

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

8/F, Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong
Tel : 2695 8318 E-mail : etl@ets-testconsult.com
Fax : 2695 3944 Web site : www.ets-testconsult.com

TEST REPORT

CHINA HARBOUR ENGINEERING CO. LIMITED

**DELIVERY OF RECLAMATION MATERIAL TO
MAINLAND -
ENVIRONMENTAL MONITORING AND ADUIT
(CONTRACT NO.: CV/2005/01)**

TUEN MUN AREA 38 FILL BANK

MONTHLY EM&A REPORT

(01 TO 13 DECEMBER 2009)

Prepared by:

LAW, Sau Yee
Senior Environmental Officer

Checked and
Approved by:

LAU, Chi Leung
Environmental Team Leader

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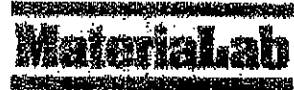
5 Lok Yi Street, 17 M.S. Castle Peak Road,

Tai Lam, Tuen Mun, N.T., Hong Kong.

Telephone : +852-24508233

Telefax : +852-24508138

Email : mcl@fugro.com.hk

**FAX MESSAGE**Priority normal / urgentTo ETS – Testconsult Ltd.

Ref. No.

MCLF2643

Country _____

Fax No.

2895 9944Attn. Mr C. L. Lau / Ms Linda Law

Date

26 January 2010From Joseph Poon

No. of Pages

1*(Incl. this page)*C.c. To Mr C. H. So / Mr P. Y. Lu (CEDD)

Fax No.

2714 0113Mr W. F. Lok / Mr Albus Cheung (CHEC)

Fax No.

2247 4108Agreement No. CE 9/2005 (EP)

Subject

Tuen Mun Area 38 Fill Bank –Monthly Environmental Monitoring & Audit Report for 01 to 13 December 2009(under Contract No.: CV/2005/01)

We refer to the revised 38th Monthly EM&A Report for 01 to 13 December 2009 (under Contract No.: CV/2005/01) that we received through email on 21st January 2010 and are pleased to confirm we have no further comment on the report.

Should you require further information, please feel free to contact us.

Best regards,

Joseph Poon
Independent Environmental Checker

JP/by

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EXECUTIVE SUMMARY

This monthly Environmental Monitoring and Audit (EM&A) report No.37 was prepared by Environmental Team (ET) of ETS-Testconsult Ltd (ETL) for the "Contract No. CV/2005/01 Delivery of Reclamation Material to Mainland – Tuen Mun Area 38 Fill Bank" (The Project).

This report documented the findings of EM&A Works conducted during the operation phase of Fill Bank at Tuen Mun Area 38 in 01 to 13 December 2009.

Construction Progress

As informed by the Contractor, the construction activities in this reporting period were as below:

- Removal & delivery of public fill stockpiled material to Mainland
- Operation of the road water lorries and the road sweeper
- Maintenance of haul road within fill bank area
- Operation of the Tipping Halls (B1, B2 & B3)
- Operation at the queuing area for public truck lorries

Environmental Monitoring Progress

The summary of the monitoring activities in this monitoring month is listed below:

- 24-hour TSP Monitoring: 2 Occasions at 2 designated locations
- 1-hour TSP Monitoring: 7 Occasions at 2 designated locations
- Noise, Daytime: 4 Occasions at 2 designated locations
- Marine Water Quality Monitoring: 6 Occasions at 4 designated locations
- Weekly-site inspection: 2 Occasions

Air Monitoring

Since the area for existing air monitoring station TM-A2 near Tipping Hall No.1 was handed over to EcoPark, air monitoring station TM-A2 was cancelled and the air monitoring was carried out at air monitoring station TM-RA2 (refer to Figure 2A attached) from 28 October 2008.

No exceedances of Action and Limit levels were recorded for 24-hr and 1-hr TSP monitoring in the reporting period.

Noise Monitoring

Since Lands Dept did not approve to carry out noise monitoring at their own area where the noise monitoring stations TM-N1 and TM-N2 located due to the security, noise monitoring carried out at two noise monitoring stations TM-RN1 and TM-RN2 (refer to the figure attached) temporarily from 18 December 2007 and before Lands Department's approval.

No exceedances of Action and Limit levels for noise monitoring were recorded in the reporting period.

Marine Water Quality Monitoring

According to the summary of marine water monitoring results, no exceedances of Action and Limit levels were recorded.

Site Inspection

Environmental site inspections conducted in this reporting period are presented as follows:

<u>Concerned Parties</u>	<u>Dates of Audit / Inspection</u>
ET Weekly site inspection	03 and 08
IEC site inspection	03

In general, performance on environmental mitigation measures implemented was found to be satisfactory in this reporting period. The major findings observed during site inspections are presented in the Section 7.0.



Environmental Complaints, Notification of summons and successful prosecutions

No complaints, notification of summons and prosecutions with respect to environmental issues were received in this monitoring month.

1.0 INTRODUCTION

China Harbour Engineering Company Limited appointed Environmental Team (ET) of ETS-Testconsult Limited (ETL) to undertake the Environmental Monitoring and Audit (EM&A) for the "Contract No. CV/2005/01 Delivery of Reclamation Material to Mainland – Tuen Mun Area 38 Fill Bank" (The Project).

In accordance with the Condition 5 of Part C of Environmental Permit (No.: EP-210/2005/A) (the EP), an EM&A programme as set out in the Project Profile should be implemented.

The EM&A programme requires environmental monitoring for air quality, water quality and environmental site inspections for air quality, water quality, landscape and visual, and waste management. The EM&A requirements for each parameter described in the following sections include:

- All monitoring parameters;
- Monitoring schedules for the reporting period and forthcoming months;
- Action and Limit levels for all environmental parameters;
- Event/Action Plans;
- Environmental mitigation measures, as recommended in the Project Profile; and
- Environmental requirements in contract documents.

Baseline monitoring was completed in May 2003 by Stanger Asia Ltd. Action and Limit Levels were established for air and water quality parameters based on the baseline monitoring results.

This report documented the findings of EM&A Works conducted during the operation phase of Fill Bank at Tuen Mun Area 38 in 01 to 13 December 2009.

2.0 PROJECT INFORMATION

2.1 Construction Programme

Details of construction programme are shown in Appendix G.

2.2 Project Organization and Management Structure

The organization chart and lines of communication with respect to the on-site environmental management and monitoring program are shown in Appendix A.

2.3 Contact Details of Key Personnel

The key personnel contact names and telephone numbers are shown in Table 2.1.

Table 2.1 Contact Details of Key Personnel

Organization	Name of Key Staff	Project Role	Tel. No.	Fax No.
CEDD	Mr. P Y LU, Mr. Lawrence NG, Mr. Thomas WONG	Engineer's Representative	2760 5835	2714 0113
IEC (Materialab)	Mr Joseph POON	IEC	2450 8238	2450 6138
Contractor (CHEC)	Mr. Wah Fung LOK	Contractor's Agent	9772 7055	2243 4089
ET (ETL)	Mr C. L. LAU	ET Leader	2946 7791	2695 3944



3.0 CONSTRUCTION PROGRESS IN THIS REPORTING PERIOD

As informed by the Contractor, the activities in the reporting period include:

- Removal & delivery of public fill stockpiled material to Mainland
- Operation of the road water lorries and the road sweeper
- Maintenance of haul road within fill bank area
- Operation of the Tipping Halls (B1, B2 & B3)
- Operation at the queuing area for public truck lorries

4.0 AIR QUALITY MONITORING

4.1 Monitoring Requirement

1-hr and 24-hr TSP levels were monitored in the reporting period. Table 4.4 shows the Action and Limit Levels for the environmental monitoring works.

4.2 Monitoring Equipment

Both 1-hour and 24-hour TSP air quality monitoring was performed using a GMWS2310 High Volume Air Sampler (HVS) located at each of the designated monitoring station. Table 4.1 summarizes the equipment used in the air quality monitoring programme. A copy of the calibration certificates for the HVS are attached in Appendix B1.

Table 4.1 Air Quality Monitoring Equipment

<i>Equipment</i>	<i>Model and Make</i>
<i>HVS</i>	<i>Greasby GMWS2310</i>
<i>Calibrator</i>	<i>Tisch TE-5025A</i>

4.3 Monitoring Parameters, Frequency and Duration

Table 4.2 summarizes the monitoring parameters, monitoring duration and frequencies of air quality monitoring.

Table 4.2 Monitoring parameters, duration, frequency of air quality monitoring

<i>Parameter</i>	<i>Duration</i>	<i>Frequency</i>
<i>24-hr TSP</i>	<i>24 hr</i>	<i>One per six days</i>
<i>1-hr TSP</i>	<i>1 hr</i>	<i>Three times per six days</i>

4.4 Monitoring Locations and Schedule

In accordance with the Project Profile, two air-quality monitoring stations, namely TM-A1 and TM-A2, were selected for the 1-hr TSP and 24-hr TSP sampling.

Since the area for existing air monitoring station TM-A2 near Tipping Hall No.1 was handed over to EcoPark, air monitoring station TM-A2 was cancelled and the air monitoring was carried out at air monitoring station TM-RA2 (refer to Figure 2A attached) from 28 October 2008.

The locations of monitoring stations are shown in Figure 2A.

During the reporting period, 1-hr and 24-hr TSP monitoring were carried out as the schedule. The details for 24-hr and 1-hr TSP monitoring carried out in this reporting period are summarized in Appendix B2.



4.5 Monitoring Methodology

Both 1-hr and 24-hr air quality monitoring (High Volume Sampler)

Instrumentation

High volume sampler, as HVS, (Greasby GMWS2310) complete with appropriate sampling inlets were employed for both 1-hour and 24-hour TSP monitoring. The sampler is composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

Installation

The installation of HVS refers to the requirement stated in EM&A Manual.

Operation/Analytical Procedures

Operating/analytical procedures for the operation of HVS are as below:

- Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 0.6m³/min and 1.7m³/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50. The flow rate is indicated on the flow rate chart.
- For TSP sampling, fiberglass filters (GA-55) were used.
- The power supply was checked to ensure the sampler worked properly.
- On sampling, the sampler was operated 5 minutes to establish thermal equilibrium before placing any filter media at designated air monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an air-tight seal on the outer edges of the filter. Then the filter holder frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The programmable timer will be set for a sampling period of 1 hour / 24 hours. 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.).
- After sampling, the filter was transferred from the filter holder of the HVS to a sealed plastic bag and sent to the laboratory for weighting. The elapsed time was also recoded.
- Before weighting, all filters were equilibrated in a desiccator for 24 hour with the temperature of 25°C ± 3°C and the relative humidity (RH) <50% ±5%.

Maintenance & Calibration

- The HVS and their accessories should be maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- HVS should be calibrated at bi-monthly intervals.

Wind Data Monitoring

Wind data included wind speed and wind direction were directly extracted from Tuen Mun Station of Hong Kong Observatory during this reporting period. The wind data are presented in Appendix E.

4.6 Action and Limit Levels

Table 4.3 shows the Action and Limit levels for 24-hr TSP and 1-hr TSP monitoring.

Table 4.3 Action and Limit Levels for 24-hr TSP and 1-hr TSP

Monitoring Location	24-hr TSP ($\mu\text{g}/\text{m}^3$)		1-hr TSP ($\mu\text{g}/\text{m}^3$)	
	Action Level	Limit Level	Action Level	Limit Level
TM-A1	192	260	344	500
TM-A2	192	260	344	500



4.7 Event-Action Plans

Please refer to Appendix F for details.

4.8 Results and Observations

Totally 2 occasions of 24-hr TSP monitoring and 7 occasions of 1-hr TSP monitoring were carried out in this reporting period. All monitoring data of both 1-hr and 24-hr TSP monitoring is provided in Appendix B2. Graphical presentation of 1-hr and 24-hr TSP monitoring results for the reporting period is shown in Appendix B3. Wind data, including wind speed and wind direction, are annexed in Appendix E.

No exceedances of Action and Limit Level of both 1-hour and 24-hour TSP monitoring results were recorded during the reporting period.

Generally, the Contractor implemented sufficient dust mitigation measures, including operation of wheel washing facilities and road dampening by water bowsers on the main haul roads and unpaved areas.

