9	33.8	48.9	3.4	9.5
			10:20	23.7	8.0	33.8	46.8	3.3	8.3

Remark: \* Calm: Small or no wave, Moderate: Between calm and rough, Rough: White capped or rougher

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

**Water Quality Monitoring Results at VH1 - Mid-Flood Tide**



Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

21.5	Sunny	Moderate	10:11	23.7	7.9	33.7	49.0	3.4	9.5
			10:20	23.7	7.9	33.8	46.8	3.3	8.4
22.0	Sunny	Moderate	10:12	23.7	7.9	33.7	49.1	3.4	9.4
			10:20	23.7	8.0	33.7	46.8	3.3	8.3
22.5	Sunny	Moderate	10:12	23.7	7.9	33.7	49.4	3.5	8.9
			10:20	23.7	8.0	33.7	46.6	3.3	8.3

**Water Quality Monitoring Results (Sampling Depth)**

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	10:05	26.0	8.0	31.3	77.8	5.3	2.2
			10:15	25.8	8.0	31.4	71.8	4.9	2.4
11.5	Sunny	Moderate	10:08	24.7	7.9	32.5	59.2	4.1	4.7
			10:17	24.1	8.0	33.2	51.6	3.6	5.4
22.0	Sunny	Moderate	10:12	23.7	7.9	33.7	49.1	3.4	9.4
			10:20	23.7	8.0	33.7	46.8	3.3	8.3

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at VH2 - Mid-Flood Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 3.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	10:49	25.3	8.0	32.7	88.0	6.0	3.0
			10:55	24.9	8.0	33.0	78.8	5.4	3.2
1.0	Sunny	Moderate	10:49	25.1	8.0	32.8	87.7	6.0	3.2
			10:55	25.0	8.0	33.0	78.3	5.4	3.2
1.5	Sunny	Moderate	10:49	24.8	8.0	33.0	88.0	6.1	3.2
			10:55	24.8	8.0	33.1	78.8	5.4	3.3
2.0	Sunny	Moderate	10:49	24.6	8.0	33.1	87.9	6.1	3.2
			10:55	24.6	8.0	33.2	79.1	5.5	3.3
2.5	Sunny	Moderate	10:49	24.3	8.0	33.3	87.2	6.0	3.1
			10:55	24.5	8.0	33.3	77.7	5.4	3.2
3.0	Sunny	Moderate	10:50	23.9	8.0	33.6	83.8	5.8	2.9
			10:55	24.6	8.0	33.1	75.0	5.2	3.3
3.5	Sunny	Moderate	10:50	23.8	7.9	33.7	80.7	5.6	2.9
			10:55	25.1	8.0	32.7	74.9	5.1	3.2
4.0	Sunny	Moderate	10:50	23.7	7.9	33.8	75.4	5.3	2.9
			10:55	25.1	8.0	32.6	74.9	5.1	3.2
4.5	Sunny	Moderate	10:50	23.7	7.9	33.8	72.2	5.0	3.0
			10:56	25.2	8.0	32.6	75.3	5.2	3.0
5.0	Sunny	Moderate	10:50	23.6	7.9	33.9	69.8	4.9	3.1
			10:56	25.1	8.0	32.7	76.8	5.3	3.0
5.5	Sunny	Moderate	10:50	23.6	7.9	33.9	69.3	4.8	3.2
			10:56	25.0	8.0	32.8	76.8	5.3	3.0
6.0	Sunny	Moderate	10:50	23.6	7.9	33.9	67.2	4.7	3.2
			10:56	24.9	8.0	32.9	76.3	5.2	3.0
6.5	Sunny	Moderate	10:50	23.6	7.9	33.9	66.6	4.7	3.1
			10:56	24.9	8.0	32.9	76.3	5.2	3.0
7.0	Sunny	Moderate	10:51	23.6	7.9	33.9	65.6	4.6	3.1
			10:56	24.9	8.0	32.9	76.5	5.3	2.9
7.5	Sunny	Moderate	10:51	23.6	7.9	33.9	64.7	4.5	3.1
			10:56	24.8	8.0	33.0	76.5	5.3	2.9
8.0	Sunny	Moderate	10:51	23.6	7.9	33.9	63.1	4.4	3.2
			10:56	24.7	8.0	33.1	76.4	5.3	2.9
8.5	Sunny	Moderate	10:51	23.6	7.9	33.9	62.9	4.4	3.3
			10:56	24.6	8.0	33.1	75.8	5.2	2.9
9.0	Sunny	Moderate	10:51	23.6	7.9	33.9	62.4	4.4	3.4
			10:56	24.4	8.0	33.3	75.2	5.2	2.9
9.5	Sunny	Moderate	10:51	23.6	7.9	33.9	61.7	4.3	3.5
			10:57	24.2	8.0	33.5	75.3	5.2	3.0
10.0	Sunny	Moderate	10:51	23.6	7.9	33.9	61.4	4.3	3.5
			10:57	24.1	8.0	33.6	73.8	5.1	3.1
10.5	Sunny	Moderate	10:51	23.6	7.9	33.9	61.4	4.3	3.3
			10:57	24.0	8.0	33.6	72.0	5.0	3.2

