KWAN ON CONSTRUCTION CO. LTD.

Contract No. YL/2009/01
Hang Hau Tsuen Channel
at Lau Fau Shan

Monthly Environmental Monitoring and Audit Report
September 2012

(Version 1.1)

Certified By

(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

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CINOTECH CONSULTANTS LTD
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong
Tel: (852) 2151 2083 Fax: (852) 3107 1388
Email: info@cinotech.com.hk

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ABBREVIATION AND ACRONYM

AL Levels	Action and Limit Levels
CEDD	Civil Engineering & Development Department
E / ER	Engineer/Engineer's Representative
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EMIS	Environmental Mitigation Implementation Schedule
EP	Environmental Permit
EPD	Environmental Protection Department
ET	Environmental Team
HVS	High Volume Sampler
IEC	Independent Environmental Checker
RE	Resident Engineer
RH	Relative Humidity
TSP	Total Suspended Particulates
QA/QC	Quality Assurance / Quality Control
SLM	Sound Level Meter
WMP	Waste Management Plan

EXECUTIVE SUMMARY

Introduction

1. This is the Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for CEDD's Civil Contract No. YL/2009/01 "Hang Hau Channel at Lau Fau Shan" under an Environmental Permit (Permit No. EP-343/2009). This report documents the findings of EM&A Works conducted in September 2012.

2. The site activities undertaken for in the reporting month included:

- Construction of additional footway at northern bank slope in progress;
- Type II railing installation in progress;
- Proposed CLP & PCCW U/G ducting & cable work at northern bank in progress;
- Tree transplanting work in progress;
- Top soil work at Northern bank in progress;
- Laying of Street light U/G ducting and draw pit construction in progress;
- Planting work at southern bank was in progress;
- Irrigation pipe installation and water point construction; and
- Road widening work located at existing access road.

Environmental Monitoring Works

3. Environmental monitoring was performed in accordance with the EM&A Manual and the monitoring results were checked and reviewed. Site audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

4. Summary of the non-compliance of the reporting month is tabulated in Table I.

Table I Summary Table for Non-compliance Recorded in the Reporting Month

Parameter	No. of Exceedance		No. of Exceedance Due to the Project		Action Taken
	Action Level	Limit Level	Action Level	Limit Level	
1-hr TSP	0	0	0	0	N/A
24-hr TSP	0	0	0	0	N/A
Noise	0	0	0	0	N/A
Water	0	0	0	0	N/A

1-hour TSP Monitoring

5. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

6. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise

7. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Water Quality

8. All water quality monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Licenses and Permits

9. Licenses/Permits granted to the Project include the Environmental Permit (EP); waste water discharge licence; and waste Producer under Waste Disposal (Chemical Waste) (General) Regulation for the Project. Permits under Dumping at Sea Ordinance with No. EP/MD/11-006 and EP/MD/11-045 are expired.

Key Information in the Reporting Month

10. Summary of key information in the reporting month is tabulated in Table II.

Key Information in the EIA Report

11. According to the EIA Report, air quality, noise, water quality, ecology and landscape and visual would be the key environmental issues during the construction and operation of the Hang Hau Tsuen Channel. Details of the implementation of mitigation measures are provided in the **Appendix M**.

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received	0	---	N/A	N/A	---
Changes to the assumptions and key construction / operation activities recorded	0	---	N/A	N/A	---
Status of submissions under EP	1	Monthly EM&A Report for August 2012	Submitted to EPD On 27 September 2012	No comment	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---
Future Key Issues:					

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Major site activities for the coming two months include: • Water sampling test of DN 150 D.I. pipe laying work at Northern bank; • Irrigation pipe installation and water point construction; • Backfilling and forming of slopes; • Road paving work- wearing course, road marking; • Arrange UU to carry out U/G ducting and cable work at footpath area and access road; • Installation of street furniture such as traffic post, water meter box etc.; • Planting work; • Modification of existing footpath for construction of access road at Deep Bay Road • Construction of additional cat ladder and concrete apron; and • Re surfacing at Deep Bay Road.					

1. INTRODUCTION

Background

1.1 The Project comprises the construction of the Hang Hau Tsuen Channel and associated works to improve the local drainage systems in the Hang Hau Tsuen area. The Project is located in Hang Hau Tsuen at Lau Fau Shan, North West New Territories. It is located between Deep Bay Road and Deep Bay. The general location plan of the Project is shown in Figure 1.

1.2 The Project is a designated project (Register No.: AEIAR-134/2009) and an Environmental Permit (Permit No. EP-343/2009) was issued on 21st May 2009 to the Civil Engineering and Development Department (hereinafter called the CEDD) as the Permit Holder.

1.3 The implementation programme for the Project is tentatively expected to start in end 2009 for completion by end 2012.

1.4 Kwan On Construction Company Limited (hereafter called the Contractor) was commissioned by the CEDD to undertake the construction of the Contract No.YL/2009/01 "Hang Hau Channel at Lau Fau Shan"

1.5 Cinotech Consultants Limited was commissioned by Kawn On Construction Co. Ltd. to undertake the Environmental Monitoring and Audit (EM&A) works for "Hang Hau Tsuen Channel at Lau Fau Shan" and was appointed as the Environmental Team (ET) of the Project under Condition 2.1 of the EP.

1.6 This is the monthly EM&A report summarizing the EM&A works conducted for the Project in September 2012.

Project Organizations

1.7 Different parties with different levels of involvement in the project organization include:

- Project Proponent – Civil Engineering & Development Department (CEDD).
- Engineer's Representative (ER) –Black & Veatch Hong Kong Ltd (B&V).
- Environmental Team (ET) – Cinotech Consultants Limited (Cinotech).
- Independent Environmental Checker (IEC) – ENVIRON Hong Kong Limited (ENVIRON).
- Contractor – Kwan On Construction Co. Ltd. (Kwan On).

1.8 The responsibilities of respective parties are detailed in Sections 1.6 of the EM&A Manual of the Project.

1.9 The key contacts of the Project are shown in Table 1.1 and the organization chart of ET is shown in **Figure 5**.

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.	Fax No.
CEDD	Permit Holder	Mr. Y.M. Chan	Chief Engineer	2158 5612	2693 2918
		Mr. CK Choi	Engineer	2158 5613	
B&V	Engineer	Mr. Kelvin Lau	Director	2601 1000	2601 3988
	Engineer's Representative	Mr. Victor Go	Resident Engineer	2475 4871/ 9686 4575	2470 3266
		Mr. Vincent Wan	Assistant Resident Engineer	2442 8007/ 61178711	
		Mr. Tim Law	AIOW	2475 4871/ 9845 6346	
Cinotech	Environmental Team	Dr. Priscilla Choy	ET Leader	2151 2089	3107 1388
		Mr. Gary Lau	Project Coordinator & Audit Team Leader	2151 2098	
		Mr. Henry Leung	Monitoring Team Leader	2151 2087	
ENVIRON	Independent Environmental Checker	Mr. David Yeung	Independent Environmental Checker	3743 0717/ 9019 3740	3548 6988
		Mr. Tony Cheng	Deputy Independent Environmental Checker	3743 0722	
		Mr. Justin Ye	IEC Team Member	3743 0705/ 6576 9531	
Kwan On	Contractor	Mr. Ambrose Kwong	Project Director	2889 2675	2558 6900
		Mr. P.H Ho	Project Manager	2889 2675	
		Mr. K.L. Lee	Site Agent	6113 6926	
		Mr. Michael Chung	Environmental Manager	6198 7781	
		Ms. Joey Wong	Environmental Officer	6108 7906	

Construction Programme

1.10 The site activities undertaken in the reporting month included:

- Construction of additional footway at northern bank slope in progress;
- Type II railing installation in progress;
- Proposed CLP & PCCW U/G ducting & cable work at northern bank in progress;
- Tree transplanting work in progress;
- Top soil work at Northern bank in progress;
- Laying of Street light U/G ducting and draw pit construction in progress;
- Planting work at southern bank was in progress;
- Irrigation pipe installation and water point construction; and
- Road widening work located at existing access road.

Summary of EM&A Requirements

1.11 The EM&A programme requires construction phase monitoring for air quality and construction noise, water quality, landscape and visual and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

- All monitoring parameters;
- Action and Limit levels for all environmental parameters;
- Event Action Plans;
- Environmental mitigation measures, as recommended in the project EIA study final report; and
- Environmental requirements in contract documents.

1.12 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 5 of this report.

1.13 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely dust, noise levels, water quality, and audit works conducted for the Project in September 2012.

2. AIR QUALITY

Monitoring Requirements

2.1 1-hour and 24-hour TSP monitoring were conducted to monitor the air quality. Appendix A shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

2.2 Two designated monitoring stations, A1a and A2 were selected for impact dust monitoring. Table 2.1 describes the air quality monitoring locations, which are also depicted in Figure 2.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Station	Description	Location of Measurement
A1a*	Village house at No. 88 Hang Hau Tsuen	At the outdoor area of the Village house at No. 88 Hang Hau Tsuen
A2**	Village house at No.29 Hang Hau Tsuen	At the outdoor area of the Village house at No. 29 Hang Hau Tsuen
A2b***	Village house at No.84 Hang Hau Tsuen	At the outdoor area of the Village house at No. 84 Hang Hau Tsuen

* Alternative location for Air Quality Monitoring Station A1.

** Air Quality Monitoring Station A2 (Village house at No.57 Hang Hau Tsuen) was not identifiable and therefore Village house at No. 29 Hang Hau Tsuen was proposed as the alternative station.

*** The monitoring works for Air Quality Monitoring Station at A2 have been replaced with A2b (Village house at No.84 Hang Hau Tsuen) from 15th July 2010. A2b (24-TSP) is temporarily suspended after 19 March 2011 due to stopping of the High Volume Sampler requested by the house's owner but resumed in normal state on 25 May 2011 afterward.

Monitoring Equipment

2.3 Table 2.2 summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates are attached in Appendix B.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Qty.
HVS Sampler	Tisch Environmental, Inc.; Model no. TE-5170	2
Laser Dust Monitor	Sibata, Model no. LD-3B AErocet-501	4
Calibrator	Thermo Andersen; Model no.: G25A	1

Monitoring Parameters, Frequency and Duration

2.4 Table 2.3 summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting period is shown in Appendix D.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Monitoring Station	Parameter	Period	Frequency
All monitoring locations	1-hour TSP	0700-1900	3 times/ every 6 days
	24-hour TSP	0000-2400	once in every 6 days

Monitoring Methodology and QA/QC Procedure

1-hour TSP Monitoring

Measuring Procedures

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

- Pull up the air sampling inlet cover
- Change the Mode 0 to BG with once
- Push Start/Stop switch once
- Turn the knob to SENSI.ADJ and press it
- Push Start/Stop switch once
- Return the knob to the position MEASURE slowly
- Push the timer set switch to set measuring time
- Remove the cap and make a measurement

Maintenance/Calibration

2.6 The following maintenance/calibration was required for the direct dust meters:

- Check the meter at a 3-month interval and calibrate the meter at a 1-year interval throughout all stages of the air quality monitoring.

24-hour TSP Monitoring

Instrumentation

2.7 High volume (HVS) samplers (Model no. TE-5170) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in section 2.3.1 of the EM&A Manual.

Operating/Analytical Procedures

2.8 Operating/analytical procedures for the operation of HVS were as follows:

- A horizontal platform was provided with appropriate support to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The sampler was more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

2.9 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m^3/min. and 1.4 m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.

2.10 For TSP sampling, fiberglass filters were used [Note: these filters have a collection efficiency of > 99% for particles of 0.3 mm diameter].

2.11 The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.12 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.

2.13 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

2.14 The shelter lid was closed and secured with the aluminum strip.

2.15 The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).

2.16 After sampling, the filter was removed and sent to the laboratory for weighing. The elapsed time was also recorded.

2.17 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary

by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%.
Maintenance/Calibration

2.18 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- High volume samplers were calibrated at bi-monthly intervals using Calibration Kit (Tisch Environmental, Inc.; Model no.TE-5025A) throughout all stages of the air quality monitoring.

Results and Observations

2.19 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in Appendix I.

2.20 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in Appendix I.

2.21 Alternative air quality monitoring station A2b (village house at No.84 Hang Hau Tsuen) was proposed for the replacement of station A2 (village house at No.29 Hang Hau Tsuen) to the EPD on 20 April 2010 for approval.

2.22 Referring to Email reply from EPD dated on 17 May 2010, no further comment from EPD was received for replacement of station A2 by A2b. The air quality monitoring works at A2b has been started from 15 July 2010.

2.23 The house's owners at A2b reported that the sound from the operating High volume sampler (HVS) might cause disturbance. Stopping the sampler is requested.
24-hour TSP is temporarily suspended after 19 Mar 2011 while 1-hour TSP is in normal state.

2.24 Referring to the letter sent to EPD by courier on 15 April 2011 and a copy of fax from CEDD to EPD on 18 May 2011, the shifting process of A2b was proposed and there is no need for approval from EPD. The course of action was completed and the 24-hour TSP monitoring has resumed in normal state on 25 May 2011.

2.25 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in Appendices E and F respectively.

2.26 In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website http://www.cinotech.com.hk/projects/LFS.

2.27 According to our field observations, the identified dust sources at the monitoring stations were mainly generated when loading materials and vehicles movement.

3. NOISE

Monitoring Requirements

3.1 Two noise monitoring stations, namely N2 and N3 were designated in the EM&A Manual for impact monitoring. Appendix A shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

3.2 Noise monitoring was conducted at two designated monitoring stations as listed in Table 3.1. Figure 3 shows the locations of these stations.

Table 3.1 Noise Monitoring Stations

Monitoring Station	Description	Location of Measurement
N2	Village house at No.84 Hang Hau Tsuen	At the outdoor area of Village house at No.84 Hang Hau Tsuen
N3	Village house at No. 88 Hang Hau Tsuen	At the outdoor area of Village house at No. 88 Hang Hau Tsuen

Remarks: Noise Monitoring Station N1 (Wing Jan Kindergarten) was cancelled because it was found abandoned.

Monitoring Equipment

3.3 Table 3.2 summarizes the noise monitoring equipment. Copies of calibration certificates are provided in Appendix B.

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Quantity
Integrating Sound Level Meter	SVANTEK: SVAN 957	2
Acoustical Calibrator	SVANTEK: SV30A	2
RS232 Integral Vane Digital Anemometer	AZ Instrument: AZ8904	1

Monitoring Parameters, Frequency and Duration

3.4 Table 3.3 summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in Appendix D.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency	Measurement
N2	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A)	0700-1900 hrs. on weekdays	Once per week	Free Field
N3				Free Field

Monitoring Methodology and QA/QC Procedures

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels were adjusted with a correction of +3 dB(A).
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - time measurement : 30 minutes / 5 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused temporarily during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

3.5 The microphone head of the sound level meter and calibrator was cleaned with soft cloth regularly.

3.6 The meters were sent to laboratory to check and calibrate on a yearly interval.

Results and Observations

3.7 All construction noise monitoring at two designated locations were conducted as scheduled in the reporting month.

3.8 No Action/Limit Level exceedance was recorded in the reporting month. Summary of exceedance is presented in Appendix I.

3.9 The proposal of the cancellation of Noise Monitoring Station N1 (Wing Jan Kindergarten) was approved by the EPD on 1 April 2010.

3.10 All the Construction Noise Levels (CNLs) reported in this report were adjusted with the corresponding baseline level (i.e. Measured Leq – Baseline Leq = Measured CNL), in order to facilitate the interpretation of the noise exceedance. The baseline noise level and the allowed CNL at each designated noise monitoring station are presented at Table 3.4.

3.11 Noise monitoring results and graphical presentations are shown in Appendix G. In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website http://www.cinotech.com.hk/projects/LFS.

3.12 The major noise sources identified at the designated noise monitoring stations were road noise and human activities.

Table 3.4 Baseline Noise Level and Allowed Construction Noise Level for Monitoring Stations

Station	Baseline Noise Level, dB (A)	Allowed CNL, dB (A)
N2 - Village house at No.84 Hang Hau Tsuen	57	75
N3 - Village house at No.88 Hang Hau Tsuen	58	

4. WATER QUALITY

Monitoring Requirements

4.1 Temperature, pH, Turbidity, Water Depth, Salinity, DO and SS monitoring were conducted to monitor the water quality. Appendix A shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

4.2 In accordance with the requirements set out in the approved EM&A Manual, seven water quality monitoring locations (W1, W2, W3, W4, W5, W6 and W7) were specified for baseline water quality monitoring. Table 4.1 describes the locations of these monitoring locations. The locations are also shown in Figure 4.

Table 4.1 Locations for Water Quality Monitoring

Monitoring Stations	Description	Purpose of Placing Sampling Station	Coordinates	
			N = Northing	E = Easting
W1	Downstream of the works immediately at the discharge point to Deep Bay	Monitor and audit potential impacts from the works, check water quality discharging to Deep Bay, impact station	836095	816023
W2	Near the oyster bed in Deep Bay	Monitor and audit potential impacts from the works, check water quality discharging to Deep Bay, impact station	836276	815791
W3	Near the oyster bed in Deep Bay	Monitor and audit potential impacts from the works, check water quality discharging to Deep Bay, impact station	836076	815673
W4	Immediate downstream of any specific works within Hang Hau Tsuen channel	Temporary / mobile station to monitor and audit potential impacts from any specific works, check water quality discharging to Deep Bay, impact station	See notes below	
W5	Upstream of the works at the confluence of San Hing Tsuen Channel and Fung Kong Tsuen Channel	Establish background water quality levels entering Hang Hau Tsuen stream, control station	836039	816390
W6	Waters of Deep Bay	Establish background water quality levels in Deep Bay, control station	836713	815496
W7	Waters of Deep Bay	Establish background water quality levels in Deep Bay, control station	835484	815174

Notes:
- Temporary / mobile station to be proposed by the Environmental Team Leader with reference to the contractor's working programme and works location.

Monitoring Equipment

4.3 Table 4.2 summarizes the equipment used in the water quality monitoring program. All the monitoring equipment complied with the specifications is stipulated in the Updated EM&A Manual. Copies of the calibration certificates of the equipment are shown in Appendix B.

Table 4.2 Water Quality Monitoring Equipment

Equipment	Model No. (Equipment No.)	Qty.
Sonde Environmental Monitoring System	YSI 6820-C-M (W.03.01 and W.03.02)	2

Monitoring Parameters, Frequency and Duration

4.4 Table 4.3 summarizes the monitoring parameters, monitoring period and frequencies of water quality monitoring.

Table 4.3 Frequency and Parameters of Water Quality Monitoring

Monitoring Stations	Parameters, unit (detection limit)	Depth	Frequency
All Monitoring Stations	• Temperature, °C (0.01°C) • pH, pH unit (0.01pH unit) • turbidity, NTU (0.1NTU) • water depth, m (0.001m) • salinity, mg/L (0.01ppt) • dissolved oxygen (DO), mg/L and % of saturation (0.01mg/L) • suspended solids (SS),mg/L) (0.5mg/L)	• 3 water depths: 1m below sea surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth sampling only. • If water depth less than 6m, mid-depth may be omitted.	• 3 days per week at mid-flood and mid-ebb tides throughout construction phase.

Monitoring Methodology, Calibration Details and QA/QC Procedures

4.5 A multi-parameter meter (Model YSI 6820-C-M) was used to measure DO, turbidity, salinity, pH and temperature.

4.6 At each measurement, two consecutive measurements of turbidity and pH were taken. The probes were retrieved out of the water after the first measurement and then re-deployed for the second measurement. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken.

4.7 For SS measurement, grab samples were collected. Water samples of about 500 ml were collected and stored in polyethylene bottles. The sample bottles were packed into an ice-box and delivered to a HOKLAS-accredited Laboratory, WELLAB Ltd., for the analysis of suspended solids contents within 24 hours.

Maintenance and Calibration

4.8 Before each round of monitoring, a zero check in distilled water was performed with the turbidity probe of YSI 6820-C-M. The probe was then calibrated with a solution of known NTU.

4.9 Quality Control Reports for SS analysis by the HOKLAS-accredited laboratory, WELLAB Ltd. are attached in Appendix C.

Results and Observations

4.10 All water quality monitoring were conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. Summary of exceedance is presented in Appendix I.

4.11 The monitoring data and graphical presentations of the monitoring results are shown in Appendix H.

4.12 Since the proposal of change of water quality monitoring station W2 and W3 was not approved by the EPD, all water quality monitoring stations will be maintained as that stated in the approved EM&A Manual.

4.13 In accordance with Condition 4.2 of the EP, all environmental monitoring data was made available to the public via internet access at the website: http://www.cinotech.com.hk/projects/LFS.

5. ENVIRONMENTAL AUDIT

Site Audits

5.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in th*e* Project site.

5.2 Environmental site audits were conducted on 6, 13, 21 and 27 September 2012 in the reporting month. No non-compliance was observed during the site audits.

5.3 Site inspections were undertaken to ensure and check that the implementation and maintenance of landscape and visual mitigation measures are being properly carried out in the reporting month in accordance to section 8.3 of the EM&A Manual. No non-compliance was observed during the site inspections.

5.4 The summaries of site audits are attached in Appendix J.

Review of Environmental Monitoring Procedures

5.5 The monitoring works conducted by the monitoring team were inspected regularly. The following observations have been recorded for the monitoring works:

Air Quality Monitoring

- The monitoring team recorded all observations around the monitoring stations within and outside the construction site.
- The monitoring team recorded the temperature and weather conditions on the monitoring days.

Noise Monitoring

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

Water Quality Monitoring

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- The monitoring team recorded the weather condition on the monitoring day.

Status of Environmental Licensing and Permitting

5.6 All permits/licenses obtained for the Project are summarized in Table 5.1.

Table 5.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Details	Status
	From	To		
Environmental Permit				
EP-343/2009	21/05/09	N/A	Waterways and drainage works for the Project - Hang Hau Tsuen Channel at Lau Fau Shan (Register No.: AEIAR-134/2009)	Valid
Wastewater Discharge License				
WT00006437-2010	13/04/10	30/04/15	Discharge of Industrial Trade Effluent at Deep Bay Water Control Zone	Valid
Waste Producer under Waste Disposal (Chemical Waste) (General) Regulation				
5123-513-K2958-01	16/01/10	N/A	Major Chemical Waste: Spent lubricating oil	Valid
Permit under Dumping at Sea Ordinance				
EP/MD/11-006	22/11/10	21/12/10	Type 1 – Open Sea Disposal Type 2 – Confined Marine Disposal	Expired
EP/MD/11-045	01/11/10	30/04/11	Type 1 – Open Sea Disposal	Expired

Status of Waste Management

5.7 The amount of wastes generated by the activities of the Project in the reporting month is shown in Appendix K.

Implementation Status of Environmental Mitigation Measures

5.8 According to the EIA Report, air quality, noise, water quality, ecology and landscape and visual impact would be the key issues during the construction and operation of the Project. Details of the implementation of mitigation measures are provided in the Appendix M.

5.9 During the weekly environmental site inspections in the reporting period, no non-conformance was identified. The observations and recommendations for the Projects are summarized in Table 5.2.

Table 5.2 Observations and Recommendations of Site Audit

Parameters	Date (Ref. no.)	Observations	Remedial Actions
Water Quality	13-9-2012 (120913-R01)	Ponding water and sediment should be cleared to prevent spillage.	The situation was observed improved / rectified during site inspection on 21-9-12
	13-9-2012 (120913-R02)	Stockpile next to the stream should be covered and removed away to prevent run-off spillage.	The situation was observed improved / rectified during site inspection on 21-9-12

	27-9-2012 (120927-R01)	The debris near the stream area should be cleared to avoid polluting the water.	The situation was observed improved / rectified during site inspection on 11-10-12
Air Quality	6-9-2012 (120906-O01)	Sand and dusty materials (on paved road) should be regularly cleared to reduce dust generation.	The situation was observed improved / rectified during site inspection on 13-9-12
	6-9-2012 (120906-O02)	Exposed stockpile should be covered for dust suppression.	The situation was observed improved / rectified during site inspection on 13-9-12
	6-9-2012 (120906-O03)	The broken sand bags near deep bay road should be repaired/removed.	The situation was observed improved / rectified during site inspection on 13-9-12
	21-9-2012 (120921-R03)	To clear the dusty materials and sand to reduce dust generation in dry days.	The situation was observed improved / rectified during site inspection on 27-9-12
Waste / Chemical Management	--	--	--
Ecology	--	--	--
Noise	--	--	--
Landscape and Visual	--	--	--
Permit/ Licenses	--	--	--

Implementation Status of Event Action Plans

5.10 The Event Action Plans for air quality, noise and water quality are presented in Appendix L.

1-hr TSP

5.11 No Action/Limit Level exceedance was recorded.

24-hr TSP

5.12 No Action/Limit Level exceedance was recorded.

Construction Noise

5.13 No Action/Limit Level exceedance was recorded.

Water Quality

5.14 No Action/Limit Level exceedance was recorded.

Ecology

5.15 No non-compliance was recorded.

Landscape and Visual

5.16 No non-compliance was recorded.

Summary of Complaints and Prosecutions

5.17 No environmental complaint and prosecution was received for the Project in the reporting month.

5.18 There were no environmental complaint and prosecution received since the commencement of the Project. The Complaint Log is presented in Appendix N.

6. FUTURE KEY ISSUES

Key Issues for the Coming Month

6.1 Key environmental issues in the coming month include:

- Water sampling test of DN 150 D.I. pipe laying work at Northern bank;
- Irrigation pipe installation and water point construction;
- Backfilling and forming of slopes;
- Road paving work- wearing course, road marking;
- Arrange UU to carry out U/G ducting and cable work at footpath area and access road;
- Installation of street furniture such as traffic post, water meter box etc.;
- Planting work;
- Modification of existing footpath for construction of access road at Deep Bay Road
- Construction of additional cat ladder and concrete apron; and
- Re surfacing at Deep Bay Road.

Monitoring Schedule for the Next Month

6.2 The tentative environmental monitoring schedules for the next month are shown in Appendix D.

Construction Program for the Next Month

6.3 The tentative construction program is provided in Appendix O.

7. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

7.1 Environmental monitoring and audit works were performed in the reporting month and all monitoring results were checked and reviewed.

1-hour TSP Monitoring

7.2 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

24-hour TSP Monitoring

7.3 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

7.4 All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Water Quality Monitoring

7.5 All water quality monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Audit

7.6 Environmental site audits were conducted as weekly basis in the reporting month. No non-compliance was recorded.

Complaint and Prosecution

7.7 No environmental complaint and prosecution was received in the reporting month.

Recommendations

7.8 According to the environmental audit performed in the reporting month, the following recommendations were made:

Dust Impact

- To prohibit any open burning on site;
- To regularly maintain the machinery and vehicles on site;
- To follow up any exceedance caused by the construction works;
- To implement dust suppression measures on all haul roads, stockpiles, dried/unpaved surfaces and excavation/road breaking works; and
- To provide adequate wheel washing facilities at each exit.

Noise Impact

- To inspect the noise sources inside the site;
- To follow up any exceedance caused by the construction works;
- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers; and
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers in an appropriate location.
- To provide adequate lubricant on mechanical equipments to reduce frictional noise; and
- To well maintain the mechanical equipments / machineries to avoid abnormal noise nuisance

Water Impact

- To identify any discharge of wastewater from the construction site;
- To avoid any discharge of wastewater by-pass/ without the desilting facilities from the construction site;
- To regularly clear up and maintain the condition of u-channel, catch pits and wheel washing facilities on site;
- To regularly maintain the sediment control measures after rainstorms;
- To avoid water from accumulation on site and carry out larviciding against mosquito breeding for stagnant water when mosquito larvae are observed; and
- Containment structure shall be installed around the excavation area to facilitate a dry or confined excavation within the stream.

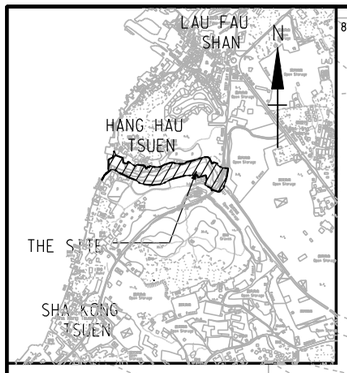
Waste/Chemical Management

- To provide proper rubbish bins / skips for waste collection;
- To check for any accumulation of wasted materials or rubbish on site;
- To provide proper storage area or drip trays for oil containers/ equipments on site;
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment;
- To well maintain the equipments and drip trays to avoid oil leakage; and
- To avoid improper handling or storage of oil drum on site.

Air Quality

- Temporary stockpiles of excavated material shall be covered by tarpaulin or packed in plastic bags/enclosed skips and shall be removed off-site within 2 days; and
- Tightly sealed closed grab excavators shall be employed for conducting excavation works within the stream.

FIGURES



LOCATION PLAN

836 200 N A3 1 : 20000

836 300 N

816 100 E

816 200 E

816 300 E

816 400 E

836 100 N

836 000 N

835 900 N

坑口村
HANG HAU TSUEN

DEEP BAY ROAD

FUNG KONG TSUEN CHANNEL

露天貨倉
Open Storage

泥路
Track

Ramp 斜路

Sewer 渲渠

Stream Course 溪流

Graves 墳墓

骨灰龕

PO

FP

RCP

ESS

LEGEND

- SITE BOUNDARY
- PORTION A
- PORTION B
- PORTION D (A)

NOTES:

1. GRID LINES ARE HONG KONG METRIC GRID 1980.
2. THE EXACT BOUNDARY OF THE WORKS SITE AND THE WORKS AREA AND THE EXACT ALIGNMENT OF HOARDING AND SAFETY FENCE SHALL BE CONFIRMED BY THE ENGINEER ON SITE.
3. POSSESSION OF PORTION A AND B WOULD BE GIVEN TO CONTRACTORS ON 31 DEC. 2009 AND 1 FEB. 2010 RESPECTIVELY.

Revision	Date	Description			Initial
A	09/09	ADDENDUM NO.1			EY
	Designed	Checked	Drawn	Checked	
Initial	ZC	EY	SZ	SHT	
Date	06/09	06/09	06/09	06/09	

Approved

CONTRACT NO. YL/2009/01

AGREEMENT NO. CE 3/74

Contract Title

HANG HAU TSUEN CHANNEL
AT LAU FAU SHAN

Drawing Title

PORTION OF SITE
(SHEET 1 OF 2)

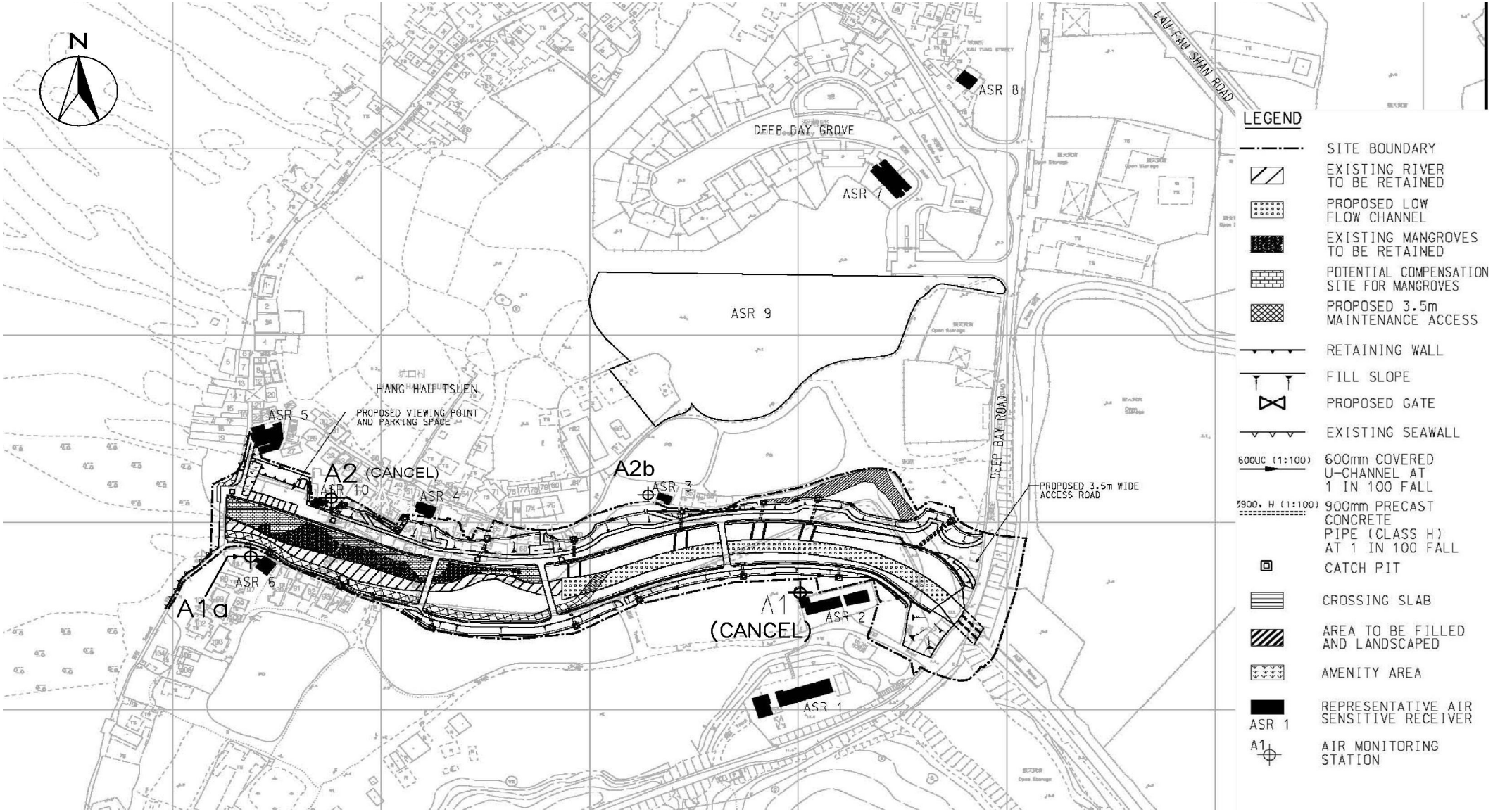
Plan Register No.	Revision
0095/LFS/003	A
Scale: A3 1:1500	Drawing No. 3

土木工程拓展署
CEDD Civil Engineering and Development Department

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

Plot Date • 9/10/2009

CAD Filename • P:\infrastr\yl\0095-0201\Tender Drawing\Addendum No.1\0095-LFS-003A.dgn