5.0 MARINE WATER QUALITY MONITORING

5.1 Monitoring Requirements

In accordance with the Project Profile, impact marine water quality monitoring was conducted three days per week. Measurements were taken at both mid-flood and mid-ebb tides at three depths (i.e. 1m below surface, mid depth and 1m from seabed) at two control monitoring stations (TM-FC1 and TM-FC2) and two impact monitoring stations (TM-FM1 and TM-FM2).

5.2 Monitoring Locations

As stipulated in the EM&A requirement, there were four monitoring stations undertaken during the impact monitoring. Figure 3 shows the locations of the marine water quality monitoring stations.

5.3 Monitoring Parameters and Frequency

Monitoring of the marine water quality parameters and frequency are listed in Table 5.1.

Table 5.1 Monitoring Parameters and Frequency of the marine water

Monitoring Station	Parameter	Frequency	No. of Depths
Control Stations: TM-FC1 and TM-FC2	Depth (m)	3 days/week, 2 tides/day	3 (Surface, mid-depth & bottom)
	Temperature (°C)		
Impact Stations: TM-FM1 and TM-FM2	Dissolved Oxygen (mg/L and % saturation)		
	Turbidity (NTU)		
	Salinity (ppt)		
	Suspended solids (mg/L)		

5.4 Monitoring Methodology and Equipment Used

For Location of the monitoring stations

Global Positioning System (GPS)

A hand-held digital GPS was used to identify the designated monitoring stations prior to water sampling.



For Water Depth measurement

Echo Sounder

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

For In-situ Water Quality Measurement

All in-situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals or sometimes longer throughout all stages of the water quality monitoring.

Dissolved Oxygen (DO) and temperature measuring equipment

A portable, weatherproof DO-measuring meter with built-in salinity compensation (YSI model 95) was used in the impact monitoring. It can be capable for measuring:

- a dissolved oxygen level in the range of 0-20 mg/L and 0-200 % saturation; and
- a temperature of 0-45 degree Celsius

This type of DO-measuring meter has a membrane electrode with automatic temperature compensation complete with a 50-foot cable. Wet bulb calibration for a DO meter was carried out before the start of measurement.

Turbidity Measurement Instrument

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

Salinity Meter

A portable salinity meter capable of measuring salinity in the range 0-40 ppt (YSI Model 30M) was provided for measuring salinity of the water at each monitoring location. It was checked with standard 30 ppt Salinity solutions before the start of measurement.

For Water Sampling and Sample Analysis

In-situ monitoring was carried out at three depths: 1 meter below water surface, at mid-depth and 1 meter above the seabed. At each sampling depth, duplicate readings of dissolved oxygen content and turbidity were taken. The probes were retrieved out of the water after first measurement and then redeployed for the second measurement. The difference between the two readings of each set was more than 25% of the value of the first reading while a third measurement would be conducted to ensure data precision.

Water Sampler

A water sampler comprising a transparent PVC cylinder, with a capacity of not less than 2 liters, was lowered into the water body at the predetermined depth. The both opening ends of the sampler were then closed accordingly by dead weight and water samples were collected.

Water Container

The sample container, made by high-density polythene, was rinsed with a portion of the water sample. The water sample was then transferred to the container, labeled with a unique sample ID and sealed with a screw cap. The water samples were stored in a cool box maintained at 4°C. The water samples were then delivered to a local HOKLAS-accredited laboratory (Environmental Laboratory, ETS-Testconsult Ltd, HOKLAS Registration No. 022) on the same day for analysis.

The summary of testing method of testing parameter as recommended by EIA or required by EPD, with the QA/QC results in accordance with the requirement of HOKLAS or international accredited scheme is shown in Table 5.2. For the QA/QC procedures, one QC sample, one duplicate sample and one sample spike of every batch of 20 samples were analysis. The QA/QC results are summarized in Appendix L.

Table 5.2 Summary of testing procedures

Laboratory Analysis	Testing Procedure	Detection Limit
Total suspended solids	In house method based on APHA 19 th ed 2540D	1.0 mg/L

In-situ measurement

All in-situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before the start of measurement.

At each measurement/sampling depth, two consecutive measurements of dissolved oxygen (DO), dissolved oxygen saturation (DOS), turbidity and salinity were taken. For turbidity measurement, the sample was collected by using sampler and then transferred to the cell. The reading of turbidity of the sample was directly recorded from the Turbidimeter (HACH 2100P) after inserting the cell to the Turbidimeter. For DO, DOS and Salinity, measurements were conducted three days per week at both mid-ebb and mid-flood tides at three depths (i.e. 1m below surface, mid depth and 1m from seabed). The duplicate measurements were averaged if the difference was not greater than 25%. If the difference is greater than 25%, repeat measurement will be required to be carried out.

Table 5.3 shows the equipment used for in-situ monitoring of water quality. The calibration certificates are attached in Appendix C1.

Table 5.3 Details of Marine Water Quality Monitoring Equipment (In-site measurement)

Parameter	Model	Date of Calibration	Due Date	Equipment No.
Coordinate of Monitoring stations	MLR GPS Navigator, SP24	----	----	ET/EW/005/01
Dissolved Oxygen (Saturation), Temperature, Salinity	YSI Dissolved Oxygen, Salinity & Temperature Meter, YSI 85	26/11/09	26/02/09	ET/EW/008/002 *
Turbidity	HACH Model 2100P Turbid Meter	09/11/09	08/02/10	ET/0505/006
Water Depth	EAGLE Strata 128 Sonar	----	----	EW/002/02

Remark: (*) indicates the instrument should be calibrated on use.

5.5 Action and Limit Levels

The water quality criteria, namely Action and Limit (A/L) levels are presented in the table below.

Table 5.4 Water Quality Action and Limit Levels

Parameter	Action Level	Limit Level
DO (mg/L)	<u>Surface & Middle</u> <4.78 mg/L (5%-ile of baseline data) <u>Bottom</u> <4.16 mg/L (5%-ile of baseline data)	<u>Surface & Middle</u> <4.00 mg/L (1%-ile of baseline data) <u>Bottom</u> <2.00 mg/L
SS (mg/L) (Depth-averaged)	>120% of the upstream control station's SS at the same tide on the same day	>130% of the upstream control station's SS at the same tide on the same day
Turbidity (NTU) (Depth-averaged)	>120% of the upstream control station's turbidity at the same tide on the same day	>130% of the upstream control station's turbidity at the same tide on the same day

5.6 Event and Action Plan

Please refer to the Appendix F for details.



5.7 Monitoring Duration and Period in this reporting period

Below is the time schedule for the water quality monitoring events that were conducted in this reporting period:

Table 5.5 Time Schedule of Marine Water Quality Monitoring

December 2009						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 ▼	2	3 ▼	4	5 ▼
6 / 13	7	8 ▼	9	10 ▼	11	12 ▼

Remark (▼) : Marine water quality monitoring carried out by ET

The duration of marine water quality monitoring is detailed in Appendix C2.

5.8 Marine Water Quality Monitoring Results

Totally 6 occasions (mid-flood and mid-ebb) of marine water quality monitoring were carried out in this reporting period. The impact water quality measurement results are detailed in Appendix C2. Appendix C3 presents the water quality monitoring data and graphical presentations of monitoring results respectively.

The summary of marine water quality exceedances is shown in Table 5.6.

Table 5.6 Summary of Marine Water Quality Exceedances in this reporting period

Tide	Station	Exceedance Level	DO		Turbidity	SS	Total
			Surface and Middle	Bottom			
Mid-Ebb	TM-FM1	Action	0	0	0	0	0
		Limit	0	0	0	0	0
	TM-FM2	Action	0	0	0	0	0
		Limit	0	0	0	0	0
Mid-Flood	TM-FM1	Action	0	0	0	0	0
		Limit	0	0	0	0	0
	TM-FM2	Action	0	0	0	0	0
		Limit	0	0	0	0	0
Total	Action		0	0	0	0	0
	Limit		0	0	0	0	0

According to the summary of marine water monitoring results, no exceedances of Action and Limit levels were recorded for this reporting period.

6.0 Noise Monitoring

6.1 Monitoring Requirements

Noise monitoring was conducted at 2 designated monitoring stations as specified in the Sections 26.10 to 26.12 of the Particular Specification for good site practice.

The equipment, parameter, frequency, duration, methodology, calibration details, results and observations of the noise monitoring for the reporting period are presented in this section.

6.2 Monitoring Equipment

An Integrating Sound Level Meter was used for noise monitoring. It was a Type 1 sound level meter capable of giving a continuous readout of the noise level reading including equivalent continuous sound pressure level (L_{eq}) and percentile sound pressure level (L_x). It complies with International Electro Technical Commission Publications 651:1979 (Type1) and 804:1985 (Type1), and speed in m/s was used to monitor the wind speed.

Table 6.1 summarizes noise monitoring equipment model being used. A copy of the calibration certificate for noise meter and calibrator are attached in Appendix D1.

Table 6.1 Noise Monitoring Equipment

<i>Equipment</i>	<i>Model</i>
<i>Integrating Sound Level Meter</i>	<i>Rion NL-31 Sound Level Meter</i>
<i>Calibrator</i>	<i>Rion NC-73 Sound Level Calibrator</i>
<i>Portable Wind Speed Indicator</i>	<i>TSI Model 8340-M Air Velocity Meter</i>

6.3 Monitoring Parameters, Duration and Frequency

Duration, frequencies and parameters of noise measurement are presented in Table 6.2.

Table 6.2 Duration, Frequencies and Parameters of Noise Monitoring

<i>Time period</i>	<i>Duration/min</i>	<i>Parameters</i>	<i>Frequency</i>
<i>Day-time: 0700-1900 hrs on normal weekday</i>	<i>30</i>	<i>L_{eq}, L_{10}, L_{90}</i>	<i>Twice per week</i>

6.4 Monitoring Locations and Period

Since Lands Dept did not approve to carry out noise monitoring at their own area where the noise monitoring stations TM-N1 and TM-N2 located due to the security, noise monitoring carried out at two noise monitoring stations TM-RN1 and TM-RN2 (refer to the figure attached) temporarily from 18 December 2007 and before Lands Department's approval.

The noise monitoring locations, TM-RN1 and TM-RN2 are shown in Figure 4.

The noise-monitoring period of monitoring stations is summarized in Appendix D2.

6.5 Monitoring Procedures and Calibration Details

Operation/Analysis Procedures

- The Sound Level Meter was set on a tripod at a height of 1.2m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces.
- 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 mins*
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1000HZ. If the difference in the calibration level before and after measurement was more than 1dB(A), the measurement would be considered invalid and repeat measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with a portable wind meter.
- During the monitoring period, the L_{eq} , L_{10} and L_{90} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Free Field correction to the measurements should be made. Correction factor of +3dB(A) should be made to the free Field measurements.
- Noise monitoring would be cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind gusts exceeding 10m/s.



Maintenance and Calibration

- The microphone head of the sound level meter and calibrator are cleaned with soft cloth in quarterly intervals.
- The meter is sent to the supplier or HOKLAS laboratory to check and calibrated in yearly intervals.

6.6 Action and Limit Levels

The Action and Limit levels for noise levels derived as illustrated in Table 6.3.

Table 6.3 Action and Limit Levels for noise monitoring

<i>Time Period</i>	<i>Action *</i>	<i>Limit *</i>
<i>0700-1900 hrs on normal weekdays</i>	<i>When one documented complaint is received</i>	<i>65 dB(A)</i>

Remark (*): The Action and Limit Levels refer to the Table 26.2 – Action and Limit Levels for Noise in the Particular Specification of Contract No.CV/2005/01.

6.7 Event-Action Plans

Please refer to the Appendix F for details.

6.8 Results and Observation

Totally 8 occasions of noise monitoring were carried out in this reporting period.

The detail of the noise monitoring is provided in Appendix D2. Graphical presentation of the monitoring result for the reporting period is shown in Appendix D3.

Since no documented complaints on noise issue were received in this reporting period, no Action Level exceedances were recorded. Besides, no exceedances in Limit Level were recorded according to the result from Day-time noise monitoring.

The major sources of noise pollution observed in this reporting period were noise from the traveling dump trucks and from the operation of site machines.