Remark: \* Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at VH2 - Mid-Flood Tide

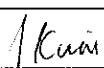

Sampling Date: 18 August 2011

Secchi Disc Depth: 3.0m

11.0	Sunny	Moderate	10:52	23.6	7.9	33.9	60.5	4.2	3.2
			10:57	23.9	8.0	33.7	68.9	4.8	3.4
11.5	Sunny	Moderate	10:52	23.6	7.9	33.9	59.8	4.2	3.3
			10:57	23.9	8.0	33.7	67.7	4.7	3.4
12.0	Sunny	Moderate	10:52	23.6	8.0	33.9	59.8	4.2	3.4
			10:57	23.8	8.0	33.8	65.9	4.6	3.5
12.5	Sunny	Moderate	10:52	23.6	8.0	33.9	59.7	4.2	3.4
			10:57	23.7	8.0	33.8	63.8	4.5	3.5
13.0	Sunny	Moderate	10:52	23.4	7.9	34.1	59.2	4.1	3.8
			10:57	23.7	8.0	33.8	63.0	4.4	3.8
13.5	Sunny	Moderate	10:53	23.3	7.9	34.1	58.2	4.1	4.1
			10:57	23.8	8.0	33.8	61.7	4.3	3.7
14.0	Sunny	Moderate	10:53	23.3	7.9	34.2	57.1	4.0	4.3
			10:57	23.8	8.0	33.8	61.4	4.3	3.8
14.5	Sunny	Moderate	10:53	23.3	7.9	34.2	55.7	3.9	4.8
			10:58	23.8	8.0	33.8	60.9	4.2	4.4
15.0	Sunny	Moderate	10:53	23.3	7.9	34.2	54.5	3.8	5.6
			10:58	23.8	8.0	33.8	60.9	4.2	5.0
15.5	Sunny	Moderate	10:53	23.3	7.9	34.2	53.9	3.8	5.7
			10:58	23.8	8.0	33.8	60.9	4.2	5.2
16.0	Sunny	Moderate	10:53	23.3	7.9	34.2	53.0	3.7	5.9
			10:58	23.7	8.0	33.8	60.9	4.2	5.4
16.5	Sunny	Moderate	10:53	23.3	7.9	34.2	52.8	3.7	5.8
			10:58	23.7	8.0	33.8	60.7	4.2	5.4

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	10:49	25.1	8.0	32.8	87.7	6.0	3.2
			10:55	25.0	8.0	33.0	78.3	5.4	3.2
8.5	Sunny	Moderate	10:51	23.6	7.9	33.9	62.9	4.4	3.3
			10:56	24.6	8.0	33.1	75.8	5.2	2.9
16.0	Sunny	Moderate	10:53	23.3	7.9	34.2	53.0	3.7	5.9
			10:58	23.7	8.0	33.8	60.9	4.2	5.4

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at KTN - Mid-Flood Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	8:05	28.0	7.9	24.0	43.5	3.0	7.5
			8:05	27.7	7.9	26.9	43.8	3.0	7.3
1.0	Sunny	Moderate	8:06	27.0	7.9	29.6	48.9	3.3	5.6
			8:06	27.1	7.9	29.5	49.4	3.3	5.7
1.5	Sunny	Moderate	8:07	26.7	7.9	30.3	38.6	2.6	7.1
			8:07	26.7	7.9	30.4	39.1	2.6	6.8

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	8:06	27.0	7.9	29.6	48.9	3.3	5.6
			8:06	27.1	7.9	29.5	49.4	3.3	5.7