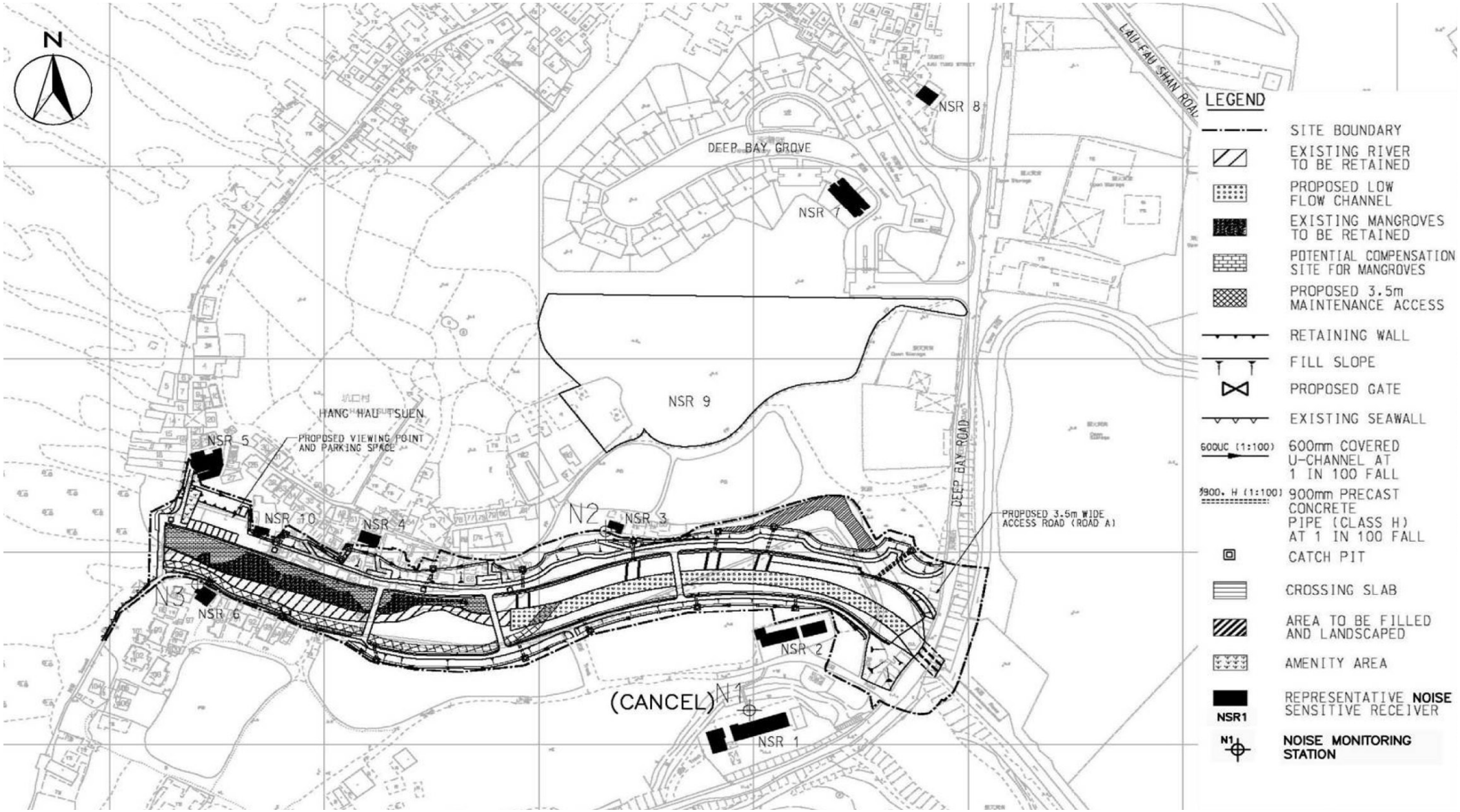


CINOTECH
Cinotech Consultants Limited

YL/2009/01
HANG HAU TSUEN CHANNEL AT LAU FAU SHAN

Locations of Air Quality Monitoring Stations

SCALE	N.T.S.	DATE	Apr-10
CHECK	CH	DRAWN	SL
JOB NO.		DRAWING No.	Rev
	MA0002	Fig. 2	-

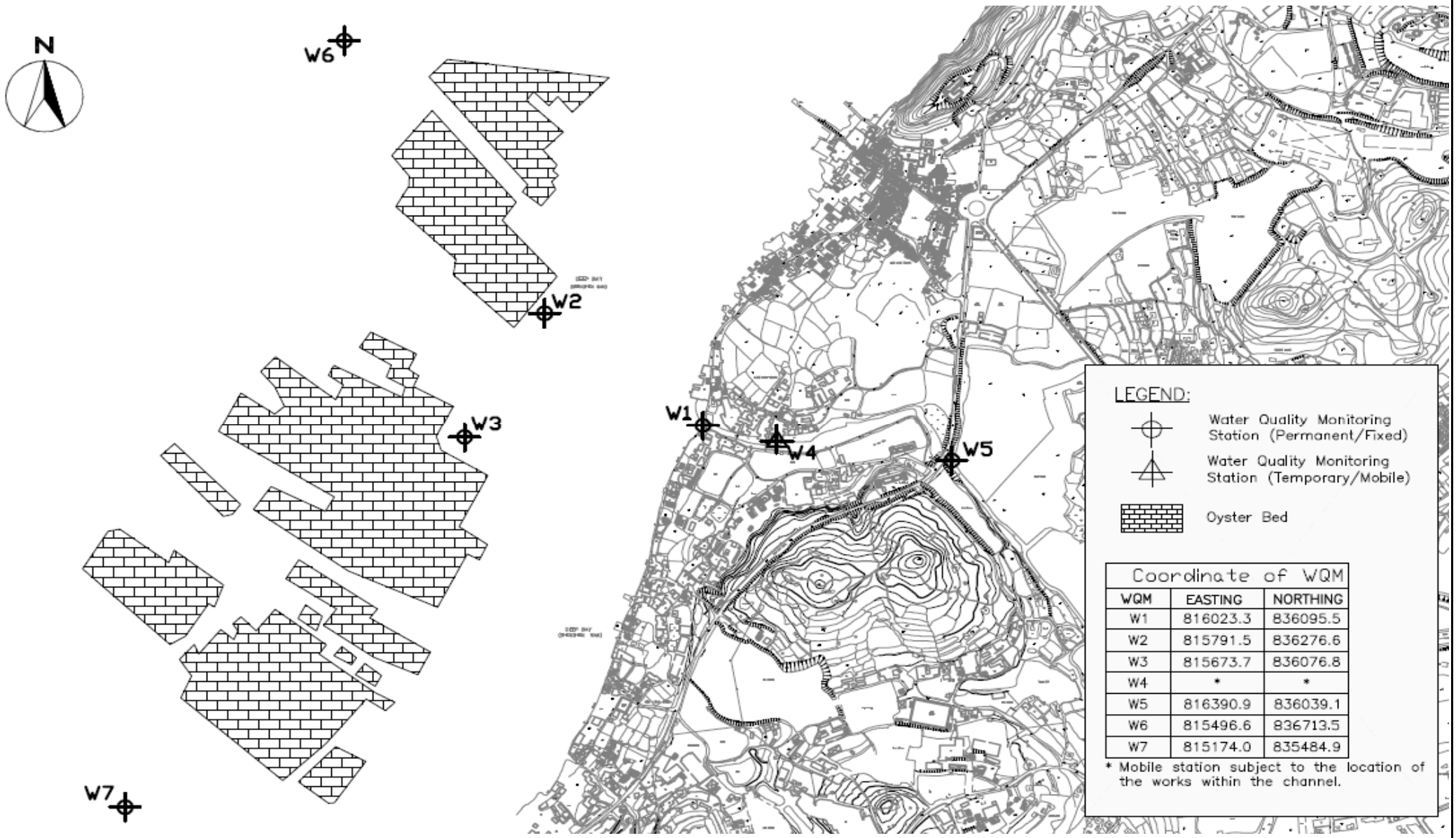


CINOTECH
Cinotech Consultants Limited

YL/2009/01
HANG HAU TSUEN CHANNEL AT LAU FAU SHAN

Locations of Noise Monitoring Stations

SCALE	N.T.S.	DATE	Jan-10
CHECK	CH	DRAWN	SL
JOB NO.	MA0002	DRAWING No. Fig. 3	Rev -



Coordinate of WQM

WQM	EASTING	NORTHING
W1	816023.3	836095.5
W2	815791.5	836276.6
W3	815673.7	836076.8
W4	*	*
W5	816390.9	836039.1
W6	815496.6	836713.5
W7	815174.0	835484.9

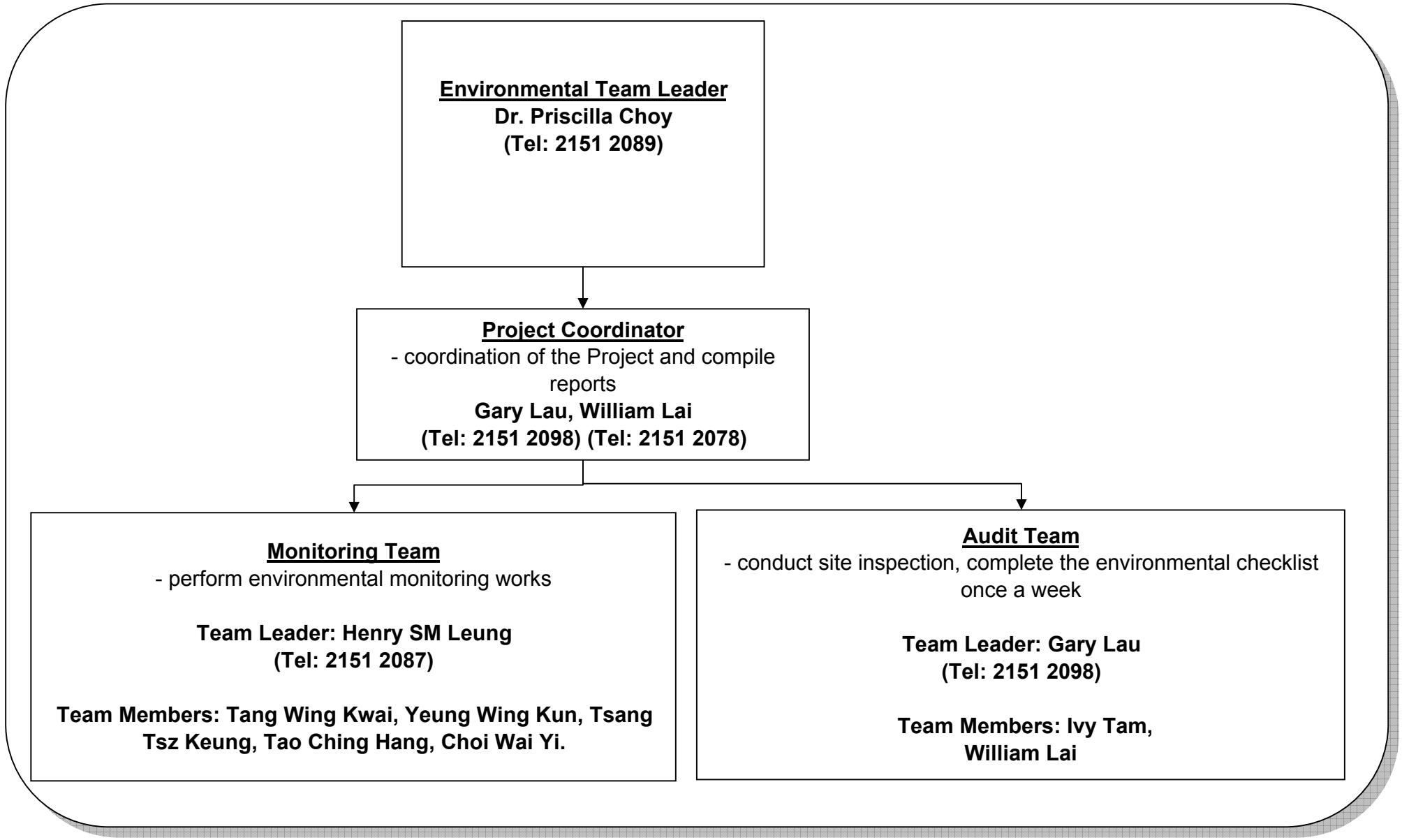
* Mobile station subject to the location of the works within the channel.

CINOTECH
Cinotech Consultants Limited

YL/2009/01
HANG HAU TSUEN CHANNEL AT LAU FAU SHAN

Locations of Water Quality Monitoring Stations

SCALE	N.T.S.	DATE	Jan-10
CHECK	CH	DRAWN	SL
JOB NO.	MA0002	DRAWING No. Fig. 4	Rev -



Title		Scale	Project No.	
Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan		N.T.S	MA0002	CINOTECH
Organization Chart		Date: Aug-10	Figure: 5	

APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR QUALITY, NOISE AND WATER QUALITY

Appendix A Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
A1a	320	500
A2b	324	500

Table A-2 Action and Limit Levels for 24-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
A1a	159	260
A2b	156	260

Table A-3 Action and Limit Level for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75* dB(A)

* reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

Table A-4 Action and Limit Level for Water Quality

<table>
<tr><th colspan="2">Parameter</th><th colspan="2">Action</th><th colspan="2">Limit</th></tr>
<tr><td rowspan="2">DO, mg/L</td><td>Surface and Middle</td><td>W2, W3: 4.5</td><td>W1, W4: 5.1</td><td>W2, W3: 4.4</td><td>W1, W4: 5.0</td></tr>
<tr><td>Bottom</td><td colspan="2">N/A *</td><td colspan="2">N/A *</td></tr>
<tr><td rowspan="2" colspan="2">SS, mg/L</td><td colspan="2">97.8</td><td colspan="2">162.8</td></tr>
<tr><td colspan="2">or 120% of upstream control station's SS at the same tide of the same day</td><td colspan="2">or 130% of SS readings at the upstream control station at the same tide of same day and specific sensitive receiver water quality requirements</td></tr>
<tr><td rowspan="2" colspan="2">Turbidity, NTU</td><td>W2, W3: 135.0</td><td>W1, W4: 49.1</td><td>W2, W3: 142.6</td><td>W1, W4: 177.7</td></tr>
<tr><td colspan="2">or 120% of upstream control station's turbidity at the same tide of the same day</td><td colspan="2">or 130% of turbidity at the upstream control station at the same tide of same day</td></tr>
</table>

* Since the water depths were less than 3 meters at all monitoring stations, only middle depth samples were taken.

APPENDIX B
COPIES OF CALIBRATION CERTIFICATES

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0002/A52/0017

Station: A1a - Village House at no.88 Hang Hau Tsuen Operator: WK

Date: 16-Jul-12 Next Due Date: 15-Sep-12

Equipment No.: A-01-52 Serial No. 1955

Ambient Condition			
Temperature, Ta (K)	303.2	Pressure, Pa (mmHg)	757.2

Orifice Transfer Standard Information					
Equipment No.:	A-04-01	Slope, mc	0.0568	Intercept, bc	-0.0432
Last Calibration Date:	9-Oct-11	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	8-Oct-12	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.7	3.38	60.35	7.9	2.78
2	9.8	3.10	55.30	6.4	2.50
3	7.5	2.71	48.47	5.0	2.21
4	5.3	2.28	40.87	3.3	1.80
5	3.3	1.80	32.41	1.9	1.36

By Linear Regression of Y on X

Slope , mw = 0.0504 **Intercept, bw =** -0.2607

Correlation coefficient* = 0.9994

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.71

Remarks:

Conducted by: WK Tang Signature: Kwan Date: 16/7/12

Checked by: [illegible] Signature: [illegible] Date: 16 July 2012

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0002/A52/0018

Station: A1a - Village House at no.88 Hang Hau Tsuen Operator: WK

Date: 17-Sep-12 Next Due Date: 16-Nov-12

Equipment No.: A-01-52 Serial No. 1955

Ambient Condition			
Temperature, Ta (K)	300.2	Pressure, Pa (mmHg)	762.4

Orifice Transfer Standard Information					
Equipment No.:	A-04-01	Slope, mc	0.0568	Intercept, bc	-0.0432
Last Calibration Date:	9-Oct-11	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	8-Oct-12	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.9	3.44	61.37	7.9	2.80
2	9.7	3.11	55.48	6.5	2.54
3	7.7	2.77	49.51	5.0	2.23
4	5.4	2.32	41.59	3.3	1.81
5	3.2	1.79	32.19	2.0	1.41

By Linear Regression of Y on X

Slope , mw = 0.0486 **Intercept, bw :** -0.1736

Correlation coefficient* = 0.9992

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.69

Remarks:

Conducted by: Wk. Tang Signature: Date: 17/9/12

Checked by: [illegible] Signature: Date: 17 September 2012

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0002/A54/0016

Station: A2b - Village House at no.84 Hang Hau Tsuen Operator: WK

Date: 16-Jul-12 Next Due Date: 15-Sep-12

Equipment No.: A-01-54 Serial No. 1536

Ambient Condition			
Temperature, Ta (K)	303.2	Pressure, Pa (mmHg)	757.2

Orifice Transfer Standard Information					
Equipment No.:	A-04-01	Slope, mc	0.0568	Intercept, bc	-0.0432
Last Calibration Date:	9-Oct-11	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	8-Oct-12	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.8	3.40	60.61	7.9	2.78
2	9.8	3.10	55.30	6.5	2.52
3	7.5	2.71	48.47	4.8	2.17
4	5.3	2.28	40.87	3.2	1.77
5	3.2	1.77	31.93	2.0	1.40

By Linear Regression of Y on X

Slope , mw = 0.0488 **Intercept, bw =** -0.1885

Correlation coefficient* = 0.9990

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.73**

Remarks:

Conducted by: WK. Tang Signature: Kwan Date: 16/7/12

Checked by: [illegible] Signature: Date: 16 July 2012

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA0002/A54/0017

Station: A2b - Village House at no.84 Hang Hau Tsuen Operator: WK

Date: 17-Sep-12 Next Due Date: 16-Nov-12

Equipment No.: A-01-54 Serial No. 1536

Ambient Condition			
Temperature, Ta (K)	300.2	Pressure, Pa (mmHg)	762.4

Orifice Transfer Standard Information					
Equipment No.:	A-04-01	Slope, mc	0.0568	Intercept, bc	-0.0432
Last Calibration Date:	9-Oct-11	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	8-Oct-12	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.9	3.44	61.37	7.9	2.80
2	9.7	3.11	55.48	6.8	2.60
3	7.6	2.75	49.19	5.0	2.23
4	5.2	2.28	40.82	3.3	1.81
5	3.2	1.79	32.19	1.9	1.38

By Linear Regression of Y on X

Slope , mw = 0.0501 **Intercept, bw =** -0.2292

Correlation coefficient* = 0.9984

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.72

Remarks:

Conducted by: Wk Tang Signature: Kwan Date: 17/9/12

Checked by: [illegible] Signature: Date: 17 September 2012

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

Description	Calibration Orifice	**Manufacturer**	Thermo Andersen
Serial No.	1536	**Temperature,Ta (K)**	298
Model No.	G25A	**Pressure, Pa (mmHg)**	762.3
Date	9 October 2011		

Plate	Diff.Vol (m^3)	Diff.Time (min)	Diff.Hg (mm)	Diff.H_2O (in.)
1	1.00	1.3760	3.4	2.00
2	1.00	0.9740	6.4	4.00
3	1.00	0.8730	7.9	5.00
4	1.00	0.8320	8.6	5.50
5	1.00	0.6890	12.8	8.00

DATA TABULATION

Vstd	(X axis) Qstd	(Y axis)
0.9985	0.7257	1.4163
0.9946	1.0211	2.0030
0.9926	1.1370	2.2394
0.9917	1.1919	2.3487
0.9861	1.4313	2.8326

Y axis= SQRT[H_2O(Pa/760)(298/Ta)]

Qstd Slope (m) = 2.00766
Intercept (b) = -0.04318
Coefficient (r) = 0.99999

Va	(X axis) Qa	(Y axis)
0.9955	0.7235	0.8842
0.9916	1.0181	1.2505
0.9896	1.1336	1.3981
0.9887	1.1884	1.4664
0.9832	1.4270	1.7685

Y axis= SQRT[H_2O(Ta/Pa)]

Qa Slope (m) = 1.25716
Intercept (b) = -0.02696
Coefficient (r) = 0.99999

CALCULATIONS

Vstd=Diff. Vol[(Pa-Diff.Hg)/760](298/Ta)
Qstd=Vstd/Time
Va=Diff.Vol[(Pa-Diff.Hg)/Pa]
Qa=Va/Time

For subsequent flow rate calculations:
Qstd=I/m{[SQRT(H_2O(Pa/760)(298/Ta))]-b}
Qa=I/m{[SQRT H_2O(Ta/Pa)]-b}

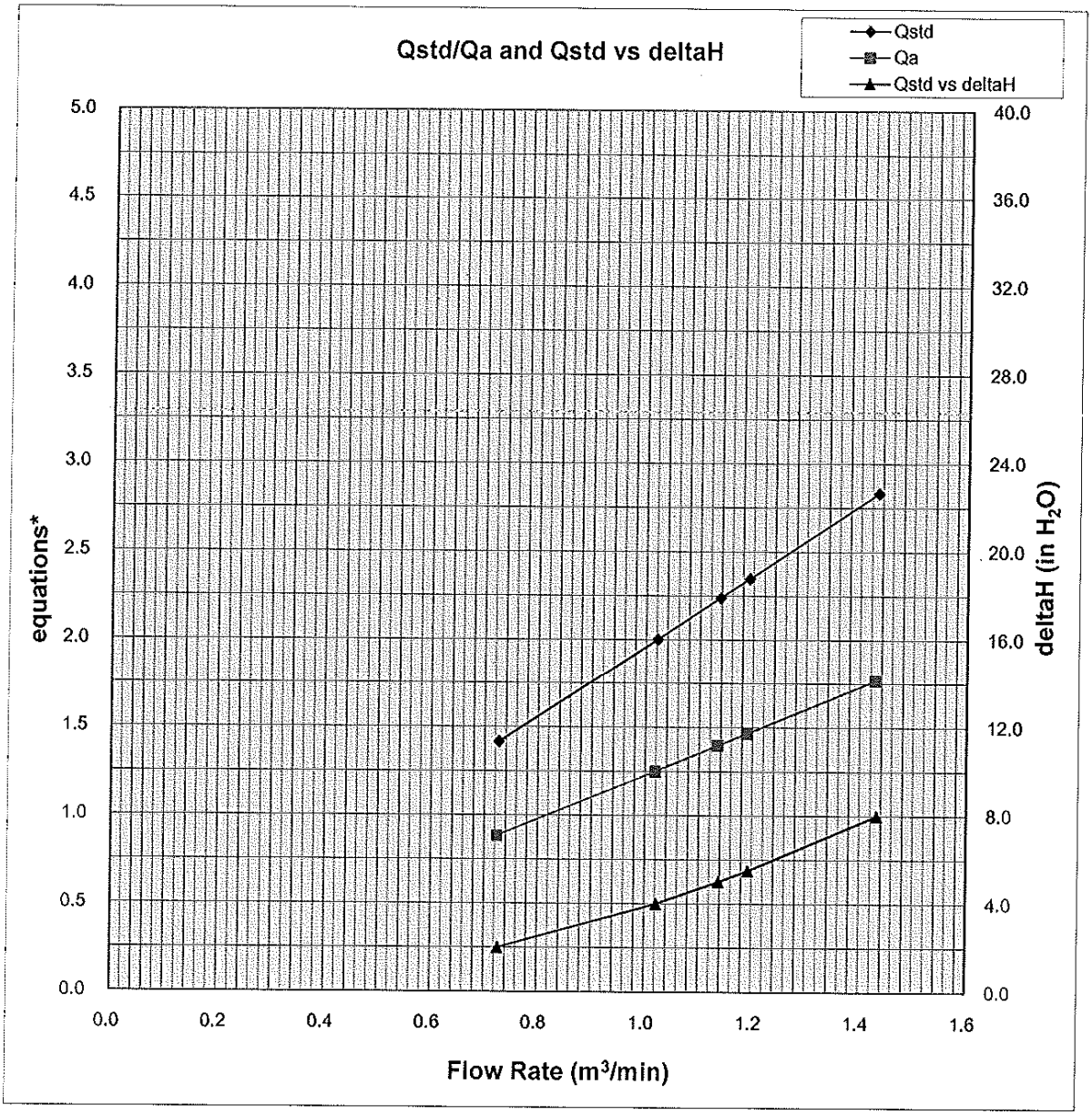
PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT



Y-axis equations:

Qstd series: SQRT[ΔH(Pa/Pstd)(Tstd/Ta)]

Qa series: SQRT[ΔH(Ta/Pa)]

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WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT:	**Cinotech Consultants Limited** **Room 1710, Technology Park,** **18 On Lai Street,** **Shatin, NT, Hong Kong**	Test Report No.: Date of Issue: Date Received: Date Tested: Date Completed: Next Due Date:	C/12/120501 2012-05-02 2012-05-01 2012-05-01 2012-05-02 2013-05-01
ATTN:	**Mr. W.K Tang**	Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: RS232 Integral Vane Digital Anemometer
Manufacturer	: AZ Instrument
Model No.	: AZ8904
Serial No.	: 974835
Equipment No.	: A-03-03

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 67%
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

WELLAB 匯力 Testing & Research

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18 On Lai Street, Shatin, N.T, Hong Kong.
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TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/120831/1
Date of Issue:	2012-09-03
Date Received:	2012-08-31
Date Tested:	2012-08-31
Date Completed:	2012-09-03
Next Due Date:	2012-11-02
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 853944
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 685 CPM
Equipment No.	: A-02-04

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 66%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0031

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
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TEST REPORT

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

ATTN: **Mr. WK Tang**

Test Report No.:	C/120611/1
Date of Issue:	2012-06-11
Date Received:	2012-06-08
Date Tested:	2012-06-08
Date Completed:	2012-06-11
Next Due Date:	2012-08-10
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 954253
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 685 CPM
Equipment No.	: A-02-05

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 63%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0030

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
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TEST REPORT

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

ATTN: **Mr. WK Tang**

Test Report No.:	C/120813/1
Date of Issue:	2012-08-13
Date Received:	2012-08-10
Date Tested:	2012-08-10
Date Completed:	2012-08-13
Next Due Date:	2012-10-12
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 954253
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 685 CPM
Equipment No.	: A-02-05

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 66%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0032

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
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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/120831/2
Date of Issue:	2012-09-03
Date Received:	2012-08-31
Date Tested:	2012-08-31
Date Completed:	2012-09-03
Next Due Date:	2012-11-02

ATTN: **Mr. W. K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 014750
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 790 CPM
Equipment No.	: A-02-06

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 66%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0030

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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18 On Lai Street, Shatin, N.T, Hong Kong.
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TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/120709/1
Date of Issue:	2012-07-09
Date Received:	2012-07-06
Date Tested:	2012-07-06
Date Completed:	2012-07-09
Next Due Date:	2012-09-08
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 541146
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 625 CPM
Equipment No.	: A-02-07

Test Conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 68%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0031

****

PREPARED AND CHECKED BY:

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

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/120907/5
Date of Issue:	2012-09-10
Date Received:	2012-09-07
Date Tested:	2012-09-07
Date Completed:	2012-09-10
Next Due Date:	2012-11-09
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 541146
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 625 CPM
Equipment No.	: A-02-07

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 65%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0031

****

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

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/120827/2
Date of Issue:	2012-08-27
Date Received:	2012-08-24
Date Tested:	2012-08-24
Date Completed:	2012-08-27
Next Due Date:	2012-10-26
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095039
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 764 CPM
Equipment No.	: A-02-08

Test Conditions:

Room Temperature	: 24 degree Celsius
Relative Humidity	: 68%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0032

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/120831/3
Date of Issue:	2012-09-03
Date Received:	2012-08-31
Date Tested:	2012-08-31
Date Completed:	2012-09-03
Next Due Date:	2012-11-02
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibata
Model No.	: LD-3B
Serial No.	: 095050
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 577 CPM
Equipment No.	: A-02-09

Test Conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 66%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Laser Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Laser Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0031

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W. K. Tang**

Test Report No.:	C/N/120120/v1
Date of Issue:	2012-05-21
Date Received:	2012-01-20
Date Tested:	2012-01-20
Date Completed:	2012-01-21
Next Due Date:	2013-01-20
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 14303
Microphone No.	: 35222
Equipment No.	: N-08-05

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 52%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

Remark: 1)This report supersedes the one dated 2012/01/21 with certificate number C/N/120120/1.

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力
Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/120901/2
Date of Issue:	2012-09-02
Date Received:	2012-09-01
Date Tested:	2012-09-01
Date Completed:	2012-09-02
Next Due Date:	2013-09-01
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21459
Microphone No.	: 43676
Equipment No.	: N-08-08

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 67%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/N/120901/3
Date of Issue:	2012-09-02
Date Received:	2012-09-01
Date Tested:	2012-09-01
Date Completed:	2012-09-02
Next Due Date:	2013-09-01
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21460
Microphone No.	: 43679
Equipment No.	: N-08-09

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 67%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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18 On Lai Street, Shatin, N.T, Hong Kong.
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Website: www.wellab.com.hk

TEST REPORT

APPLICANT:	**Cinotech Consultants Limited** **Room 1710, Technology Park,** **18 On Lai Street,** **Shatin, NT, Hong Kong**	Test Report No.:	C/N/111104/1
		Date of Issue:	2011-11-05
		Date Received:	2011-11-04
		Date Tested:	2011-11-04
		Date Completed:	2011-11-05
		Next Due Date:	2012-11-04
ATTN:	**Mr. Henry Leung**	Page:	1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 10965
Equipment No.	: N-09-02

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 60%

Methodology:

The Sound Level Calibrator 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:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

Test Report No.:	C/N/111008/1
Date of Issue:	2011-10-10
Date Received:	2011-10-08
Date Tested:	2011-10-08
Date Completed:	2011-10-10
Next Due Date:	2012-10-09

ATTN: **Mr. Henry Leung** Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 62%

Methodology:

The Sound Level Calibrator 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:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/W/120615-1
Date of Issue:	2012-06-15
Date Received:	2012-06-15
Date Tested:	2012-06-15
Date Completed:	2012-06-15
Next Due Date:	2012-09-14
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

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 65%

Test Specifications:

Conductivity & Salinity Sensor, Model: 6560, L/N: 11J100025
1. Conductivity performance check with Potassium Chloride standard solution
2. Salinity performance check with Sodium Chloride standard solution
Dissolved Oxygen Sensor, Model: 6562, L/N: 07E100029
1. Performance check against Winkler titration
Turbidity Sensor, Model: 6136, S/N: 11J1000475
1. Calibration check with Formazin standard solution
pH Meter, Model: 6561, L/N: 11H
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

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Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

Test Report No.:	C/W/120615-1
Date of Issue:	2012-06-15
Date Received:	2012-06-15
Date Tested:	2012-06-15
Date Completed:	2012-06-15
Next Due Date:	2012-09-14

Results:

1. Conductivity performance check

Specific Conductivity, µS/cm		Correction, µS/cm	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	D = C1 - C2	
1420	1420	0	1420 ± 20

2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.0	30.0	0.0	30.0 ± 3

3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O_2/L		Correction, mg O_2/L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.1	9.1	0.0	± 0.2
Half-saturated	5.6	5.6	0.0	± 0.2
Zero	0.0	0.0	0.0	± 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 ± 0.05
100	100	0	100 ± 5
1000	1000	0	1000 ± 100

5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error ΔpH_j , pH unit	0.01	Less than 0.05
Shift on stirring ΔpH_s , pH unit	0.01	Less than 0.02
Noise ΔpH_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 ± 0.05

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

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WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/W/120915-1
Date of Issue:	2012-09-15
Date Received:	2012-09-15
Date Tested:	2012-09-15
Date Completed:	2012-09-15
Next Due Date:	2012-12-14
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

Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 65%

Test Specifications:

Conductivity & Salinity Sensor, Model: 6560, L/N: 11J100025
1. Conductivity performance check with Potassium Chloride standard solution
2. Salinity performance check with Sodium Chloride standard solution
Dissolved Oxygen Sensor, Model: 6562, L/N: 07E100029
1. Performance check against Winkler titration
Turbidity Sensor, Model: 6136, S/N: 11J1000475
1. Calibration check with Formazin standard solution
pH Meter, Model: 6561, L/N: 11H
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

WELLAB 匯力
Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

Test Report No.:	C/W/120915-1
Date of Issue:	2012-09-15
Date Received:	2012-09-15
Date Tested:	2012-09-15
Date Completed:	2012-09-15
Next Due Date:	2012-12-14
Page:	2 of 2

Results:

1. Conductivity performance check

Specific Conductivity, µS/cm		Correction, µS/cm	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	D = C1 - C2	
1420	1420	0	1420 ± 20

2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.0	30.0	0.0	30.0 ± 3

3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O_2/L		Correction, mg O_2/L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.1	9.1	0.0	± 0.2
Half-saturated	5.6	5.6	0.0	± 0.2
Zero	0.0	0.0	0.0	± 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 ± 0.05
100	100	0	100 ± 5
1000	1000	0	1000 ± 100

5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error ΔpH_j , pH unit	0.01	Less than 0.05
Shift on stirring ΔpH_s , pH unit	0.01	Less than 0.02
Noise ΔpH_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 ± 0.05

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

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Website: www.wellab.com.hk

TEST REPORT

APPLICANT:	**Cinotech Consultants Limited** **Room 1710, Technology Park,** **18 On Lai Street,** **Shatin, NT, Hong Kong**	Test Report No.:	C/W/120615-3
		Date of Issue:	2012-06-15
		Date Received:	2012-06-15
		Date Tested:	2012-06-15
		Date Completed:	2012-06-15
		Next Due Date:	2012-09-14
ATTN:	**Mr. W.K. Tang**	Page:	1 of 2

Certificate of Calibration

Item for calibration:

Description	: Sonde Environmental Monitoring System
Manufacturer	: YSI
Model No.	: 6920-M
Serial No.	: 03H1764AA
Equipment No.	: W.03.03

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 65%

Test Specifications:

Conductivity & Salinity Sensor, Model: 6560, L/N: 03H1461
1. Conductivity performance check with Potassium Chloride standard solution
2. Salinity performance check with Sodium Chloride standard solution

Dissolved Oxygen Sensor, Model: 6562, L/N: 08C100610
1. Performance check against Winkler titration

Turbidity Sensor, Model: 6136, S/N: 09M100672
1. Calibration check with Formazin standard solution

pH Meter, Model: 6561, L/N: 07E
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

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Testing & Research

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18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

Test Report No.:	C/W/120615-3
Date of Issue:	2012-06-15
Date Received:	2012-06-15
Date Tested:	2012-06-15
Date Completed:	2012-06-15
Next Due Date:	2012-09-14
Page:	2 of 2

Results:

1. Conductivity performance check

Specific Conductivity, µS/cm		Correction, µS/cm	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	D = C1 - C2	
1420	1420	0	1420 ± 20

2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.0	30.0	0.0	30.0 ± 3

3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O_2/L		Correction, mg O_2/L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.1	9.1	0.0	± 0.2
Half-saturated	5.6	5.6	0.0	± 0.2
Zero	0.0	0.0	0.0	± 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 ± 0.05
100	100	0	100 ± 5
1000	1000	0	1000 ± 100

5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error ΔpH_j , pH unit	0.01	Less than 0.05
Shift on stirring ΔpH_s , pH unit	0.01	Less than 0.02
Noise ΔpH_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 ± 0.05

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

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Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Mr. W.K. Tang**

Test Report No.:	C/W/120915-3
Date of Issue:	2012-09-15
Date Received:	2012-09-15
Date Tested:	2012-09-15
Date Completed:	2012-09-15
Next Due Date:	2012-12-14
Page:	1 of 2

Certificate of Calibration

Item for calibration:

Description	: Sonde Environmental Monitoring System
Manufacturer	: YSI
Model No.	: 6920-M
Serial No.	: 03H1764AA
Equipment No.	: W.03.03

Test conditions:

Room Temperature	: 25 degree Celsius
Relative Humidity	: 65%

Test Specifications:

Conductivity & Salinity Sensor, Model: 6560, L/N: 03H1461
1. Conductivity performance check with Potassium Chloride standard solution
2. Salinity performance check with Sodium Chloride standard solution

Dissolved Oxygen Sensor, Model: 6562, L/N: 08C100610
1. Performance check against Winkler titration

Turbidity Sensor, Model: 6136, S/N: 09M100672
1. Calibration check with Formazin standard solution

pH Meter, Model: 6561, L/N: 07E
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

WELLAB 匯力
Testing & Research

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TEST REPORT

Test Report No.:	C/W/120915-3
Date of Issue:	2012-09-15
Date Received:	2012-09-15
Date Tested:	2012-09-15
Date Completed:	2012-09-15
Next Due Date:	2012-12-14
Page:	2 of 2

Results:

1. Conductivity performance check

Specific Conductivity, µS/cm		Correction, µS/cm	Acceptable range
Salinity Meter (C1)	Theoretical Value (C2)	D = C1 - C2	
1420	1420	0	1420 ± 20

2. Salinity Performance check

Salinity, ppt		Correction, ppt	Acceptable range
Instrument Reading	Theoretical Value		
30.0	30.0	0.0	30.0 ± 3

3. Dissolved Oxygen check

Oxygen level in water at 20°C	Dissolved Oxygen, mg O_2/L		Correction, mg O_2/L	Acceptable range
	D.O. Meter	Winkler Titration		
Saturated	9.1	9.1	0.0	± 0.2
Half-saturated	5.6	5.6	0.0	± 0.2
Zero	0.0	0.0	0.0	± 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 ± 0.05
100	100	0	100 ± 5
1000	1000	0	1000 ± 100

5. pH Meter check

Test Parameters	Performance characteristic	Acceptable range
Liquid junction error ΔpH_j , pH unit	0.01	Less than 0.05
Shift on stirring ΔpH_s , pH unit	0.01	Less than 0.02
Noise ΔpH_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 ± 0.05

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

APPENDIX C
QUALITY CONTROL REPORTS FOR SS LABORATORY ANALYSIS

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TEST REPORT

QC REPORT

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

Laboratory No.:	16709
Date of Issue:	2012/09/04
Date Received:	2012/09/03
Date Tested:	2012/09/03
Date Completed:	2012/09/04
Page:	1 of 1

ATTN: Ms. MeiLing Tang

Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/03
Number of Sample: 28
Custody No.: MA0002/120903

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W3mf	48	51	5	101

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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Laboratory No.:	16728
Date of Issue:	2012/09/06
Date Received:	2012/09/05
Date Tested:	2012/09/05
Date Completed:	2012/09/06
Page:	1 of 1

ATTN: Ms. MeiLing Tang

Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/05
Number of Sample: 28
Custody No.: MA0002/120905

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W3mf	51	46	10	101

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

PREPARED AND CHECKED BY:
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PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Laboratory No.:	16748
Date of Issue:	2012/09/10
Date Received:	2012/09/07
Date Tested:	2012/09/07
Date Completed:	2012/09/10
Page:	1 of 1

ATTN: Ms. MeiLing Tang

Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/07
Number of Sample: 28
Custody No.: MA0002/120907

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W3mf	60	60	0	96

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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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TEST REPORT

QC REPORT

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

Laboratory No.:	16760
Date of Issue:	2012/09/11
Date Received:	2012/09/10
Date Tested:	2012/09/10
Date Completed:	2012/09/11
Page:	1 of 1

ATTN: Ms. MeiLing Tang

Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/10
Number of Sample: 28
Custody No.: MA0002/120910

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W3mf	61	63	3	101

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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Laboratory No.:	16773
Date of Issue:	2012/09/13
Date Received:	2012/09/12
Date Tested:	2012/09/12
Date Completed:	2012/09/13
Page:	1 of 1

ATTN: Ms. MeiLing Tang
Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/12
Number of Sample: 28
Custody No.: MA0002/120912

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W3mf	53	52	2	100

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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Testing & Research

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Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Laboratory No.:	16792
Date of Issue:	2012/09/17
Date Received:	2012/09/14
Date Tested:	2012/09/14
Date Completed:	2012/09/17
Page:	1 of 1

ATTN: Ms. MeiLing Tang

Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/14
Number of Sample: 14
Custody No.: MA0002/120914

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W7me	60	61	2	99

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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

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Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Laboratory No.:	16799
Date of Issue:	2012/09/18
Date Received:	2012/09/17
Date Tested:	2012/09/17
Date Completed:	2012/09/18
Page:	1 of 1

ATTN: Ms. MeiLing Tang

Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/17
Number of Sample: 28
Custody No.: MA0002/120917

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W3mf	38	44	13	99

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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Laboratory No.:	16812
Date of Issue:	2012/09/20
Date Received:	2012/09/19
Date Tested:	2012/09/19
Date Completed:	2012/09/20
Page:	1 of 1

ATTN: Ms. MeiLing Tang

Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/19
Number of Sample: 28
Custody No.: MA0002/120919

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W3mf	36	33	8	101

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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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WELLAB LIMITED
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18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Laboratory No.:	16838
Date of Issue:	2012/09/24
Date Received:	2012/09/21
Date Tested:	2012/09/21
Date Completed:	2012/09/24
Page:	1 of 1

ATTN: Ms. MeiLing Tang

Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/21
Number of Sample: 28
Custody No.: MA0002/120921

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W4me	64	65	1	101

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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Laboratory No.:	16846
Date of Issue:	2012/09/25
Date Received:	2012/09/24
Date Tested:	2012/09/24
Date Completed:	2012/09/25
Page:	1 of 1

ATTN: Ms. MeiLing Tang

Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/24
Number of Sample: 28
Custody No.: MA0002/120924

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W5me	66	67	2	99

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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 816, 1516 & 1701, Technology Park,
18 On Lai Street, Shatin, N.T, Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Laboratory No.:	16861
Date of Issue:	2012/09/27
Date Received:	2012/09/26
Date Tested:	2012/09/26
Date Completed:	2012/09/27
Page:	1 of 1

ATTN: Ms. MeiLing Tang

Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/26
Number of Sample: 28
Custody No.: MA0002/120926

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W3mf	79	79	0	103

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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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TEST REPORT

QC REPORT

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

Laboratory No.:	16895
Date of Issue:	2012/10/03
Date Received:	2012/09/28
Date Tested:	2012/09/28
Date Completed:	2012/10/03
Page:	1 of 1

ATTN: Ms. MeiLing Tang

Sampling Site: Lau Fau Shan
Project No.: MA0002
Sampling Date: 2012/09/28
Number of Sample: 14
Custody No.: MA0002/120928

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
W7me	55	52	5	102

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

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan
Impact Air Quality and Noise Monitoring Schedule for September 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2-Sep	3-Sep	4-Sep	5-Sep	6-Sep	7-Sep	8-Sep
	1hr TSP Noise 24hrs TSP		1hr TSP		1hr TSP	24hrs TSP
9-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep	15-Sep
	1hr TSP Noise		1hr TSP		1hr TSP 24hrs TSP	
16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep
	1hr TSP Noise		1hr TSP	24hrs TSP	1hr TSP	
23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	29-Sep
	1hr TSP Noise		1hr TSP 24hrs TSP		1hr TSP	
30-Sep						

Air Quality Monitoring Station

A1a - Village house at No.88 Hang Hau Tsuen
A2b - Village house at No.84 Hang Hau Tsuen

Noise Monitoring Station

N2 - Village house at No.84 Hang Hau Tsuen
N3 - Village house at No.88 Hang Hau Tsuen

Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan
Impact Water Quality Monitoring Schedule for September 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2-Sep	3-Sep	4-Sep	5-Sep	6-Sep	7-Sep	8-Sep
	Mid-Flood 8:58 Mid-Ebb 15:09		Mid-Flood 10:17 Mid-Ebb 16:04		Mid-Flood 11:56 Mid-Ebb 17:15	
9-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep	15-Sep
	Mid-Ebb 8:18 Mid-Flood 16:33		Mid-Ebb 10:54 Mid-Flood 17:57		Mid-Ebb 12:27 Mid-Flood N/A	
16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep
	Mid-Flood 8:10 Mid-Ebb 14:26		Mid-Flood 9:43 Mid-Ebb 15:41		Mid-Flood 11:46 Mid-Ebb 17:22	
23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	29-Sep
	Mid-Ebb 8:00 Mid-Flood 16:16		Mid-Ebb 10:43 Mid-Flood 17:58		Mid-Ebb 12:21 Mid-Flood N/A	
30-Sep						

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)
NA indicated favourable tide occurs during non-working hours

Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan
Tentative Impact Air Quality and Noise Monitoring Schedule for October 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Oct	**2-Oct**	3-Oct	4-Oct	5-Oct	6-Oct
		24hrs TSP		1hr TSP Noise	1hr TSP	1hr TSP
7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct
	1hr TSP Noise 24hrs TSP		1hr TSP		1hr TSP	24hrs TSP
14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct
	1hr TSP Noise		1hr TSP		1hr TSP 24hrs TSP	
21-Oct	22-Oct	**23-Oct**	24-Oct	25-Oct	26-Oct	27-Oct
	1hr TSP Noise		1hr TSP	24hrs TSP	1hr TSP	
28-Oct	29-Oct	30-Oct	31-Oct			
	1hr TSP Noise		1hr TSP 24hrs TSP			

Air Quality Monitoring Station

A1a - Village house at No.88 Hang Hau Tsuen
A2b - Village house at No.84 Hang Hau Tsuen

Noise Monitoring Station

N2 - Village house at No.84 Hang Hau Tsuen
N3 - Village house at No.88 Hang Hau Tsuen

Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan
Impact Water Quality Monitoring Schedule for October 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Oct	**2-Oct**	3-Oct	4-Oct	5-Oct	6-Oct
			Mid-Flood 10:12 Mid-Ebb 15:41			Mid-Flood 11:53 Mid-Ebb 16:56
7-Oct	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct
	Mid-Flood 14:12 Mid-Ebb 18:41		Mid-Ebb 8:39 Mid-Flood 16:24		Mid-Ebb 11:05 Mid-Flood 17:40	
14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct
	Mid-Ebb 13:22 Mid-Flood N/A		Mid-Flood 9:02 Mid-Ebb 14:51		Mid-Flood 10:58 Mid-Ebb 16:25	
21-Oct	22-Oct	**23-Oct**	24-Oct	25-Oct	26-Oct	27-Oct
	Mid-Flood 14:29 Mid-Ebb N/A		Mid-Ebb 9:00 Mid-Flood 16:34		Mid-Ebb 11:09 Mid-Flood 17:47	
28-Oct	29-Oct	30-Oct	31-Oct			
	Mid-Ebb 13:09 Mid-Flood N/A		Mid-Flood 8:48 Mid-Ebb 14:15			

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)
NA indicated favourable tide occurs during non-working hours

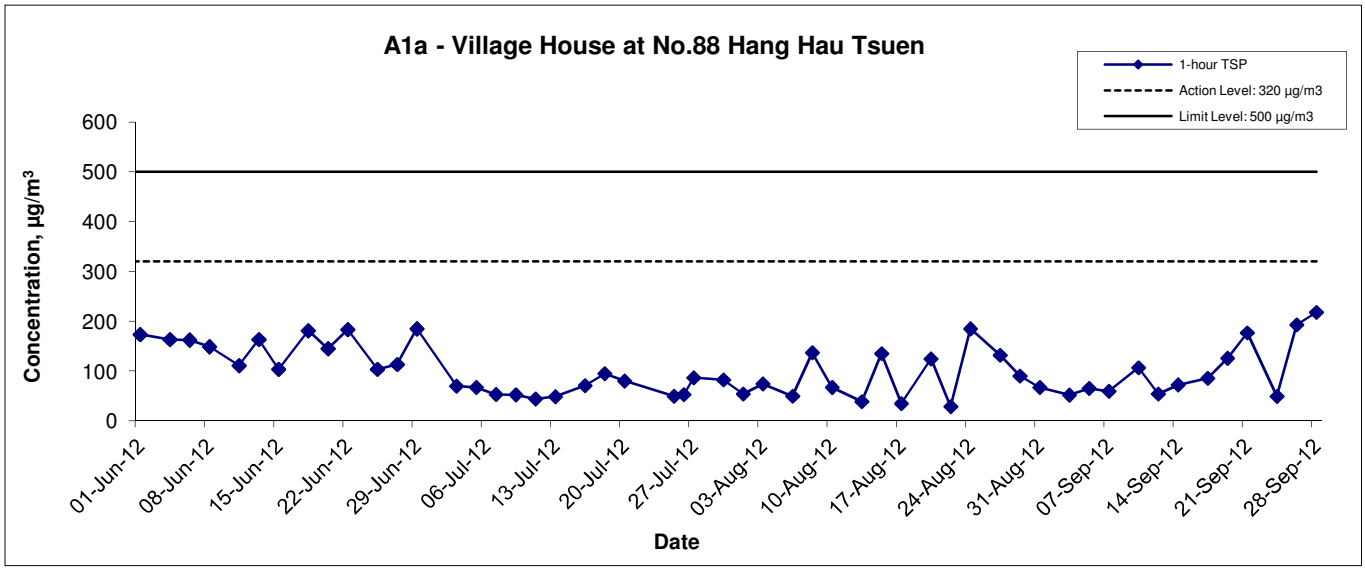
APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

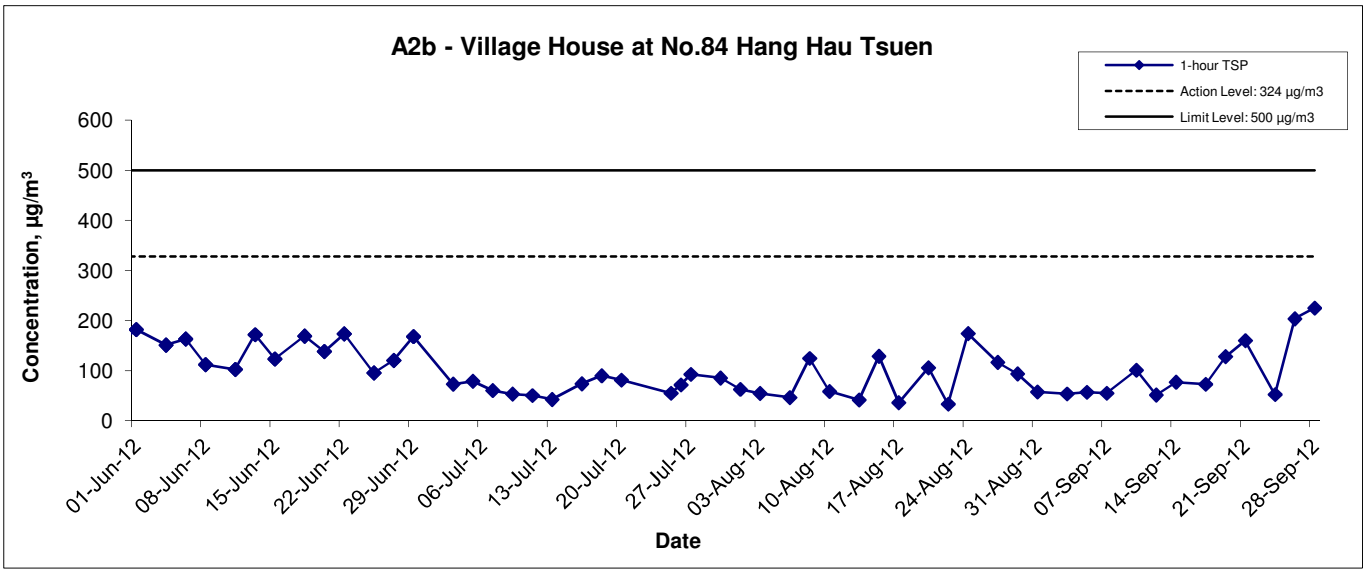
Appendix E - 1-hour TSP Monitoring Results

Location A1a - Village House at No.88 Hang Hau Tsuen			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
3-Sep-12	8:00	Cloudy	51.9
5-Sep-12	9:30	Sunny	65.2
7-Sep-12	9:15	Cloudy	59.3
10-Sep-12	9:10	Sunny	106.7
12-Sep-12	10:00	Sunny	54.1
14-Sep-12	9:10	Sunny	72.2
17-Sep-12	9:10	Sunny	85.6
19-Sep-12	9:15	Cloudy	125.6
21-Sep-12	10:00	Sunny	176.8
24-Sep-12	9:30	Cloudy	49.3
26-Sep-12	16:15	Sunny	192.9
28-Sep-12	10:00	Sunny	217.9
		Average	104.8
		Maximum	217.9
		Minimum	49.3

Location A2b - Village House at No.84 Hang Hau Tsuen			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
3-Sep-12	8:00	Cloudy	53.7
5-Sep-12	10:50	Sunny	57.0
7-Sep-12	10:45	Cloudy	54.9
10-Sep-12	10:30	Sunny	100.9
12-Sep-12	11:00	Sunny	51.4
14-Sep-12	10:25	Sunny	76.9
17-Sep-12	9:00	Sunny	72.9
19-Sep-12	10:30	Cloudy	128.1
21-Sep-12	10:10	Sunny	159.9
24-Sep-12	10:45	Cloudy	52.5
26-Sep-12	16:00	Sunny	203.7
28-Sep-12	11:05	Sunny	224.9
		Average	103.1
		Maximum	224.9
		Minimum	51.4

1-hr TSP Concentration Levels





Title	Scale	Project No.
Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of 1-hour TSP Monitoring Results	N.T.S	MA0002
	Date: Sep 12	Appendix: E

CINOTECH

APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PERSENTATIONS

Appendix F - 24-hour TSP Monitoring Results

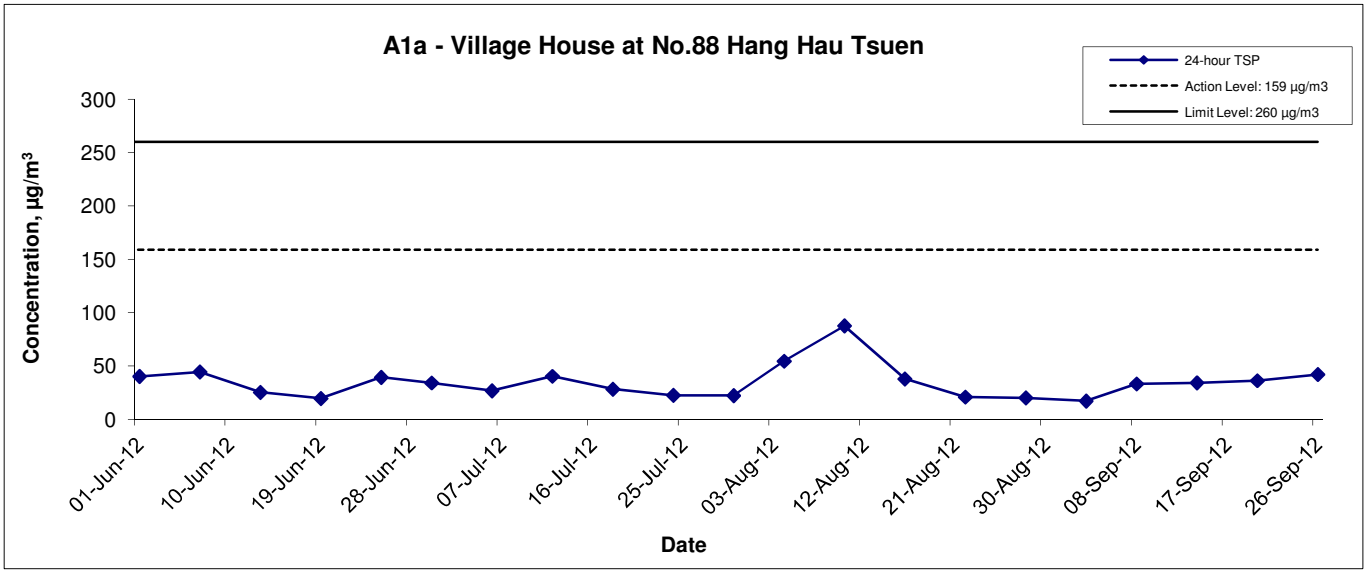
Location A1a - Village House at No.88 Hang Hau Tsuen

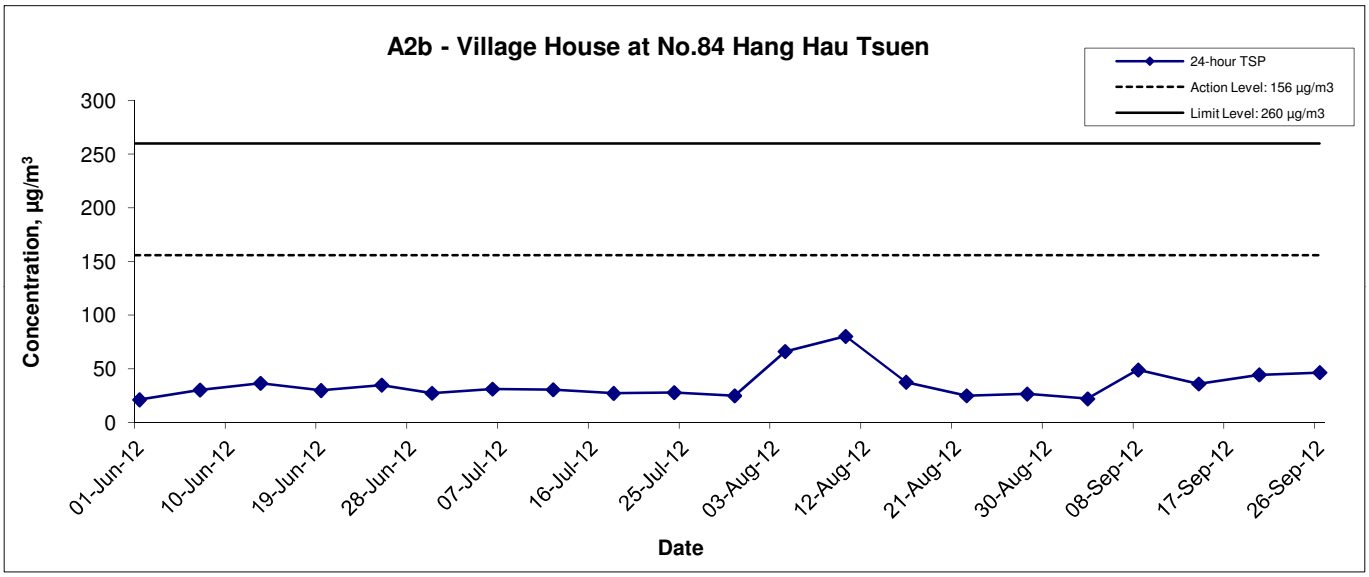
Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (μg/m^3)
				Initial	Final		Initial	Final		Initial	Final			
3-Sep-12	Cloudy	301.7	759.0	3.1476	3.1777	0.0301	4808.7	4832.7	24.0	1.22	1.22	1.22	1755.5	17.1
8-Sep-12	Sunny	302.1	761.9	3.1539	3.2121	0.0582	4832.7	4856.7	24.0	1.22	1.22	1.22	1757.5	33.1
14-Sep-12	Sunny	298.7	760.1	3.2973	3.3575	0.0602	4856.7	4880.7	24.0	1.23	1.23	1.23	1764.4	34.1
20-Sep-12	Sunny	299.9	761.8	3.0956	3.1591	0.0635	4880.7	4904.7	24.0	1.22	1.22	1.22	1755.3	36.2
26-Sep-12	Sunny	300.6	760.6	3.1305	3.2040	0.0735	4904.7	4928.7	24.0	1.22	1.22	1.22	1752.1	42.0
													Min	17.1
													Max	42.0
													Average	32.5

Location A2b - Village House at No.84 Hang Hau Tsuen

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (μg/m^3)
				Initial	Final		Initial	Final		Initial	Final			
3-Sep-12	Cloudy	301.7	759.0	3.1851	3.2239	0.0388	7330.3	7354.3	24.0	1.22	1.22	1.22	1752.7	22.1
8-Sep-12	Sunny	302.1	761.9	3.1508	3.2368	0.0860	7354.3	7378.3	24.0	1.22	1.22	1.22	1754.8	49.0
14-Sep-12	Sunny	298.7	760.1	3.2788	3.3421	0.0633	7378.3	7402.3	24.0	1.22	1.22	1.22	1761.9	35.9
20-Sep-12	Sunny	299.9	761.8	3.1105	3.1881	0.0776	7402.3	7426.3	24.0	1.21	1.21	1.21	1747.9	44.4
26-Sep-12	Sunny	300.6	760.6	3.1300	3.2111	0.0811	7426.3	7450.3	24.0	1.21	1.21	1.21	1744.8	46.5
													Min	22.1
													Max	49.0
													Average	39.6

24-hr TSP Concentration Levels





Title: Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S	Project No.: MA0002	CINOTECH
	Date: Sep 12	Appendix: F	

APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

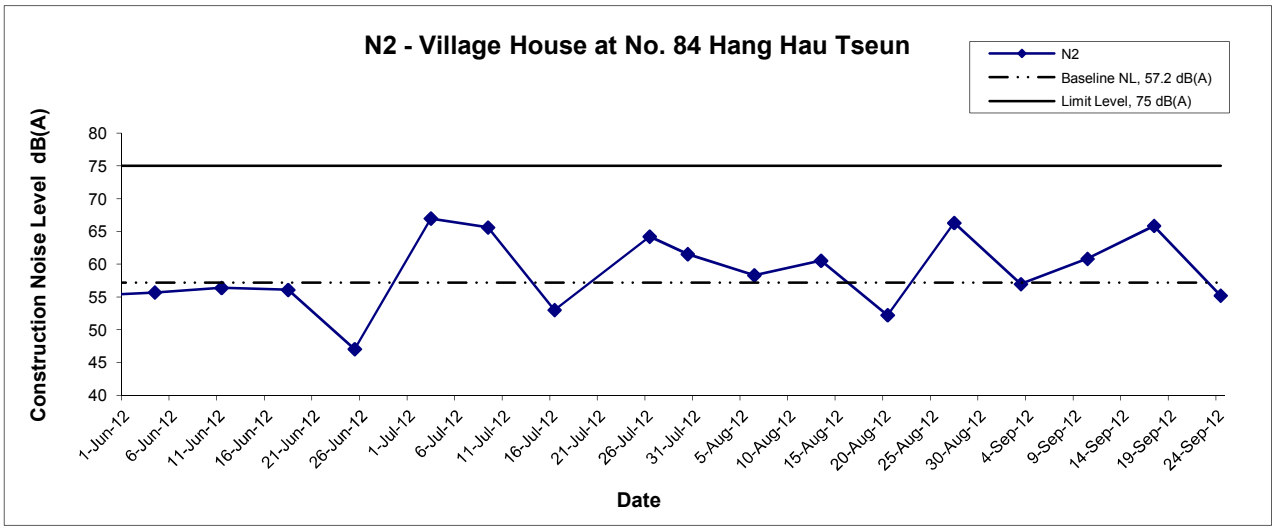
Appendix G - Noise Monitoring Results

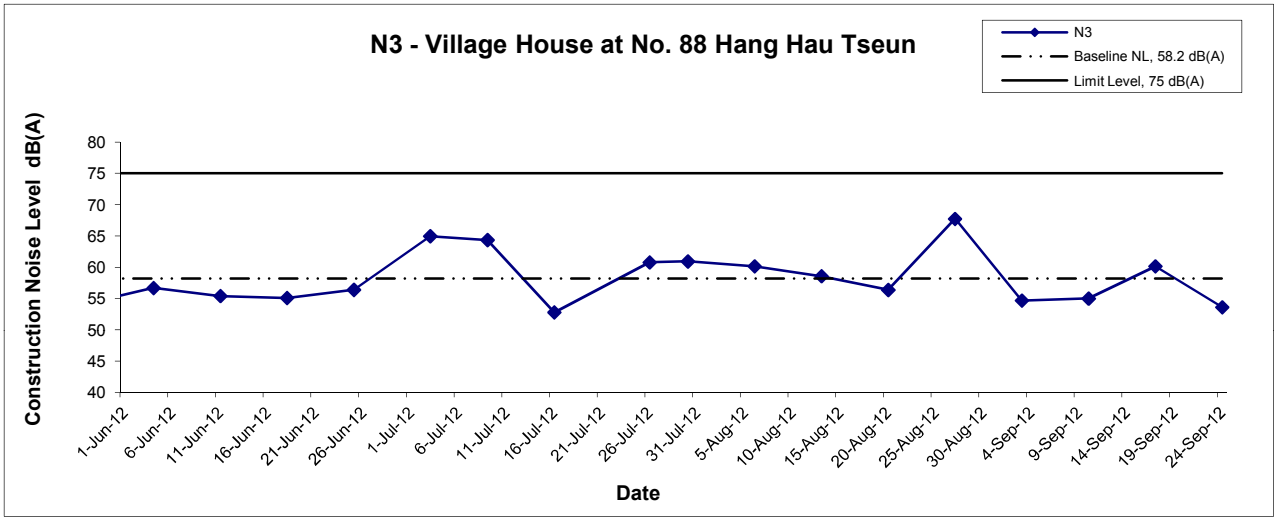
Location N2 - Village House at No. 84 Hang Hau Tseun							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
3-Sep-12	08:10	Cloudy	60.1	56.4	47.2	57.2	57.0
10-Sep-12	09:15	Sunny	62.4	65.9	60.3		60.8
17-Sep-12	09:00	Sunny	66.4	68.9	60.1		65.8
24-Sep-12	09:30	Cloudy	55.2	64.2	44.9		55.2 Measured $\leq$ Baseline

Location N3 - Village House at No. 88 Hang Hau Tseun							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
3-Sep-12	08:00	Cloudy	59.8	65.0	42.3	58.2	54.7
10-Sep-12	10:35	Sunny	59.9	62.0	57.6		55.0
17-Sep-12	09:35	Sunny	62.3	63.9	60.4		60.2
24-Sep-12	10:45	Cloudy	59.5	66.1	49.5		53.6

* Free-field adjustment is adopted for monitoring results at station N2 and N3.