7.0 ENVIRONMENTAL AUDIT

7.1 Weekly Site Inspection

Weekly site inspections were carried out by ET to monitor the timely implementation of proper environmental pollution control and mitigation measures for the Project. In this reporting period, two weekly site inspections were conducted on 03 and 08 December 2009. Summaries of weekly site inspection observations and recommendations in this month are described as follows:

Air Quality

- The major dust sources were dump truck movement on the unpaved haul roads and loading & unloading activities on various working platforms in the Fill Bank. The Contractor deployed water bowsers to dampen the haul roads and the working platforms;
- Wheel washing facilities were found operating during weekly site inspections. However, the Contractor was reminded to provide notice or manpower at site exit to inform the drivers to limit the vehicle speed and use the wheel washing facilities to wash away any dusty materials before leaving the site;
- The power of the engines of site equipment were off when not in use;
- The tarpaulin sheets and watering system at tipping halls were found provided and operated properly in this reporting period;
- Water trucks served to dampen the haul roads and on the ramp to the stockpiling area;
- The dump trucks were operating below the speed limit in the Fill Bank. There were sufficient speed limit signs on site to advise the drivers;
- The Contractor watered the haul road adequately and hence no fugitive dust was detected during site inspections in this reporting period;
- No fugitive dust was noted at unpaved areas and public roads in this reporting period. The Contractor was still reminded to improve the water spraying system to dampen unpaved areas and public roads; and



- Mud and silt were noted on the road near weight-bridge during the weekly site inspections on 03 and 10 December 2009. The Contractor was reminded to clean up the mud and silt and maintain the road properly in order to avoid any dust emission by wind erosion or vehicle / equipment movements. During the subsequent weekly site inspection on 17 December 2009, mud and silt accumulated on the road were cleaned up.

Noise

- The major noise source was dump truck traffic in the Fill Bank;
- Compressors and generators were operated with door closed; and
- All site equipment and machinery were well maintained and no noise nuisance was sensed during operating.

Water Quality

- Silt curtain was installed at the main drainage outlet to prevent mud and silt to the marine;
- Stagnant water was noted accumulated at the checking point near weight-bridge during the weekly site inspection on 10 December 2009. The Contractor was reminded to drain / pump out the stagnant water or apply pesticide to avoid mosquito breeding. During the last weekly site inspection on 17 December 2009, no stagnant water was noted; and
- Mud and silt was found accumulated inside the drainage near workshop during the weekly site inspection on 10 December 2009. The Contractor was reminded to clean up the mud and silt and also maintain the drainage properly. During the next weekly site inspection on 17 December 2009, the mud and silt were cleaned up.

Chemical and Waste Management

- The chemical waste was stored in the Chemical Waste Storage Area (CWSA). The Contractor should dispose chemical wastes regularly to avoid over accumulation of chemical waste on site;
- Chemical containers accumulated at chemical waste storage area were collected by the licensed collector regularly;
- Appropriate chemical labels were applied for all chemicals in the chemical waste storage area in this reporting period; and
- No oil leakage was noted in this reporting period. However, the Contractor was still reminded to clean up the spilled oil immediately and treat the contaminated soil and the materials used for cleaning as chemical waste.

Site Practices

- Sufficient rubbish skips had been provided at site by the Contractor in this reporting period.

7.2 Review of Environmental Monitoring Procedures

The monitoring works conducted by the ET were inspected internally on a regular basis. The following observations have been recorded for the monitoring works:

Air Quality Monitoring

- The monitoring team recorded the observations around the monitoring stations within and outside of the construction site.
- The monitoring team recorded the temperature, air pressure and general weather condition on the monitoring day.

Water Quality Monitoring

- The monitoring team recorded the observations around the monitoring stations, which might affect the results; and
- Major water pollution sources were identified and recorded.

Noise Monitoring

- The monitoring team recorded the observations around the monitoring station, which might affect the results.
- Major noise sources were identified and recorded.

7.3 Status of Environmental Licensing and Permitting

All permits/licenses valid in this reporting period are summarized in Table 7.1.

Table 7.1 Summary of environmental licensing and permit status

Description	Permit No.	Valid Period		Section
		From	To	
Environmental Permit	EP-210/2005/A	15/12/08	---	Issued
Chemical Waste Producer	5298-421-C1186-07	03/01/07	---	Spent lubricating oil, Petrol, Diesel, Battery and Surplus Paint
Effluent Discharge License	EP760/421/01 2141/I	19/04/07	30/04/12	Discharge of Industrial Trade Effluent arising from public fill reception facilities

7.4 Implementation Status

7.4.1 Implementation Status of Environmental Mitigation Measures

An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in Appendix I. Most of the necessary mitigation measures were implemented properly.

7.4.2 Implementation Status of Event and Action Plan

There was no exceedance on air quality, noise and marine water monitoring parameters recorded in this monitoring month. Hence no further actions were required.

7.4.3 Implementation Status of Environmental Complaint, Notifications of Summons and Successful Prosecutions Handling

No complaints, notifications of summons and successful prosecutions were received in this reporting period. A summary of environmental complaints, notifications of summons and successful prosecutions was given in Table 7.2.

Table 7.2 Summary of Environmental Complaints and Prosecutions

Complaints logged		Summons served		Successful Prosecution	
December 2009	Cumulative	December 2009	Cumulative	December 2009	Cumulative
0	1	0	0	0	0

8.0 LANDSCAPE AND VISUAL

Landscape and visual site audit was carried out on a weekly basis to monitor environmental issues in order to ensure that all mitigation measures were implemented timely and properly. The findings in this reporting period were:

- The maximum stockpiling height at the Fill Bank was limited to a maximum of +40 mPD;
- The Contractor hydroseeded the outer slopes of the Fill Bank as far as practicable;
- The Contractor removed the stockpile of public fill in a sequence to allow the outer hydroseeded to be removed later than other portions as far as practicable;
- *Casuarina equisetifolia* were planted as buffer tree along the northern perimeter of the site. The height of *Casuarina equisetifolia* was maintained at least 3000mm above soil level; and
- Lighting was set to minimize night-time glare.

9.0 WASTE MANAGEMENT

9.1 Summary of Waste generated in this month

The actual amounts of different types of waste generated by the activities of the Project in the month are shown in Table 9.1



Table 9.1 Actual amounts of Waste generated in this reporting period

Waste Type	Actual Amount	Disposal Locations
Public Fill	0 m ³	---
C&D Waste (general refuse)	0 m ³	---
Chemical Waste	0 kg	---

9.2 Advice on the Solid and Liquid Waste Management Status

The Contractor should provide sufficient preventive measures during equipment maintenance works so as to avoid oil leakage on the ground. In the event of any oil leakage, the Contractor should clean up the polluted soil and handle all the materials used for this cleaning works as chemical waste.

The drain outlet of all the bunded areas should be plugged properly. Besides, pre-cast drip trays were provided for oil drums at several areas, such as workshop and chemical storage area. The Contractor should collect and dispose of any stagnant water accumulated in the concrete bunding and drip trays and handle them as chemical waste.

The Contractor should use suitable containers with proper labels to store chemical wastes in accordance with Code of Practice on the Packaging, Labeling and Storage of Chemical Waste. The Contractor should also advise their workers of the proper procedures in handling the chemical waste. All the trip tickets for chemical waste disposal should be properly kept in the site office.

The Contractor was reminded to increase the frequency of inspection and cleaning of the site drainage system, including permanent desilting chambers, desilting facilities, oil interceptor bypass tank and all the trapezoidal channels. Moreover, the Contractor should apply approved pesticides in the stagnant water ponds.

All the runoff from the parking area should be pumped to the desilting facilities and oil interceptors to remove suspended solids and oil & grease prior to discharge.

10.0 ENVIRONMENTAL NON-CONFORMANCE

10.1 Summary of air quality, noise and marine water quality

No exceedances of Action and Limit Level of 24-hour and 1-hour TSP monitoring results were recorded during the reporting period.

According to the summary of marine water monitoring results, no exceedances of Action and Limit levels were recorded for this reporting period.

The noise level measured at the monitoring station complied with the Limit Level of 65dB(A). No complaint was received regarding noise issue in this reporting period.

10.2 Summary of Environmental Complaints

No complaint was received in this reporting period.

10.3 Summary of Notification of Summons and Prosecution

There was no notification of summon and prosecution respect to environmental issues registered in this reporting period.

11.0 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Impact monitoring of air quality, noise and water quality were carried out at designated locations in accordance with the EM&A Manual in this reporting period.



Impact monitoring of air quality were carried out at designated locations in accordance with the Project Profile in this reporting period.

According to the summary of air monitoring results, no exceedances of Action and Limit Level of 1-hour and 24-hour TSP monitoring results were recorded during the reporting period.

According to the summary of marine water monitoring results, no exceedances of Action and Limit levels were recorded in this reporting period.

The noise level measured at the monitoring station complied with the Limit Level of 65dB(A). No complaint was received regarding noise issue in this reporting period.

According to the weekly site inspections carried out in this reporting period, the Contractor generally implemented sufficient dust mitigation measures, including operation of the mist spraying systems and automatic wheel washing facilities, dampening of haul roads and stockpiling areas.

No complaints, prosecutions or notifications of summons were received in this reporting period.

Recommendations

According to the environmental site inspections performed in the reporting period, the following recommendations were provided:

Air Quality

- Ensure the frequency of water spraying on haul roads, unloading areas and stockpiles to be sufficient to suppress the dust sources;
- Provide proper maintenance for the powered mechanical equipment and barges to avoid emission of dark smoke;
- Provide water spraying onto the truckloads during inspection of fill material;
- Conduct road sweeping on all paved haul roads and public roads especially outside and near the site egress by the road sweeper. Undertake water spraying on stockpiling area by water bowsers;
- Erect adequate speed limit signs to advise the truck drivers of the speed limit;
- Operate mist spraying systems and automatic water sprinklers in the Fill Bank;
- Implement the dust mitigation measures for the construction activities;
- Designate proper haul roads to ensure effective water spraying; and
- Ensure all vehicles to be washed before leaving the site egress by provision, operation and maintenance of automatic wheel washing facilities.

Noise

- Conduct noisy activities at a farther location from the NSRs.

Water Quality

- Maintain the drainage system, including the trapezoidal channels and permanent desilting chambers regularly; and
- Remove the stagnant water or provide approved pesticides for the stagnant water in the permanent desilting chambers, if any.

Chemical and Waste Management

- Remove waste materials from the site to avoid accumulation regularly;
- Handle and store chemical wastes properly;
- Remove unwanted material in the existing stockpiles and avoid further dumping of such material;
- Provide and maintain sufficient drip trays for diesel drums, chemical containers, chemical waste storage drums and diesel operated generator set;
- Maintain good housekeeping at the workshop area;
- Ensure sufficient tarpaulin sheets are provided to cover drip trays; and
- Avoid soil being polluted during oil filling and equipment maintenance; hence, properly remove and store the contaminated soil, if any.