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at JVC - Mid-Flood Tide



Sampling Date: 18 August 2011

Secchi Disc Depth: 1.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	8:58	28.9	8.2	17.4	39.9	2.8	3.2
			8:58	28.5	8.1	20.5	37.4	2.6	3.8
1.0	Sunny	Moderate	8:59	27.0	8.0	29.0	61.4	4.2	3.4
			8:59	26.9	8.0	29.0	61.2	4.2	3.5
1.5	Sunny	Moderate	8:59	26.4	7.9	30.7	53.1	3.6	2.4
			8:59	26.4	7.9	30.8	52.6	3.6	2.4
2.0	Sunny	Moderate	8:59	26.0	7.9	31.5	18.3	1.2	17.8
			8:59	26.0	7.9	31.5	17.1	1.2	18.0
2.5	Sunny	Moderate	8:59	25.9	7.9	31.6	9.3	0.6	14.3
			9:00	25.9	7.9	31.6	9.3	0.6	14.4
3.0	Sunny	Moderate	9:00	25.6	7.9	32.1	5.4	0.4	11.6
			9:00	25.6	7.9	32.1	5.2	0.4	11.4
3.5	Sunny	Moderate	9:00	25.5	7.9	32.3	3.5	0.2	11.4
			9:00	25.5	7.9	32.3	3.7	0.3	11.4

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
1.0	Sunny	Moderate	8:59	27.0	8.0	29.0	61.4	4.2	3.4
			8:59	26.9	8.0	29.0	61.2	4.2	3.5
3.0	Sunny	Moderate	9:00	25.6	7.9	32.1	5.4	0.4	11.6
			9:00	25.6	7.9	32.1	5.2	0.4	11.4

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02  
 Kai Tak Development  
 – Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at WSD Intake at Tai Wan - Mid-Flood Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	9.52	24.7	7.9	32.5	56.9	3.9	5.5
			9.55	24.8	8.0	32.6	52.4	3.6	6.6
1.0	Sunny	Moderate	9.52	24.7	7.9	32.6	55.9	3.9	5.9
			9.55	24.9	8.0	32.5	52.6	3.6	6.9
1.5	Sunny	Moderate	9.52	24.7	7.9	32.6	55.8	3.9	6.5
			9.55	24.9	8.0	32.5	52.8	3.6	6.7
2.0	Sunny	Moderate	9.52	24.7	7.9	32.6	54.5	3.8	6.8
			9.55	24.7	8.0	32.6	54.6	3.8	6.5
2.5	Sunny	Moderate	9.52	24.7	7.9	32.6	53.8	3.7	7.3
			9.55	24.6	8.0	32.7	54.7	3.8	6.6
3.0	Sunny	Moderate	9.52	24.7	7.9	32.6	53.6	3.7	7.1
			9.56	24.6	8.0	32.7	54.6	3.8	6.4
3.5	Sunny	Moderate	9.52	24.7	7.9	32.6	53.3	3.7	6.9
			9.56	24.6	8.0	32.7	53.9	3.7	6.6
4.0	Sunny	Moderate	9.53	24.7	7.9	32.7	53.0	3.7	6.8
			9.56	24.6	8.0	32.7	53.4	3.7	6.1
4.5	Sunny	Moderate	9.53	24.7	7.9	32.7	52.5	3.6	6.6
			9.56	24.7	8.0	32.6	53.2	3.7	6.2
5.0	Sunny	Moderate	9.53	24.7	7.9	32.8	52.4	3.6	6.1
			9.56	24.7	8.0	32.6	53.4	3.7	5.8
5.5	Sunny	Moderate	9.53	24.7	7.9	32.6	52.4	3.6	6.0
			9.56	24.7	8.0	32.6	53.4	3.7	5.9
6.0	Sunny	Moderate	9.53	24.7	7.9	32.6	52.0	3.6	5.8
			9.56	24.7	8.0	32.6	53.4	3.7	5.9
6.5	Sunny	Moderate	9.53	24.6	7.9	32.7	52.2	3.6	5.8
			9.56	24.7	8.0	32.6	53.6	3.7	5.5
7.0	Sunny	Moderate	9.53	24.6	7.9	32.7	52.0	3.6	5.7
			9.56	24.7	8.0	32.6	53.6	3.7	5.6
7.5	Sunny	Moderate	9.54	24.6	7.9	32.7	51.7	3.6	5.9
			9.56	24.7	8.0	32.6	53.6	3.7	5.5
8.0	Sunny	Moderate	9.54	24.6	7.9	32.8	51.8	3.6	6.3
			9.56	24.7	8.0	32.6	53.4	3.7	5.6
8.5	Sunny	Moderate	9.54	24.5	7.9	32.8	51.3	3.5	6.4
			9.56	24.7	8.0	32.7	53.3	3.7	5.9
9.0	Sunny	Moderate	9.54	24.5	7.9	32.8	51.9	3.6	6.7
			9.57	24.7	8.0	32.7	52.9	3.7	5.8
9.5	Sunny	Moderate	9.54	24.5	8.0	32.9	51.6	3.6	7.4
			9.57	24.6	8.0	32.7	52.3	3.6	6.4