Noise Levels





Title	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA0002	CINOTECH
		Date Sep 12	Appendix G	

APPENDIX H
WATER QUALITY MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Water Quality Monitoring Results at W1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	15:01	Middle	0.3	27.9 27.0	27.5	7.8 7.8	7.8	21.2 20.0	20.6	70.2 69.1	69.7	5.3 5.2	5.3	16.8 16.5	16.7	51 51	51.0
5-Sep-12	Fine	Moderate	16:29	Middle	0.3	29.1 29.2	29.2	7.8 7.9	7.9	23.2 22.3	22.8	81.7 74.8	78.3	6.4 5.9	6.2	21.2 21.5	21.4	48 48	48.0
7-Sep-12	Cloudy	Moderate	16:45	Middle	0.3	28.4 28.2	28.3	7.2 7.5	7.4	18.5 18.3	18.4	73.2 76.9	75.1	5.9 5.6	5.8	19.7 20.8	20.3	41 43	42.0
10-Sep-12	Sunny	Moderate	09:23	Middle	0.3	29.8 29.6	29.7	7.8 7.8	7.8	17.3 17.2	17.3	71.0 71.1	71.1	5.7 5.7	5.7	21.8 21.7	21.8	40 39	39.5
12-Sep-12	Sunny	Moderate	09:31	Middle	0.3	27.9 27.0	27.5	7.2 7.2	7.2	21.9 20.8	21.4	77.4 75.7	76.6	5.8 5.7	5.8	13.7 15.9	14.8	61 61	61.0
14-Sep-12	Sunny	Moderate	12:41	Middle	0.3	27.4 27.7	27.6	7.0 7.1	7.1	19.5 18.4	19.0	73.5 76.2	74.9	5.6 5.6	5.6	21.2 21.1	21.2	58 58	58.0
17-Sep-12	Sunny	Moderate	15:24	Middle	0.3	28.9 28.8	28.9	8.0 8.0	8.0	25.2 24.9	25.1	84.5 84.4	84.5	6.6 6.4	6.5	18.4 18.4	18.4	31 31	31.0
19-Sep-12	Sunny	Moderate	14:24	Middle	0.3	27.2 26.8	27.0	8.1 8.1	8.1	19.2 18.2	18.7	73.6 72.7	73.2	6.3 6.2	6.3	20.0 19.9	20.0	18 19	18.5
21-Sep-12	Cloudy	Moderate	17:13	Middle	0.3	28.4 28.5	28.5	8.2 7.8	8.0	20.6 20.0	20.3	79.7 79.0	79.4	6.3 6.0	6.2	19.1 19.1	19.1	19 19	19.0
24-Sep-12	Fine	Moderate	08:22	Middle	0.3	26.6 27.5	27.1	7.9 7.4	7.7	22.4 20.6	21.5	86.4 92.2	89.3	6.5 7.0	6.8	24.3 26.2	25.3	65 65	65.0
26-Sep-12	Fine	Moderate	10:27	Middle	0.3	27.8 28.1	28.0	8.1 8.2	8.2	20.2 19.0	19.6	78.4 75.6	77.0	6.0 5.7	5.9	34.9 35.3	35.1	89 89	89.0
28-Sep-12	Sunny	Moderate	12:26	Middle	0.3	27.6 28.6	28.1	7.6 7.2	7.4	24.8 22.8	23.8	85.3 86.1	85.7	6.3 6.4	6.4	31.3 32.0	31.7	52 52	52.0

Water Quality Monitoring Results at W1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	09:00	Middle	0.3	27.4 27.0	27.2	7.7 7.9	7.8	31.6 33.0	32.3	72.2 71.3	71.8	5.4 5.5	5.5	18.6 18.9	18.8	44 43	43.5
5-Sep-12	Fine	Moderate	11:04	Middle	0.3	28.8 28.2	28.5	7.8 7.8	7.8	19.5 18.6	19.1	80.1 79.1	79.6	6.2 6.1	6.2	17.4 19.3	18.4	53 52	52.5
7-Sep-12	Cloudy	Moderate	11:32	Middle	0.3	29.3 28.4	28.9	7.2 7.0	7.1	19.5 19.1	19.3	74.7 76.7	75.7	6.2 5.7	6.0	18.1 17.5	17.8	60 60	60.0
10-Sep-12	Sunny	Moderate	16:17	Middle	0.3	29.4 29.5	29.5	7.9 7.9	7.9	17.9 17.0	17.5	70.6 69.5	70.1	5.7 5.6	5.7	18.2 17.6	17.9	57 58	57.5
12-Sep-12	Sunny	Moderate	16:36	Middle	0.3	27.5 27.0	27.3	7.1 7.3	7.2	32.5 32.6	32.6	79.1 70.8	75.0	5.9 5.3	5.6	15.2 15.3	15.3	26 26	26.0
17-Sep-12	Sunny	Moderate	09:14	Middle	0.3	28.4 28.5	28.5	8.3 7.6	8.0	24.1 23.2	23.7	79.1 76.6	77.9	6.2 6.0	6.1	19.3 17.9	18.6	53 53	53.0
19-Sep-12	Sunny	Moderate	08:52	Middle	0.3	27.6 26.8	27.2	8.0 8.2	8.1	24.6 23.9	24.3	75.9 73.5	74.7	6.5 6.1	6.3	18.1 18.2	18.2	35 35	35.0
21-Sep-12	Cloudy	Moderate	12:19	Middle	0.3	28.5 28.7	28.6	8.2 8.0	8.1	21.5 20.5	21.0	82.4 80.1	81.3	6.3 5.9	6.1	38.5 38.7	38.6	61 61	61.0
24-Sep-12	Fine	Moderate	16:11	Middle	0.3	25.9 27.1	26.5	7.2 7.0	7.1	25.5 26.6	26.1	97.2 97.5	97.4	7.4 7.4	7.4	25.7 24.6	25.2	70 70	70.0
26-Sep-12	Fine	Moderate	17:14	Middle	0.3	27.7 27.9	27.8	7.9 7.6	7.8	24.4 23.0	23.7	77.2 76.6	76.9	6.2 5.8	6.0	35.7 35.7	35.7	76 76	76.0

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

Water Quality Monitoring Results at W2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	15:02	Middle	0.3	27.3 26.7	27.0	8.0 8.0	8.0	31.0 30.9	31.0	77.5 77.5	77.5	5.8 5.8	5.8	18.7 18.2	18.5	37 38	37.5
5-Sep-12	Fine	Moderate	16:30	Middle	0.3	29.0 29.1	29.1	7.9 8.4	8.2	31.6 31.0	31.3	95.7 93.0	94.4	7.3 7.1	7.2	17.6 19.6	18.6	49 50	49.5
7-Sep-12	Cloudy	Moderate	16:27	Middle	0.3	27.9 28.8	28.4	6.8 7.1	7.0	30.3 30.0	30.2	86.5 84.0	85.3	6.9 6.9	6.9	14.9 14.6	14.8	59 59	59.0
10-Sep-12	Sunny	Moderate	09:24	Middle	0.3	29.6 29.6	29.6	8.2 8.1	8.2	31.1 29.3	30.2	88.0 87.2	87.6	6.6 6.5	6.6	19.0 18.7	18.9	55 53	54.0
12-Sep-12	Sunny	Moderate	09:33	Middle	0.3	27.3 26.7	27.0	7.4 7.4	7.4	31.8 31.7	31.8	85.3 85.4	85.4	6.4 6.4	6.4	16.9 16.4	16.7	54 56	55.0
14-Sep-12	Sunny	Moderate	12:42	Middle	0.3	27.9 27.8	27.9	7.8 7.5	7.7	31.2 31.3	31.3	88.7 92.0	90.4	6.5 6.3	6.4	19.7 19.2	19.5	57 57	57.0
17-Sep-12	Sunny	Moderate	15:25	Middle	0.3	28.8 28.7	28.8	8.3 8.2	8.3	32.8 34.3	33.6	88.7 86.4	87.6	6.8 6.7	6.8	21.5 22.4	22.0	35 33	34.0
19-Sep-12	Sunny	Moderate	14:24	Middle	0.3	27.2 27.2	27.2	8.3 8.3	8.3	30.4 29.6	30.0	87.3 87.7	87.5	7.0 7.0	7.0	18.0 18.7	18.4	34 32	33.0
21-Sep-12	Cloudy	Moderate	16:54	Middle	0.3	28.1 28.7	28.4	8.4 7.9	8.2	31.2 30.8	31.0	83.1 81.9	82.5	6.6 6.5	6.6	38.6 39.1	38.9	61 63	62.0
24-Sep-12	Fine	Moderate	08:23	Middle	0.3	26.4 27.7	27.1	7.3 7.5	7.4	27.3 28.0	27.7	86.7 92.2	89.5	6.6 7.0	6.8	26.3 27.9	27.1	66 66	66.0
26-Sep-12	Fine	Moderate	10:28	Middle	0.3	27.8 27.9	27.9	8.4 8.3	8.4	32.6 31.2	31.9	81.6 81.1	81.4	6.3 6.3	6.3	37.1 37.5	37.3	78 80	79.0
28-Sep-12	Sunny	Moderate	12:27	Middle	0.3	27.3 28.8	28.1	7.7 7.1	7.4	29.6 30.4	30.0	87.8 84.3	86.1	6.5 6.3	6.4	32.9 33.5	33.2	52 51	51.5

Water Quality Monitoring Results at W2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	09:01	Middle	0.3	27.2 26.8	27.0	7.7 8.4	8.1	32.4 31.5	32.0	81.6 78.5	80.1	6.1 5.9	6.0	20.3 23.4	21.9	45 45	45.0
5-Sep-12	Fine	Moderate	11:05	Middle	0.3	28.5 28.1	28.3	8.1 8.1	8.1	30.6 30.5	30.6	92.5 92.4	92.5	7.0 6.9	7.0	17.4 17.1	17.3	48 48	48.0
7-Sep-12	Cloudy	Moderate	11:13	Middle	0.3	28.7 29.1	28.9	7.0 7.3	7.2	29.3 30.6	30.0	85.1 84.6	84.9	7.0 6.9	7.0	15.0 15.2	15.1	51 53	52.0
10-Sep-12	Sunny	Moderate	16:18	Middle	0.3	29.6 29.5	29.6	8.1 8.2	8.2	28.3 28.1	28.2	86.2 87.7	87.0	6.4 6.6	6.5	18.2 19.4	18.8	58 60	59.0
12-Sep-12	Sunny	Moderate	16:37	Middle	0.3	27.2 26.8	27.0	7.1 7.8	7.5	33.2 32.3	32.8	90.5 87.1	88.8	6.8 6.5	6.7	16.5 19.0	17.8	63 63	63.0
17-Sep-12	Sunny	Moderate	09:15	Middle	0.3	28.5 28.3	28.4	8.3 8.1	8.2	32.3 32.5	32.4	81.8 83.3	82.6	6.3 6.7	6.5	23.8 25.5	24.7	38 40	39.0
19-Sep-12	Sunny	Moderate	08:53	Middle	0.3	27.1 26.9	27.0	8.2 8.4	8.3	31.2 30.3	30.8	90.2 89.1	89.7	7.2 7.1	7.2	17.8 19.0	18.4	41 42	41.5
21-Sep-12	Cloudy	Moderate	12:01	Middle	0.3	28.4 28.7	28.6	8.2 8.2	8.2	31.7 31.2	31.5	83.7 87.6	85.7	6.4 6.7	6.6	38.6 39.0	38.8	62 61	61.5
24-Sep-12	Fine	Moderate	16:12	Middle	0.3	26.3 26.6	26.5	7.5 7.6	7.6	33.5 28.4	31.0	92.9 94.5	93.7	7.0 7.2	7.1	27.5 28.8	28.2	66 66	66.0
26-Sep-12	Fine	Moderate	17:14	Middle	0.3	27.4 27.8	27.6	8.2 8.1	8.2	31.0 31.7	31.4	82.5 79.0	80.8	6.5 6.2	6.4	38.1 38.4	38.3	75 75	75.0

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

Water Quality Monitoring Results at W3 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	15:03	Middle	0.3	27.4 26.9	27.2	8.0 8.2	8.1	32.5 30.7	31.6	75.3 73.4	74.4	5.7 5.5	5.6	19.6 20.8	20.2	42 42	42.0
5-Sep-12	Fine	Moderate	16:31	Middle	0.3	29.5 29.0	29.3	8.2 8.0	8.1	30.6 30.5	30.6	90.4 90.4	90.4	6.9 6.9	6.9	20.1 17.9	19.0	42 42	42.0
7-Sep-12	Cloudy	Moderate	16:30	Middle	0.3	28.9 28.5	28.7	7.5 7.1	7.3	28.2 27.4	27.8	93.6 84.6	89.1	6.8 6.4	6.6	16.6 16.6	16.6	53 55	54.0
10-Sep-12	Sunny	Moderate	09:25	Middle	0.3	29.7 29.5	29.6	8.1 8.2	8.2	28.5 29.8	29.2	85.1 85.4	85.3	6.4 6.4	6.4	21.3 21.4	21.4	50 51	50.5
12-Sep-12	Sunny	Moderate	09:34	Middle	0.3	27.4 26.9	27.2	7.4 7.6	7.5	33.4 31.5	32.5	83.3 81.0	82.2	6.2 6.1	6.2	15.9 17.0	16.5	51 51	51.0
14-Sep-12	Sunny	Moderate	12:43	Middle	0.3	27.6 27.2	27.4	7.6 7.5	7.6	29.7 29.6	29.7	84.0 87.8	85.9	6.3 6.1	6.2	20.6 20.5	20.6	61 61	61.0
17-Sep-12	Sunny	Moderate	15:27	Middle	0.3	28.9 28.8	28.9	8.1 8.1	8.1	33.4 34.3	33.9	86.7 88.0	87.4	6.7 6.7	6.7	22.3 23.0	22.7	37 37	37.0
19-Sep-12	Sunny	Moderate	14:25	Middle	0.3	27.2 26.9	27.1	8.2 8.3	8.3	31.2 29.3	30.3	85.2 83.9	84.6	6.8 6.7	6.8	19.3 18.5	18.9	35 35	35.0
21-Sep-12	Cloudy	Moderate	16:58	Middle	0.3	28.6 28.9	28.8	8.0 8.1	8.1	32.9 30.6	31.8	84.7 83.7	84.2	6.4 6.3	6.4	39.1 39.1	39.1	58 58	58.0
24-Sep-12	Fine	Moderate	08:24	Middle	0.3	26.9 27.3	27.1	7.7 7.1	7.4	33.8 28.9	31.4	83.1 82.8	83.0	6.3 6.3	6.3	26.4 27.5	27.0	68 66	67.0
26-Sep-12	Fine	Moderate	10:30	Middle	0.3	27.8 28.6	28.2	8.0 7.8	7.9	32.6 30.8	31.7	78.8 77.8	78.3	6.0 5.9	6.0	37.4 36.9	37.2	60 60	60.0
28-Sep-12	Sunny	Moderate	12:29	Middle	0.3	27.9 28.2	28.1	7.5 8.1	7.8	35.7 31.3	33.5	83.6 88.9	86.3	6.2 6.6	6.4	32.3 31.7	32.0	52 51	51.5

Water Quality Monitoring Results at W3 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	09:02	Middle	0.3	27.4 26.6	27.0	8.1 7.8	8.0	30.9 30.7	30.8	76.4 76.4	76.4	5.7 5.7	5.7	22.5 19.1	20.8	48 48	48.0
5-Sep-12	Fine	Moderate	11:06	Middle	0.3	28.2 27.9	28.1	8.0 8.2	8.1	31.7 30.4	31.1	90.2 88.3	89.3	6.8 6.7	6.8	17.3 18.1	17.7	51 52	51.5
7-Sep-12	Cloudy	Moderate	11:17	Middle	0.3	29.2 27.9	28.6	7.8 7.4	7.6	27.1 27.1	27.1	87.9 85.7	86.8	7.0 7.0	7.0	15.5 15.5	15.5	60 60	60.0
10-Sep-12	Sunny	Moderate	16:19	Middle	0.3	29.4 29.4	29.4	8.1 8.0	8.1	29.8 27.7	28.8	85.0 83.7	84.4	6.4 6.3	6.4	18.8 16.8	17.8	61 62	61.5
12-Sep-12	Sunny	Moderate	16:38	Middle	0.3	27.4 26.6	27.0	7.5 7.2	7.4	31.7 31.6	31.7	84.6 84.7	84.7	6.3 6.3	6.3	18.2 15.5	16.9	53 53	53.0
17-Sep-12	Sunny	Moderate	09:16	Middle	0.3	28.6 28.9	28.8	8.0 7.8	7.9	36.3 34.7	35.5	81.4 78.4	79.9	6.4 6.1	6.3	24.1 22.4	23.3	38 38	38.0
19-Sep-12	Sunny	Moderate	08:54	Middle	0.3	26.9 26.9	26.9	8.3 8.2	8.3	30.6 30.2	30.4	87.1 87.3	87.2	7.0 6.9	7.0	18.9 18.2	18.6	36 38	37.0
21-Sep-12	Cloudy	Moderate	12:03	Middle	0.3	28.8 28.3	28.6	8.2 7.7	8.0	31.6 29.3	30.5	85.5 82.5	84.0	6.7 6.5	6.6	39.9 38.6	39.3	58 58	58.0
24-Sep-12	Fine	Moderate	16:12	Middle	0.3	26.2 26.9	26.6	7.8 6.9	7.4	31.1 26.4	28.8	89.3 93.1	91.2	6.8 7.1	7.0	29.2 26.7	28.0	71 73	72.0
26-Sep-12	Fine	Moderate	17:16	Middle	0.3	27.9 27.9	27.9	8.0 7.8	7.9	33.1 30.6	31.9	78.2 81.3	79.8	6.1 6.0	6.1	37.7 36.5	37.1	79 76	77.5

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

Water Quality Monitoring Results at W4 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	15:04	Middle	0.3	27.1 27.3	27.2	7.3 8.0	7.7	6.7 6.4	6.6	70.2 69.4	69.8	5.3 5.2	5.3	29.5 30.5	30.0	45 45	45.0
5-Sep-12	Fine	Moderate	16:32	Middle	0.3	28.7 29.2	29.0	7.8 7.7	7.8	5.2 5.3	5.3	76.6 72.0	74.3	6.1 5.8	6.0	26.7 28.8	27.8	33 35	34.0
7-Sep-12	Cloudy	Moderate	16:51	Middle	0.3	27.9 28.9	28.4	6.7 7.1	6.9	5.3 5.4	5.4	75.5 70.7	73.1	5.8 5.7	5.8	25.5 26.6	26.1	30 30	30.0
10-Sep-12	Sunny	Moderate	09:26	Middle	0.3	29.7 29.5	29.6	7.7 7.7	7.7	2.7 3.2	3.0	63.2 62.5	62.9	5.5 5.4	5.5	23.7 24.1	23.9	30 31	30.5
12-Sep-12	Sunny	Moderate	09:35	Middle	0.3	27.1 27.3	27.2	6.7 7.4	7.1	7.2 7.0	7.1	77.8 72.3	75.1	5.8 5.4	5.6	24.0 24.8	24.4	26 26	26.0
14-Sep-12	Sunny	Moderate	12:44	Middle	0.3	27.0 26.7	26.9	6.8 7.0	6.9	4.2 4.3	4.3	73.0 67.4	70.2	5.4 5.4	5.4	25.0 24.7	24.9	49 50	49.5
17-Sep-12	Sunny	Moderate	15:28	Middle	0.3	28.7 29.2	29.0	7.8 7.9	7.9	10.6 9.9	10.3	80.2 76.3	78.3	6.3 6.0	6.2	24.8 25.6	25.2	46 46	46.0
19-Sep-12	Sunny	Moderate	14:26	Middle	0.3	27.6 27.2	27.4	7.8 8.1	8.0	5.0 4.8	4.9	67.3 67.2	67.3	6.2 6.0	6.1	26.2 26.9	26.6	40 39	39.5
21-Sep-12	Cloudy	Moderate	17:19	Middle	0.3	28.4 29.0	28.7	7.9 7.8	7.9	9.1 8.8	9.0	79.2 77.7	78.5	6.2 5.9	6.1	43.0 43.5	43.3	64 64	64.0
24-Sep-12	Fine	Moderate	08:25	Middle	0.3	26.5 27.9	27.2	7.6 7.6	7.6	9.9 9.7	9.8	89.7 93.3	91.5	6.8 7.1	7.0	25.2 27.2	26.2	58 58	58.0
26-Sep-12	Fine	Moderate	10:31	Middle	0.3	28.0 28.2	28.1	8.1 8.0	8.1	8.4 8.4	8.4	79.4 80.9	80.2	6.1 6.0	6.1	43.0 43.8	43.4	81 81	81.0
28-Sep-12	Sunny	Moderate	12:30	Middle	0.3	27.4 29.1	28.3	7.3 7.1	7.2	7.7 7.5	7.6	81.0 76.7	78.9	6.0 5.7	5.9	43.7 44.8	44.3	43 43	43.0

Water Quality Monitoring Results at W4 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	09:03	Middle	0.3	26.1 27.7	26.9	7.8 7.7	7.8	8.0 7.1	7.6	69.1 67.6	68.4	5.2 5.2	5.2	28.8 32.1	30.5	35 35	35.0
5-Sep-12	Fine	Moderate	11:07	Middle	0.3	28.2 28.3	28.3	7.5 7.9	7.7	5.0 4.8	4.9	77.1 73.7	75.4	6.1 5.8	6.0	27.3 27.9	27.6	26 26	26.0
7-Sep-12	Cloudy	Moderate	11:38	Middle	0.3	27.7 28.4	28.1	7.1 7.0	7.1	5.5 5.1	5.3	72.7 72.1	72.4	6.0 5.5	5.8	24.9 25.0	25.0	23 25	24.0
10-Sep-12	Sunny	Moderate	16:20	Middle	0.3	29.4 29.2	29.3	7.8 7.7	7.8	3.3 3.0	3.2	63.0 63.9	63.5	5.5 5.6	5.6	23.2 23.4	23.3	23 22	22.5
12-Sep-12	Sunny	Moderate	16:39	Middle	0.3	26.1 27.7	26.9	7.2 7.1	7.2	8.5 8.7	8.6	76.6 70.7	73.7	5.7 5.3	5.5	23.3 26.0	24.7	9 10	9.5
17-Sep-12	Sunny	Moderate	09:17	Middle	0.3	28.6 28.5	28.6	7.8 7.9	7.9	8.5 8.4	8.5	75.7 72.3	74.0	6.1 6.0	6.1	26.1 25.9	26.0	42 42	42.0
19-Sep-12	Sunny	Moderate	08:55	Middle	0.3	27.2 27.1	27.2	7.9 8.0	8.0	5.4 5.2	5.3	69.2 66.7	68.0	6.3 6.0	6.2	25.8 26.9	26.4	38 37	37.5
21-Sep-12	Cloudy	Moderate	12:25	Middle	0.3	28.2 28.9	28.6	8.1 7.9	8.0	8.1 7.7	7.9	81.7 83.6	82.7	6.2 6.2	6.2	40.2 40.7	40.5	70 70	70.0
24-Sep-12	Fine	Moderate	16:14	Middle	0.3	26.7 27.2	27.0	7.5 7.6	7.6	6.9 7.8	7.4	93.1 94.1	93.6	7.1 7.1	7.1	23.2 24.8	24.0	44 44	44.0
26-Sep-12	Fine	Moderate	17:17	Middle	0.3	27.8 28.4	28.1	8.0 8.0	8.0	7.9 8.2	8.1	74.9 71.6	73.3	6.1 5.8	6.0	44.2 46.4	45.3	69 69	69.0

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

Water Quality Monitoring Results at W5 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	15:05	Middle	0.4	27.3 27.7	27.5	7.9 7.5	7.7	6.8 6.0	6.4	69.7 69.1	69.4	5.2 5.2	5.2	29.1 29.3	29.2	55 51	53.0
5-Sep-12	Fine	Moderate	16:33	Middle	0.4	29.3 29.2	29.3	7.9 8.1	8.0	4.5 4.3	4.4	78.5 74.1	76.3	6.3 6.0	6.2	29.8 27.7	28.8	53 43	48.0
7-Sep-12	Cloudy	Moderate	17:01	Middle	0.4	28.5 28.6	28.6	7.1 6.6	6.9	4.5 4.4	4.5	73.7 75.7	74.7	6.0 6.1	6.1	28.4 27.6	28.0	53 53	53.0
10-Sep-12	Sunny	Moderate	09:27	Middle	0.4	29.4 29.8	29.6	7.9 7.7	7.8	2.5 2.2	2.4	63.3 63.9	63.6	5.5 5.5	5.5	27.1 27.1	27.1	50 50	50.0
12-Sep-12	Sunny	Moderate	09:36	Middle	0.4	27.4 27.7	27.6	7.3 6.9	7.1	7.3 6.5	6.9	74.1 76.1	75.1	5.5 5.7	5.6	23.6 23.8	23.7	55 56	55.5
14-Sep-12	Sunny	Moderate	12:45	Middle	0.4	27.9 27.9	27.9	7.3 7.3	7.3	4.2 4.1	4.2	67.0 70.7	68.9	5.5 5.5	5.5	29.6 29.6	29.6	58 58	58.0
17-Sep-12	Sunny	Moderate	15:29	Middle	0.4	29.1 28.9	29.0	8.3 7.7	8.0	11.0 10.7	10.9	80.6 79.2	79.9	6.0 6.3	6.2	27.6 26.5	27.1	41 42	41.5
19-Sep-12	Sunny	Moderate	14:28	Middle	0.4	27.3 27.1	27.2	8.2 8.1	8.2	4.5 4.4	4.5	69.3 68.7	69.0	6.3 6.2	6.3	28.0 28.3	28.2	34 33	33.5
21-Sep-12	Cloudy	Moderate	17:33	Middle	0.4	28.6 29.0	28.8	8.4 7.6	8.0	6.5 6.6	6.6	79.1 82.7	80.9	6.0 6.2	6.1	46.5 46.3	46.4	60 60	60.0
24-Sep-12	Fine	Moderate	08:26	Middle	0.4	26.7 27.2	27.0	7.3 7.3	7.3	7.7 8.1	7.9	85.6 88.2	86.9	6.5 6.7	6.6	25.7 26.0	25.9	66 66	66.0
26-Sep-12	Fine	Moderate	10:32	Middle	0.4	28.1 28.3	28.2	8.1 8.2	8.2	7.5 7.2	7.4	78.5 77.4	78.0	5.9 5.9	5.9	45.5 43.5	44.5	81 82	81.5
28-Sep-12	Sunny	Moderate	12:31	Middle	0.4	27.5 28.3	27.9	8.7 6.7	7.7	9.1 9.0	9.1	72.7 81.4	77.1	5.4 6.1	5.8	43.7 44.8	44.3	50 49	49.5

Water Quality Monitoring Results at W5 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	09:04	Middle	0.4	27.9 27.0	27.5	7.8 8.2	8.0	6.2 5.9	6.1	71.2 69.6	70.4	5.4 5.3	5.4	30.9 27.2	29.1	41 43	42.0
5-Sep-12	Fine	Moderate	11:08	Middle	0.4	28.3 28.5	28.4	7.9 7.6	7.8	4.9 4.3	4.6	75.0 76.4	75.7	5.9 6.0	6.0	28.4 28.6	28.5	50 50	50.0
7-Sep-12	Cloudy	Moderate	11:52	Middle	0.4	29.7 28.8	29.3	6.7 7.0	6.9	4.9 4.9	4.9	78.7 72.7	75.7	5.8 5.6	5.7	29.2 27.4	28.3	62 62	62.0
10-Sep-12	Sunny	Moderate	16:21	Middle	0.4	29.4 29.2	29.3	7.8 7.9	7.9	2.3 2.3	2.3	64.6 64.1	64.4	5.6 5.5	5.6	27.4 27.2	27.3	55 56	55.5
12-Sep-12	Sunny	Moderate	16:40	Middle	0.4	27.9 27.0	27.5	7.2 7.6	7.4	6.7 6.5	6.6	78.6 72.3	75.5	5.9 5.4	5.7	27.5 22.1	24.8	26 26	26.0
17-Sep-12	Sunny	Moderate	09:18	Middle	0.4	28.9 29.0	29.0	8.1 8.1	8.1	7.9 7.3	7.6	79.7 81.0	80.4	6.2 6.2	6.2	25.9 26.1	26.0	46 48	47.0
19-Sep-12	Sunny	Moderate	08:56	Middle	0.4	27.1 27.2	27.2	8.2 8.1	8.2	4.5 4.2	4.4	69.2 68.0	68.6	6.3 6.1	6.2	29.9 27.2	28.6	38 39	38.5
21-Sep-12	Cloudy	Moderate	12:34	Middle	0.4	29.1 28.9	29.0	7.9 8.1	8.0	7.8 8.1	8.0	80.5 80.9	80.7	6.2 6.1	6.2	42.4 42.8	42.6	94 94	94.0
24-Sep-12	Fine	Moderate	16:14	Middle	0.4	26.7 27.8	27.3	7.5 8.0	7.8	5.1 5.3	5.2	92.3 95.0	93.7	7.0 7.2	7.1	24.9 23.2	24.1	73 72	72.5
26-Sep-12	Fine	Moderate	17:18	Middle	0.4	27.8 28.2	28.0	8.4 7.8	8.1	7.1 6.8	7.0	75.0 79.2	77.1	5.7 5.9	5.8	46.9 43.5	45.2	66 66	66.0

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

Water Quality Monitoring Results at W6 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	15:07	Middle	0.4	27.8 27.3	27.6	8.3 8.2	8.3	32.6 31.4	32.0	77.5 75.3	76.4	5.8 5.7	5.8	17.7 17.8	17.8	46 46	46.0
5-Sep-12	Fine	Moderate	16:34	Middle	0.4	29.6 29.1	29.4	8.2 8.3	8.3	32.3 31.8	32.1	95.9 95.9	95.9	7.3 7.3	7.3	17.8 18.2	18.0	50 50	50.0
7-Sep-12	Cloudy	Moderate	16:40	Middle	0.4	28.8 28.9	28.9	8.2 8.2	8.2	30.6 29.8	30.2	87.0 88.6	87.8	6.7 6.6	6.7	15.2 15.3	15.3	67 68	67.5
10-Sep-12	Sunny	Moderate	09:29	Middle	0.4	30.1 29.7	29.9	8.2 8.4	8.3	27.9 28.4	28.2	89.8 89.7	89.8	6.6 6.6	6.6	20.3 21.2	20.8	61 60	60.5
12-Sep-12	Sunny	Moderate	09:37	Middle	0.4	27.8 27.3	27.6	7.7 7.6	7.7	33.4 32.2	32.8	85.3 83.2	84.3	6.4 6.2	6.3	14.4 14.2	14.3	49 48	48.5
14-Sep-12	Sunny	Moderate	12:46	Middle	0.4	27.4 28.1	27.8	7.6 7.7	7.7	29.7 31.0	30.4	87.3 90.1	88.7	6.6 6.4	6.5	19.8 20.4	20.1	62 62	62.0
17-Sep-12	Sunny	Moderate	15:30	Middle	0.4	29.0 28.7	28.9	8.0 8.7	8.4	33.5 32.2	32.9	82.1 82.2	82.2	6.4 6.4	6.4	24.2 24.6	24.4	36 36	36.0
19-Sep-12	Sunny	Moderate	14:29	Middle	0.4	27.4 27.0	27.2	8.4 8.5	8.5	31.7 31.0	31.4	91.7 91.0	91.4	7.3 7.1	7.2	17.4 17.8	17.6	36 36	36.0
21-Sep-12	Cloudy	Moderate	17:07	Middle	0.4	28.2 28.8	28.5	8.1 8.7	8.4	33.8 32.7	33.3	83.9 85.5	84.7	6.2 6.3	6.3	38.3 38.1	38.2	53 52	52.5
24-Sep-12	Fine	Moderate	08:27	Middle	0.4	26.3 27.0	26.7	7.4 7.1	7.3	32.6 34.6	33.6	92.6 93.5	93.1	7.0 7.1	7.1	25.7 22.6	24.2	64 65	64.5
26-Sep-12	Fine	Moderate	10:33	Middle	0.4	28.2 27.8	28.0	8.0 8.3	8.2	34.2 32.3	33.3	80.2 79.5	79.9	6.0 6.4	6.2	37.6 37.7	37.7	77 77	77.0
28-Sep-12	Sunny	Moderate	12:32	Middle	0.4	27.4 28.0	27.7	6.9 8.4	7.7	34.3 36.7	35.5	73.9 75.3	74.6	5.5 5.6	5.6	31.5 31.8	31.7	56 56	56.0

Water Quality Monitoring Results at W6 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	09:06	Middle	0.4	28.0 27.3	27.7	8.0 8.1	8.1	32.9 32.1	32.5	80.7 80.7	80.7	6.1 6.1	6.1	18.0 18.6	18.3	44 44	44.0
5-Sep-12	Fine	Moderate	11:10	Middle	0.4	28.7 28.4	28.6	8.3 8.3	8.3	32.0 31.2	31.6	93.7 91.9	92.8	7.0 6.9	7.0	17.1 17.2	17.2	49 50	49.5
7-Sep-12	Cloudy	Moderate	11:26	Middle	0.4	29.6 29.5	29.6	7.6 7.7	7.7	32.4 31.1	31.8	91.1 89.4	90.3	6.6 6.5	6.6	14.2 14.4	14.3	55 55	55.0
10-Sep-12	Sunny	Moderate	16:22	Middle	0.4	29.9 30.1	30.0	8.3 8.2	8.3	29.1 29.1	29.1	91.4 91.2	91.3	6.8 6.8	6.8	18.4 19.6	19.0	57 55	56.0
12-Sep-12	Sunny	Moderate	16:41	Middle	0.4	28.1 27.3	27.7	7.4 7.5	7.5	33.8 33.0	33.4	88.7 88.9	88.8	6.6 6.7	6.7	17.2 17.8	17.5	54 52	53.0
17-Sep-12	Sunny	Moderate	09:19	Middle	0.4	28.7 29.0	28.9	8.2 8.2	8.2	32.8 33.4	33.1	84.6 84.2	84.4	6.5 6.5	6.5	23.9 24.3	24.1	37 37	37.0
19-Sep-12	Sunny	Moderate	08:57	Middle	0.4	27.7 27.1	27.4	8.2 8.5	8.4	32.1 31.6	31.9	90.3 90.4	90.4	7.2 7.2	7.2	17.0 17.2	17.1	54 54	54.0
21-Sep-12	Cloudy	Moderate	12:13	Middle	0.4	28.5 29.1	28.8	8.0 8.2	8.1	34.1 32.4	33.3	84.2 83.3	83.8	6.2 6.3	6.3	38.6 38.1	38.4	72 72	72.0
24-Sep-12	Fine	Moderate	16:15	Middle	0.4	25.5 27.7	26.6	7.8 7.9	7.9	34.4 32.9	33.7	91.7 90.8	91.3	6.9 6.9	6.9	26.2 25.5	25.9	66 66	66.0
26-Sep-12	Fine	Moderate	17:19	Middle	0.4	27.5 27.9	27.7	7.9 8.1	8.0	33.2 30.4	31.8	80.8 80.0	80.4	6.0 6.0	6.0	37.3 36.9	37.1	87 85	86.0

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

Water Quality Monitoring Results at W7 - Mid-Ebb Tide

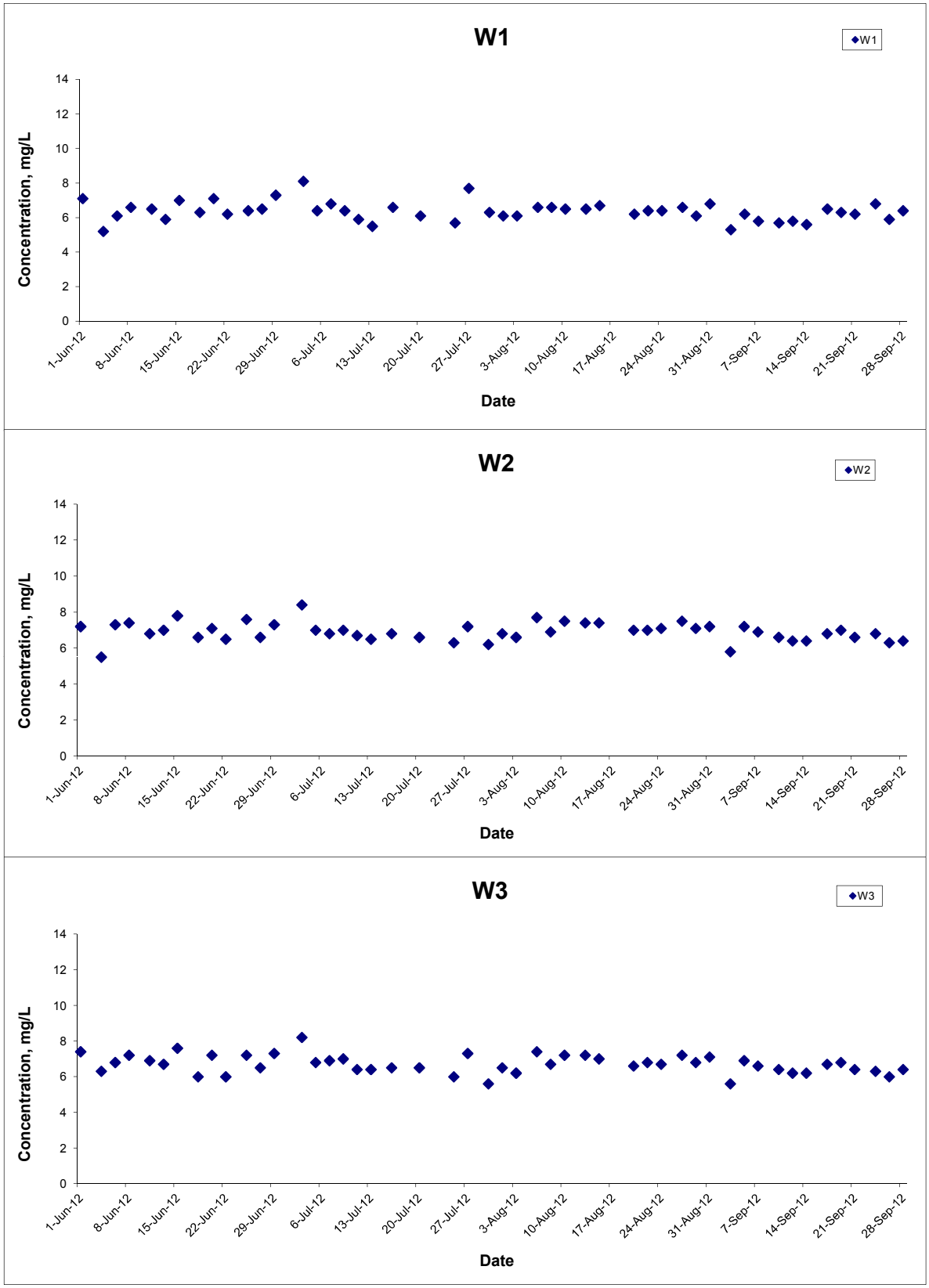
Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	15:07	Middle	0.4	27.2 27.0	27.1	8.0 8.3	8.2	33.3 32.4	32.9	84.8 80.7	82.8	6.4 6.1	6.3	15.6 18.3	17.0	48 48	48.0
5-Sep-12	Fine	Moderate	16:35	Middle	0.4	29.1 29.2	29.2	8.3 8.3	8.3	32.1 31.2	31.7	98.6 88.9	93.8	7.5 6.8	7.2	18.6 18.4	18.5	45 45	45.0
7-Sep-12	Cloudy	Moderate	16:34	Middle	0.4	28.5 28.6	28.6	7.4 7.2	7.3	30.3 29.8	30.1	91.0 87.7	89.4	7.1 6.8	7.0	16.1 15.9	16.0	53 53	53.0
10-Sep-12	Sunny	Moderate	09:29	Middle	0.4	29.7 29.6	29.7	8.3 8.2	8.3	31.3 31.3	31.3	89.8 89.8	89.8	6.7 6.7	6.7	21.3 20.8	21.1	55 54	54.5
12-Sep-12	Sunny	Moderate	09:37	Middle	0.4	27.2 27.0	27.1	7.4 7.7	7.6	34.2 33.3	33.8	92.9 89.4	91.2	7.0 6.7	6.9	14.7 14.8	14.8	50 50	50.0
14-Sep-12	Sunny	Moderate	12:48	Middle	0.4	27.6 27.8	27.7	8.0 7.9	8.0	33.3 31.7	32.5	90.6 91.3	91.0	6.7 6.6	6.7	20.4 19.3	19.9	60 59	59.5
17-Sep-12	Sunny	Moderate	15:30	Middle	0.4	28.6 28.6	28.6	8.5 8.3	8.4	37.4 35.3	36.4	81.2 78.7	80.0	6.5 6.4	6.5	22.8 22.6	22.7	39 39	39.0
19-Sep-12	Sunny	Moderate	14:30	Middle	0.4	27.6 27.1	27.4	8.4 8.4	8.4	31.6 31.2	31.4	91.9 90.7	91.3	7.3 7.2	7.3	18.1 18.2	18.2	31 30	30.5
21-Sep-12	Cloudy	Moderate	17:02	Middle	0.4	28.5 28.8	28.7	8.2 7.9	8.1	33.0 32.7	32.9	86.8 84.6	85.7	6.7 6.7	6.7	38.2 38.3	38.3	60 60	60.0
24-Sep-12	Fine	Moderate	08:28	Middle	0.4	26.2 26.9	26.6	7.4 7.6	7.5	34.7 32.5	33.6	94.6 94.9	94.8	7.2 7.2	7.2	23.2 24.8	24.0	68 68	68.0
26-Sep-12	Fine	Moderate	10:33	Middle	0.4	27.7 27.9	27.8	8.6 8.3	8.5	32.9 32.2	32.6	79.8 76.3	78.1	6.5 6.2	6.4	37.0 37.3	37.2	76 76	76.0
28-Sep-12	Sunny	Moderate	12:32	Middle	0.4	27.1 28.0	27.6	7.9 7.5	7.7	37.9 36.1	37.0	76.5 77.2	76.9	5.7 5.7	5.7	31.1 30.5	30.8	55 55	55.0