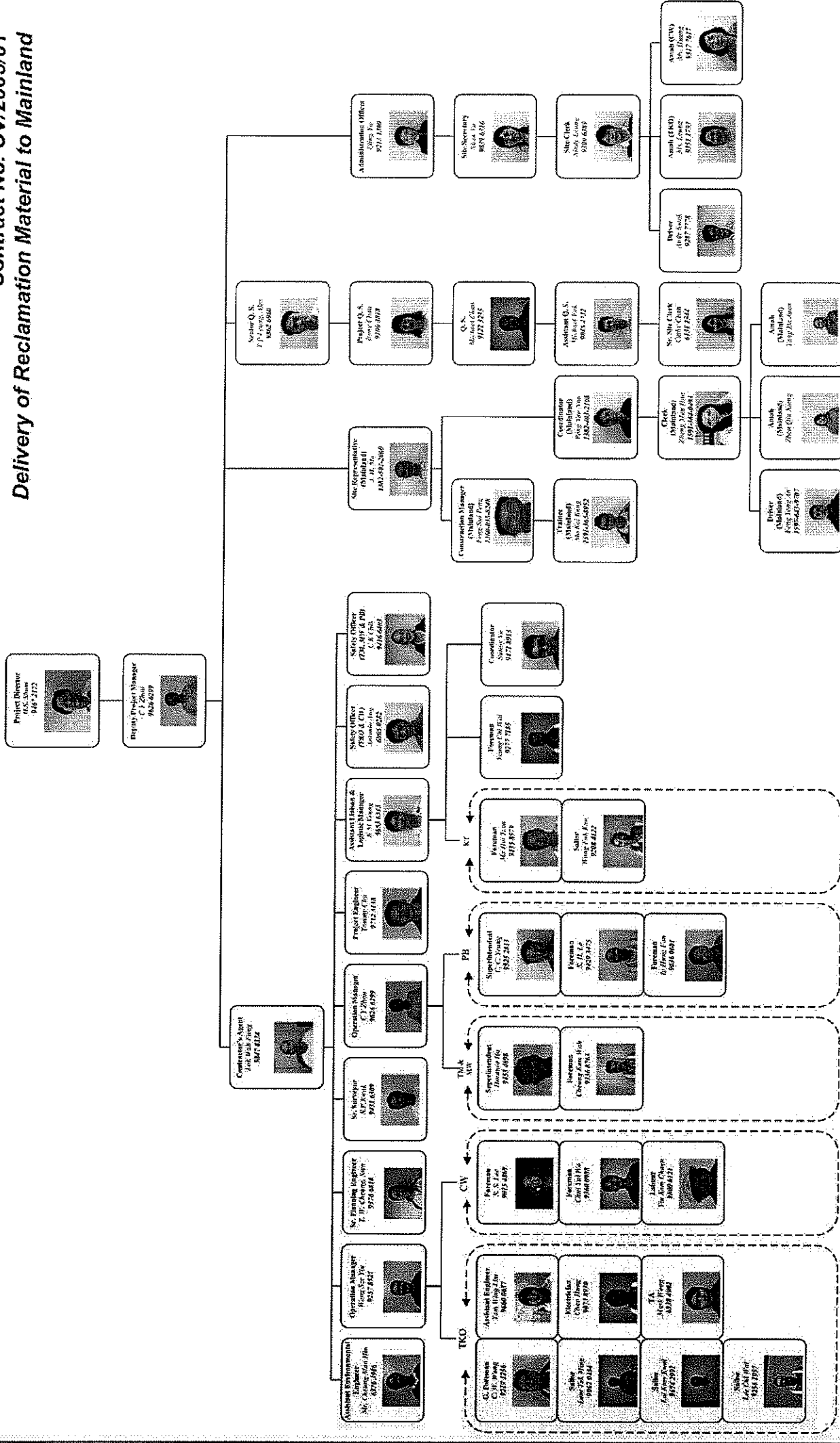
Landscape and Visual

- Provide hydroseeding on the exposed slopes, on which the final profile has been formed;
- Erect all the site hoarding / chaining fences in accordance with agreed design at proper location;
and
- Maintain the hydroseeded slopes properly.

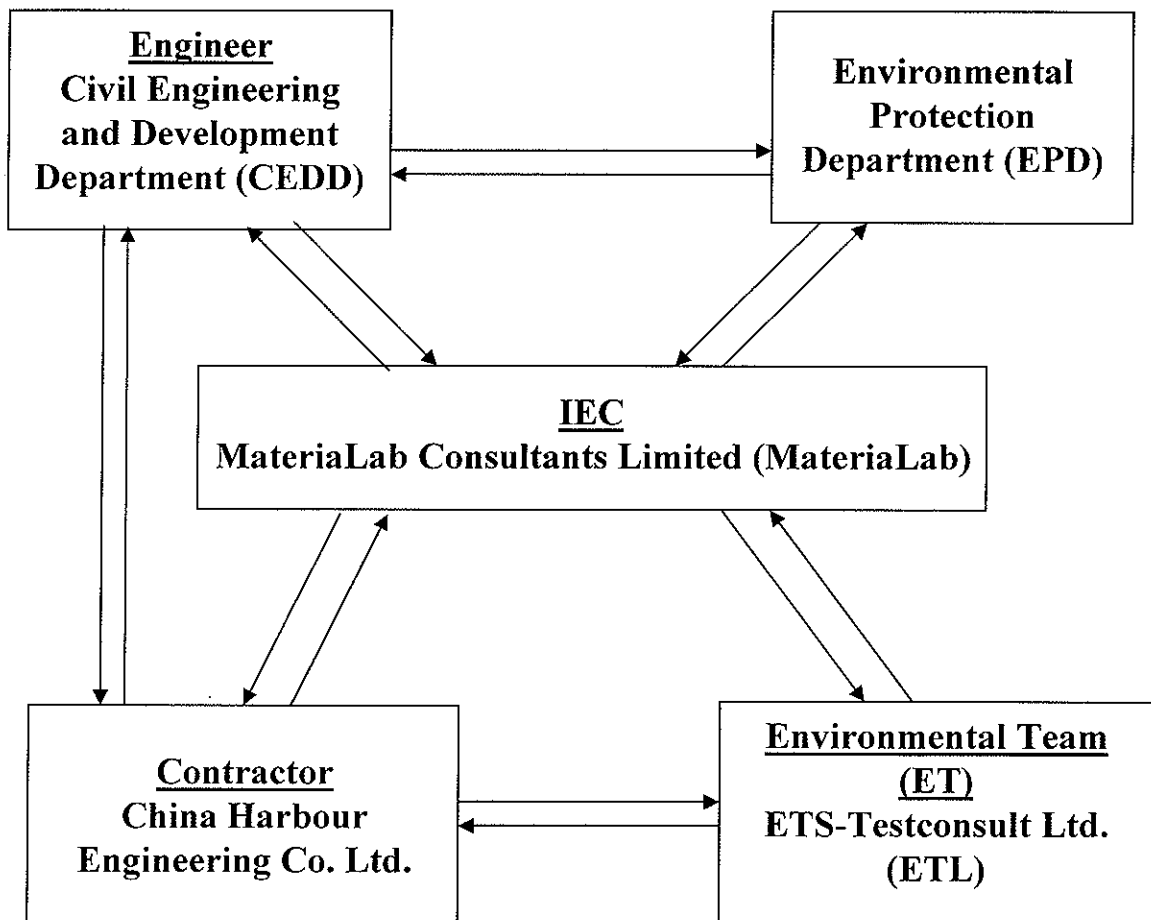


Appendix A

Organization Chart and Lines of Communication



Lines of Communication





Appendix B1

Calibration Certificates for Impact Air Quality Monitoring Equipments



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong

Tel : 2695 8318

E-mail : ett@ets-testconsult.com

Fax : 2695 3944

Web site : www.ets-testconsult.com

TEST REPORT

Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW Date of Calibration : 12 November 2009

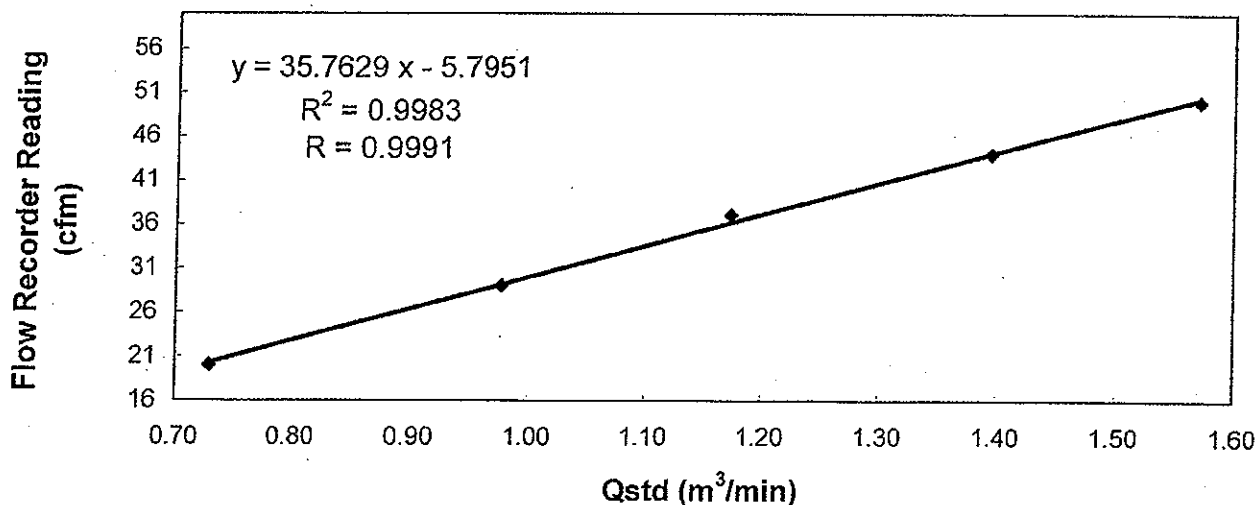
Serial No. : 9503 (ET/EA/003/03) Calibration Due Date : 11 January 2010

Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results

Flow recorder reading (cfm)	50	44	37	29	20
Qstd (Actual flow rate, m ³ /min)	1.57	1.39	1.17	0.98	0.73
Pressure :	757.56 mm Hg			Temp. : 300 K	

Sampler 9503 Calibration Curve
Site: Tuen Mun 38 (TM-A1)



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration.

The high volume sampler complies* / does not comply* with the specified requirements and is deemed acceptable* / unacceptable* for use.

Calibrated by : Li, Chi Kwai
(Technician)

Approved by : LAW, Sau Yee
(Senior Environmental Officer)



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

8/F, Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fotan, Hong Kong
Tel : 2695 8318 E-mail : etl@ets-testconsult.com
Fax : 2695 3944 Web site : www.ets-testconsult.com

TEST REPORT

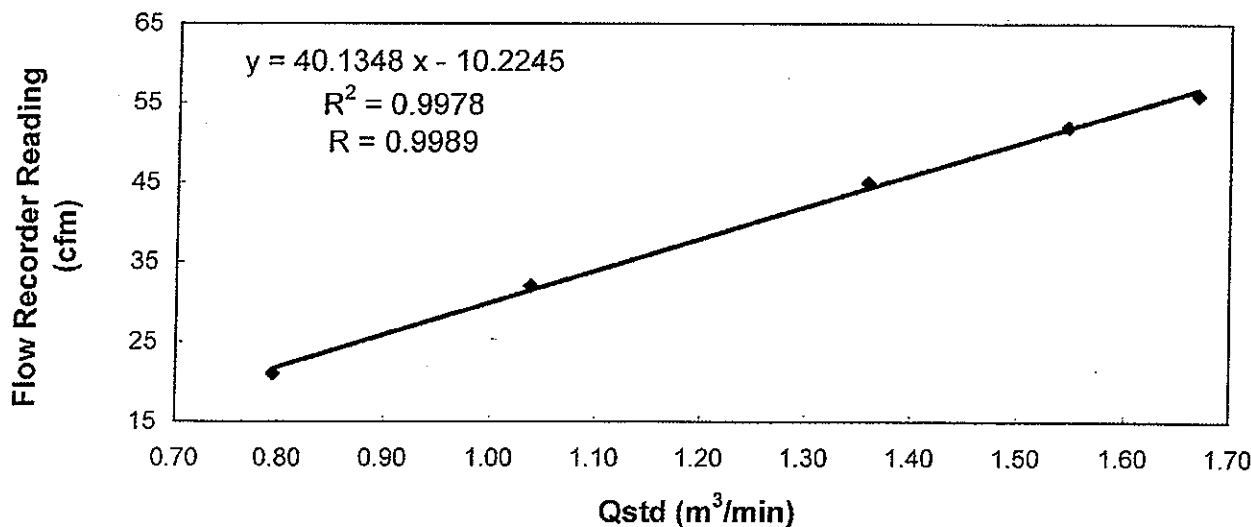
Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW Date of Calibration : 12 November 2009
Serial No. : 8115 (ET/EA/003/13) Calibration Due Date : 11 January 2010
Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	56	52	45	32	21
Qstd (Actual flow rate, m ³ /min)	1.67	1.55	1.36	1.04	0.79
Pressure :	757.56 mm Hg			Temp. :	300 K

Sampler 8115 Calibration Curve
Site: Tuen Mun 38 (TM-A2)



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration.

The high volume sampler complies* / does not comply* with the specified requirements and is deemed acceptable* unacceptable* for use.