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
5.0	Sunny	Moderate	9.53	24.7	7.9	32.6	52.4	3.6	6.1
			9.56	24.7	8.0	32.6	53.4	3.7	5.8

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Contract No. KL/2010/02  
 Kai Tak Development  
 - Kal Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at WSD Intake at Cha Kwo Ling - Mid-Flood Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	10.14	26.0	8.0	32.2	70.8	4.8	5.9
			10.14	26.0	8.0	32.2	70.7	4.8	6.0
1.0	Sunny	Moderate	10.15	25.5	8.0	32.6	71.1	4.8	6.1
			10.15	25.5	8.0	32.6	71.2	4.9	6.1
1.5	Sunny	Moderate	10.15	25.3	7.9	32.8	72.5	4.9	5.9
			10.15	25.3	7.9	32.8	73.2	5.0	5.8
2.0	Sunny	Moderate	10.15	25.6	7.9	32.5	76.4	5.2	5.9
			10.15	25.7	7.9	32.5	75.0	5.1	5.9
2.5	Sunny	Moderate	10.15	25.4	7.9	32.7	71.5	4.9	5.7
			10.15	25.3	7.9	32.8	71.4	4.9	5.8
3.0	Sunny	Moderate	10.16	25.3	7.9	32.7	72.8	5.0	5.7
			10.16	25.4	7.9	32.7	73.6	5.0	5.8
3.5	Sunny	Moderate	10.16	24.8	7.9	33.2	68.0	4.7	6.8
			10.16	24.7	7.9	33.3	68.1	4.7	6.8
4.0	Sunny	Moderate	10.16	24.1	7.9	33.9	57.0	3.9	4.2
			10.16	24.1	7.9	33.9	56.3	3.9	4.4
4.5	Sunny	Moderate	10.17	24.0	7.9	34.0	52.9	3.7	5.5
			10.17	24.0	7.9	34.0	52.8	3.7	6.1
5.0	Sunny	Moderate	10.17	23.9	7.9	34.0	51.9	3.6	6.6
			10.17	23.9	7.9	34.1	51.7	3.6	6.7
5.5	Sunny	Moderate	10.17	23.8	7.9	34.1	50.7	3.5	6.9
			10.17	23.8	7.9	34.1	50.6	3.5	7.3
6.0	Sunny	Moderate	10.17	23.7	7.9	34.2	49.5	3.4	8.3
			10.17	23.7	7.9	34.2	49.4	3.4	8.1
6.5	Sunny	Moderate	10.18	23.8	7.9	34.1	47.7	3.3	6.3
			10.18	23.8	7.9	34.1	47.8	3.3	6.0
7.0	Sunny	Moderate	10.18	23.8	7.9	34.1	48.5	3.4	5.8
			10.18	23.8	7.9	34.1	48.6	3.4	6.0
7.5	Sunny	Moderate	10.18	24.0	7.9	33.9	49.4	3.4	5.7
			10.19	23.9	7.9	34.0	49.7	3.5	5.7
8.0	Sunny	Moderate	10.19	23.8	7.9	34.1	47.2	3.3	8.2
			10.19	23.7	7.9	34.1	47.1	3.3	8.2
8.5	Sunny	Moderate	10.19	23.7	7.9	34.1	47.3	3.3	8.1
			10.19	23.8	7.9	34.1	47.4	3.3	7.8
9.0	Sunny	Moderate	10.20	23.7	7.9	34.1	47.3	3.3	8.0
			10.20	23.7	7.9	34.1	47.2	3.3	7.8
9.5	Sunny	Moderate	10.20	23.7	7.9	34.1	47.2	3.3	7.9
			10.20	23.8	7.9	34.1	47.1	3.3	7.9