Water Quality Monitoring Results at W7 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Water Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3-Sep-12	Fine	Moderate	09:06	Middle	0.4	27.4 27.0	27.2	8.2 8.2	8.2	32.6 31.3	32.0	83.7 72.2	78.0	6.3 5.4	5.9	20.1 17.6	18.9	65 66	65.5
5-Sep-12	Fine	Moderate	11:10	Middle	0.4	28.2 28.1	28.2	8.1 8.3	8.2	32.5 31.9	32.2	99.7 96.2	98.0	7.5 7.2	7.4	16.3 16.7	16.5	50 50	50.0
7-Sep-12	Cloudy	Moderate	11:21	Middle	0.4	28.8 29.9	29.4	7.6 7.1	7.4	31.7 31.9	31.8	94.6 89.3	92.0	7.0 6.8	6.9	15.7 15.8	15.8	55 56	55.5
10-Sep-12	Sunny	Moderate	16:23	Middle	0.4	29.3 29.6	29.5	8.3 8.2	8.3	30.5 30.5	30.5	91.6 90.6	91.1	6.8 6.7	6.8	21.1 18.6	19.9	52 51	51.5
12-Sep-12	Sunny	Moderate	16:42	Middle	0.4	27.4 27.0	27.2	7.6 7.6	7.6	33.5 32.2	32.9	92.8 79.8	86.3	6.9 6.0	6.5	15.9 16.1	16.0	65 65	65.0
17-Sep-12	Sunny	Moderate	09:20	Middle	0.4	28.6 28.7	28.7	8.3 8.1	8.2	34.3 36.0	35.2	86.2 84.3	85.3	6.7 6.4	6.6	25.8 24.3	25.1	44 42	43.0
19-Sep-12	Sunny	Moderate	08:58	Middle	0.4	27.2 27.0	27.1	8.5 8.4	8.5	32.2 31.7	32.0	91.7 89.8	90.8	7.4 7.0	7.2	18.2 18.1	18.2	47 48	47.5
21-Sep-12	Cloudy	Moderate	12:08	Middle	0.4	28.5 29.0	28.8	8.5 8.0	8.3	33.7 32.4	33.1	85.7 81.1	83.4	6.6 6.3	6.5	38.6 38.5	38.6	90 90	90.0
24-Sep-12	Fine	Moderate	16:16	Middle	0.4	26.7 26.9	26.8	7.1 7.6	7.4	28.6 28.2	28.4	98.8 97.9	98.4	7.5 7.4	7.5	24.6 23.3	24.0	83 86	84.5
26-Sep-12	Fine	Moderate	17:20	Middle	0.4	27.7 28.1	27.9	8.2 8.1	8.2	34.4 33.0	33.7	79.9 78.7	79.3	6.8 6.6	6.7	37.7 37.4	37.6	65 65	65.0

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

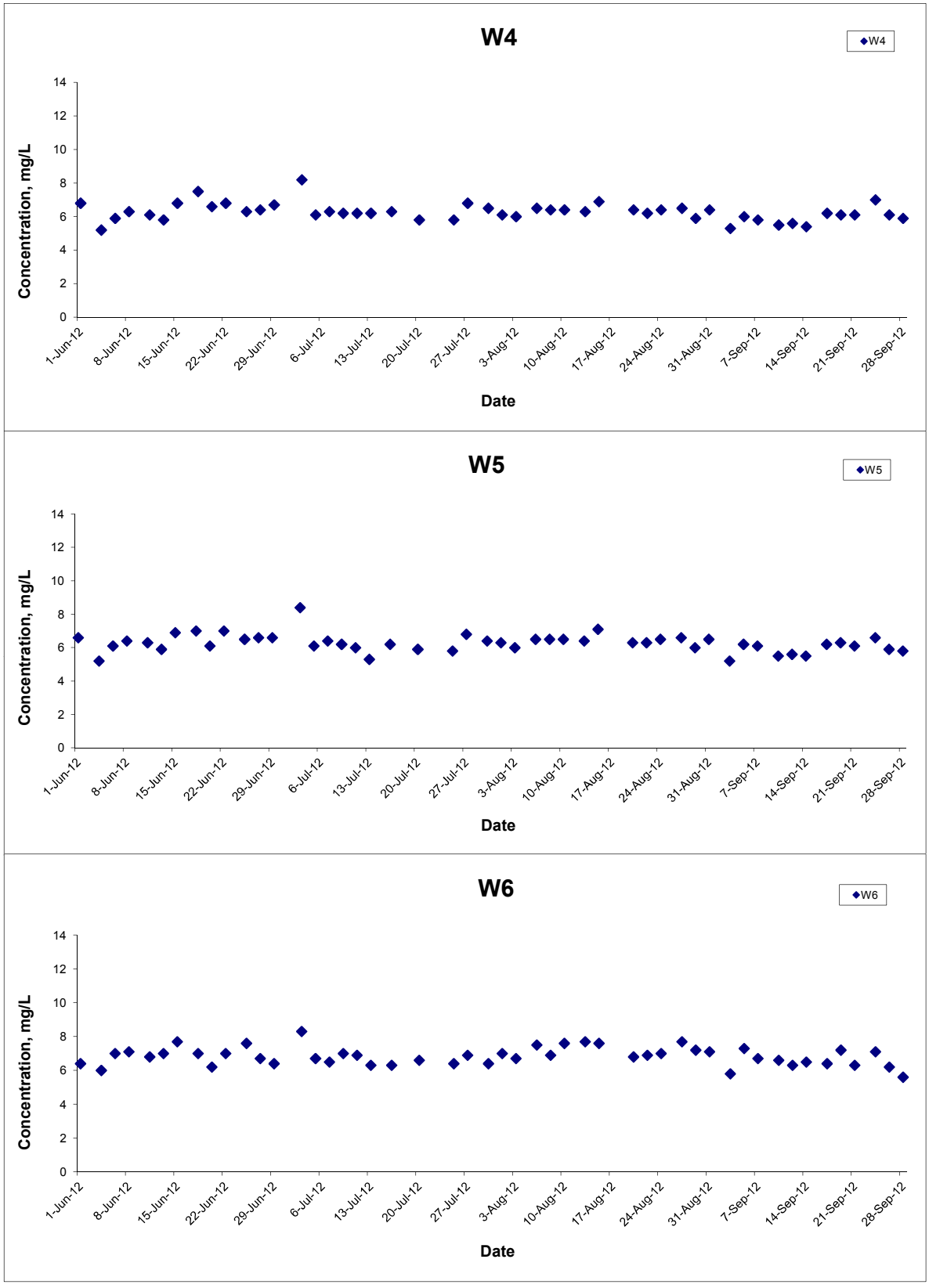
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



Title		Scale	Project No.
Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results		N.T.S	MA0002
		Date Sep 12	Appendix H

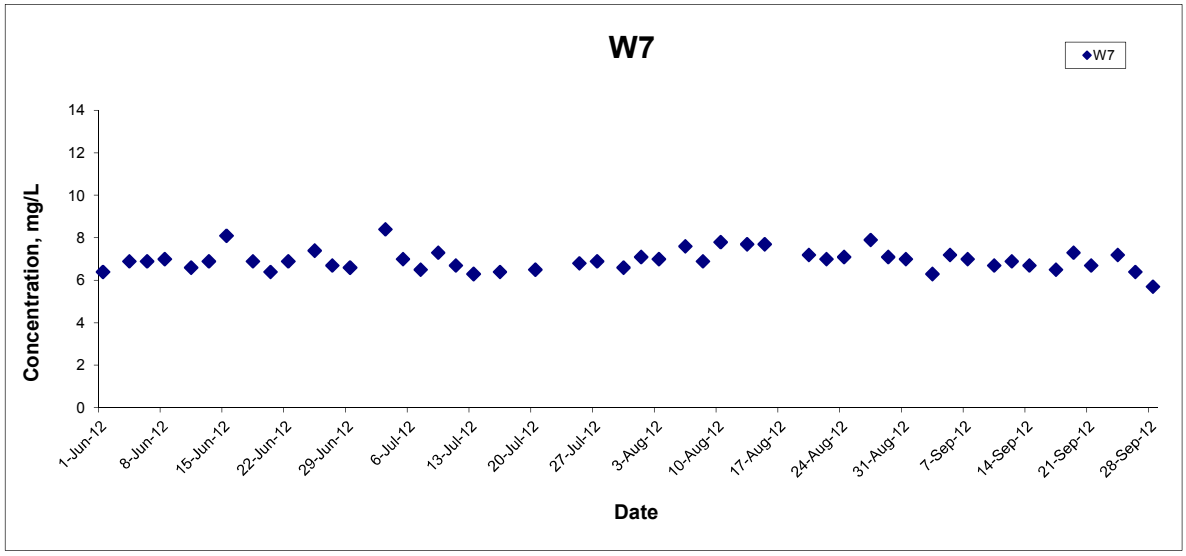
CINOTECH

Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



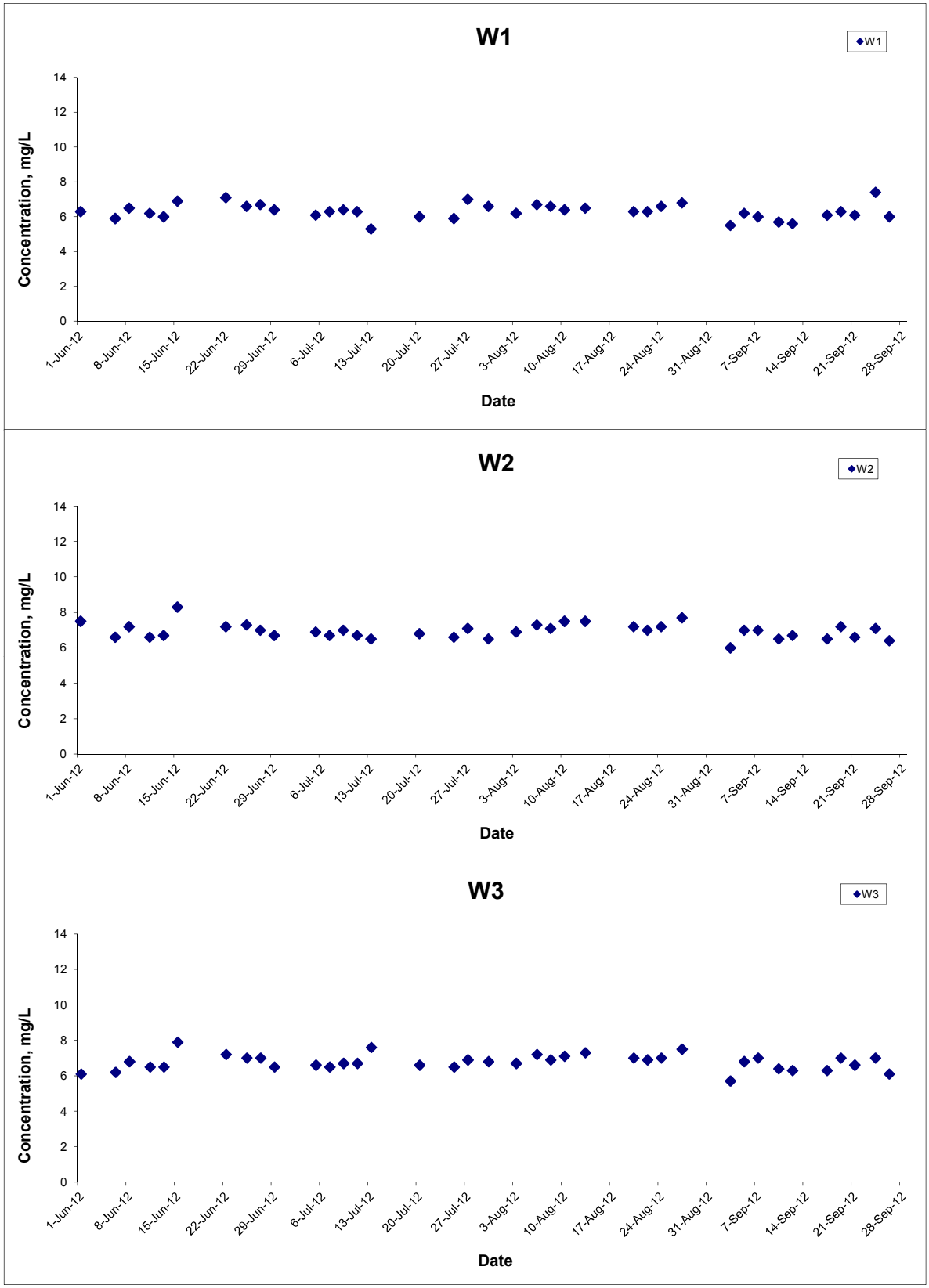
Title	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA0002	CINOTECH
		Date Sep 12	Appendix H	

Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



Title	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA0002	CINOTECH
		Date Sep 12	Appendix H	

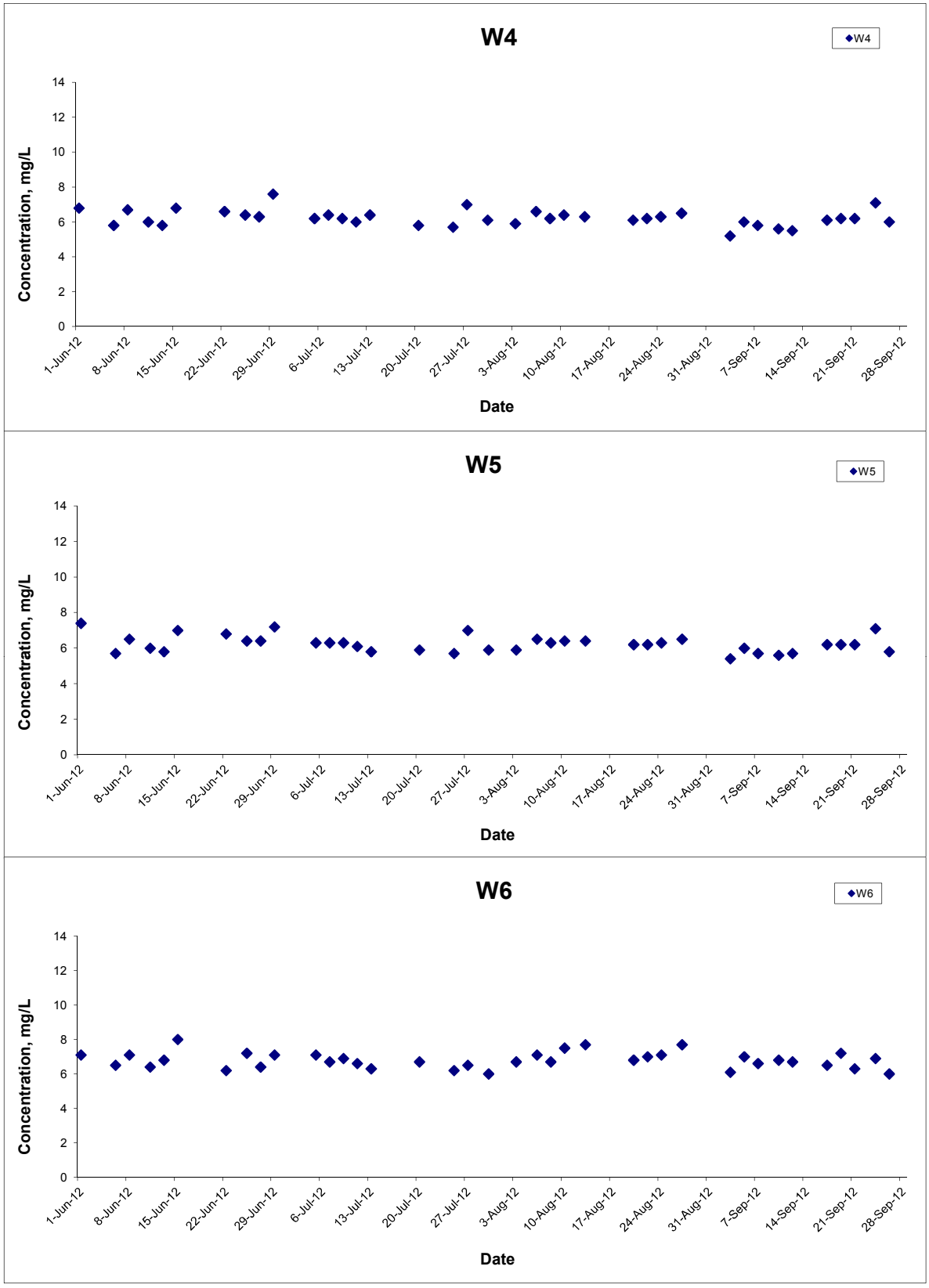
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



Title		Scale	Project No.
Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results		N.T.S	MA0002
		Date: Sep 12	Appendix: H

CINOTECH

Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



Title		Scale	Project No.
Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results		N.T.S	MA0002
		Date: Sep 12	Appendix: H

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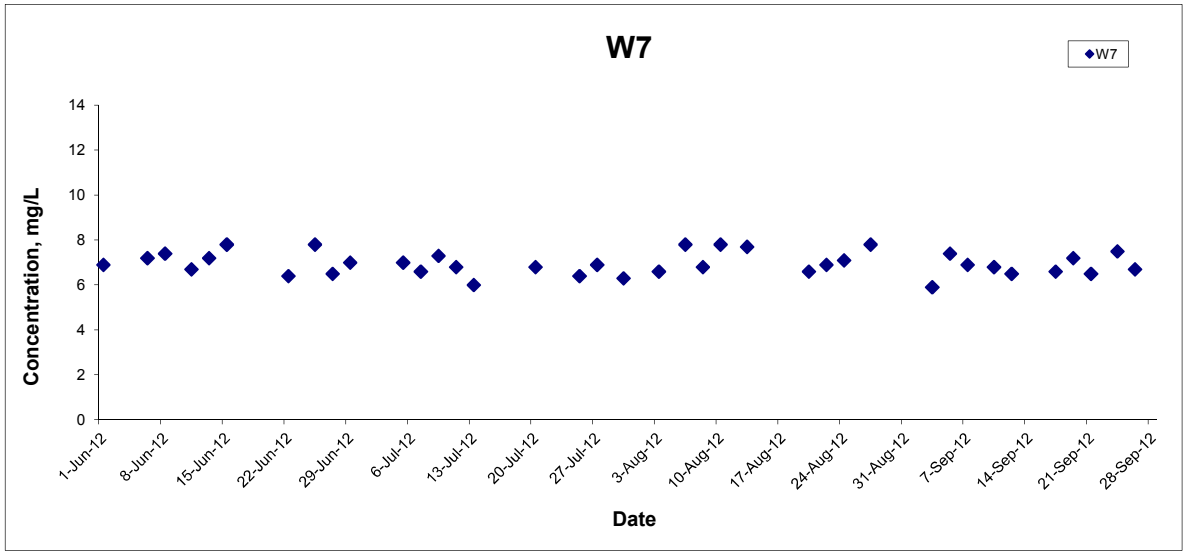
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



Title	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA0002	CINOTECH
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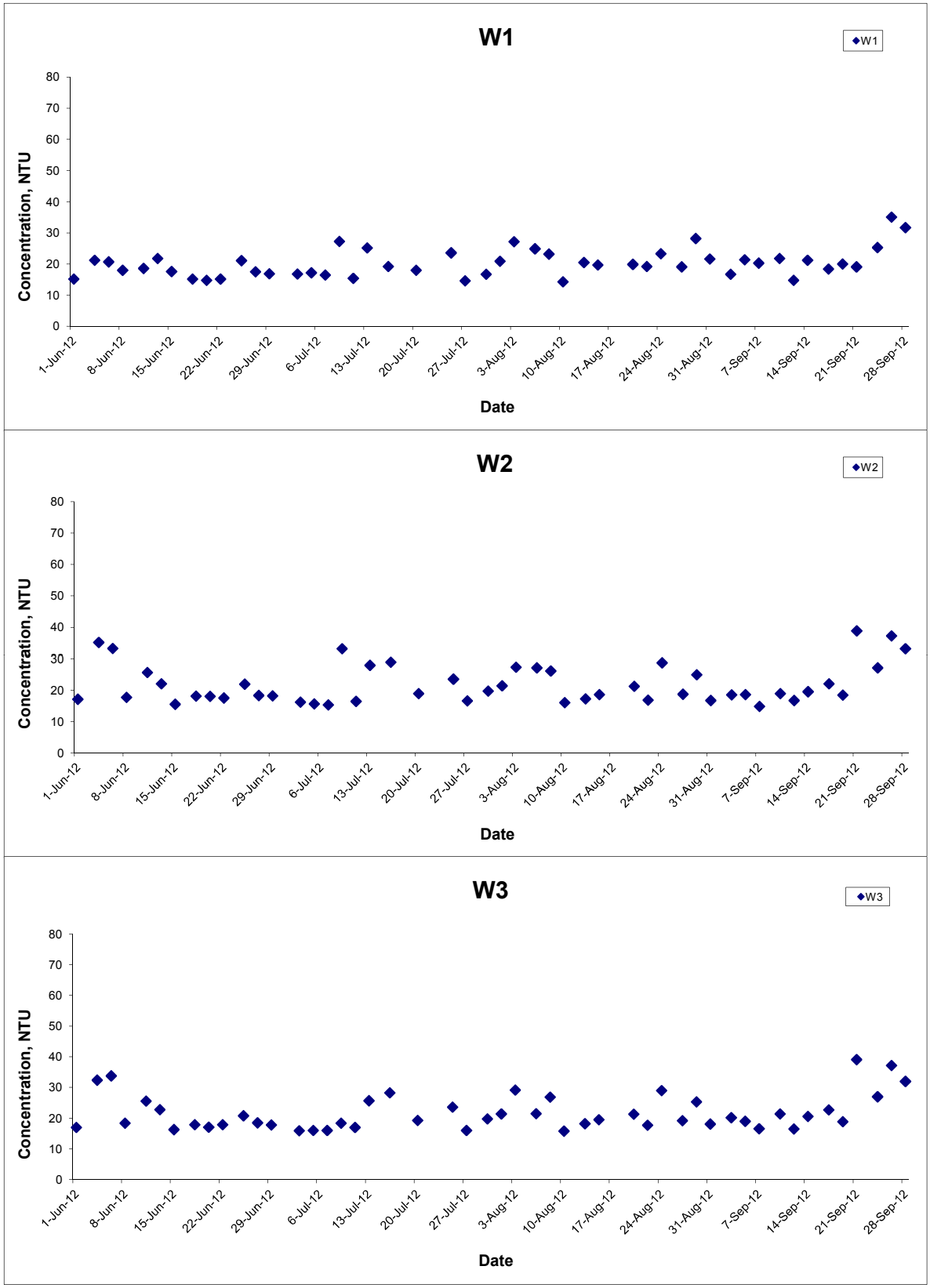
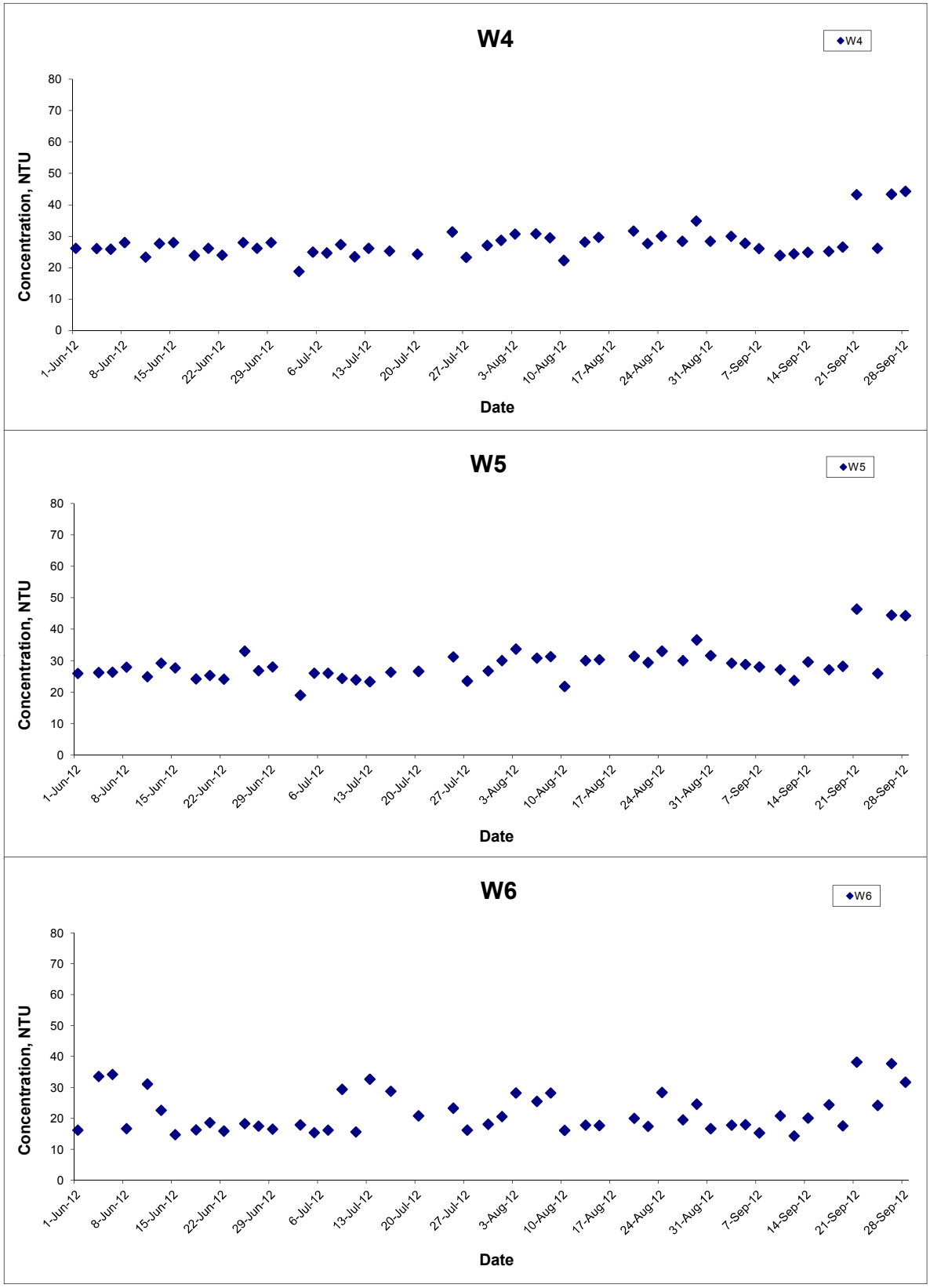
Turbidity (Depth-averaged) at Mid-Ebb Tide



Title	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA0002	CINOTECH
		Date: Sep 12	Appendix: H	

Turbidity (Depth-averaged) at Mid-Ebb Tide



Title		Scale	Project No.
	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan	N.T.S	MA0002
	Graphical Presentation of Water Quality Monitoring Results	Date: Sep 12	Appendix: H

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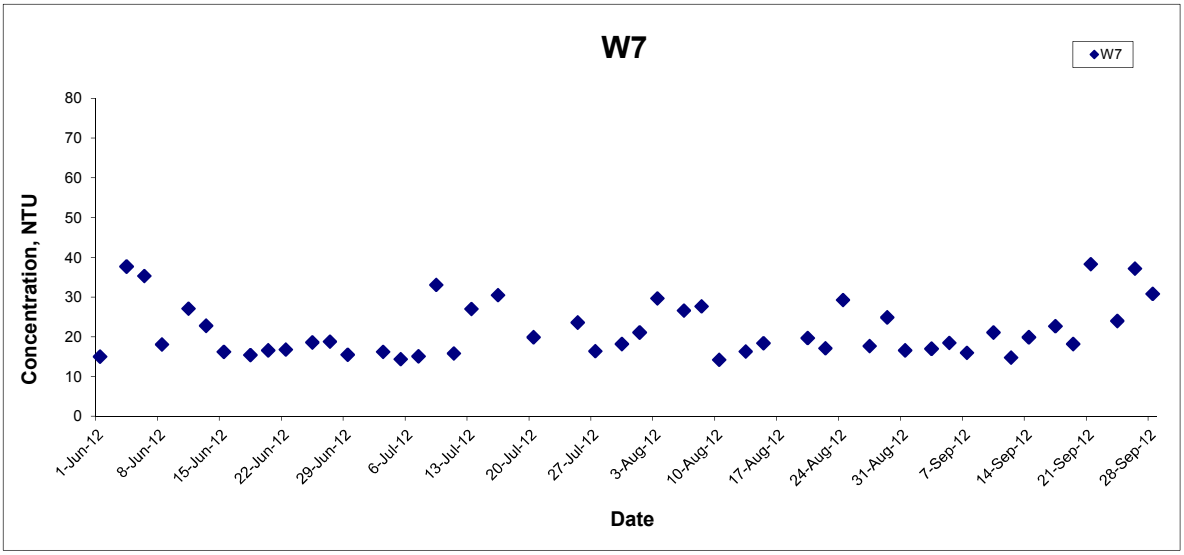
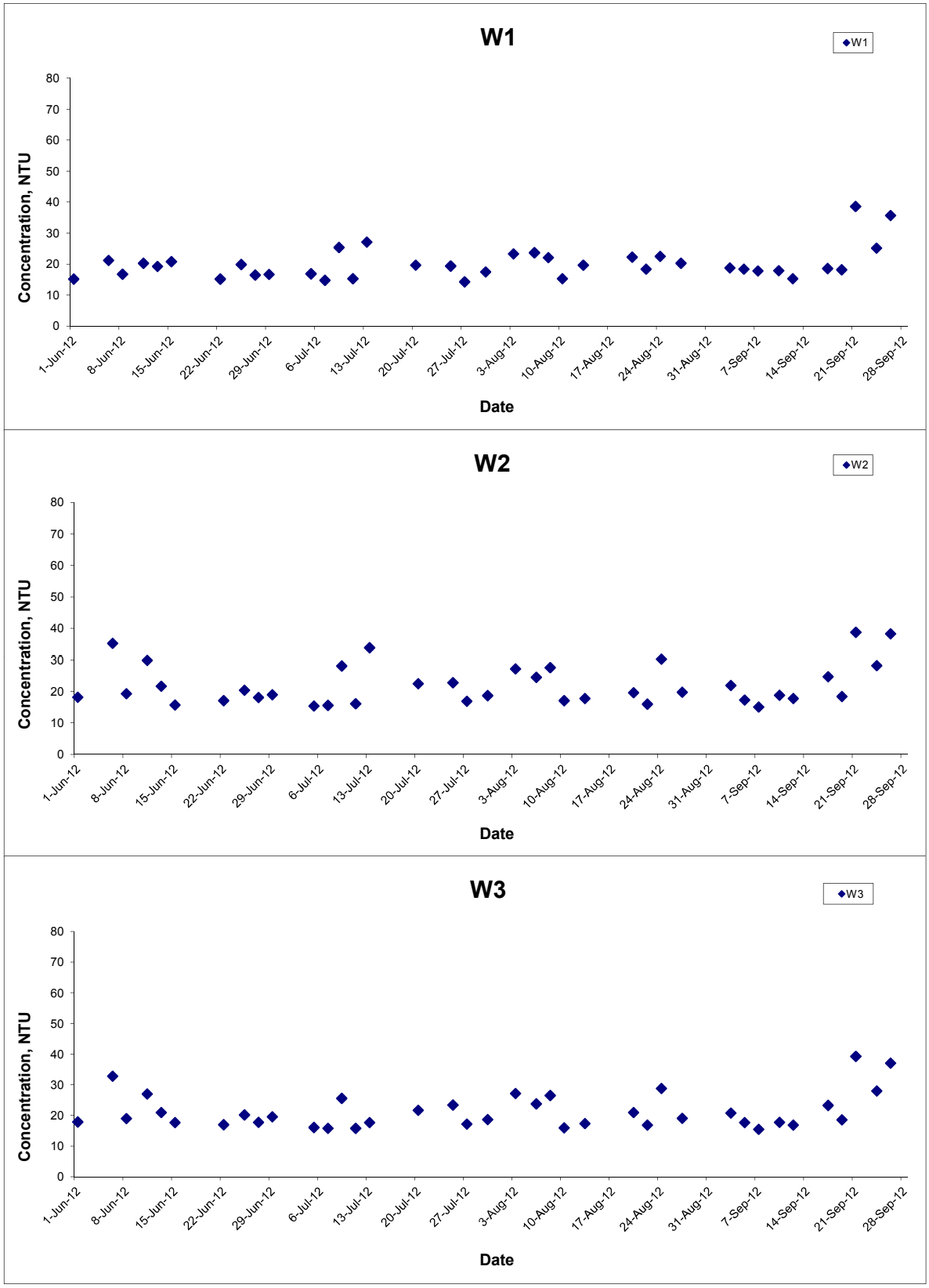
Turbidity (Depth-averaged) at Mid-Ebb Tide