Calibrated by : LI, Chi Kwah
(Technician)

Approved by : LAW, Sau Yee
(Senior Environmental Officer)



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE.
 VILLAGE OF CLEVELAND, OH 45002
 513.467.9000
 877.263.7610 TOLL FREE
 513.467.9009 FAX
 WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 18, 2009 Rootsometer S/N 9833620 Ta (K) - 293
 Operator Tisch Orifice I.D. - 1560 Pa (mm) - 765.81

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.4310	3.2	2.00
2	NA	NA	1.00	1.0060	6.3	4.00
3	NA	NA	1.00	0.8990	7.9	5.00
4	NA	NA	1.00	0.8580	8.7	5.50
5	NA	NA	1.00	0.7070	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0205	0.7132	1.4317	0.9958	0.6959	0.8748
1.0164	1.0104	2.0247	0.9918	0.9859	1.2371
1.0142	1.1281	2.2637	0.9896	1.1008	1.3831
1.0132	1.1809	2.3742	0.9886	1.1522	1.4506
1.0078	1.4255	2.8633	0.9834	1.3909	1.7495
Qstd slope (m) = 2.01170			Qa slope (m) = 1.25969		
intercept (b) = -0.00455			intercept (b) = -0.00278		
coefficient (r) = 0.99998			coefficient (r) = 0.99998		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

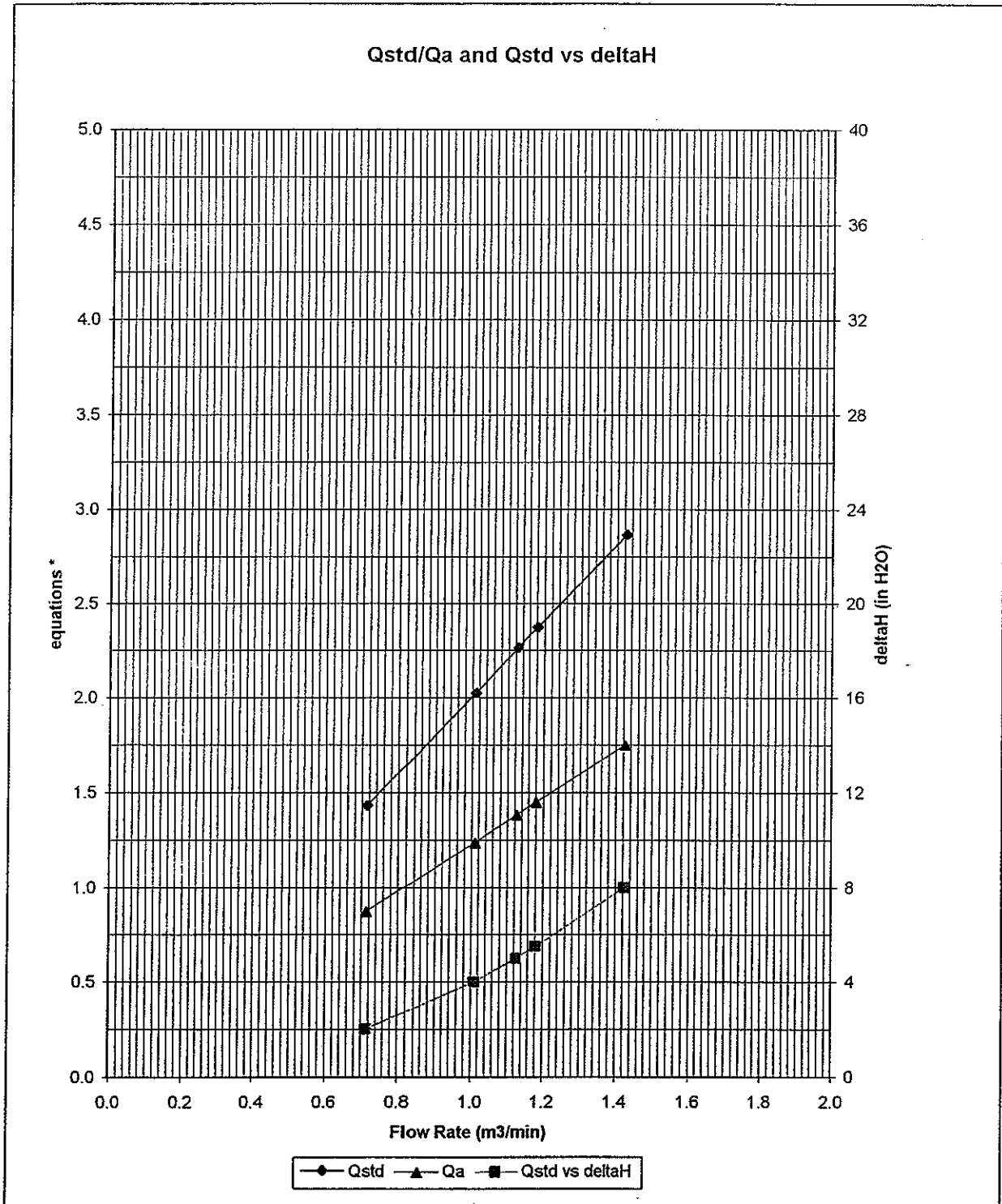
Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)
 Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
 Qa = Va/Time

For subsequent flow rate calculations:

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

AIR POLLUTION MONITORING EQUIPMENT



* y-axis equations:

Qstd series:
$$\sqrt{\Delta H \left(\frac{P_a}{P_{std}} \right) \left(\frac{T_{std}}{T_a} \right)}$$

Qa series:
$$\sqrt{(\Delta H (T_a / P_a))}$$

1560

Appendix B2

Impact Air Quality Monitoring Results

Summary of 24-hr TSP Monitoring Results

Monitoring Station : TM-A1

Date	Start Time	Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m ³ /min.)		Average (m ³ /min.)	Filter Weight (g)		Conc. (µg/m ³)
		Date	Time	Initial	Final		Initial	Final		Initial	Final	
02/12/09	12:20	03/12/09	12:20	14810.23	14834.23	24.00	Initial 1.0289	Final 1.0289	1.0289	Initial 2.8391	Final 3.0480	141
08/12/09	13:40	09/12/09	13:40	14837.23	14861.23	24.00	Initial 1.0289	Final 1.0289	1.0289	Initial 2.8353	Final 3.0254	128

Monitoring Station : TM-RA2 *

Date	Start Time	Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m ³ /min.)		Average (m ³ /min.)	Filter Weight (g)		Conc. (µg/m ³)
		Date	Time	Initial	Final		Initial	Final		Initial	Final	
02/12/09	12:33	03/12/09	12:33	15196.19	15220.19	24.00	Initial 1.0289	Final 1.0289	1.0289	Initial 2.8289	Final 3.0473	144
08/12/09	13:51	09/12/09	13:51	15223.19	15247.19	24.00	Initial 1.0289	Final 1.0289	1.0289	Initial 2.8291	Final 3.0175	119

Remark (*): Since the area for existing air monitoring station TM-A2 near Tipping Hall No.1 was handed over to EcoPark, air monitoring station TM-A2 was cancelled and the air monitoring was carried out at air monitoring station TM-RA2 (refer to Figure 2A attached) from 28 October 2008.

Summary of 1-hr TSP Monitoring Results

Monitoring Station : TM-A1 Location : Outside CEDD Site Office

Date	Time		Elapse Time		Sampling Time (hrs)	Flow Rate (m ³ /min.)		Average (m ³ /min.)		Filter Weight (g)		Conc. (µg/m ³)
	Start	Finish	Initial	Final		Initial	Final	Initial	Final	Initial	Final	
01/12/09	09:00	10:00	14808.23	14809.23	1.00	1.0289	1.0289	1.0289	1.0289	2.8506	2.8668	262
02/12/09	10:38	11:38	14809.23	14810.23	1.00	1.0289	1.0289	1.0289	1.0289	2.8414	2.8582	272
03/12/09	09:00	11:00	14834.23	14835.23	1.00	1.0289	1.0289	1.0289	1.0289	2.8515	2.8727	343
05/12/09	09:00	10:00	14835.23	14836.23	1.00	1.0289	1.0289	1.0289	1.0289	2.8184	2.8351	271
08/12/09	09:30	10:30	14836.23	14837.23	1.00	1.0289	1.0289	1.0289	1.0289	2.8442	2.8570	207
10/12/09	09:00	10:00	14861.23	14862.23	1.00	1.0289	1.0289	1.0289	1.0289	2.8312	2.8452	227
12/12/09	09:00	10:00	14862.23	14863.23	1.00	1.0289	1.0289	1.0289	1.0289	2.8121	2.8315	314

Monitoring Station : TM-A2 / TM-RA2 * Location : Site Egress

Date	Time		Elapse Time		Sampling Time (hrs)	Flow Rate (m ³ /min.)		Average (m ³ /min.)		Filter Weight (g)		Conc. (µg/m ³)
	Start	Finish	Initial	Final		Initial	Final	Initial	Final	Initial	Final	
01/12/09	09:00	10:00	15194.19	15195.19	1.00	1.0770	1.0770	1.0770	1.0770	2.8404	2.8606	313
02/12/09	10:49	11:49	15195.19	15196.19	1.00	1.0770	1.0770	1.0770	1.0770	2.8524	2.8719	302
03/12/09	10:05	11:05	15220.19	15221.19	1.00	1.1019	1.1019	1.1019	1.1019	2.8149	2.8362	322
05/12/09	09:00	10:00	15221.19	15222.19	1.00	1.1019	1.1019	1.1019	1.1019	2.8209	2.8400	289
08/12/09	09:42	10:42	15222.19	15223.19	1.00	1.1019	1.1019	1.1019	1.1019	2.8395	2.8544	225
10/12/09	09:05	10:04	15247.19	15248.18	0.99	1.1019	1.1019	1.1019	1.1019	2.8260	2.8422	245
12/12/09	09:00	10:00	15248.18	15249.18	1.00	1.1019	1.1019	1.1019	1.1019	2.8017	2.8216	301

Remark (*): Since the area for existing air monitoring station TM-A2 near Tipping Hall No.1 was handed over to EcoPark, air monitoring station TM-A2 was cancelled and the air monitoring was carried out at air monitoring station TM-RA2 (refer to Figure 2A attached) from 28 October 2008.

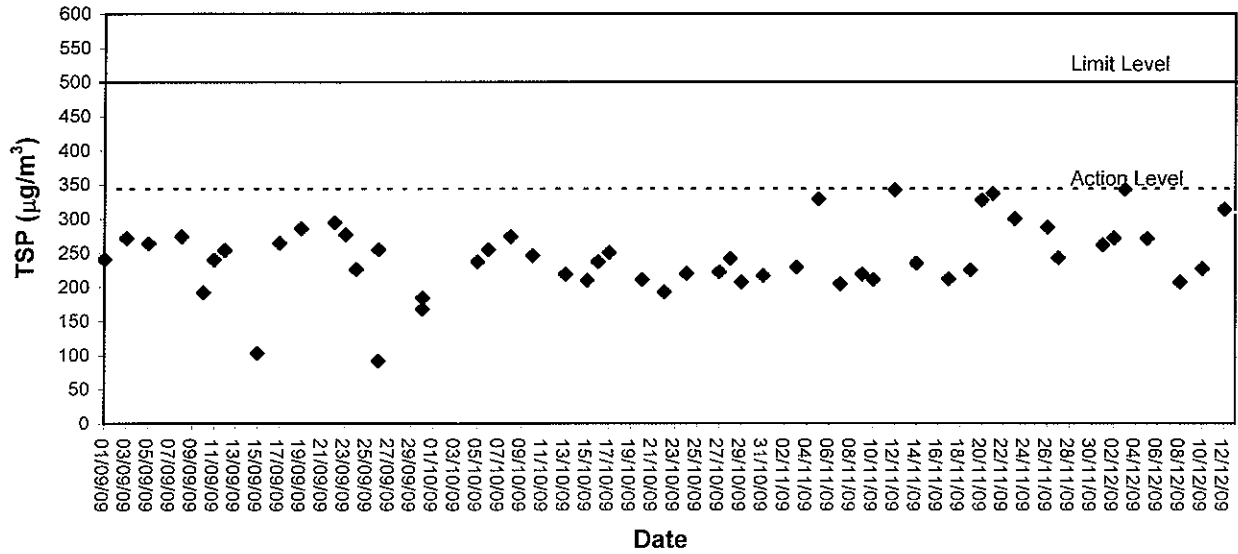


Appendix B3

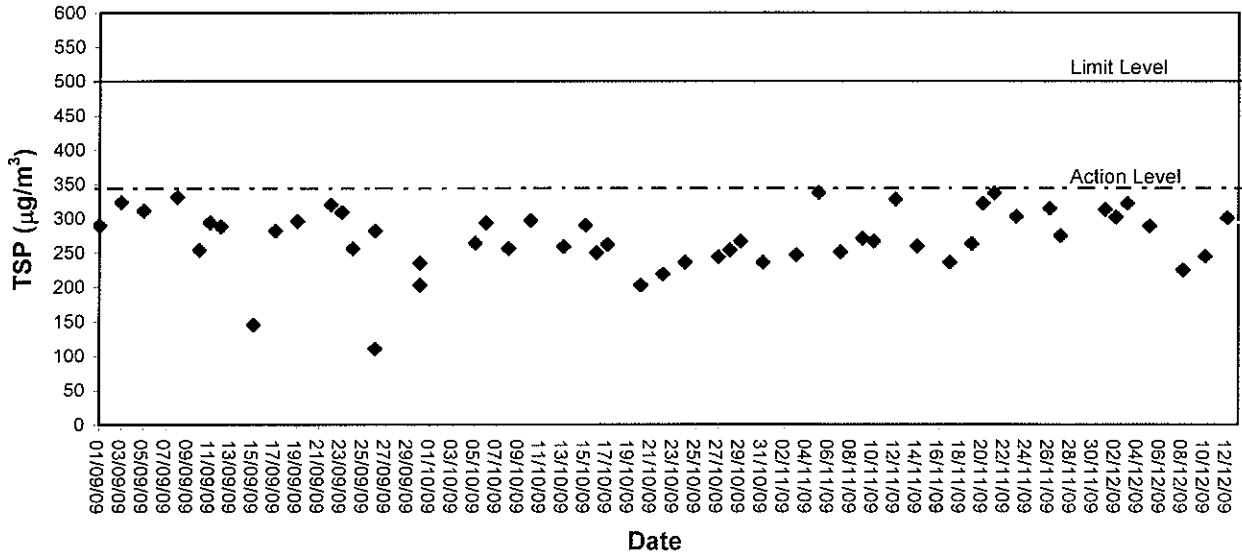
Graphical Plots of Impact Air Quality Monitoring Data