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
5.0	Sunny	Moderate	10.17	23.9	7.9	34.0	51.9	3.6	6.6
			10.17	23.9	7.9	34.1	51.7	3.6	6.7

	Name	Signature	Date
Conducted by:	Lee Man Hei		18-Aug-11
Checked by:	Henry Leung		18-Aug-11



Contract No. KL/2010/02  
 Kai Tak Development  
 – Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at WSD Intake at Quarry Bay - Mid-Flood Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 2.5m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	10:35	25.1	7.9	32.2	69.3	4.8	3.1
			10:38	25.6	7.9	31.7	68.0	4.7	2.7
1.0	Sunny	Moderate	10:35	25.2	7.9	32.2	68.9	4.7	3.0
			10:38	25.2	8.0	32.2	68.5	4.7	3.0
1.5	Sunny	Moderate	10:35	24.8	7.9	32.6	70.4	4.9	3.3
			10:38	24.7	7.9	32.8	67.9	4.7	3.5
2.0	Sunny	Moderate	10:35	24.4	7.9	33.0	68.1	4.7	4.6
			10:38	24.3	7.9	33.1	64.6	4.5	4.0
2.5	Sunny	Moderate	10:36	24.2	7.9	33.2	66.4	4.6	4.9
			10:38	24.0	7.9	33.4	62.4	4.3	4.5
3.0	Sunny	Moderate	10:36	24.0	7.9	33.4	63.7	4.4	4.8
			10:38	23.8	7.9	33.6	60.7	4.2	4.7
3.5	Sunny	Moderate	10:36	23.8	7.9	33.6	62.0	4.3	5.2
			10:38	23.6	7.9	33.9	58.8	4.1	5.1
4.0	Sunny	Moderate	10:36	23.6	7.9	33.9	59.5	4.2	6.0
			10:39	23.4	7.9	34.1	57.9	4.1	5.6
4.5	Sunny	Moderate	10:36	23.3	7.9	34.1	57.5	4.0	6.0
			10:39	23.2	7.9	34.2	56.6	4.0	5.8
5.0	Sunny	Moderate	10:36	23.2	7.9	34.2	56.4	4.0	5.7
			10:39	23.2	7.9	34.3	55.2	3.9	6.3
5.5	Sunny	Moderate	10:36	23.1	7.9	34.3	55.9	3.9	5.7
			10:39	23.1	7.9	34.3	54.5	3.8	6.7
6.0	Sunny	Moderate	10:36	23.1	7.9	34.3	55.0	3.9	6.0
			10:39	23.1	7.9	34.4	53.1	3.7	7.1
6.5	Sunny	Moderate	10:36	23.1	7.9	34.3	54.2	3.8	6.1
			10:39	23.0	7.9	34.4	52.0	3.7	7.1
7.0	Sunny	Moderate	10:37	23.1	7.9	34.4	53.4	3.8	6.7
			10:39	23.0	7.9	34.4	51.2	3.6	7.6
7.5	Sunny	Moderate	10:37	23.1	7.9	34.4	52.9	3.7	6.9
			10:39	23.0	7.9	34.4	50.8	3.6	7.8

Water Quality Monitoring Results (Sampling Depth)

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
4.0	Sunny	Moderate	10:36	23.6	7.9	33.9	59.5	4.2	6.0
			10:39	23.4	7.9	34.1	57.9	4.1	5.6

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

Remark: \* Calm: Small or no wave; Moderate: Between calm and rough; Rough: White capped or rougher