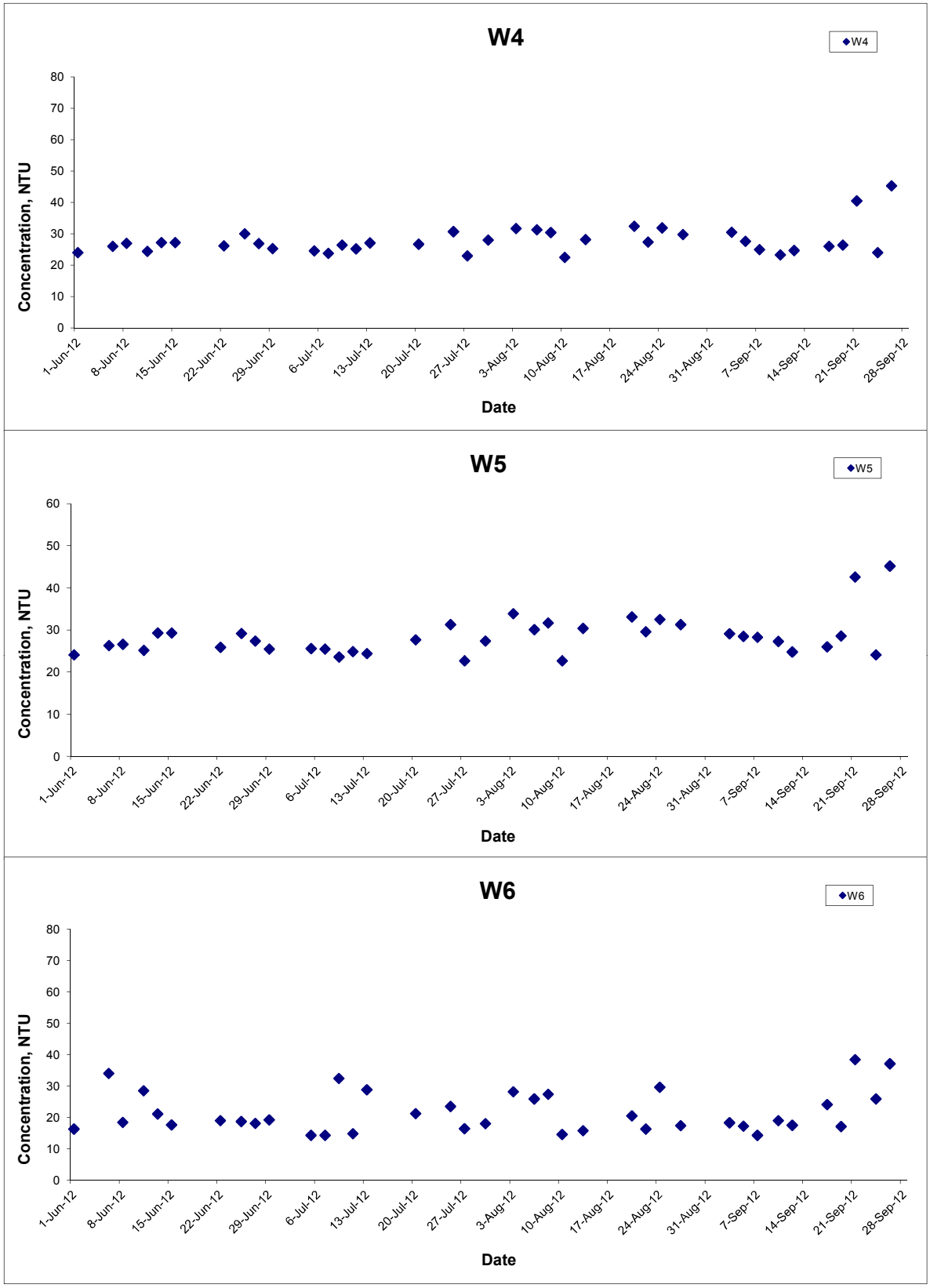
Title	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA0002	CINOTECH
		Date: Sep 12	Appendix: H	

Turbidity (Depth-averaged) at Mid-Flood Tide



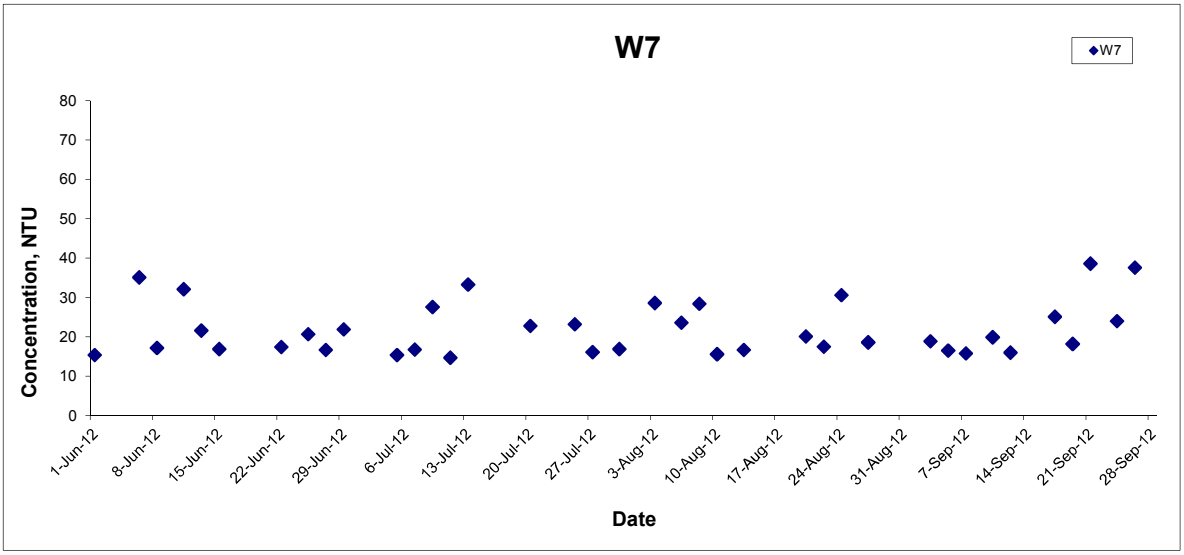
Title	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA0002	CINOTECH
		Date: Sep 12	Appendix: H	

Turbidity (Depth-averaged) at Mid-Flood Tide



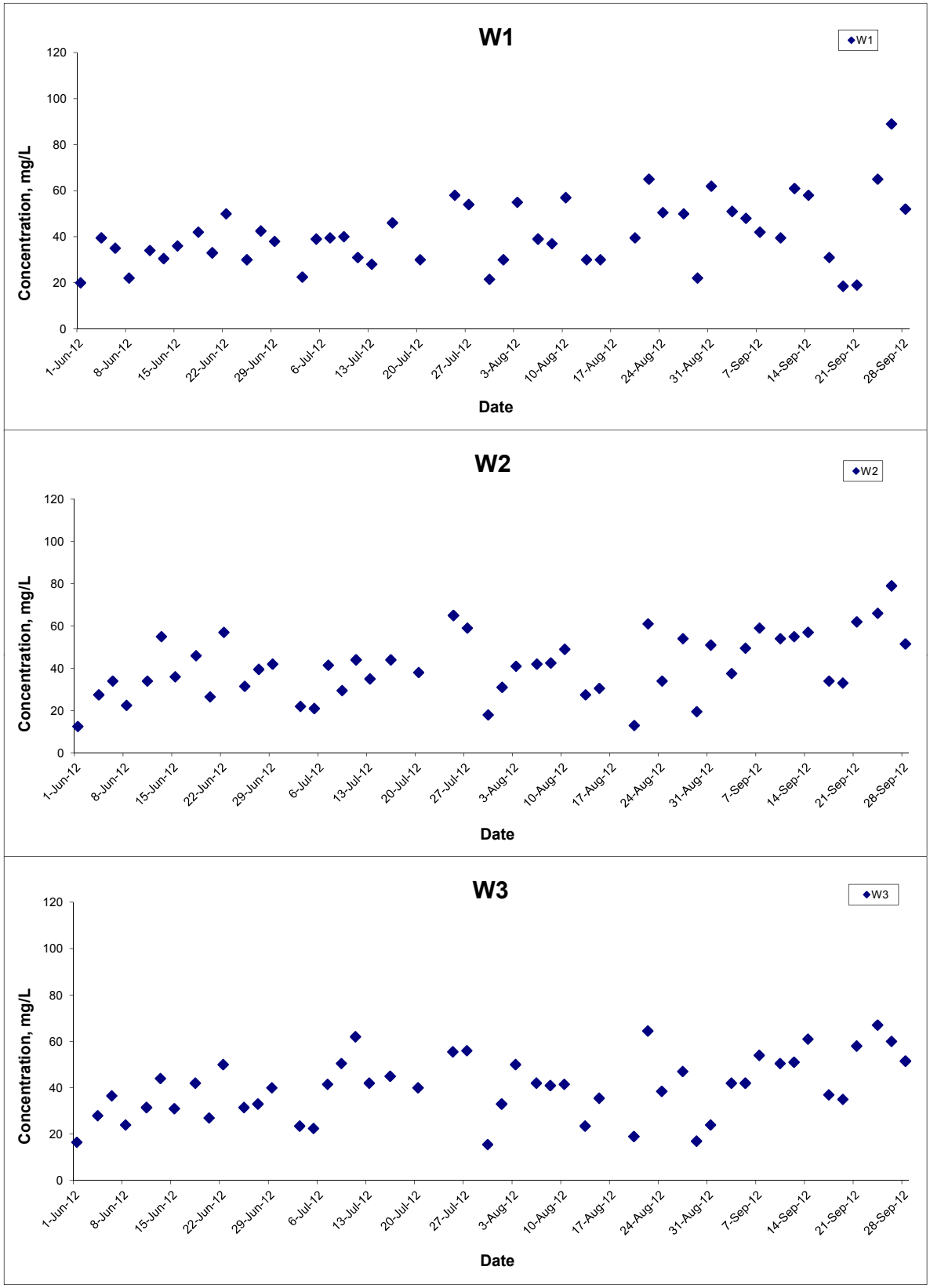
Title	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA0002	CINOTECH
		Date: Sep 12	Appendix: H	

Turbidity (Depth-averaged) at Mid-Flood Tide



Title	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA0002	CINOTECH
		Date: Sep 12	Appendix: H	

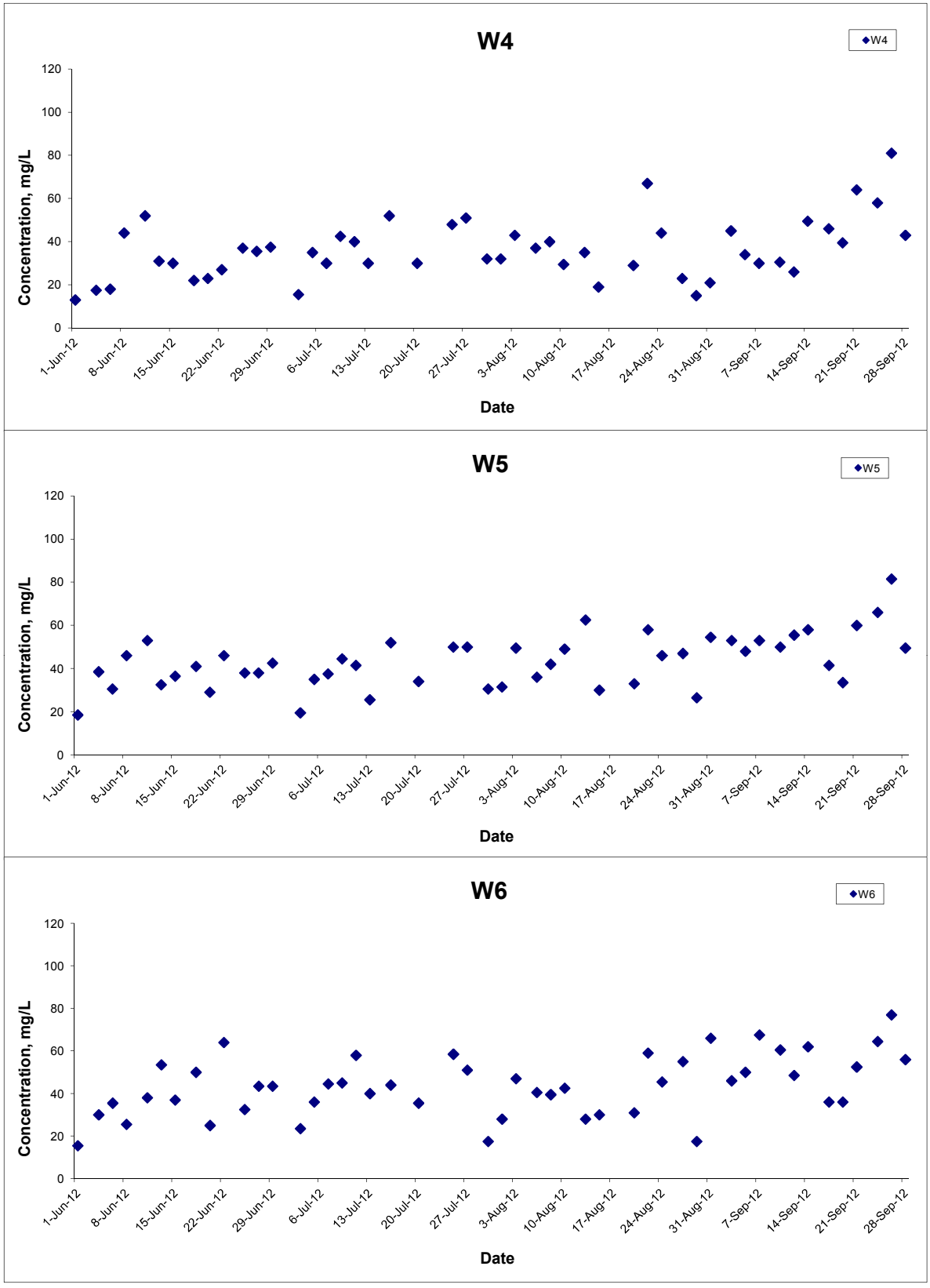
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



Title		Scale	Project No.
Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results		N.T.S	MA0002
		Date: Sep 12	Appendix: H

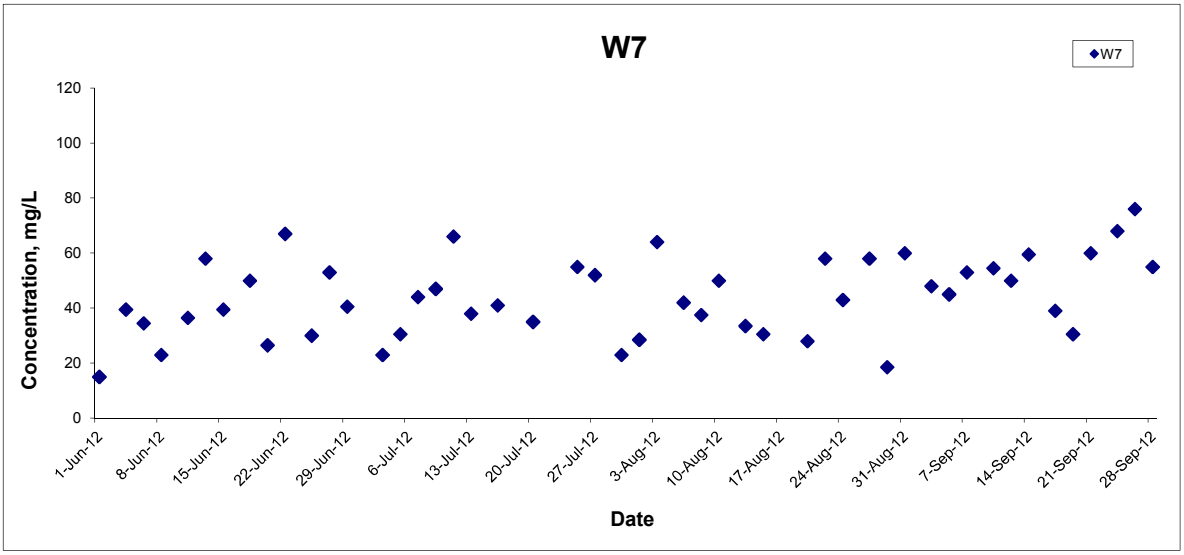
CINOTECH

Suspended Solids (Depth-averaged) at Mid-Ebb Tide



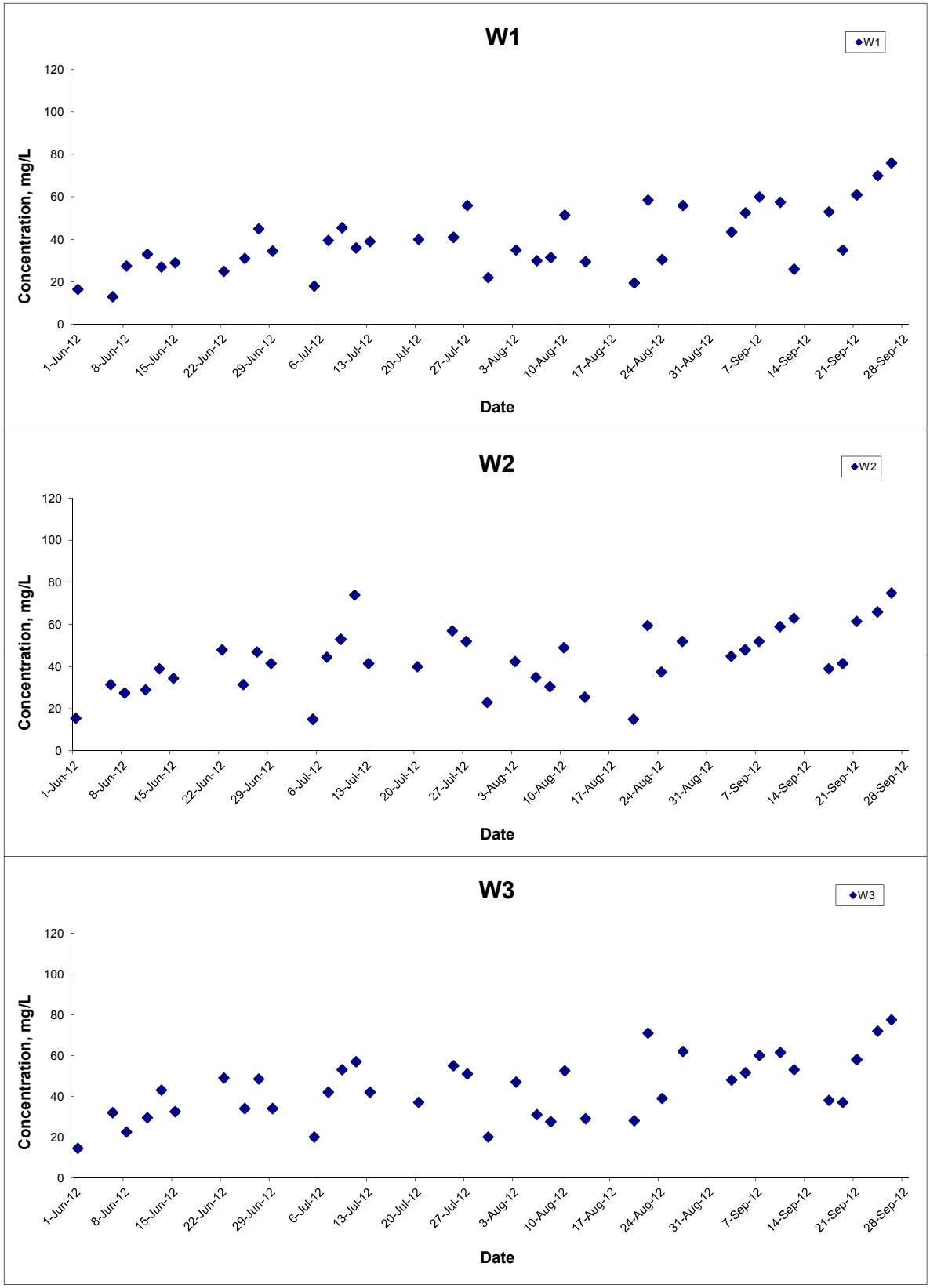
Title: Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA0002	CINOTECH
	Date: Sep 12	Appendix: H	

Suspended Solids (Depth-averaged) at Mid-Ebb Tide



Title	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA0002	CINOTECH
		Date Sep 12	Appendix H	

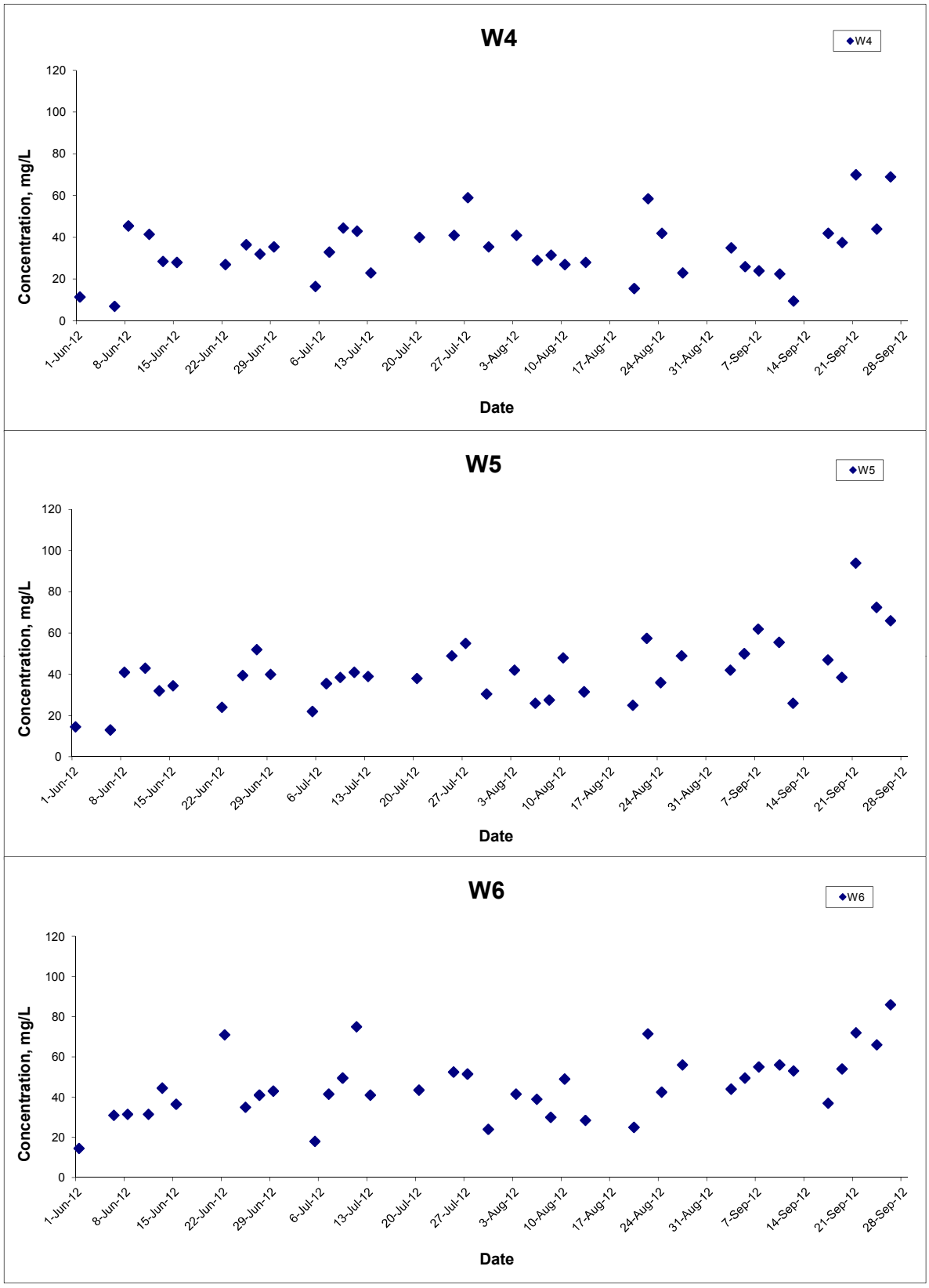
Suspended Solids (Depth-averaged) at Mid-Flood Tide



Title		Scale	Project No.
Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results		N.T.S	MA0002
		Date: Sep 12	Appendix: H

CINOTECH

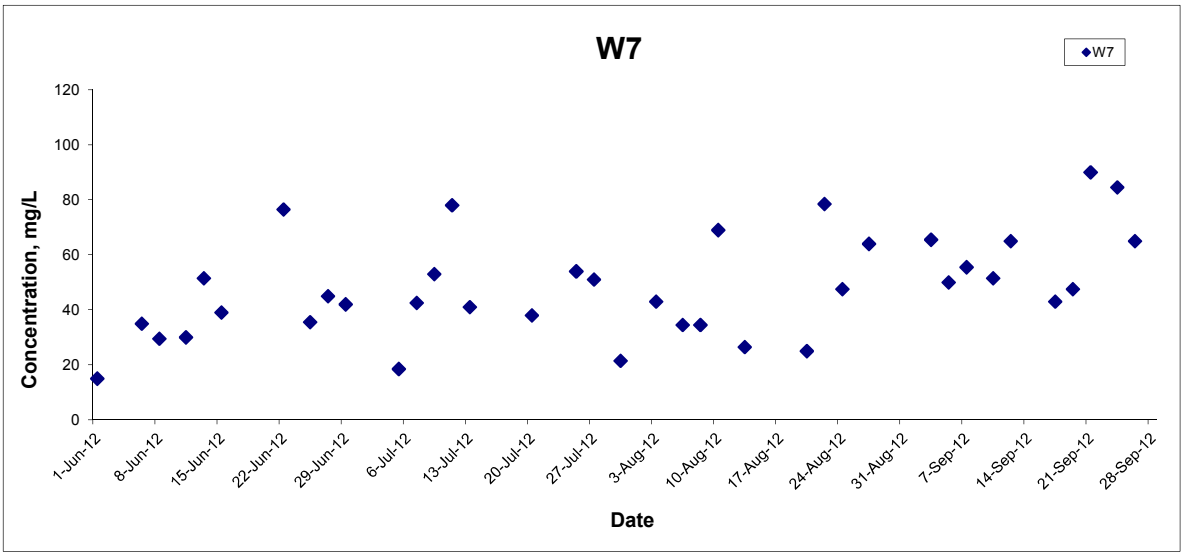
Suspended Solids (Depth-averaged) at Mid-Flood Tide



Title		Scale	Project No.
	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan	N.T.S	MA0002
	Graphical Presentation of Water Quality Monitoring Results	Date: Sep 12	Appendix: H

CINOTECH

Suspended Solids (Depth-averaged) at Mid-Flood Tide



Title	Contract No. YL/2009/01 Hang Hau Tsuen Channel at Lau Fau Shan Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA0002	CINOTECH
		Date Sep 12	Appendix H	

APPENDIX I
SUMMARY OF EXCEEDANCE

APPENIDX I – SUMMARY OF EXCEEDANCE

Reporting Month: September 2012

a) Exceedance Report for 1-hr TSP (NIL)

b) Exceedance Report for 24-hr TSP (NIL)

c) Exceedance Report for Construction Noise (NIL)

d) Exceedance Report for water quality (NIL)

APPENDIX J
SITE AUDIT SUMMARY

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	120906
Date	6 September 2012 (Thursday)
Time	16:30-17:15

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Observations /Remarks	Related Item No.
	Part A – Water Quality • No environmental deficiency was identified during the site inspection.	
	Part B – Ecology • No environmental deficiency was identified during the site inspection.	
	Part C – Landscape and Visual • No environmental deficiency was identified during the site inspection.	
	Part D – Air Quality	
120906-O01	• Sand and dusty materials (on paved road) should be regularly cleared to reduce dust generation.	D 3
120906-O02	• Exposed stockpile should be covered for dust suppression.	D 6
120906-O03	• The broken sand bags near deep bay road should be repaired/removed.	D 6
	Part E – Construction Noise Impact • No environmental deficiency was identified during the site inspection.	
	Part F – Waste / Chemical Management • No environmental deficiency was identified during the site inspection.	
	Part G – Permit / Licences • No environmental deficiency was identified during the site inspection.	
	Part H – Others Follow-up on previous audit session (Ref. No.120830): item 120830-R01 was find outstanding and will be followed up during the next site inspection.	
	Part I – Remarks • N/A	

	Name	Signature	Date
Recorded by	Mr. Gary Lau		6 September 2012
Checked by	Dr. Priscilla Choy		6 September 2012

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	120913
Date	13 September 2012 (Thursday)
Time	15:00-16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Observations /Remarks	Related Item No.
120913-R01 120913-R02	**Part A – Water Quality** • Ponding water and sediment should be cleared to prevent spillage. • Stockpile next to the stream should be covered and removed away to prevent run-off spillage. **Part B – Ecology** • No environmental deficiency was identified during the site inspection. **Part C – Landscape and Visual** • No environmental deficiency was identified during the site inspection. **Part D – Air Quality** • No environmental deficiency was identified during the site inspection. **Part E – Construction Noise Impact** • No environmental deficiency was identified during the site inspection. **Part F – Waste / Chemical Management** • No environmental deficiency was identified during the site inspection. **Part G – Permit / Licences** • No environmental deficiency was identified during the site inspection. **Part H – Others** Follow-up on previous audit session (Ref. No.120906): all the items were improved/ rectified during the site inspection. **Part I – Remarks** • N/A	A 11 A 14ii

	Name	Signature	Date
Recorded by	Mr. Gary Lau		13 September 2012
Checked by	Dr. Priscilla Choy		13 September 2012

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	120921
Date	21 September 2012 (Thursday)
Time	10:00-11:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Observations /Remarks	Related Item No.
120921-R01	**Part A – Water Quality** • No environmental deficiency was identified during the site inspection. **Part B – Ecology** • No environmental deficiency was identified during the site inspection. **Part C – Landscape and Visual** • No environmental deficiency was identified during the site inspection. **Part D – Air Quality** • To clear the dusty materials and sand to reduce dust generation in dry days. **Part E – Construction Noise Impact** • No environmental deficiency was identified during the site inspection. **Part F – Waste / Chemical Management** • No environmental deficiency was identified during the site inspection. **Part G – Permit / Licences** • No environmental deficiency was identified during the site inspection. **Part H – Others** Follow-up on previous audit session (Ref. No.120913): all the items were improved/ rectified during the site inspection. **Part I – Remarks** • N/A	D 3

	Name	Signature	Date
Recorded by	Mr. Gary Lau		21 September 2012
Checked by	Dr. Priscilla Choy		21 September 2012

Record Summary of Environmental Site Inspection

Inspection Information

Checklist Reference Number	120927
Date	27 September 2012 (Thursday)
Time	15:00-16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Observations /Remarks	Related Item No.
120927-R01	**Part A – Water Quality** • The debris near the stream area should be cleared to avoid polluting the water. **Part B – Ecology** • No environmental deficiency was identified during the site inspection. **Part C – Landscape and Visual** • No environmental deficiency was identified during the site inspection. **Part D – Air Quality** • No environmental deficiency was identified during the site inspection. **Part E – Construction Noise Impact** • No environmental deficiency was identified during the site inspection. **Part F – Waste / Chemical Management** • No environmental deficiency was identified during the site inspection. **Part G – Permit / Licences** • No environmental deficiency was identified during the site inspection. **Part H – Others** Follow-up on previous audit session (Ref. No.120921): all the items were improved/ rectified during the site inspection. **Part I – Remarks** • The U-channel should be properly maintained to prevent blockage.	A 19

	Name	Signature	Date
Recorded by	Mr. Gary Lau		28 September 2012
Checked by	Dr. Priscilla Choy		28 September 2012

APPENDIX K
SUMMARY OF AMOUNT OF WASTE GENERATED

Kwan On Construction Co Ltd
Contract No.: YL/2009/01

Name of Department : CEDD Contract No. : YL/2009/01

Monthly Summary Waste Flow Table for 2010 (year)

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Materials Generated Monthly				
	Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m^3)
Jan	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00984
Feb	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.01751
Mar	Nil	Nil	Nil	Nil	Nil	0.09225	Nil	Nil	Nil	Nil	0.14739
Apr	0.44356	Nil	Nil	Nil	0.44356	0.15015	Nil	Nil	Nil	Nil	0.15099
May	0.34204	Nil	Nil	Nil	0.34204	0.20970	Nil	Nil	Nil	Nil	0.01277
June	0.33543	Nil	Nil	Nil	0.33543	0.60841	Nil	Nil	Nil	Nil	0.02963
Sub-total	1.12103	Nil	Nil	Nil	1.12103	1.06051	Nil	Nil	Nil	Nil	0.45669
July	0.69356	Nil	0.00250	Nil	0.69106	0.74752	Nil	Nil	Nil	Nil	0.01077
Aug	0.03504	Nil	0.00110	Nil	0.03394	0.78783	Nil	Nil	Nil	Nil	0.00088
Sept	0.00200	Nil	0.00200	Nil	Nil	0.16154	1.10000	Nil	Nil	Nil	0.00056
Oct	1.25952	Nil	Nil	Nil	1.25952	0.12418	Nil	Nil	Nil	Nil	0.00239
Nov	Nil	Nil	Nil	Nil	Nil	Nil	1.30000	Nil	Nil	Nil	0.03107
Dec	0.00310	Nil	0.00310	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00255
Total	3.11425	Nil	0.00870	Nil	3.10555	2.88158	2.40000	Nil	Nil	Nil	0.50491

Forecast of Total Quantities of C&D Materials to be Generated from the Contractor*										
Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m^3)
21.00000		8.00000		12.00000	3.40000					3.80000

Notes:
(1) The performance targets are given in PS Clause 1.108(14).
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(4) *The Contractor shall also submit the latest forecast of the total amount C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m^3.

Kwan On Construction Co Ltd
Contract No.: YL/2009/01

Name of Department : CEDD Contract No. : YL/2009/01

Monthly Summary Waste Flow Table for 2011 (year)

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Materials Generated Monthly				
	Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m^3)
Jan	Nil	0.05000	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.06000	0.00362
Feb	Nil	Nil	Nil	Nil	Nil	0.017958	Nil	Nil	Nil	Nil	0.00020
Mar	Nil	Nil	Nil	Nil	Nil	0.671667	Nil	Nil	Nil	Nil	0.02189
Apr	Nil	30.00000	30.00000	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00602
May	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00220
June	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00300	0.00198
Sub-total	Nil	30.05000	30.00000	Nil	Nil	0.689625	Nil	Nil	Nil	0.06300	0.03591
July	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00140
Aug	1.58417	Nil	Nil	Nil	1.58417	Nil	Nil	Nil	Nil	Nil	0.00897
Sept	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00337
Oct	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00098
Nov	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00087
Dec	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00230
Total	1.58417	30.05000	30.00000	Nil	1.58417	0.689625	Nil	Nil	Nil	0.06300	0.05380

Forecast of Total Quantities of C&D Materials to be Generated from the Contractor*										
Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m^3)
21.00000		8.00000		12.00000	3.40000					3.80000

Notes:
(1) The performance targets are given in PS Clause 1.108(14).
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(4) *The Contractor shall also submit the latest forecast of the total amount C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m^3.