1-hour TSP level at TM-A1

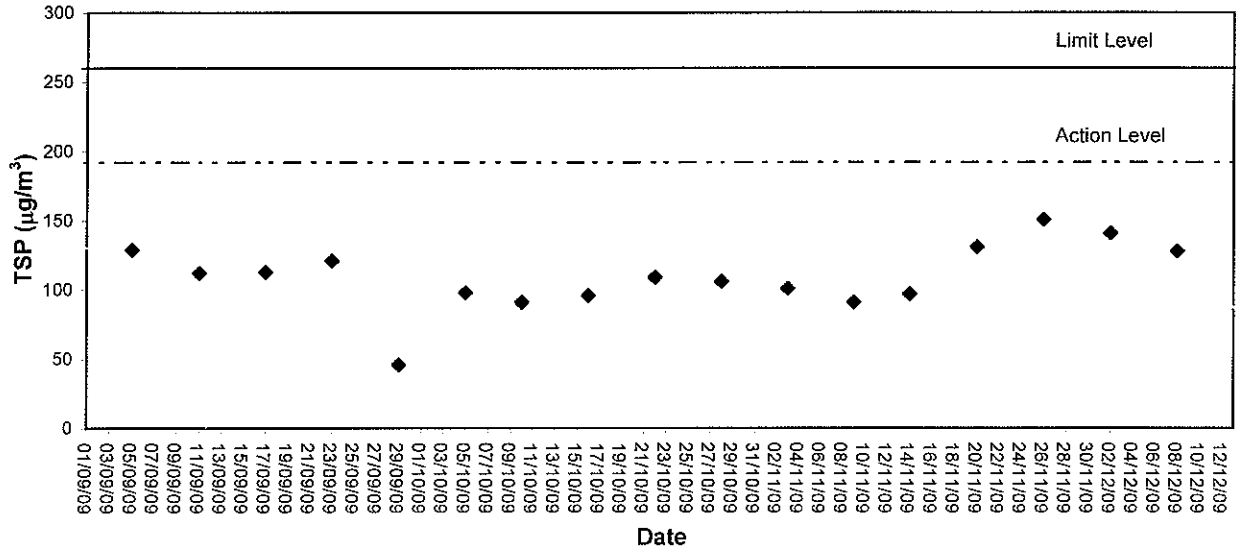


1-hour TSP level at TM-A2

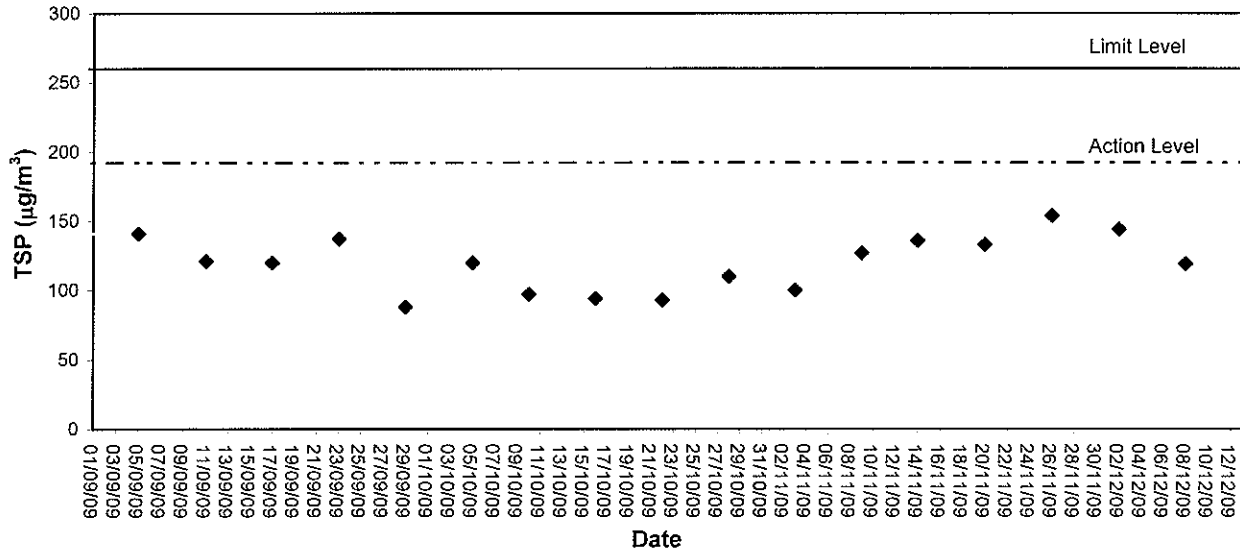




24-hour TSP level at TM-A1



24-hour TSP level at TM-A2





Appendix C1

Calibration Certificates for Impact Marine Water Quality Monitoring Equipments



Performance Check of Turbidimeter

Equipment Ref. No. : ET/0505/006 Manufacturer : HACH

Model No. : 2100P Serial No. : 060700018334

Date of Calibration : 9/11/09 Due Date : 8/2/10

Gelex Vial Std	Theoretical Value (NTU)	Measured Value (NTU)	Difference %
0-10 NTU	5.34	5.30	0.8
10-100 NTU	56.6	56.1	0.9
100-1000 NTU	547	543	0.7

Acceptance Criteria

Difference : <5 %

The salinity meter complies * / ~~does not comply~~ * with the specified requirements and is deemed acceptable * / ~~unacceptable~~ * for use. Measurements are traceable to national standards.

Checked by : [Signature]

Approved by : [Signature]



Internal Calibration Report of Dissolved Oxygen Meter

Equipment Ref. No. : FA/FW/008/002 Manufacturer : YSI.
 Model No. : 85 Serial No. : 06C1998AD
 Date of Calibration : 26/11/09 Calibration Due Date : 26/12/10.

Ref. No. of Reference Thermometer : ET10521/001
 Ref. No. of Potassium Dichromate : ET10520/003/09

Temperature Verification

	Temperature (°C)
Thermometer reading	<u>22.0</u>
Meter reading	<u>22.0</u>

Linearity Checking

Purging time, min	DO meter reading, mg/L			Winkler Titration result, mg/L			Difference (%) of DO Content	
	1	2	Average	1	2	Average		
2	<u>7.91</u>	<u>7.88</u>	<u>7.90</u>	<u>7.77</u>	<u>7.75</u>	<u>7.76</u>	<u>1.79</u>	
5	<u>6.52</u>	<u>6.54</u>	<u>6.53</u>	<u>6.32</u>	<u>6.34</u>	<u>6.33</u>	<u>3.11</u>	
10	<u>5.06</u>	<u>5.04</u>	<u>5.05</u>	<u>4.91</u>	<u>4.93</u>	<u>4.92</u>	<u>2.61</u>	
Linear regression coefficient			<u>0.9993</u>					

Zero Point Checking

DO meter reading, mg/L	<u>0.00</u>
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Salinity Checking


Salinity (ppt)	DO meter reading, mg/L			Winkler Titration result, mg/L			Difference (%) of DO Content
	1	2	Average	1	2	Average	
10	<u>7.61</u>	<u>7.59</u>	<u>7.60</u>	<u>7.44</u>	<u>7.46</u>	<u>7.45</u>	<u>1.99</u>
30	<u>6.84</u>	<u>6.82</u>	<u>6.83</u>	<u>6.66</u>	<u>6.64</u>	<u>6.65</u>	<u>2.67</u>

Acceptance Criteria

- (1) Difference between temperature readings from temperature sensor of DO probe and reference thermometer : < 0.5 °C
- (2) Linear regression coefficient : > 0.99
- (3) Zero checking: 0.0mg/L
- (4) Difference (%) of DO content from the meter reading and by winkler titration : within ± 5%

The equipment complies * / does not comply * with the specified requirements and is deemed acceptable * / ~~unacceptable~~ * for use.

* Delete as appropriate

Calibrated by : 

Approved by : 



Performance Check of Salinity Meter

Equipment Ref. No. : ET7BW/008/002 Manufacturer : YSI
Model No. : 85 Serial No. : 06C 1998 AD
Date of Calibration : 26/11/09 Due Date : 26/2/10

Ref. No. of Salinity Standard used (30ppt)

J351

Salinity Standard (ppt)	Measured Salinity (ppt)	Difference %
30	<u>29.3</u>	<u>2.36%</u>

Acceptance Criteria

Difference : <10 %

The salinity meter complies * / ~~does not comply~~ * with the specified requirements and is deemed acceptable * / ~~unacceptable~~ * for use. Measurements are traceable to national standards.

Checked by :

Approved by :



Appendix C2

Impact Marine Water Quality Monitoring Results

Mid-Flood Tide

Monitoring Station : TM-FC2

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)	Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)		Dissolved Oxygen Saturation (%)			Turbidity (NTU)			Suspended Solids (mg/L)		
					Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Depth-average	Value	Average
01/12/09	1645-1701	22/Sunny	Surface	25.8	23.6	23.6	6.41	6.41	84.4	84.4	9.91	9.90	9.5	9.6	10.62		
			Middle	24.9	23.6	6.41	5.79	76.3	76.3	9.89	10.40	9.7	10.6				
			Bottom	23.5	23.7	5.79	5.29	69.8	69.8	10.40	11.00	10.7	11.7				
03/12/09	0930-0945	18/Fine	Surface	21.3	28.9	28.8	5.59	5.60	77.5	77.6	11.20	11.1	11.3	11.2	11.25		
			Middle	21.1	28.9	28.9	5.59	5.60	76.0	76.1	11.00	11.0	11.3	11.3			
			Bottom	20.9	28.9	28.7	5.42	5.42	72.1	72.3	11.40	11.4	11.3	11.3			
05/12/09	1030-1045	20/Sunny	Surface	22.4	30.6	30.6	6.42	6.44	89.2	89.4	6.95	6.97	7.5	7.4	8.4		
			Middle	24.0	31.3	31.3	6.02	6.04	83.6	83.8	8.27	8.28	7.3	8.5			
			Bottom	24.2	31.2	31.4	5.74	5.76	84.0	80.0	8.29	8.97	8.5	9.4			
08/12/09	1200-1214	19/Cloudy	Surface	21.9	22.1	22.0	6.34	6.32	82.4	82.2	9.58	9.58	9.5	9.5	9.8		
			Middle	20.9	23.5	23.3	6.00	6.01	78.0	78.1	9.74	9.74	9.7	9.9			
			Bottom	20.4	23.0	23.8	5.60	5.60	78.2	72.9	9.73	10.00	10.0	10.2			
10/12/09	1445-1500	20/Sunny	Surface	21.4	29.9	29.9	6.40	6.42	90.8	91.1	7.52	7.54	7.5	7.7	8.5		
			Middle	23.4	31.0	31.0	5.90	5.88	83.7	83.5	7.55	8.45	7.8	8.4			
			Bottom	23.7	30.9	31.3	5.86	5.82	83.2	82.0	8.43	8.98	8.5	9.4			
12/12/09	1505-1520	25/Sunny	Surface	26.2	29.0	29.0	5.88	5.84	79.1	79.1	9.13	9.15	8.8	8.9	9.2		
			Middle	25.0	29.3	29.2	5.77	5.74	79.1	78.3	9.17	9.18	9.0	9.4			
			Bottom	24.8	29.5	29.5	5.20	5.21	78.3	70.3	9.18	9.42	9.2	9.4			