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

Water Quality Monitoring Results at WSD Intake at Sai Wan Ho - Mid-Flood Tide

Sampling Date: 18 August 2011

Secchi Disc Depth: 3.0m

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0.5	Sunny	Moderate	11:18	24.9	7.9	32.9	75.5	5.2	2.2
			11:21	25.0	8.0	32.9	77.4	5.3	2.4
1.0	Sunny	Moderate	11:18	24.9	7.9	32.9	74.4	5.1	2.1
			11:21	25.0	8.0	32.9	75.2	5.2	2.4
1.5	Sunny	Moderate	11:18	24.9	7.9	32.9	74.2	5.1	2.3
			11:21	25.0	8.0	32.9	73.8	5.1	2.3
2.0	Sunny	Moderate	11:19	24.8	7.9	32.9	74.1	5.1	2.2
			11:21	25.0	8.0	32.9	73.9	5.1	2.3
2.5	Sunny	Moderate	11:19	24.8	7.9	33.0	73.9	5.1	2.3
			11:22	25.0	8.0	32.9	73.9	5.1	2.4
3.0	Sunny	Moderate	11:19	24.7	7.9	33.1	74.3	5.1	2.3
			11:22	25.0	8.0	33.0	73.9	5.1	2.4
3.5	Sunny	Moderate	11:19	24.6	7.9	33.1	73.2	5.1	2.4
			11:22	24.7	8.0	33.2	69.6	4.8	2.4
4.0	Sunny	Moderate	11:19	24.4	7.9	33.3	71.7	5.0	2.6
			11:22	24.7	8.0	33.2	68.9	4.7	2.5
4.5	Sunny	Moderate	11:19	24.5	7.9	33.3	71.6	4.9	2.7
			11:22	24.5	8.0	33.3	68.5	4.7	2.6
5.0	Sunny	Moderate	11:19	24.3	7.9	33.4	70.7	4.9	3.1
			11:22	24.4	8.0	33.4	68.0	4.7	2.8
5.5	Sunny	Moderate	11:19	24.1	7.9	33.5	70.0	4.9	3.3
			11:22	24.3	8.0	33.5	67.0	4.6	2.9
6.0	Sunny	Moderate	11:19	24.0	7.9	33.5	69.5	4.8	3.3
			11:22	24.1	8.0	33.5	66.1	4.6	3.0
6.5	Sunny	Moderate	11:19	23.9	7.9	33.7	68.4	4.8	3.4
			11:22	24.0	8.0	33.6	65.5	4.6	3.0
7.0	Sunny	Moderate	11:19	23.8	7.9	33.7	67.4	4.7	3.4
			11:22	24.0	8.0	33.7	64.7	4.5	3.1
7.5	Sunny	Moderate	11:19	23.8	7.9	33.8	66.7	4.6	3.4
			11:22	24.0	8.0	33.7	63.9	4.4	3.1
8.0	Sunny	Moderate	11:19	23.7	7.9	33.9	66.3	4.6	3.4
			11:23	23.9	8.0	33.8	63.2	4.4	3.1
8.5	Sunny	Moderate	11:20	23.4	7.9	34.1	65.6	4.6	3.6
			11:23	23.7	8.0	33.9	62.5	4.4	3.2
9.0	Sunny	Moderate	11:20	23.2	7.9	34.2	62.5	4.4	4.0
			11:23	23.5	8.0	34.0	62.1	4.3	3.4
9.5	Sunny	Moderate	11:20	23.2	7.9	34.3	62.5	4.4	4.1
			11:23	23.4	8.0	34.1	60.9	4.3	3.6
10.0	Sunny	Moderate	11:20	23.2	7.9	34.3	59.7	4.2	4.0
			11:23	23.4	8.0	34.1	59.9	4.2	3.7
10.5	Sunny	Moderate	11:20	23.1	7.9	34.3	58.9	4.1	3.9
			11:23	23.3	8.0	34.2	59.0	4.1	3.4

Remark: \* Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher

Contract No. KL/2010/02

Kai Tak Development

– Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)

**Water Quality Monitoring Results at WSD Intake at Sai Wan Ho - Mid-Flood Tide**

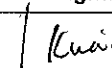

Sampling Date: 18 August 2011

Secchi Disc Depth: 3.0m

11.0	Sunny	Moderate	11:20	23.1	7.9	34.3	58.2	4.1	4.0
			11:23	23.2	8.0	34.2	58.3	4.1	3.6
11.5	Sunny	Moderate	11:20	23.1	7.9	34.3	57.6	4.0	4.0
			11:23	23.2	8.0	34.2	56.9	4.0	3.6
12.0	Sunny	Moderate	11:20	23.1	7.9	34.4	57.0	4.0	4.6
			11:23	23.2	8.0	34.3	55.3	4.0	4.1
12.5	Sunny	Moderate	11:20	23.0	7.9	34.4	56.7	4.0	5.0
			11:23	23.2	8.0	34.3	55.8	3.9	4.1
13.0	Sunny	Moderate	11:20	23.0	7.9	34.4	55.0	3.9	5.6
			11:23	23.1	8.0	34.3	55.5	3.9	4.5
13.5	Sunny	Moderate	11:20	23.0	7.9	34.4	55.0	3.9	6.6
			11:23	23.1	8.0	34.4	54.4	3.8	5.3