Name of Department : CEDD Contract No. : YL/2009/01

Monthly Summary Waste Flow Table for 2012 (year)

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Materials Generated Monthly				
	Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m^3)
Jan	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00330
Feb	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00089
Mar	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00316
Apr	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00147
May	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00161
June	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00081
Sub-total	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.01124
July	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00127
Aug	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.01170
Sept	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	0.00110
Oct											
Nov											
Dec											
Total											

Forecast of Total Quantities of C&D Materials to be Generated from the Contractor*										
Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m^3)
21.00000		8.00000		12.00000	3.40000					3.80000

Notes:
(1) The performance targets are given in PS Clause 1.108(14).
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(4) *The Contractor shall also submit the latest forecast of the total amount C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m^3.

APPENDIX L
EVENT/ ACTION PLANS

APPENDIX L

Tale L- 1 Event/Action Plan for Air Quality

EVENT	ACTION			
	ET Leader	**IEC**	**ER**	**Contractor**
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source 2. Inform IEC, ER and Contractor 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by ET Leader 2. Check Contractor's working method	1. Notify Contractor	1. Rectify any unacceptable practice 2. Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	1. Identify source 2. Inform IEC, ER and Contractor 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Discuss with IEC, Contractor and ER on remedial actions required 6. If exceedance continue, arrange meeting with IEC, ER and Contractor 7. If exceedance stops, cease additional monitoring	1. Checking monitoring data submitted by ET Leader. 2. Check Contractor's working method 3. Discuss with ET Leader and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial actions to IEC and ER within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if appropriate
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source 2. Inform IEC, ER, EPD and Contractor 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Assess effectiveness of Contractor's remedial actions and kept IEC, EPD and ER informed of the results	1. Check monitoring data submitted by ET Leader 2. Check Contractor's working method 3. Discuss with ET Leader and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Audit implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid for the exceedance 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification 3. Implement the agreed proposals 4. Amend proposal if appropriate
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD 2. Identify source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency to daily 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Arrange meeting with IEC, Contractor and ER to discuss the remedial actions to be taken 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring	1. Discuss amongst ER, ET leader and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Audit the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. In consultation with IEC, agree with the Contractor on the remedial measures to be implemented 4. Ensure remedial measures properly implemented 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid for the exceedance 2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abate.

Table L-2 Event / Action Plan for Construction Noise

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

Table L-3 Event / Action Plan for Water Quality

Event	ET Leader	IEC	ER	Contractor
Action Level being exceeded by one sampling day	1. Repeat in-site measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform IEC and Contractor. 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC and Contractor. 6. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures. submitted by Contractor and advise the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures. 2. Make agreement on the mitigation measures to be implemented. 3. Assess effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER. 6. Implement the agreed mitigation measures.
Action Level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact. 3. Inform IEC and Contractor. 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC and Contractor. 6. Ensure mitigation measures are implemented. 7. Prepare to increase the monitoring frequency to daily. 8. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures. 2. Make agreement on the mitigation measures to be implemented. 3. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days. 6. Implement the agreed mitigation measures.
Limit Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform IEC, contractor, AFCD and EPD. 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC, ER and Contractor. 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit Level.	1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures. 2. Request Contract to critically review the working methods. 3. Make agreement on the mitigation measures to be implemented. 4. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days. 6. Implement the agreed mitigation measures.
Limit Level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings. 2. Identify source(s) of impact. 3. Inform IEC, contractor, AFCD and EPD. 4. Check monitoring data, all plant, equipment and Contractor's working methods. 5. Discuss mitigation measures with IEC, ER and Contractor. 6. Ensure mitigation measures are implemented. 7. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.	1. Discuss with ET and Contractor on the mitigation measures. 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures. 2. Request Contractor to critically review the working methods. 3. Make agreement on the mitigation measures to be implemented. 4. Assess the effectiveness of the implemented mitigation measures. 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the work until no exceedance of Limit Level.	1. Inform the ER and confirm notification of the non-compliance in writing. 2. Rectify unacceptable practice. 3. Check all plant and equipment. 4. Consider changes of working methods. 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days. 6. Implement the agreed mitigation measures. 7. As directed by the ER, to slow down or to stop all or part of the work or construction activities.

Table L-4 Event / Action Plan for Ecology during Construction Phase

EVENT	ACTION			
	ET Leader	**IEC**	**Engineer**	**Contractor**
Non-conformity on one occasion	1. Identify source 2. Inform the IEC and the ER 3. Discuss remedial actions with the IEC, the ER and the Contractor 4. Monitor / audit / review remedial actions until rectification has been completed	1. Check monitoring / auditing results 2. Check the Contractor's working method 3. Discuss with the ET and Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures 5. Check the implementation of remedial measures	1. Notify Contractor 2. Ensure remedial measures are properly implemented 3. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the works in the case of serious non-conformity until situation is rectified	1. Take immediate action to avoid further problem 2. Amend working methods if needed 3. Submit proposals for remedial actions to ET, ER and IEC 4. Rectify damage and implement the agreed remedial actions
Repeated Non-conformity	1. Identify source 2. Inform the IEC, ER, EPD and AFCD 3. Increase monitoring / auditing frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor / audit / review remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring / auditing	1. Check monitoring / auditing results 2. Check the Contractor's working method 3. Discuss with the ET and Contractor on possible remedial measures 4. Supervise the implementation of remedial measures 5. Advise the ER on effectiveness of proposed remedial measures and keep EPD and AFCD informed	1. Notify Contractor 2. Ensure remedial measures are properly implemented 3. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the works in the case of serious non-conformity until situation is rectified	1. Take immediate action to avoid further problem 2. Amend working methods if needed 3. Submit proposals for remedial actions to ET, ER and IEC 4. Rectify damage and implement the agreed remedial actions

Table L-5 Event / Action Plan for Landscape and Visual Impact

Action Level	Environmental Team (ET) Leader	Independent Environmental Checker (IEC)	Engineer's Representative (ER)	Contractor
Non-conformity on one occasion	1. Identify source 2. Inform the IEC and the ER 3. Discuss remedial actions with the IEC, the ER and the Contractor 4. Monitor remedial actions until rectification has been completed	1. Check report 2. Check the Contractor's working method 3. Discuss with the ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures	1. Notify the Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake remedial measures or any necessary replacement
Repeated Non-conformity	1. Identify source 2. Inform the IEC, the ER and EPD 3. Increase monitoring (site audit) frequency 4. Discuss remedial actions with the IEC, the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring (site audit)	1. Check report 2. Check the Contractor's working method 3. Discuss with the ER and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures	1. Notify the Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake remedial measures or any necessary replacement

APPENDIX M
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE

Appendix M - Implementation Schedule of Environmental Mitigation Measures

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of Recommended Measures and Main Concerns to addressed	Location /Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines	Status
						D	C	O		
Air Quality – Construction Phase										
3.8.1	2.9.1	*Construction Dust* In order to comply with Air Pollution Control Ordinance (APCO), the Contractor should undertake at all times measures to prevent dust nuisance as a results of his activities. The Contractors are required to follow all the requirements for dust control stipulated in the Air Pollution Control (Construction Dust) Regulation. Dust suppression measures should be installed as part of good construction practice, and they should be incorporated in the Contract Specification and implemented to minimize dust nuisance to within acceptable levels arising from the works. The followings are examples of the dust suppression measures. *(i)* The area in which excavation takes place shall be sprayed with water immediately prior to, during and immediately after the excavation to minimise dust generation. *(ii)* The Contractor shall frequently clean and water the site to minimize fugitive dust emissions. *(iii)* Effective water sprays shall be used during the delivery and handling of aggregate, and other	To prevent dust nuisance on ASRs during construction	All work site / during construction	Construction Contractor		✓		Air Pollution Control Ordinance Air Pollution Control (Construction Dust) Regulation	*

		similar materials, when dust is likely to be created and to dampen all stored materials during dry and windy weather. *(iv)* Watering of exposed surfaces shall be conducted at least 2 times per day especially during dry and windy weather. *(v)* Areas within the site where there is a regular movement of vehicles must be regularly watered as often as necessary for effective suppression of dust or as often as directed by the Engineer. *(vi)* Where dusty material are being discharged to vehicle from a conveying system at a fixed transfer point, a three-sided roofed enclosure with a flexible curtain across the entry shall be provided. Exhaust fans shall be provided for this enclosure and vented to a suitable fabric filter system. *(vii)* The Contractor shall restrict all motorised vehicles within the site, excluding those on public roads, to a maximum speed of 15 km per hour and confine haulage and delivery vehicles to designated roadways inside the site. *(viii)* Wheel washing facilities shall be installed and used by all vehicles leaving the site. No earth, mud, debris, dust and the like shall be deposited on public roads. Water in the wheel cleaning facility shall be changed at frequent intervals and sediments shall be removed regularly. The Contractor shall submit details of proposals for the wheel cleaning facility. Such wheel washing facilities shall be usable prior to any earthworks excavating activity on the site. The Contractor shall also provide a hard-surfaced road between any washing								

		facility and the public road. *(ix)* All vehicle exhausts shall be directly vertically upwards or directed away from the ground. *(x)* Any materials dropped on paved roads shall be cleaned up immediately to prevent dust nuisance.								
3.8.2	2.9.2	*Odour* In the event that excavated materials are found to be odourous, the following measures should be implemented by the Contractor. i. Place odorous excavated material as far away (say, at least 20m) from air sensitive receivers as possible. ii. Temporary stockpiles of odorous excavated material should be properly covered with tarpaulin and should be removed off-site as soon as practically possible within 2 days to avoid any odour nuisance arising.	To prevent odour nuisance on ASRs During construction	All work site / during construction	Construction Contractor		✓		Air Pollution Control Ordinance Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^
Air Quality – Operational Phase										
3.8.3	2.9.3	No adverse air quality impact is identified during operational phase. In the event that sediment excavated during maintenance are found to be odourous, the following measures should be implemented by DSD (or DSD's maintenance contractor). i. Place odorous excavated material as far away (say, at least 20m) from air sensitive receivers as possible. ii. Odorous excavated material should be properly covered with tarpaulin or packed in plastic bags or stored in enclosed skips and should be removed off-site as soon as	To prevent odour nuisance on ASRs during maintenance	The proposed channel / during operation	DSD (or DSD's maintenance contractor)+			✓	Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	N/A

		practically possible within 2 days to avoid any odour nuisance arising.								

EIA Ref.	EM &A Ref.	Recommended Mitigation Measures	Objectives of Recommended Measures and Main Concerns to addressed	Location /Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines	Status
						D	C	O		
Noise – Construction Phase										
4.7.2	3.8.2	*Level 1 Mitigation - Use of Quiet Plant* The quiet plant used in construction noise calculation is shown in Table 3.4 (and Appendix 4.1 of the EIA). The Contractor can propose other suitable alternative equipment with similar or lower sound power level.	To protect NSRs from noise during construction	All work site / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^
4.7.3	3.8.3	The use of quiet plant is considered to be the most effective ways of alleviating construction noise impact. The Contractor should use quiet plant with sound power level lower than that stipulated in the TM-GW as the Level 1 mitigation for construction noise.	To protect NSRs from noise during construction	All work site / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^
4.7.4	3.8.4	The use of mini or lower power rating equipment (e.g. mini excavator) should also be considered where practical. This technique would be feasible and practical at some locations given the limited space available for using large size construction equipment and the small scale works involved.	To protect NSRs from noise during construction	All work site / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^

4.7.5	3.8.5	The Contractor should take note of ETWB TCW No. 19/2005 – "Environmental Management on Construction Sites" which sets out the policy and procedures requiring contractors to, among others, adopt Quality Powered Mechanical Equipment (QPME).	To protect NSRs from noise during construction	All work site / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No. 19/2005	^
4.7.6 Table 4.11	3.8.6 Table 3.4	A list of quiet powered mechanical equipment (PME) recommended for use during construction phase is tabulated below in ***Table 3.4.***	To protect NSRs from noise during construction	All work site / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No. 19/2005	^
4.7.8	3.8.7	*Level 2 Mitigation - Use of Temporary Noise Barriers* Since most of the NSRs within the Project area are typically low-rise tin-sheeted village houses of not more than 2 storeys (all are less than 5 m tall), it would be effective to have noise screening structures or temporary noise barriers purposely-built along the site boundary to provide additional protection to	To protect NSRs from noise during construction	All work site located at 30m or less from NSRs as shown in Figure 4.2 of the EIA / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	N/A

		NSRs close to the construction site boundary. This could be in the form of purposely-built site hoarding constructed from appropriate materials with a minimum superficial density of 7 kg/m^2. Noise barrier should be provided for noisy construction activities that would be undertaken close (about 30 m or less) to NSRs. The noise barrier should have a vertical height of at least 3 m or (depending on the height of the NSRs to be protected) a height ensuring that the operating equipment can be shielded from the view of the NSRs. The temporary noise barrier should have no gaps or opening at joints. The Contractor should regularly inspect and maintain the noise barrier to ensure its effectiveness.								
4.7.9	3.8.9	For the construction works which have the potential to exceed the noise standards on nearby NSR and whose line of sight cannot be effectively blocked by the temporary noise barrier, movable (mobile) barriers should be provided. This may also be applicable in situation where construction of a temporary noise barrier may not be possible due to site / space constraints, for example blocking village or emergency vehicle access. Movable barriers of at least 2.5 m height with a small cantilevered upper portion and skid footing can be located within a few meters of stationary plant (e.g. generator) and within about 5 m or more of a mobile equipment (e.g. excavator), such that the line of sight to the NSR is blocked by the barriers.	To protect NSRs from noise during construction	All work site for NSRs whose line of sight cannot be effectively blocked by the temporary noise barriers / during constrcution	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	N/A
4.7.12	3.8.10	*Good Site Practices* In general, potential construction noise impact can be minimised or avoided by imposing a combination of the following good site practices as mitigation measures:	To protect NSRs from noise during construction	All work site / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorand	^

		a. Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction period. b. Construction plant should be sited away from NSRs c. Machines and plant that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. d. Equipment known to emit sound strongly in one direction should be orientated such that the noise is directed away from nearby NSRs. e. Material stockpiles and other structures (such as site offices) should be effectively utilised to shield on-site construction activities. f. Stationary equipment should be located within the channel when weather conditions permit (e.g. dry season). g. The Contractor shall devise, arrange methods of working and carrying out the works in such manner as to minimise noise impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these measures are implemented properly. h. In the event that new schools are built near the works area, the Contractor should minimise construction noise exposure to the schools (especially during examination periods). The Contractor should liaise with the school and the Examination Authority to ascertain the exact dates and times of all examination periods during the course of the contract and to avoid noisy activities during these periods.							um on EIA Process	
4.7.1	3.8.1	To maintain an effective communication channel	To promote	All work	Project Office		✓		Environme	^

5	2	with the public, a 24-hour hotline system should be established by the project office for the Contractor to receive any enquiry and complaint lodged by the public in respect of the Project. Upon receipt of enquiry / complaint, the Contractor (or its Environmental Team) should investigate the causes of the incident and take the appropriate action to rectify the situation. Periodic newsletters, information leaflets, notices or other means of communication should be provided to the affected villages, communities, and residents advising them the current progress, the schedule of works in future, the potential environmental impacts arising from the works and the corresponding mitigation measures. It is considered that such a close relation between the local communities and the project site office could ensure speedy resolution of any environmental non-compliance and maintain an environmental standard acceptable to the local communities during construction.	good public relation and maintain effective communication during construction	site/ during construction	(Engineer) & Construction Contractor				ntal Impact Assessment Ordinance Technical Memorandum on EIA Process	
4.7.18	3.8.13	Further mitigation is recommended for NSRs 3, 4, 6 & 10 by restricting concurrent usage of several equipments at the same time during excavation and construction of the channel lining, crossings.	To further mitigate construction noise at NSR 3,4,6 &10	For work within 20m of NSRs 3, 4, 6 &10 / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^
4.7.19	3.8.14	All these construction noise mitigation measures should be implemented by the Contractor during the construction stage of the works. The location of the temporary noise barriers and mobile noise barriers should be further reviewed by the Contractor during the construction stage based on the latest construction	To protect NSRs from noise during construction and to ensure the Contactor will	All works site/ during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance	^

		programme and contemporary conditions, including any changes with respect to NSRs. The Contractor should design, construct, operate and maintain the mitigation measures throughout the construction stage and as required by the Engineer. Before commencement of the works, the Contractor should submit to the Engineer for approval (as part of their method statement) details of the mitigation measures to be employed under the works. The Contractor's proposed mitigation measures should also be certified by the ET Leader and verified by the IEC to ensure the intended noise reduction effectiveness can be achieved.	properly implement the mitigation measures						Technical Memorandum on EIA Process	
Noise – Operational Phase										
		N/A								

EIA Ref.	EM &A Ref.	Recommended Mitigation Measures	Objectives of Recommended Measures and Main Concerns to addressed	Location /Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines	Status
						D	C	O		
Water Quality – Construction Phase										
5.7.2	4.9.2	*General* The Contractor shall observe and comply with the Water Pollution Control Ordinance (WPCO) and its subsidiary regulations. The Contractor shall carry out the works in such a manner as to minimise adverse impacts on the water quality during execution of the works. In particular the Contractor shall arrange his method of working to minimise the effects on the water quality within and outside the site and on the transport routes.	To minimize adverse water quality impact during construction	All work site / during construction	Construction Contractor		✓		Water Pollution Control Ordinance	^
5.7.3	4.9.3	The Contractor shall follow the practices, and be responsible for the design, construction, operation and maintenance of all the mitigation measures below and as specified in ProPECC PN 1/94 – "Construction Site Drainage". The design of the mitigation measures shall be submitted by the Contractor to the Engineer for approval.	To minimize adverse water quality impact during construction	All work site / during construction	Construction Contractor		✓		ProPECC PN 1/94	^
5.7.4	4.9.4	*Site Preparation / Clearance* Proper construction site drainage management measures should be implemented to control site runoff and drainage, and thereby prevent high sediment loadings from reaching Deep Bay or the nearby abandoned fishponds. Site runoff and wastewater should not be discharged into the fishponds irrespective of the status of the fishponds.	To minimize adverse water quality impact during construction	All work site / during construction	Construction Contractor		✓		ProPECC PN 1/94	^
5.7.5	4.9.5	Turbid water from construction sites must be treated to minimise the solids content before being discharged. Advice on the handling and disposal of	To minimize adverse water quality impact	All work site / during construction	Construction Contractor		✓		ProPECC PN 1/94	*

		site discharge is given in the ProPECC Note PN 1/94 – "Construction Site Drainage".	during construction							
5.7.6	4.9.6	In general, surface run-off from construction sites should be discharged into water bodies via adequately designed silt removal facilities such as sand traps, silt traps and sediment basins. Channels or earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries should be provided to intercept storm run-off from outside the site so that it will not wash across the site (or into the proposed channel works area). Catchpits and perimeter channels should be constructed in advance of earthworks.	To minimize adverse water quality impact during construction	All work site / during construction	Construction Contractor		✓		ProPECC PN 1/94	*
5.7.7	4.9.7	Silt removal facilities and diversion channels should be maintained and the deposited silt and grit should be removed regularly, especially at the onset of and after each rainstorm to ensure proper functioning of these facilities at all times.	To minimize adverse water quality impact during construction	All work site / during construction	Construction Contractor		✓		ProPECC PN 1/94	^
5.7.8	4.9.8	Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into the nearby water bodies. Open stockpiles susceptible to erosion should be covered with tarpaulin or similar fabric and provided with containment such as bunds, sand bag barriers or equivalent measures, especially during the wet season (April – September) or when heavy rainstorm is predicted. Runoff to watercourses should be reduced by minimising flat exposed areas of permeable soil, and by forming pits or diversion channels into which runoff can flow to suitable treatment facilities before discharge.	To minimize adverse water quality impact during construction	All work site / during construction	Construction Contractor		✓		ProPECC PN 1/94	^
5.7.9	4.9.9	*De-watering / Excavation of Stream / Pond and Removal of Sediment* Excavation works within the existing stream section and pond should be programmed to be carried out	To minimize adverse water quality impact from excavation	Existing stream section and pond to be	Construction Contractor		✓		Water Pollution Control Ordinance	N/A

		during dry season from 1st October to 31st March as far as practicable to minimise impacts on downstream water quality and nearby sensitive receivers.	works during wet season.	excavated / during construction						
5.7.10	4.9.10	The use of containment structure such as sheet pile barriers, earth bunds, sand bag barriers wrapped with geotextile fabric or similar material, diversion channels or other similar techniques should be installed surrounding the excavation area to facilitate a dry or at least confined excavation within the stream. Schematic diagram of typical drainage measures during excavation of the stream is shown in Figure 5.3 (of the EIA). The Contractor should submit details of the temporary drainage measures along with the proposed measures to ameliorate the potential water quality impacts to the Environmental Team (ET) for verification and to the Engineer for approval before commencement of the construction works.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor				Water Pollution Control Ordinance	^
5.7.11	4.9.11	The excavation area should be limited to section of half width of the stream in order to maintain continuous water flow within the stream during the construction phase.	Restrict width of excavation work to minimize impacts on downstream water quality and sensitive receivers.	Existing stream section to be excavated / during construction	Construction Contractor		✓		Water Pollution Control Ordinance	^
5.7.12	4.9.12	After dewatering of the stream and pond, the sediments should be allowed to dry before excavation (yet still maintain a moist state to avoid dust nuisance). This will facilitate excavation of the sediments and also minimise the risk of drained water flowing back into watercourses as the sediment is handled. Where time or weather constraints require handling of wet sediment, care should be taken in the removal of sediment and the storage area should be	To minimize adverse water quality impact during construction (in particular when excavating and handling sediments)	All works site where sediment removal is required / during construction	Construction Contractor		✓		Water Pollution Control Ordinance	^

		bunded to prevent silty runoff entering water bodies.								
5.7.13	4.9.13	Tightly sealed closed grab excavators should be employed to minimize leakage and loss of sediments during excavation works within the stream.	To minimize adverse water quality impact during construction (in particular when excavating and handling sediments)	All works site where sediment removal is required / during construction	Construction Contractor		✓		Water Pollution Control Ordinance	N/A
5.7.14	4.9.14	Excavated sediment material from stream should be stored in covered impermeable skips and disposed within 2 days, to avoid inadvertent release of silty runoff and contaminants to nearby water bodies. If sediment material is identified to be suitable for reuse as stream bed material, it should be properly stockpiled, adequately covered and provided with containment to prevent runoff during wet season.	To minimize adverse water quality impact during construction (in particular when excavating and handling sediments)	All works site where sediment removal is required / during construction	Construction Contractor		✓		Water Pollution Control Ordinance	N/A
5.7.15	4.9.15	Regular monitoring of suspended solids and turbidity should be conducted during excavation works. Any exceedance of water quality in the nearby water bodies caused by inadvertent release of site runoff should be rectified in accordance with EM&A programme for this Project.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		✓		Water Pollution Control Ordinance	^
5.7.16	4.9.16	*Concreting Work* Runoff should be carefully channelled to prevent concrete-contaminated water from entering watercourses. Adjustment of pH can be achieved by adding a suitable neutralising reagent to wastewater prior to discharge. Reuse of the supernatant from the sediment pits for washing out of concrete lorries should be practised.	To minimize adverse water quality impact during construction (in particular concreting works)	All works site / during construction	Construction Contractor		✓		Water Pollution Control Ordinance	N/A
5.7.17	4.9.17	Any exceedance of acceptable range of pH levels in the nearby water bodies caused by inadvertent release	To minimize adverse water	All works site / during	Construction Contractor		✓		Water Pollution	^

		of site runoff containing concrete should be monitored and rectified under the EM&A programme for this Project.	quality impact during construction (in particular concreting works)	construction					Control Ordinance	
5.7.18	4.9.18	*Site Workshop or Depot* *General Construction Works* Any Contractor generating waste oil or other chemicals as a result of his activities should register as a chemical waste producer and provide a safe designated storage area for chemicals on site. The storage site should be located away from existing water courses.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		✓		Water Pollution Control Ordinance	^
5.7.19	4.9.19	All compounds in works areas should be located on areas of hard standing surface with provision of diversion channels and settlement ponds where necessary to allow interception and controlled release of settled / treated water. Hard standing compounds should drain via an oil interceptor. The oil interceptor should be regularly inspected and cleaned to avoid wash-out of oil during storm conditions. A bypass should be provided to avoid overload of the interceptor's capacity. To prevent spillage of fuels or other chemicals to water courses, all fuel tanks and storage areas should be sited on sealed areas within a bund of a capacity equal to 110% of the storage capacity of the largest tank. Where temporary storage of chemicals or fuel drums outside the storage area is necessary, drip tray should be provided. Disposal of the waste oil should be carried out by a licensed collector. Good housekeeping practices should be implemented to minimise careless spillage and to keep the storage and the work space in a tidy and clean condition. Appropriate training including safety	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		✓		Water Pollution Control Ordinance	^

		codes and relevant manuals should be given to the personnel who regularly handle the chemicals on site.								
5.7.20	4.9.20	*Emergency Contingency Plan* The Contractor should prepare an emergency contingency plan (spill response plan) for the Project to contain and remove accidental spillage of chemicals and all hazardous materials on-site including fuels at short notice and to prevent or to minimize the quantities of contaminants from entering the stream water and affecting the sensitive habitats. The Contractor should submit the emergency contingency plan to the ET for review & comment and the Engineer for approval. The Plan should include, but not limited to, the following: (i) potential emergency situations (ii) chemicals or hazardous materials used on-site (and their location) (iii) emergency response team (iv) emergency action plans and procedures (v) list of emergency telephone hotlines (vi) locations and types of emergency response equipment (vii) training plan and emergency drill (viii) schedules for review and audit.	To prevent or minimize the quantities of contaminants entering the stream water and affecting the habitats in case of accidental spillage of chemicals and hazardous materials	All works site / during construction	Construction Contractor		✓		Water Pollution Control Ordinance	^
5.7.21	4.9.21	<u>General Guidance for Handling of Spillage / Leakage</u> In the event that accidental spillage or leakage of hazardous substances / chemical wastes takes place, the response procedures as listed below should be followed. It should be noted that the procedures below are not exhaustive. The Contractor should propose other response procedures in the emergency contingency plan based on actual site conditions as	To prevent or minimize the quantities of contaminants entering the stream water and affecting the habitats in case of accidental	All works site / during construction	Construction Contractor		✓		Water Pollution Control Ordinance	^

		well as the particular types and quantities of chemicals or hazardous substances used, handled and stored on-site. • Contact person in charge or nominated person immediately and initiate action plans based on the emergency contingency plan. • Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance. • Instruct untrained personnel to keep at a safe distance well away from the spillage area. • If the spillage / leakage involves high toxic, volatile or hazardous waste, initiate emergency evacuation and call the emergency service. • Only trained persons equipped with suitable protective clothing and equipment should be allowed to enter and clean up the waste spillage / leakage area. • Where the spillage / leakage is contained in the enclosed storage area, the waste can be transferred back into suitable containers by suitable handheld equipment, such as hand operated pumps, scoops or shovels. If the spillage / leakage quantity is small, it can be covered and mixed with suitable absorbing materials such as tissue paper, dry soft sand or vermiculite. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal. • For spillage / leakage in other areas, immediate action is required to contain the spillage / leakage. Suitable liquid absorbing materials such as tissue paper, dry soft sand or vermiculite should be used to	spillage of chemicals and hazardous materials							

		cover the spill. The resultant slurry should be treated as chemical waste and transferred to suitable containers for disposal. • Areas that have been contaminated by chemical waste spillage / leakage should be cleaned. While water is a soluble solvent for aqueous chemical wastes and water soluble organic waste, kerosene or turpentine should be used for organic chemical wastes that are not soluble in water. The waste from the cleanup operation should be treated and disposed of as chemical waste. • In incidents where the spillage / leakage may result in significant contamination of an area or risk of pollution, the Environmental Protection Department should be informed immediately.								
5.7.22	4.9.22	*Presence of Additional Population (Workers)* Sewage arising from construction workers on site should be collected in a suitable storage facility, such as portable chemical toilets. An adequate number of portable toilets should be provided for the construction workforce. The portable toilets should be maintained in a state that will not deter the workers from using them. Wastewater collected should be discharged into foul sewers and collected by licensed collectors.	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		✓		ProPECC PN 1/94 Water Pollution Control Ordinance	^
5.7.23	4.9.23	The collected wastewater from sewage facilities and also from eating areas or washing facilities of site offices should be disposed to foul sewer. If there is no foul sewer in the vicinity, a septic tank and soakaway system or for larger flow, a sewage treatment plant should be provided. All domestic sewage discharges (except into foul sewer) are controlled under the WPCO. The Contractor must	To minimize adverse water quality impact during construction	All works site / during construction	Construction Contractor		✓		ProPECC PN 1/94 Water Pollution Control Ordinance	^

		apply for a discharge licence from EPD and must comply with the terms and conditions of a valid WPCO licence.								
Water Quality – Operational Phase										
5.9.1	4.9.24	*Measures to Reduce Pollution Loadings entering the Channel* Appropriate location along the toe zone of the channel will be filled with about 200 mm thick original stream bed materials. The upstream dry weather flow channel will also be filled with a layer of about 100 mm thick original stream bed materials on top of the rip-rap lining. The most important feature of such measure is the prospect of natural re-colonization of benthic communities and re-establishment of vegetation along the toe zone of the channel replicating riparian vegetation. The vegetation is not expected to be detrimental in any way to the channel structure or to the conveyance of flood flow. Specific planting is considered not necessary as vegetation will recolonized and established itself naturally similar to current condition. Non-woody species (such as sedges) is preferred for ease of maintenance and pruning as they are easier to be pruned and will impede the flow of water to lesser extent during large flow as the vegetation will just collapse and spring back. However, seasonal cutting and clearance of vegetation, particularly in advance of the wet season may be required. This mitigation measure has additional benefits of aesthetic and ecological value.	To minimize adverse water quality impact during operation	The proposed channel / during operation	DSD (or DSD's maintenance contractor)+			✓	--	N/A
5.9.2	4.9.25	In addition, the use of rock fill base or original stream bed materials for the channel bed has the benefit of providing uneven surfaces and cavities for sediment to accumulate. Ultimately a sediment layer will build up on the channel bed, forming a natural layer for	To minimize adverse water quality impact during operation	The proposed channel / during operation	DSD (or DSD's maintenance contractor)+			✓	--	N/A

		development of the benthic community. Removal of the upper layer of this sediment will only be necessary once the layer thickness has built up to around 300 mm thick, and sediment is likely to be washed downstream in heavy storms. A minimum of 100 mm thick sediment should be allowed to accumulate at the channel bed to permit recolonizing of benthic communities. Growth of vegetation will inhibit washout of sediment and sediment removal can be carried out at the same time as vegetation harvesting during the dry season when flows are minimal.								
5.9.3	4.9.26	Catchpits with sand traps will be provided in the drainage system to trap sands, grits and rubbish in the Hang Hau Tsuen surface runoff prior to discharge to Deep Bay. The catchpit should be cleaned and maintained especially before the onset of the wet season to ensure its performance.	To minimize adverse water quality impact during operation	The proposed channel / during operation	DSD (or DSD's maintenance contractor)+			✓	--	N/A
5.9.4	4.9.27	*Environmental Considerations for Maintenance of the Proposed Channel* Maintenance may be necessary for the proposed channel at regular intervals to remove excessive silts, vegetation, rubbish, debris and obstruction. Little or no maintenance will be necessary for the natural stream bed section of the channel. Likewise, the retained and compensated mangroves within the mangrove zone (Figure 2.7 of the EIA) will not require any long term maintenance. Good practice guides for the planning and execution of desilting and maintenance works are recommended in the following sections.	To minimize adverse water quality impact during operation (maintenance works) of the channel	The proposed channel / during operation	DSD (or DSD's maintenance contractor)+			✓	--	N/A
5.9.5	4.9.28	The following considerations should be included in planning for the maintenance works of the proposed channel: (a) Maintenance of the channel should be restricted	To minimize adverse water quality impact during operation	The proposed channel / during operation	DSD (or DSD's maintenance contractor)+			✓	--	N/A

		to silt removal when the accumulated silt will adversely affect the hydraulic capacity of the channel (except during emergency situations where flooding risk is imminent). Desilting should be carried out by hand or light machinery during the dry season (October to March) when water flow is low. (b) The management of woody / emergent vegetation should be limited to manual cutting, to be carried out during dry season and only when unchecked growth of such vegetation is very likely to impede channel flow. (c) Mangroves within the mangrove zone should be retained if the hydraulic capacity of the channel is adequate. Mangroves found outside the mangrove zone but within the proposed channel should be remove as they will affect the hydraulic capacity of the channel. Rip-rap that are used to delineate the mangrove zone should be replaced if found damaged. (d) A minimum of 100 mm thick sediment should be allowed to accumulate on the channel bed to permit recolonization of benthic communities. (e) Phasing of the works should be considered to better control and minimize any impacts caused, and to provide refuges for aquatic organisms. Where possible, works should be carried out along half width of the channel in short sections. A free passage along the channel is necessary to avoid forming stagnant water in any phase of the works and to	(maintenance works) of the channel							

		maintain the integrity of aquatic communities. (f) Containment structures (such as sand bags barrier or similar method) should be provided for the active desilting works area to facilitate a dry or at least confined working area within the channel. (g) Where no maintenance access is available for the channel, temporary access to the works site should be carefully planned and located to minimize disturbance caused to the channel, adjacent vegetation (especially mangroves) and nearby sensitive receivers by construction plants. (h) The use of lesser or smaller construction plants should be considered to reduce disturbance to the channel bed. Quiet construction plants should be used. (i) The locations for the disposal of the removed materials should be identified and agreement sought with the relevant departments before commencement of the maintenance works. Temporary stockpile of waste materials should be located away from the channel and properly covered. These waste materials should be disposed of in a timely and appropriate manner.								
5.9.7	4.9.30	*Mitigation Measures for the Proposed Access Road, Viewing Point and Carpark* Highways Department (HyD) standard road drainage system should be provided along the proposed access road and viewing point and carpark to collect the road runoff. The road drainage design should	To minimize adverse water quality impact during operation of the proposed access road,	The proposed access road, viewing point and carpark / during	CEDD (to incorporate HyD standard road drainage system design)	✓		✓	--	N/A

		incorporate gullies and silt / grit traps to trap any pollutants in the road surface runoff prior to discharge into Deep Bay.	viewing point and carpark	operation	HyD (to maintenance and mange the road drainage system)+					
5.9.8	4.9.31	Regular cleansing of the access road and viewing point and carpark following normal established practices should be carried out to remove any accumulated silts, grits and litters. The gullies and silt / grit traps should also be regularly cleaned and maintained in good working condition.	To minimize adverse water quality impact during operation of the proposed access road, viewing point and carpark	The proposed access road, viewing point and carpark / during operation	FEHD+			✓	--	N/A

EIA Ref.	EM &A Ref.	Recommended Mitigation Measures	Objectives of Recommended Measures and Main Concerns to addressed	Location /Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines	Status
						D	C	O		
Waste – Construction Phase										
6.5.1	5.1.1	*General* The HKSAR Government's construction and demolition waste management policy follows the same hierarchy as for other wastes, i.e. in order of desirability: avoidance, minimisation, recycling, treatment and safe disposal of waste. During the construction period the Contractor, Engineer and environmental specialists (Environmental Team, Independent Environmental Check) should work closely together with a view to reduce the volumes of materials requiring removal and final disposal.	To reduce the volumes of materials requiring removal and final disposal	All work site / during construction	Construction Contractor, Engineer, Environmental Team and Independent Environmental Checker		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^
6.5.2	5.1.2	Upon appointment, the main Contractor of each construction contract should prepare and implement an Environmental Management Plan (EMP) in accordance with ETWB TCW No. 19/2005 – "Environmental Management on Construction Sites" which should describe the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. The EMP should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP should be submitted to the Engineer for approval. The Contractor should implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^