Mid-Flood Tide

Monitoring Station : TM-FM1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)			Turbidity (NTU)			Suspended Solids (mg/L)			
			Surface	Bottom		Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Depth-average
01/12/09	1732-1745	22/Sunny	Surface	1.0	25.4	25.2	25.2	6.58	6.59	86.9	86.9	10.00	10.00	10.0	10.0	10.0	10.0	10.83	10.0	
			Middle	9.3	24.6	25.9	6.02	6.03	79.5	79.6	10.90	10.90	11.0	11.0	10.5	10.5				
			Bottom	17.6	23.3	26.2	5.21	5.21	68.8	68.7	11.80	11.90	11.9	11.9	12.0	12.0				
03/12/09	0852-0905	18/Fine	Surface	1.0	21.2	27.9	28.0	5.54	5.53	77.7	77.7	11.50	11.60	11.6	11.3	11.3	11.52	11.3	11.3	
			Middle	8.0	20.9	28.5	5.50	5.49	76.4	76.5	11.20	11.10	11.2	11.2	12.2	12.1				
			Bottom	15.0	20.8	28.5	5.20	5.21	73.5	73.5	11.40	11.30	11.4	11.4	11.3	11.2				
05/12/09	0950-1005	20/Sunny	Surface	1.0	22.5	30.5	30.5	6.44	6.46	89.5	89.7	7.43	7.45	7.5	7.5	7.6	7.5	7.6	8.7	
			Middle	8.6	23.9	31.2	5.85	5.87	81.3	81.5	8.87	8.86	8.8	8.8	8.8					8.9
			Bottom	16.2	24.2	31.3	5.77	5.76	79.6	79.4	9.60	9.63	9.62	9.6	9.5					9.6
08/12/09	1241-1255	19/Cloudy	Surface	1.0	21.6	21.5	21.7	6.29	6.30	81.8	81.9	8.98	8.98	8.5	8.5	8.7	8.5	8.7	9.1	
			Middle	9.3	20.6	22.4	5.90	5.88	82.0	76.7	9.02	9.03	9.03	9.03	9.3					9.3
			Bottom	17.6	20.3	22.8	5.86	5.41	76.1	70.3	9.03	9.51	9.52	9.52	9.5					9.5
10/12/09	1405-1420	20/Sunny	Surface	1.0	21.3	22.7	22.8	5.41	5.41	70.2	70.3	8.01	8.03	8.2	8.2	8.2	8.2	8.2	9.2	
			Middle	8.5	23.4	29.9	5.98	5.97	92.1	92.0	8.04	8.03	8.03	8.03	8.2					8.2
			Bottom	16.0	23.6	31.2	5.74	5.72	84.9	84.7	8.96	8.98	8.98	8.98	9.3					9.3
12/12/09	1428-1440	25/Sunny	Surface	1.0	26.1	28.5	28.5	5.89	5.80	80.3	80.6	9.41	9.42	9.5	9.5	9.5	9.5	9.5	9.5	
			Middle	7.9	25.5	29.0	5.77	5.75	78.1	78.2	9.29	9.30	9.29	9.30	9.2					9.3
			Bottom	14.8	25.0	29.1	5.50	5.50	73.9	73.7	9.72	9.71	9.72	9.71	9.7					9.9

Mid-Flood Tide

Monitoring Station : TM-FM2

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)	Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)			Turbidity (NTU)			Suspended Solids (mg/L)		
					Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average	
01/12/09	1710-1724	22/Sunny	Surface	25.8	23.0	23.2	6.20	6.20	81.9	81.9	9.81	9.82	10.3	10.4	10.77			
			Middle	24.9	23.6	23.8	5.71	5.71	75.3	75.3	10.50	10.6	10.5	10.5				
			Bottom	23.3	24.2	24.2	5.09	5.10	67.1	67.2	11.60	11.7	11.5	11.4				
03/12/09	0910-0922	18/Fine	Surface	21.3	28.1	28.1	5.51	5.52	77.2	77.3	11.60	11.6	11.3	11.3	11.45			
			Middle	21.0	28.6	28.6	5.49	5.46	76.5	76.4	11.50	11.5	11.3	11.4				
			Bottom	21.0	28.6	28.2	5.43	5.41	76.2	73.1	11.40	11.6	11.5	11.7				
05/12/09	1010-1025	20/Sunny	Surface	22.4	30.6	30.6	6.53	6.55	90.7	91.0	7.77	7.78	7.5	7.6	8.62			
			Middle	23.9	31.2	31.3	5.90	5.89	82.0	81.8	8.93	8.92	8.5	8.8				
			Bottom	24.2	31.4	31.4	5.87	5.67	81.5	78.1	8.90	9.44	9.0	9.5				
08/12/09	1221-1235	19/Cloudy	Surface	22.0	21.0	21.1	6.18	6.18	80.1	80.1	9.51	9.53	8.8	8.9	9.5			
			Middle	19.8	21.6	21.6	5.92	5.92	76.9	76.9	9.81	9.82	9.0	9.9				
			Bottom	20.4	22.4	22.5	5.56	5.56	72.3	72.3	9.68	9.68	10.0	9.7				
10/12/09	1425-1440	20/Sunny	Surface	21.3	29.8	29.8	6.33	6.32	89.8	89.6	7.76	7.75	7.5	7.7	8.6			
			Middle	23.4	30.9	31.0	5.71	5.69	89.4	80.2	7.74	8.71	7.8	8.5				
			Bottom	23.6	31.2	31.2	5.67	5.68	79.9	80.1	8.69	9.57	8.5	9.5				
12/12/09	1445-1457	25/Sunny	Surface	26.0	28.8	28.8	5.90	5.90	79.0	79.6	9.35	9.62	8.8	8.9	9.4			
			Middle	25.2	29.3	29.3	5.80	5.80	80.1	77.4	9.84	9.34	9.0	9.4				
			Bottom	25.0	29.3	29.4	5.79	5.41	77.5	72.5	9.30	9.72	9.5	9.9				

Mid-Flood Tide

Monitoring Station : TM-FC1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)			Turbidity (NTU)			Suspended Solids (mg/L)						
			Surface	Bottom		Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Depth-average	
01/12/09	1753-1805	22/Sunny	Surface	1.0	24.6	24.6	6.15	6.18	81.2	81.5	10.80	10.9	10.5	10.6	11.80	10.7	10.7	11.53	11.3	11.4	12.6	11.5	11.5
					26.8	26.8	5.76	5.73	76.0	75.6	10.90	11.5	11.3	11.4		11.5	11.5						
			Bottom	20.0	26.4	26.4	5.14	5.12	67.9	67.6	11.50	13.1	12.5	12.6		12.5	12.6						
					26.4	26.4	5.10	5.12	67.3	67.6	13.10	13.1	12.7	12.7		12.7							
			Surface	1.0	27.9	27.9	5.58	5.50	77.1	77.0	11.30	11.4	11.0	11.0		11.0	11.0						
					28.4	28.4	5.40	5.40	76.9	74.3	11.40	11.1	11.0	11.3		11.3							
03/12/09	0830-0842	18/Fine	Middle	11.1	28.4	28.4	5.39	5.40	74.5	74.3	11.10	11.1	11.3	11.3	11.2	11.3	11.3	11.15	11.3	11.3	11.0	11.3	11.3
					28.4	28.4	5.15	5.16	73.0	72.9	11.30	11.3	11.3	11.2		11.3	11.2						
			Bottom	21.2	28.4	28.4	5.17	5.16	72.8	72.9	11.30	11.3	11.0	11.3		11.2	11.2						
					30.4	30.4	6.37	6.36	88.5	88.3	7.98	7.97	8.0	8.0		8.0	8.0						
			Surface	1.0	30.3	30.4	6.34	6.36	88.1	88.3	7.95	7.97	8.0	8.0		8.0	8.0						
					31.1	31.1	5.97	5.96	82.3	82.1	9.21	9.22	9.2	9.2		9.2	9.2						
05/12/09	0930-0945	20/Sunny	Middle	12.1	31.2	31.2	5.94	5.96	81.9	82.1	9.23	9.22	9.5	9.4	9.0	9.7	9.7	9.1	9.7	9.9	10.0	9.7	9.9
					31.4	31.4	5.81	5.80	80.1	79.9	9.90	9.92	10.0	9.5		9.5	9.5		9.5				
			Bottom	23.2	31.4	31.4	5.78	5.80	79.7	79.9	9.94	9.92	10.0	9.92		9.5	9.5						
					22.5	22.5	6.25	6.23	81.3	81.0	9.26	9.26	9.5	9.5		9.5	9.5						
			Surface	1.0	22.6	22.6	6.20	6.23	80.6	81.0	9.26	9.26	9.5	9.26		9.5	9.5						
					23.2	23.2	6.04	6.04	78.5	78.3	9.35	9.34	9.3	9.3		9.3	9.3						
08/12/09	1303-1318	19/Cloudy	Middle	11.3	23.3	23.3	6.04	6.04	78.0	78.3	9.33	9.34	9.3	9.3	9.70	9.8	9.8	9.6	9.3	9.3	10.0	9.3	9.3
					23.8	23.8	5.82	5.83	75.7	75.8	10.50	10.5	9.8	9.8		9.8	9.8						
			Bottom	21.6	23.9	23.9	5.83	5.83	75.8	75.8	10.50	10.5	10.0	10.5		9.9	9.9						
					29.8	29.8	6.57	6.56	93.2	93.0	7.97	7.96	7.5	7.5		7.5	7.5						
			Surface	1.0	29.7	29.8	6.54	6.56	92.8	93.0	7.95	7.96	7.5	7.96		7.8	7.7						
					30.6	30.6	6.02	6.04	85.4	85.7	8.94	8.93	8.5	8.5		8.5	8.5						
10/12/09	1345-1400	20/Sunny	Middle	12.0	30.7	30.7	6.05	6.04	85.9	85.7	8.91	8.93	8.8	8.7	8.83	9.5	9.5	9.0	9.5	9.7	10.0	9.5	9.7
					31.1	31.1	5.88	5.90	82.9	83.1	9.60	9.62	9.8	9.8		9.8	9.8						
			Bottom	23.0	31.2	31.2	5.91	5.90	83.3	83.1	9.63	9.62	9.8	9.62		9.5	9.7						
					28.8	28.8	5.86	5.84	78.8	78.7	9.13	9.14	9.0	9.0		9.0	9.0						
			Surface	1.0	28.8	28.8	5.82	5.84	78.6	78.7	9.15	9.14	9.0	9.14		9.0	9.0						
					29.1	29.1	5.39	5.43	73.0	73.1	9.43	9.43	9.5	9.5		9.5	9.5						
12/12/09	1400-1416	25/Sunny	Middle	11.3	29.1	29.1	5.47	5.43	73.2	73.1	9.42	9.43	9.5	9.5	9.32	9.42	9.42	9.3	9.5	9.5	10.0	9.5	9.5
					29.7	29.7	5.10	5.14	70.6	70.4	9.40	9.41	9.3	9.3		9.3	9.3						
			Bottom	21.5	29.9	29.8	5.17	5.14	70.1	70.4	9.41	9.41	9.3	9.41		9.3	9.3						
					29.9	29.9	5.17	5.14	70.1	70.4	9.41	9.41	9.3	9.41		9.3	9.3						