**Water Quality Monitoring Results (Sampling Depth)**

Water Depth (m)	Weather Condition	Sea Condition*	Sampling Time	Water Temperature (°C)	pH	Salinity ppt	DO Saturation (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
7.0	Sunny	Moderate	11:19	23.8	7.9	33.7	67.4	4.7	3.4
			11:22	24.0	8.0	33.7	64.7	4.5	3.1

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		18-Aug-11
Checked by:	Henry Leung		18-Aug-11

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**APPENDIX E2  
IN-SITU MEASUREMENT RESULTS  
FOR ODOUR SAMPLING**

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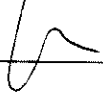
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Contract No. KLN/2009/10

**Odour, Sediment and Water Quality Monitoring Works for Improvement Works at Kai Tak Approach Channel (KTAC) and Kwun Tong Typhoon Shelter (KTTS)**

**Odour Monitoring Results on 12 August 2011**

Location	Weather Condition	Sea Condition*	Sampling Time	Water Depth (m)	Sampling Depth (m)	Ambient Air Temperature (°C)	Water Temperature (°C)	Redox Potential (mV)	pH		Salinity (ppt)		DO Saturation (%)		Dissolved Oxygen (mg/L)	
									Value	Average	Value	Average	Value	Average	Value	Average
SA1	Fine	Calm	16:11	3.0	2.0	34.8	26.4	-261	7.8	7.8	35.5	35.6	8.6	8.5	0.6	0.6
						34.8	26.4	-280	7.7		8.4		0.6			
SA2	Fine	Calm	15:52	2.0	1.0	34.8	27.8	-128	7.6	7.7	31.6	31.3	28.5	29.2	1.9	2.0
						34.7	27.9	-138	7.7		29.8		2.0			
SA3	Fine	Calm	15:32	3.0	2.0	34.4	26.7	-239	7.8	7.8	35.4	35.5	11.0	10.9	0.7	0.7
						34.5	26.7	-269	7.7		10.8		0.7			
SA4	Fine	Calm	16:33	5.0	4.0	34.4	25.6	-283	7.8	7.8	36.4	36.5	8.7	8.6	0.6	0.6
						34.4	25.5	-286	7.8		8.5		0.6			
SA5	Fine	Calm	16:45	3.0	2.0	34.5	26.1	-132	7.9	7.9	35.4	35.4	13.7	13.2	0.9	0.9
						34.5	26.1	-128	7.9		12.6		0.8			
SA6	Fine	Calm	17:01	6.0	5.0	33.2	24.5	-286	7.7	7.7	37.7	37.8	7.7	7.6	0.5	0.5
						33.3	24.4	-293	7.7		7.5		0.5			
SA7	Fine	Calm	17:14	6.0	5.0	32.0	24.7	-133	7.9	8.0	37.3	37.3	24.8	25.2	1.7	1.7
						32.1	24.7	-130	8.0		25.5		1.7			
SA8	Fine	Calm	17:26	7.0	6.0	31.9	24.4	52	8.0	8.0	37.7	37.8	16.1	16.4	1.1	1.1
						32.0	24.4	48	8.0		16.7		1.1			
SA9	Fine	Calm	17:44	6.0	5.0	31.7	24.4	43	8.0	8.0	37.7	37.8	15.9	15.6	1.1	1.1
						31.5	24.3	41	8.0		15.2		1.0			
SA10	Fine	Calm	14:53	6.0	5.0	32.7	26.6	28	8.1	8.1	35.2	35.2	62.8	62.7	4.1	4.1
						32.7	26.6	28	8.1		62.6		4.1			
SA11	Fine	Calm	14:32	5.0	4.0	35.1	26.1	23	8.1	8.1	35.7	35.7	56.5	56.5	3.7	3.7
						35.2	26.1	23	8.1		56.4		3.7			
SA12	Fine	Calm	13:58	4.0	3.0	34.9	26.6	18	8.0	8.1	35.6	35.6	66.2	66.1	4.4	4.4
						34.9	26.6	19	8.1		65.9		4.3			
SA13	Fine	Calm	13:37	4.0	3.0	34.6	26.2	-168	8.0	8.0	35.7	35.7	55.5	55.3	3.7	3.7
						34.6	26.2	-171	8.0		55.1		3.7			