		(preferably monthly) by the Contractor. The EMP should take into account the recommended mitigation measures in the approved EIA Report.								
6.5.3	5.1.3	The Contractor should refer to the simplified Construction and Demolition Material Management Plan (C&DMMP) conducted for this Project (Appendix 6.2 of the EIA) to facilitate him in the preparation of the EMP.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^
6.5.4	5.1.4	Training of construction staff should be undertaken by the Contractor about the concept of site cleanliness and appropriate waste management procedures. The Contractor should develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. Requirements for staff training should be included in the EMP.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^
6.5.5	5.1.5	Good planning and site management practice should be employed to eliminate over ordering or mixing of construction materials to reduce wastage. Proper storage and site practices will minimise the damage or contamination of construction materials. Regular cleaning and maintenance of the waste storage area should be provided.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^
6.5.6	5.1.6	Where waste generation is unavoidable, the potential for recycling or reuse should be rigorously explored. If waste cannot be recycled, disposal routes described in the EMP should be followed. A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be implemented. In order to monitor the disposal of C&D material and solid wastes at public fill reception facilities and landfills and to control fly-	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^

		tipping, a trip-ticket system should be included. One may make reference to ETWB TCW No. 31/2004 for details.								
6.5.7	5.1.7	Imported soft fill and rocks should be source from CEDD's fill bank, other projects or other approved sources instead of using new materials. Approval from the Engineer and all other relevant parties should be obtained by the Contractor before importation of the fill materials.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^
6.5.8	5.1.8	***On-site Sorting, Reuse and Recycling*** All waste materials should be segregated into categories covering: • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^
6.5.9	5.1.9	Proper segregation and disposal of construction waste should be implemented. Separate containers should be provided for inert and non-inert wastes.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^
6.5.10	5.1.10	Sorting is important to recover materials for reuse and recycling. Specific area should be allocated for on-site sorting of C&D materials and to provide a temporary storage area for those sorted materials such as metals, concrete, timber, plastics, glass, excavated spoils, bricks / tiles and waste papers. If area is limited, all C&D materials should at least be sorted on-site into inert and non-inert components.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^

		Non-inert materials (C&D waste) such as bamboo, timber, vegetation, packaging waste and other organic materials should be reused and recycled wherever possible and disposed of to designated landfill only as a last resort. Inert materials (public fill) such as concrete, stone, clay, brick, soil, asphalt and the like should be separated and reused in this or other projects (subject to approval by the relevant parties in accordance with the ETWB TCW No. 31/2004) before disposed of at a public fill reception facility operated by Civil Engineering and Development Department (CEDD). Steel and other metals should be recovered from demolition waste stream and recycled.								
6.5.11	5.1.11	The reuse of inert materials such as soil, rock and broken concrete should be maximised. Waste should be separated into fine, soft and hard materials. With the use of a crusher coarse material can be crushed to make it suitable for use as fill material where fill is required in the works. This minimises the use of imported material and maximises use of the C&D material produced.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^
6.5.12	5.1.12	Prior to export of material from the site, the potential for it to be reused should be assessed. Most C&D material can easily be reused with minimum processing. Waste separation methods should be followed to ensure that C&D waste is separated at source. Suitable soft materials should be used for landscaping and grading of embankments. Fine material should be separated out and used as topsoil.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^
6.5.13	5.1.13	The feasibility of using recycled aggregates in lieu of virgin materials should be rigorously considered during the detailed design and construction phases as stipulated in WBTC No. 12/2002 and ETWB TCW No. 24/2004. In general, recycled aggregates are suitable for use as fill materials in earthworks, road	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB	^

		sub-base formation, and drainage works. Recycled aggregates can also be used in concrete (up to Grade 35) for mass concrete walls and other minor structures such as planter boxes, toe wall planters and pavement, etc.							TCW No. 19/2005, 24/2004 WBTC No. 12/2002	
6.5.14	5.1.14	Recycled inert C&D material should be used in the works as sub-bases for access roads and footpaths of the proposed channel. Recycled aggregates should be considered for use in concrete as outlined in the above mentioned technical circulars. Some recycled rock material can be reused as rock fill or as stream bed material. This is dependent on size of rock fragments but can be achieved by appropriate use of a crusher.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction			✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^
6.5.15	5.1.15	***Site Clearance / Demolition Materials*** ***Excavated Materials*** All C&D materials should be sorted on-site into inert and non-inert components by the Contractor. Non inert materials (C&D waste) such as wood, glass and plastic should be reused and recycled before disposal to a designated landfill as a last resort (currently assume to be the WENT Landfill). Inert materials (public fill) such as soil, rubble, sand, rock, brick and concrete should be separated and where appropriate broken down to size suitable for subsequent filling. Suitable C&D material should be use as pipe bedding or for backfilling of retaining walls, box culvert and formation of channel embankments. Excavated rocks from existing streams should be reused for rip-rap lining. Inert materials should be reused on-site or in other projects approved by relevant parties in accordance with the ETWB TCW No. 31/2004 before disposed of at public fill reception facilities. Steel and other metals should be recovered from	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005, 31/2004	^

		C&D materials and recycled.								
6.5.16	5.1.16	Some of the excavated sediment from the stream bed will be contaminated with high levels of heavy metals. Contaminated sediment should be disposed of in accordance with ETWB TCW No. 34/2002 and WBTC No. 12/2000. In order to minimise off-site disposal, uncontaminated sediment should be reused as channel bed material as far as possible.	Proper disposal of excavated sediment	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 34/2002 WBTC No. 12/2000	^
6.5.17	5.1.17	Good quality reusable topsoil should be stockpiled for later landscaping works. Stockpiles should be less than 2 m in height, formed to a safe angle of repose and hydroseeded or covered with tarpaulin to prevent erosion during the rainy season and to minimise dust generation.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^
6.5.18	5.1.18	Control measures for temporary stockpiles on-site should be taken in order to minimize the noise, generation of dust, pollution of water and visual impact. These measures include: • surface of stockpiled soil should be regularly wetted with water especially during dry season; • disturbance of stockpiled soil should be minimized; • stockpiled soil should be properly covered with tarpaulin especially when heavy rain storms are predicted; • stockpiling areas should be enclosed where space is available; • stockpiling location should be away from the water bodies; and	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^

		• an independent surface water drainage system equipped with silt traps should be installed at the stockpiling area.								
6.5.19	5.1.19	The identification of final disposal sites for C&D materials generated by the construction works will be considered during the detailed design stage of the Project when the volume and types of C&D materials can be more accurately estimated. The Public Fill Committee of CEDD should be consulted on designated outlets (e.g. public fill reception facility) for public fill, whilst EPD should be consulted on landfills for C&D waste. Marine Fill Committee of CEDD should be consulted on the marine disposal sites of the excavated sediment if needed. The public fill to be disposed to public fill reception facilities must consist entirely of inert construction materials. Disposal of C&D waste to landfill must not have more than 50% (by weight) inert material. The C&D waste delivered for landfill disposal should contain no free water and the liquid content should not exceed 70% by weight.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005, 34/2002 WBTC No. 12/2002	^
6.5.20	5.1.20	In order to avoid dust or odour impacts, any vehicles leaving a works area carrying C&D waste or public fill should have their load covered up before leaving the construction site.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005 WBTC No. 19/2001	^
6.5.21	5.1.21	C&D materials should be disposed of at designated public fill reception facilities or landfills. Reuse of public fill materials at other construction projects is subject to the approval of the relevant project	Waste reduction, reuse, recycling and proper disposal	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance	^

		proponents, Engineer and/or other relevant authorities, such as LandsD, PlanD, etc. Furthermore, unauthorized disposal of C&D materials in particular on private agricultural land is prohibited and may be subject to relevant enforcement and regulating actions. The Contractor shall refer and strictly follow the trip-ticket system for the disposal of C&D materials as stipulated in the ETWB TCW No. 31/2004.	of waste						ETWB TCW No. 19/2005, 31/2004	
6.5.22	5.1.22	*Chemical Waste* Where the construction processes produce chemical waste, the Contractor must register with EPD as a chemical waste producer. Wastes classified as chemical wastes are listed in the Waste Disposal (Chemical Waste) (General) Regulation. These wastes are subject to stringent disposal routes. EPD requires information on the particulars of the waste generation processes including the types of waste produced, their location, quantities and generation rates. A nominated contact person must be registered with EPD. An updated list of licensed chemical waste collector can be obtained from EPD.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical Waste	^
6.5.23	5.1.23	Storage, handling, transport and disposal of chemical waste should be arranged in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published by EPD, and should be collected by a licensed chemical waste collector.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the	^

									Packaging Labelling and Storage of Chemical Waste	
6.5.24	5.1.24	Suitable containers should be used for specific types of chemical wastes, containers should be properly labelled (English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations), resistance to corrosion, safely stored and securely closed. Stored volume should not be kept more than 450 liters unless the specification has been approved by the EPD. Storage area should be enclosed by three sides by a wall, partition of fence that is at least 2 m height or height of tallest container with adequate ventilation and space.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical Waste	^
6.5.25	5.1.25	Hard standing, impermeable surfaces draining via oil interceptors should be provided in works area compounds. Interceptors should be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers should be bunded and/or enclosed on three sides to prevent discharge due to accidental spillages or breaches of tanks. Bunding should be of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste, whichever is largest. Waste collected from any grease traps should be collected and disposed of by a	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage	N/A

		licensed contractor.							of Chemical Waste	
6.5.26	5.1.26	Lubricants, waste oils and other chemical wastes are likely to be generated during the maintenance of vehicles and mechanical equipment. Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place. If possible, such waste should be sent to oil recycling companies, and the empty oil drums collected by appropriate companies for reuse or refill.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical Waste	^
6.5.27	5.1.27	The registered chemical waste producer (i.e. the contractor) has to arrange for the chemical waste to be collected by licensed collectors. The licensed collector should regularly take chemical waste to a licensed chemical waste treatment facility (such as the Chemical Waste Treatment Centre in Tsing Yi). A trip ticket system operates to control the movement of chemical wastes.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical Waste	^

6.5.28	5.1.28	No lubricants, oils, solvents or paint products should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging Labelling and Storage of Chemical Waste	^
6.5.29	5.1.29	***General Works Waste*** *Concrete Waste* Dry concrete waste (considered as public fill) should be sorted out from the other wastes and recycled for reuse or sorted out for disposal at designated public fill reception facilities.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005, 33/2002	^
6.5.30	5.1.30	*Wooden Materials* All wooden materials used on-site should be kept separate from other wastes to avoid damage and to facilitate reuse. Timber which cannot be reused should be sorted out from other waste and stored separately from all inert waste before being disposed of to landfill.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005, 33/2002	^
6.5.31	5.1.31	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimise	Waste reduction, reuse, recycling and	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance	^

		wastage of wood. Attention should be paid to WBTC No. 19/2001 – "Metallic Site Hoardings and Signboards" to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork.	proper disposal of waste						ETWB TCW No. 19/2005, 33/2002	
6.5.3 2	5.1.3 2	Only waste material need to be taken to a landfill. It should be separated from recyclable wood and steel materials. As for all waste types these materials should be reused on-site or other approved sites before disposal is considered as an option. Disposal to landfill should only be considered as a final option. Contractors are responsible for storage of re-useable materials on-site.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005, 33/2002	^
6.5.3 3	5.1.3 3	*Municipal Waste* General refuse generated on-site should be stored in enclosed bins or skips and collected separately from other construction and chemical wastes and disposed of at designated landfill. A temporary refuse collection point should be set up by the Contractor to facilitate the collection of refuse by licensed contractors. The removal of waste from the site should be arranged on a daily or at least on every second day by the Contractor to minimise any potential odour impacts, minimise the presence of pests, vermin and other scavengers and prevent unsightly accumulation of waste.	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005	^
6.5.3 4	5.1.3 4	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable	Waste reduction, reuse, recycling and proper disposal of waste	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB	^

		waste should be set up by the Contractor. The contractor should also be responsible for arranging recycling companies to collect these materials.							TCW No. 19/2005	
6.5.35	5.1.35	The burning of refuse on-site is prohibited under the Air Pollution Control Ordinance (APCO) (Cap.311).	Waste reduction, reuse, recycling and proper disposal of waste as well as air pollution control	All work site / during construction	Construction Contractor		✓		Waste Disposal Ordinance ETWB TCW No. 19/2005 Air Pollution Control Ordinance	^
Waste – Operational Phase										
6.6.2	5.3.1	Adequate litter bins should be provided at the viewing point and carpark and should be regularly emptied by Food and Environmental Hygiene Department (FEHD). Normal road sweeping and street cleansing routinely carried out by FEHD on a need basis is considered adequate to minimise impact from such waste. Road side gullies should be cleared and desilted regularly to ensure proper operation of the road drainage system.	Proper management of wastes during operation	Proposed access road, viewing point, carpark and associated road drainage system / during operation	FEHD+			✓	Waste Disposal Ordinance	N/A
6.6.5	5.3.2	In general, desilting or maintenance works should be carried out during dry season where flow in the watercourse is low. Non-inert materials such as excess vegetation and garbage should be properly packed and disposed of to landfill. Inert material such as excess silt should be dried and disposed of public fill reception facilities or to landfill if the amount is negligible. The locations for the disposal of the above materials should be identified and agreement sought	Proper disposal of wastes during routine maintenance	The proposed channel / during operation	DSD (or DSD's maintenance contractor)+			✓	Waste Disposal Ordinance	N/A

		with the relevant departments before commencement of the maintenance works.								

EIA Ref.	EM &A Ref.	Recommended Mitigation Measures	Objectives of Recommended Measures and Main Concerns to addressed	Location /Timing	Implementation Agent	Implementation Stages*			Relevant Legislation & Guidelines	Status
						D	C	O		
Ecology – Construction Phase										
7.9.2	6.5.2	***Impact Avoidance / Minimisation Mitigation*** The layout of the preferred option had avoided the mangroves at the lower reach of the Hang Hau Tsuen stream.	Avoid the mangroves at the lower reach of Hang Hau Tsuen	The proposed channel / during detailed design	CEDD (Detailed Design engineer) to incorporate the preferred option into the design)	✓			Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^
7.9.3	6.5.3	Good site practices and precautionary measures should be implemented to avoid encroachment onto the nearby natural habitats, minimise disturbance to wildlife, and ensure good water quality. Examples of water quality mitigation measures are detailed in ***Section 4.9*** of this EM&A Manual (and Section 5.7 of the EIA report). Other precautionary measures include: • Temporary fencing should be erected along the portion of the mangroves proposed to be retained to form protection zones to restrict access by construction workers or equipment or works. Unnecessary felling of the mangroves within these protection zones is prohibited. Signage should be provided at conspicuous location to warn workers from entering and disturbing these zones.	Avoid, minimize and mitigate ecological impacts during construction	All works sites / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^

		• All workers should be regularly briefed to avoid disturbing the flora and fauna near the works area. • Surface run-off and wastewater from construction sites should be discharged into water bodies via adequately designed silt removal facilities such as sand traps, silt traps and sediment basins. • Open stockpiles susceptible to erosion should be covered with tarpaulin or similar fabric and provided with containment such as bunds, sand bag barriers or equivalent measures, especially during the wet season (April – September) or when heavy rainstorm is predicted. • Excavation works within the existing stream section should be programmed to be carried out during periods of low flow (dry season from 1st October to 31st March) as far as practicable to minimise impacts on downstream water quality and sensitive receivers. The excavation area should be limited to section of half width of the stream in order to maintain continuous water flow within the stream during the construction phase. • Sewage arising from construction workers on site should be collected in a suitable storage facility, such as portable chemical toilets and disposed via licensed contractors.								
7.9.6	6.5.6	The channel layout has been designed to retain as much trees as possible. To mitigate the loss of 16 trees, 114 nos. of new trees in heavy standard size	Compensate the loss of trees	All works sites / during construction	Construction Contractor		✓		Environmental Impact Assessment	^

		will be planted within the site. The proposed trees consisting mostly of native species will include *Celtis sinensis*, *Cinnamomum parthenoxylon*, *Ficus microcarpa*, *Hibiscus tiliaceus* and *Cassia siamea*.							Ordinance Technical Memorandum on EIA Process ETWB TCW No. 3/2006	
7.9.7 Figure 7.3	6.5.7	To mitigate the loss of 0.07 ha of mangrove patches, a total of 0.07 ha, mainly of newly formed surface at the northern part of the downstream section of the channel is identified for compensatory mangrove planting (Figure 7.3 of the EIA). Therefore, loss of mangrove will be compensated with a ratio of 1:1. Upon completion of construction, the mangrove compensation area will be filled with mud of at least 60 cm in depth to be collected from suitable stream bed material excavated during construction, the abandoned fish pond, or mudflat outside the project area. The final level of the planted area should be about 1-2 mCD. Mangrove species to be planted will include *Kandelia obovata* at about 1-1.5 mCD and *Acanthus ilicifolius* at about 1.5-2 mCD, the major species found at the site. Mangrove seedlings of at least 60 cm in height purchased at Futian or Mai Po Nature Reserve should be planted at 1 m spacing. Upon completion of planting, monitoring for survival and growth should be conducted for two years during the operation phase. The monitoring of the compensatory mangrove will be implemented by the project proponent. It is anticipated that both the retained and the compensated mangrove in the mangrove zone (Figure 2.7; Figure 7.3 of the EIA) would need no maintenance in the long run.	Compensate the loss of trees	Mangrove planting area as shown in Figure 7.3 of the EIA / planting upon completion of construction; monitoring & maintenance after completion of planting	Construction Contractor (for planting) CEDD (for 2 years of monitoring during operation)		✓	✓	Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	N/A

7.9.8	6.5.8	Before commencement of the works, the Contractor should submit details of the mitigation measures to be implemented during construction stage as part of their working method statement to the Engineer for approval. This should also include the details of the mangrove planting. This should be reviewed by the Environmental Team Leader and verified by the Independent Environmental Checker.	To ensure the Contractor will properly implement the mitigation measures	All works site / before commencement of construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^
Ecology – Operational Phase										
7.9.9	6.5.9	During operation phase, management and maintenance of the channel bed should be limited to the minimum required to prevent flooding and ensure safety. The channel should be permitted to find (and adjust) its own low flow channel and natural changes in the deposition of silt, sand, rock should be tolerated except where a specific flooding or safety issue is identified. Environmental considerations for maintenance of the proposed channel (see Section 5.9 of the EIA) should be adopted.	To minimize ecological impact during maintenance of the completed channel	The proposed channel / during operation	DSD (or DSD's maintenance contractor)+			✓	Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	N/A
7.9.10	6.5.10	Vegetation management within the channel should be restricted to removing of obstructions and preventing tree establishment, while the presence of vegetation should be tolerated as much as possible. If clearance of vegetation is required to prevent obstruction of water flow, where specific flooding or safety issues have been identified, this should be undertaken during the dry season. Expert advice from AFCD should be sought in case of doubt.	To minimize ecological impact during maintenance of the completed channel	The proposed channel / during operation	DSD (or DSD's maintenance contractor)+			✓	Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	N/A
7.9.11	6.5.11	To further mitigate stream loss, a layer of approximately 100 mm thick original river bed material will be added on top of the rip-rap bedding of the dry weather flow channel to recreate a natural stream environment. This would allow recolonization of benthic communities and re-establishment of	To further mitigate stream loss	The dry weather flow channel / during detailed design,	CEDD (Detailed Design Engineer) to incorporate into channel	✓	✓	✓	Environmental Impact Assessment Ordinance Technical	N/A

		vegetation within the channel.		construction and operation	design Construction Contractor to construct DSD (or DSD's maintenance contractor)+				Memorandum on EIA Process	

EIA Ref.	EM &A Ref.	Recommended Mitigation Measures	Objectives of Recommended Measures and Main Concerns to addressed	Location /Timing	Implementation Agent	Implementation Stages#			Relevant Legislation & Guidelines	Status
						D	C	O		
Landscape and Visual – Construction and Operation Phase										
9.9.4 Table 9.9	8.5.2 Table 8.2	Recommended landscape mitigation measures at construction stage are: • LMM1 Advance tree transplanting • LMM2 Sensitive design site hoarding • LMM3 Preservation of existing tree to be retained • LMM4 Demarcation of tree protection zone • LMM5 Minimize of construction works in stream • LMM6 Soil conservation • LMM7 Operational time restriction	Mitigate landscape and visual impacts during construction	All works sites / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^
Table 9.9	Table 8.2	LMM1 - Advance tree transplanting of existing trees affected by the proposed development.	Preservation of existing trees	Project area / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No. 3/2006	^
Table 9.9	Table 8.2	LMM2 - Sensitively designed site hoarding in both color and form to screen view to the construction	Visual enhancement	Project area / during construction	Construction Contractor		✓		Environmental Impact Assessment	^

		works.							Ordinance Technical Memorandum on EIA Process	
Table 9.9	Table 8.2	LMM3 - Preservation of existing tree to be retain on area not affected by the proposed development.	Conservation of existing trees; Visual screen	Project area / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No. 3/2006	^
Table 9.9	Table 8.2	LMM4 - Demarcation of the tree protection zone for retain trees	Preservation of existing trees	Project area / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No. 3/2006	^
Table 9.9	Table 8.2	LMM5 - Minimization of the construction works in the existing stream	Preservation of existing landscape	Project area / during construction	Construction Contractor		✓		Environmental Impact Assessment	^

			resources and landscape character						Ordinance Technical Memorandum on EIA Process ETWB TCW No. 5/2005	
Table 9.9	Table 8.2	LMM6 - Soil conservation – conservation of existing and imported soil resources.	Conservation of existing topsoil	Project area / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^
Table 9.9	Table 8.2	LMM7 - Operational time restrictions to limit after dark welding and lighting.	Limit night time glare	Project area / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	^
9.9.5 Table 9.9	8.5.3 Table 8.2	To minimize the impact on landscape and visual features, proper provision of mitigation measures during the design stage would result in a visually more compatible design when viewed at adjacent environment. Subject to the detailed design, possible	To minimize the impact on landscape and visual features	Project area / during detailed design, construction and operation	CEDD (Detailed designed Engineer) to incorporate into design	✓	✓	✓	Environmental Impact Assessment Ordinance Technical	^

		mitigation measures to be considered during design stage should include: • LMM8 Selection of fast growing native tree and shrub mixes • LMM9 Preservation of stream and pond not affected • LMM10 Sensitive treatment and design to the external finish of channels walls • LMM11 Maintenance of planting works • LMM12 Compensation planting of mangrove			Construction Contractor to construct DLO, DSD, LCSD to maintain+				Memorandum on EIA Process ETWB TCW No. 2/2004	
Table 9.9	Table 8.2	LMM8 - Selection of fast growing native trees and shrubs mix in compensation for the removal / disturbance area. Planting will be planted along the channel bunds as landscape treatment to screen the built element and mitigate the landscape and visual impact. The combination of natives trees and shrubs mix will provide a more diverse edge effect and break up the overall visual dominance.	Visual screen; Landscape compensation	Project area / during construction and operation	Construction Contractor for planting DLO/LCSD for management and maintenance+		✓	✓	Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No. 2/2004	^
Table 9.9	Table 8.2	LMM9 - Preservation of existing stream and pond not affected by the development.	Preservation of Landscape resources and character	Section of existing stream and pond not affected by the project / during construction and operation	Construction Contractor during construction DSD for management and maintenance (for area within DSD		✓	✓	Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB	^

					boundary)+				TCW No. 5/2005	
Table 9.9	Table 8.2	LMM10 - Provide sensitive treatment and design to the external finish of the channel walls such as adopting the use of natural materials and planting to soften surface of built structures	Visual enhancement	Project area / during construction and operation	Construction Contractor during construction DSD for management and maintenance (for area within DSD boundary)+ DLO/LCSD for management and maintenance of planting outside DSD boundary +		✓	✓	Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No. 2/2004	N/A
Table 9.9	Table 8.2	LMM11 - Maintenance of planting works upon completion.	Landscape compensation	Operation period	Construction Contractor for planting and maintenance during establishment period DLO/LCSD for management and maintenance+		✓	✓	Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No.	N/A

									2/2004	
Table 9.9	Table 8.2	LMM12 - Compensation planting of mangrove to stream bed	Landscape compensation	Mangrove zone / during construction (no long term maintenance necessary)	Construction Contractor for planting and maintenance during establishment period No long term maintenance necessary		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No. 2/2004	N/A
9.9.6	8.5.4	To mitigate the loss of 16 trees, 114 nos. of new trees in heavy standard size will be planted within the site. The proposed trees consisting mostly of native species will include *Celtis sinensis*, *Cinnamomum parthenoxylon*, *Ficus microcarpa*, *Hibiscus tiliaceus* and *Cassia siamea*. The total aggregated girth size of compensatory trees of 8.55 m is more than the felled 3.59 m. Therefore, loss of tree will be compensated with a ratio of more than 1:1 in terms of numbers and aggregated girth size.	Mitigate landscape and visual impacts during construction Compensate for the loss of tree fell	All works sites / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process ETWB TCW No. 3/2006	N/A
9.9.7	8.5.5	The following native shrub species are recommended to be planted on the hydroseeded slope of the embankments: *Calliandra haematocephala*, *Codiaeum variegatum*, *Duranta repen* and *Lxora stricta*. Drooping plants such as *Jasminum mesnyi*, *Russelia equisetiformis* and *Asparagus sprengeri* are recommended to be planted to soften and provide greenery to the channel walls.	Mitigate landscape and visual impacts during construction	All works sites / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA	N/A

									Process	
9.9.9	8.5.6	As details of the proposed planting cannot be ascertain at the EIA stage, the preliminary design stage of the Project, it is recommended that a detailed Landscape Plan be submitted before commencement of planting or landscape works of the Project. The Landscape Plan should include the locations, size, number and species of plantings, design details, implementation programme, maintenance and management schedules, and drawings in scale of 1:1000 showing the landscape and visual mitigation measures. The Landscape Plan should be certified by the ET Leader and verified by the Independent Environmental Checker (IEC) as conforming to the information, requirements and recommendations set out in the approved EIA Report before submission to the relevant authorities.	Mitigate landscape and visual impacts during construction	Al works sites / during construction	Construction Contractor		✓		Environmental Impact Assessment Ordinance Technical Memorandum on EIA Process	N/A

Remarks:	^ Compliance of mitigation measure;	X Non-compliance of mitigation measure;
	N/A Not Applicable;	• Non-compliance but rectified by the contractor
	# Recommendation was made during site audit but improved/rectified by the contractor.	# D = Design, C = Construction, O = Operation
	** Recommendation was made during site audit but not yet improved/rectified by the contractor.	
	+ CEDD will assume to be responsible for the mitigation measures until an agreement is reach between CEDD and relevant parties on the management and maintenance of the mitigation measures.	

APPENDIX N
COMPLAINT LOG

APPENDIX N – COMPLAINT LOG

Reporting Month: September 2012

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

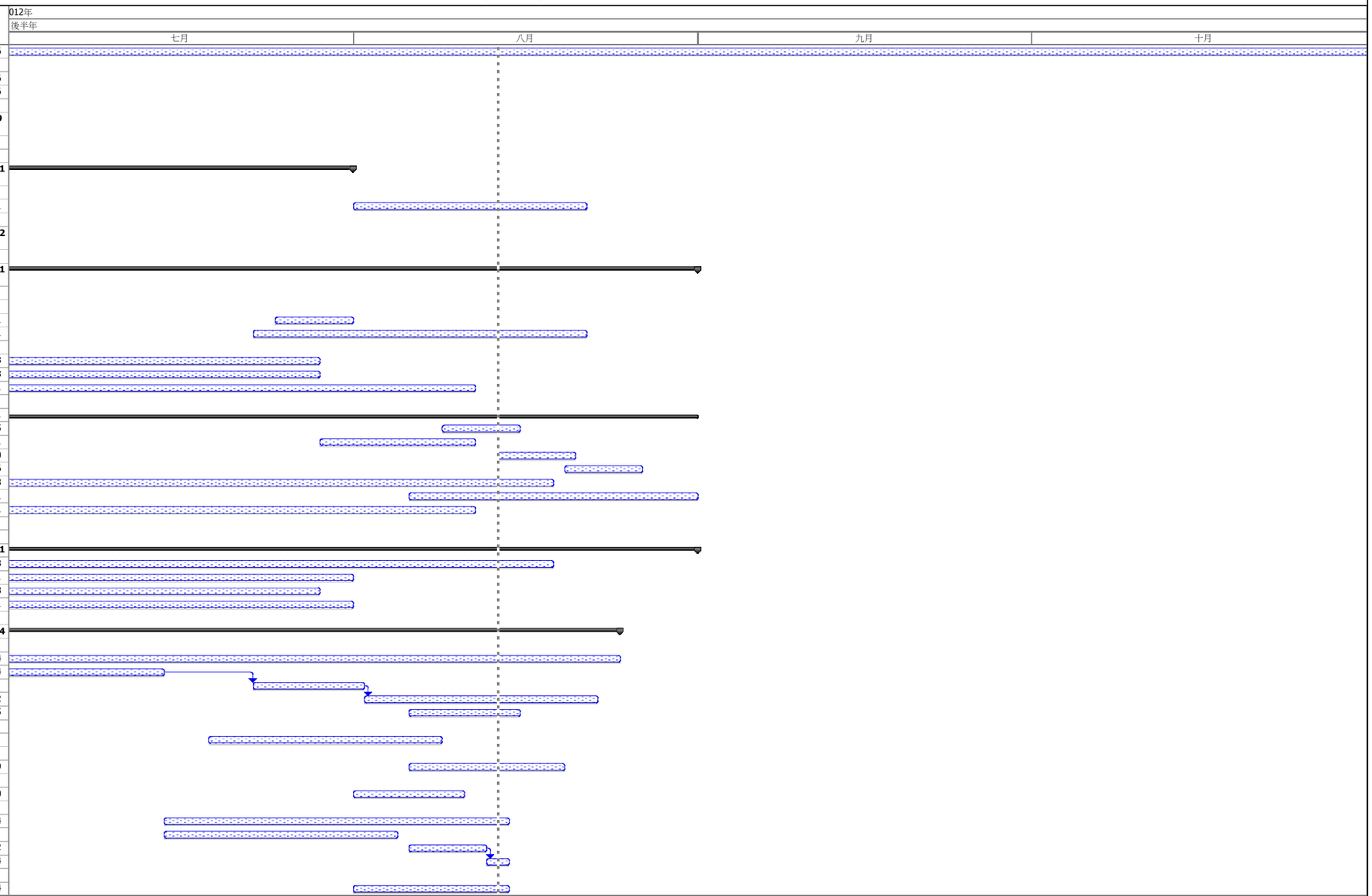
Remarks: No environmental complaint was received in the reporting month.

APPENDIX O
CONSTURCTION PROGRAMME

Acceleration programme

CEDD CONTRACT NO. YL / 2009 / 01

碼	Task Name	工期	開始時間	完成時間
1	**CONTRACT: YL/2009/01 Commencement and to Completion of Works**	1156 days	2009/12/29	2013/2/26
2				
3	Preliminary Works	733 days	2010/2/24	2012/2/26
4	Monitoring settlement / tilting of adjacent building structures	728 days	2010/3/1	2012/2/26
5				
6	**(C) SECTION III : Construction of Four Pedestrain Crossing H. H. T. Channel**	**875 days**	**2010/1/17**	**2012/6/9**
7	Bridge A - D Paving and finishes	38 days	2012/5/3	2012/6/9
8				
9	**(D) SECTION IV : Construction of Main Drainage Channel other than works in Section II**	**946 days**	**2009/12/29**	**2012/7/31**
10				
11	Installation of cat ladder /concrete apron	21 days	2012/8/1	2012/8/21
12				
13	**(E) SECTION V : All Remaining Works other than in Sections I, II, III, IV, VI, VII & VIII**	**773 days**	**2010/4/11**	**2012/5/22**
14				
15	**Amenity Area (formation only, road and drainage works included under 'Access Road & Footpath')**	**352 days**	**2011/9/15**	**2012/8/31**
16	**(Northern side)**			
17				
18	DN 150 watermain - water sampling test	7 days	2012/7/25	2012/7/31
19	Irrigation pipes & water points	30 days	2012/7/23	2012/8/21
20				
21	CLP works	44 days	2012/6/15	2012/7/28
22	PCCW works	43 days	2012/6/16	2012/7/28
23	PL cable ducts, drawpits & street light installation	72 days	2012/6/1	2012/8/11
24				
25	Road paving & footpath work	152 days	2012/4/2	2012/8/31
26	a.Installation of Manhole cover	7 days	2012/8/9	2012/8/15
27	b. Road Gully / pipe installation	14 days	2012/7/29	2012/8/11
28	*b. Road asphalt laying (wearing course)*	7 days	2012/8/14	2012/8/20
29	*d. Road Marking*	7 days	2012/8/20	2012/8/26
30	*e. Street Funiture installation*	71 days	2012/6/9	2012/8/18
31	*f. Paving block*	26 days	2012/8/6	2012/8/31
32	9. Planting work	48 days	2012/6/25	2012/8/11
33				
34				
35	**(F) SECTION VI : All Landscape Softworks**	**1000 days**	**2009/12/6**	**2012/8/31**
36	Trees transplanting	413 days	2011/7/3	2012/8/18
37	Ground preparation and soiling for planting	121 days	2012/4/2	2012/7/31
38	Hydroseeding	83 days	2012/5/7	2012/7/28
39	Trees and shrubs planting	60 days	2012/6/2	2012/7/31
40				
41	**(H) SECTION VIII : All Works Within Portion D**	**970 days**	**2009/12/29**	**2012/8/24**
42				
43	Modification of existing access road Jounction at Deep Bay Road	82 days	2012/6/4	2012/8/24
44	-XP application	41 days	2012/6/4	2012/7/14
45	-Road advice	10 days	2012/7/23	2012/8/1
46	-Road work construction	21 days	2012/8/2	2012/8/22
47	-Modification of existing Utilities services	10 days	2012/8/6	2012/8/15
48				
49	Made good river bed	21 days	2012/7/19	2012/8/8
50				
51	RCP construction	14 days	2012/8/6	2012/8/19
52				
53	Modification of staircase at bridge A	10 days	2012/8/1	2012/8/10
54				
55	Road Resurfacing of Deep Bay Road (New junction)	31 days?	2012/7/15	2012/8/14
56	Application of XP	21 days	2012/7/15	2012/8/4
57	Road Advice	7 days	2012/8/6	2012/8/12
58	Road resurfacing	2 days	2012/8/13	2012/8/14
59				
60	Modification of existing gully pipe at Deep Bay Road	14 days	2012/8/1	2012/8/14



Project: YL/2009/01 Rev 8
Date: 2012/7/28

Task Split Progress Milestone Summary Project Summary External Tasks External Milestone Deadline

Master Programme (updated May 2012)
Hang Hau Tsuen Channel at Lau Fau Shan
Prepared by KLLee & [28/07/2012]