	Name	Signature	Date
Conducted by:	W.K. Tang		12 August 2011
Checked by:	Henry Leung		12 August 2011

Remark: \*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

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**APPENDIX E3  
IN-SITU MEASUREMENT RESULTS  
FOR SEDIMENT MONITORING**

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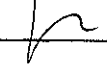
Contract No. KL/2010/02

Kai Tak Development - Kai Tak Approach Channel and Kwun Tong Typhoon Shelter  
Improvement Works (Phase 1)

Sediment Monitoring Field Record Sheet

Sampling Date: 26 August 2011

Sampling Location	Weather Condition	Co-ordinate Easting / Northing	Starting Time	Water Depth (m)	Remarks
SA1	Fine	838744.13 / 820311.91	22:24	3.2	N/A
SA2	Fine	838840.95 / 820030.07	22:59	2.6	N/A
SA3	Fine	839163.99 / 819942.90	23:30	3.6	N/A
SA4	Fine	839407.66 / 819537.90	17:45	5.5	N/A
SA5	Fine	839580.35 / 819512.47	18:10	4.0	N/A
SA6	Fine	839647.87 / 819329.45	18:35	7.0	N/A
SA7	Fine	840122.60 / 819275.72	19:12	6.0	N/A
SA8	Fine	840270.71 / 819015.35	19:25	7.0	N/A
SA9	Fine	840479.55 / 818798.14	19:48	7.5	N/A
SA10	Fine	838694.90 / 819582.08	20:20	7.0	N/A
SA11	Fine	838138.20 / 820038.77	20:45	5.0	N/A
SA12	Fine	837892.97 / 819704.84	21:10	6.5	N/A
SA13	Fine	837857.15 / 819436.94	21:34	5.5	N/A

	Name	Signature	Date
Conducted by:	Tang Wing Kwai		26-Aug-11
Checked by:	Henry Leung		26-Aug-11

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**APPENDIX F  
METEOROLOGICAL DATA FROM  
HONG KONG OBSERVATORY  
STATION DURING ODOUR  
SAMPLING**

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## Daily Weather Summary and Radiation Level on 12/08/2011

HKO Readings & Radiation Level

Daily Weather Summary and Radiation Level on 12/08/2011:

Hong Kong Observatory  
 Maximum Air Temperature 32.0 C  
 Minimum Air Temperature 27.6 C  
 Grass Minimum Temperature 26.6 C  
 Relative Humidity 65 - 88 Percent  
 Rainfall 0 mm  
 Total rainfall since 1st January 1045.1 mm  
 Against an average of 1602.7 mm

Other Stations	Min	Max
King's Park	26.8 C	32.0 C
Wong Chuk Hang	26.9 C	30.9 C
Ta Kwu Ling	25.8 C	34.2 C
Lau Fau Shan	26.9 C	32.0 C
Tai Po	26.4 C	33.0 C
Sha Tin	26.8 C	33.0 C
Tuen Mun	27.8 C	33.1 C
Tseung Kwan O	26.3 C	33.0 C
Sai Kung	27.1 C	30.7 C
Cheung Chau	26.5 C	31.2 C
Chek Lap Kok	28.0 C	32.8 C
Tsing Yi	26.8 C	31.3 C
Shek Kong	26.1 C	33.5 C
Tsuen Wan Ho Koon	25.5 C	30.9 C
Tsuen Wan Shing Mun Valley	26.2 C	32.6 C
Hong Kong Park	27.8 C	32.8 C
Shau Kei Wan	26.5 C	32.0 C
Kowloon City	26.5 C	32.3 C
Happy Valley	27.8 C	32.7 C
Wong Tai Sin	27.2 C	32.8 C
Stanley	27.0 C	30.9 C
<b>Kwun Tong</b>	<b>27.5 C</b>	<b>33.1 C</b>
Sham Shui Po	27.5 C	31.8 C

### Kai Tak Automatic Weather Station

Date	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
Aug 12	0.0	120	7.5

Title Contract No. KL/2010/02 Kai Tak Development – Kai Tak Approach Channel and Kwun Tong Typhoon Shelter Improvement Works (Phase 1)	Scale N.T.S	Project No. MA11017	<b>CINOTECH</b>
	Date Aug 11	Appendix F	
Meteorological data from Hong Kong Observatory Station			