Mid-Ebb Tide

Monitoring Station : TM-FC1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)	Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)			Turbidity (NTU)			Suspended Solids (mg/L)		
					Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Value	Average
01/12/09	1248-1300	23/Sunny	Surface	25.7	23.6	23.8	6.20	6.25	6.03	83.2	83.1	11.20	11.1	11.3	12.53			
					24.0	27.1	5.81	5.81	76.6	11.00	11.3	11.3						
					27.0	27.0	5.80	5.80	76.5	12.60	12.7	12.5						
03/12/09	1320-1335	24/Fine	Bottom	22.8	25.8	25.4	4.95	4.93	4.93	65.3	65.0	14.30	14.3	13.7				
					25.0	25.4	4.90	4.93	64.7	14.20	13.5	13.8						
					27.3	27.3	5.50	5.47	77.60	11.20	10.70	10.70						
05/12/09	1430-1445	20/Sunny	Surface	22.8	30.5	30.5	6.30	6.32	6.06	87.5	87.8	8.92	8.94	9.6				
					30.4	31.2	5.82	5.80	80.3	8.95	9.0	9.0						
					31.2	31.2	5.77	5.80	79.6	9.81	9.7	9.5						
08/12/09	1827-1840	17/Drizzle	Bottom	24.2	31.5	31.5	5.68	5.66	5.66	78.3	78.1	10.10	10.1	10.3				
					31.4	21.8	5.64	5.66	77.8	10.00	10.3	10.3						
					21.8	21.8	6.30	6.31	81.8	9.21	9.3	9.3						
10/12/09	0700-0715	20/Sunny	Surface	20.9	22.5	22.6	5.94	5.94	6.12	77.3	77.3	9.40	9.38	9.4				
					22.6	23.0	5.93	5.94	77.2	9.36	9.5	9.5						
					23.0	23.0	5.75	5.76	74.8	9.41	9.7	9.8						
12/12/09	0845-0900	22/Fine	Bottom	20.2	29.6	29.7	5.63	5.62	5.62	79.3	79.1	9.42	9.42	9.5				
					29.7	29.7	5.76	5.62	78.9	9.42	9.9	9.5						
					29.0	29.0	5.60	5.62	78.9	9.76	10.0	10.0						
12/12/09	0845-0900	22/Fine	Surface	20.9	28.9	28.7	5.85	5.81	5.67	79.9	80.6	9.42	9.41	9.6				
					28.5	28.7	5.76	5.81	81.3	9.40	9.6	9.5						
					28.8	28.9	5.56	5.54	78.4	9.55	9.7	9.3						
12/12/09	0845-0900	22/Fine	Middle	21.5	28.9	28.9	5.52	5.54	5.54	78.3	78.4	9.51	9.53	9.5				
					28.9	28.9	5.52	5.54	78.3	9.51	9.3	9.3						
					29.0	29.0	5.60	5.51	73.6	9.26	9.5	9.5						
12/12/09	0845-0900	22/Fine	Bottom	20.2	29.0	29.0	5.41	5.51	5.51	73.3	73.5	9.24	9.25	9.5				
					29.0	29.0	5.41	5.51	73.3	9.24	9.5	9.5						
					29.0	29.0	5.41	5.51	73.3	9.24	9.5	9.5						

Mid-Ebb Tide

Monitoring Station : TM-FM1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)			Turbidity (NTU)			Suspended Solids (mg/L)		
			Surface	Bottom		Value	Average	Value	Average	Depth-average	Value	Average	Depth-average	Value	Average	Depth-average	Value	Average	Depth-average
01/12/09	1228-1240	23/Sunny	Surface	1.0	25.2	24.8	24.8	6.56	6.53	6.23	86.6	86.2	10.20	10.2	10.2	10.2	10.1	10.87	
			Middle	9.2	24.3	25.6	5.92	5.92	6.09	78.1	78.1	10.60	10.6	10.5	10.5	10.5			
			Bottom	17.4	23.1	26.6	5.05	5.05	5.05	66.7	66.8	11.40	11.4	12.0	12.0	12.0			
03/12/09	1346-1358	24/Fine	Surface	1.0	24.2	27.3	27.3	5.44	5.47	5.44	77.0	77.0	11.00	11.1	11.0	11.0	10.77		
			Middle	7.9	24.1	28.0	5.40	5.40	5.40	75.9	75.8	10.90	10.9	10.5	10.5	10.5			
			Bottom	14.8	24.0	28.4	5.10	5.14	5.14	70.1	70.4	11.00	11.0	10.8	10.8	10.8			
05/12/09	1450-1505	20/Sunny	Surface	1.0	22.8	30.6	30.6	6.29	6.27	6.09	87.4	87.1	8.17	8.18	8.5	8.5	9.2		
			Middle	8.4	23.9	31.2	5.94	5.92	5.92	81.9	81.6	9.06	9.08	9.5	9.4	9.5			
			Bottom	15.8	24.2	31.5	5.89	5.74	5.74	81.2	79.1	9.09	9.48	9.3	9.6	9.7			
08/12/09	1806-1819	17/Drizzle	Surface	1.0	21.8	20.9	20.8	6.23	6.24	6.06	81.1	81.2	9.02	9.02	9.3	9.2	9.2		
			Middle	9.8	21.2	21.5	5.88	5.88	5.88	76.3	76.4	9.04	9.05	9.0	9.0	9.0			
			Bottom	18.2	20.7	22.2	5.59	5.52	5.52	71.4	71.8	9.39	9.41	9.3	9.4	9.5			
10/12/09	0720-0735	20/Sunny	Surface	1.0	21.1	29.8	29.8	6.34	6.32	6.10	90.0	89.7	7.90	7.92	7.5	7.5	8.7		
			Middle	8.3	23.2	30.9	5.90	5.89	5.89	83.7	83.5	9.12	9.14	9.0	9.2	9.0			
			Bottom	15.6	23.8	31.0	5.87	5.79	5.79	83.3	82.2	9.15	9.55	9.3	9.5	9.5			
12/12/09	0910-0925	22/Fine	Surface	1.0	23.0	28.7	28.5	5.79	5.76	5.73	79.2	79.3	9.59	9.60	9.0	9.0	9.3		
			Middle	7.5	22.9	28.9	5.71	5.71	5.71	79.0	79.0	9.45	9.45	9.5	9.5	9.5			
			Bottom	14.0	22.7	28.9	5.70	5.71	5.71	78.0	78.2	9.35	9.37	9.3	9.4	9.5			

Mid-Ebb Tide

Monitoring Station : TM-FM2

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)	Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)			Turbidity (NTU)			Suspended Solids (mg/L)		
					Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Value	Average
01/12/09	1209-1222	23/Sunny	Surface	24.7	21.9	22.0	6.25	6.25	6.00	82.5	82.5	9.88	9.89	9.5	9.6	11.22		
			Middle	24.4	22.5	5.74	5.74	75.8	75.8	11.10	11.1	11.3	11.4					
			Bottom	23.5	22.9	5.12	5.13	67.6	67.7	12.50	12.3	11.5	12.7					
03/12/09	1403-1415	24/Fine	Surface	24.5	27.7	27.5	5.46	5.47	5.43	76.9	76.9	11.40	11.4	11.3	11.3	10.83		
			Middle	24.1	27.9	27.9	5.39	5.39	75.4	75.3	10.90	11.0	10.5	10.6				
			Bottom	23.9	28.1	28.2	5.20	5.21	71.2	71.4	10.90	11.0	10.5	10.6				
05/12/09	1510-1525	20/Sunny	Surface	22.9	30.6	30.6	6.37	6.36	6.16	88.5	88.3	8.34	8.36	8.5	8.4	9.03		
			Middle	23.8	31.3	31.3	5.98	5.97	83.1	82.9	8.95	8.97	8.2	9.1				
			Bottom	24.1	31.2	31.5	5.59	5.58	82.7	76.9	8.98	9.57	9.0	9.7				
08/12/09	1751-1802	17/Drizzle	Surface	21.9	20.8	20.8	6.15	6.15	6.05	80.0	80.0	9.42	9.43	9.3	9.3	9.6		
			Middle	21.4	21.2	21.2	5.94	5.95	77.2	77.3	9.74	9.76	9.5	9.7				
			Bottom	21.0	21.2	22.1	5.63	5.64	73.2	73.3	9.78	9.72	9.8	9.9				
10/12/09	0740-0755	20/Sunny	Surface	21.0	29.8	29.9	6.29	6.28	6.10	89.3	89.1	8.01	8.03	8.2	8.2	9.3		
			Middle	23.2	31.0	31.1	5.94	5.92	84.3	84.0	8.04	9.84	8.2	9.9				
			Bottom	23.8	31.1	31.2	5.90	5.71	83.7	80.4	9.85	9.92	10.0	9.9				
12/12/09	0930-0945	22/Fine	Surface	23.1	28.4	28.4	5.69	5.70	5.65	80.6	80.4	9.90	9.92	10.0	9.9	9.3		
			Middle	22.1	28.5	28.5	5.60	5.60	79.0	79.1	9.66	9.64	9.3	9.4				
			Bottom	22.1	29.0	29.0	5.44	5.42	78.3	78.3	9.41	9.42	9.5	9.4				
					29.0	29.0	5.40	5.42	77.3	77.7	9.10	9.11	9.0	9.2				

Mid-Ebb Tide

Monitoring Station : TM-FC2

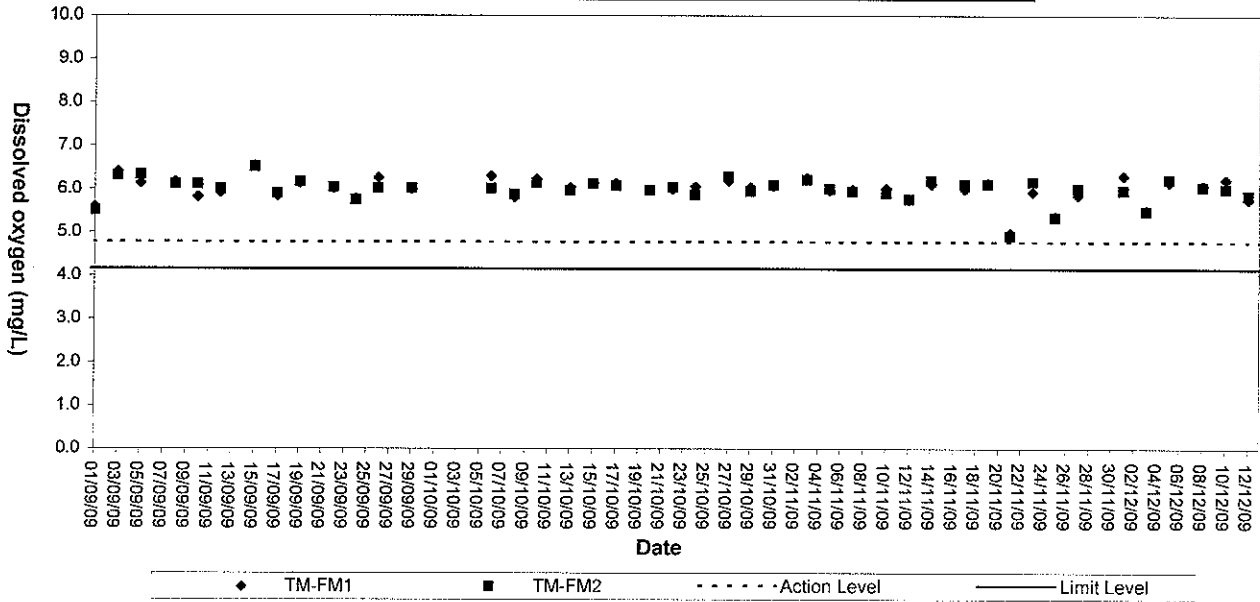
Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)			Turbidity (NTU)			Suspended Solids (mg/L)		
			Surface	Bottom		Value	Average	Value	Average	Depth-average	Value	Average	Depth-average	Value	Average	Depth-average	Value	Average	Depth-average
01/12/09	1145-1200	23/Sunny	Surface	1.0	24.8	24.1	24.2	6.45	6.47	85.1	85.4	9.94	9.94	9.8	9.9	10.77			
			Middle	5.4	24.5	25.0	5.84	5.84	77.0	77.1	10.20	10.2	10.5	10.5					
			Bottom	9.8	24.0	25.6	5.25	5.27	69.3	69.6	11.60	11.8	11.8	11.9					
03/12/09	1422-1436	24/Fine	Surface	1.0	24.4	27.6	27.6	5.42	5.42	78.3	78.2	11.60	11.4	11.3	11.2	11.05			
			Middle	7.5	24.5	28.1	5.38	5.38	77.1	77.1	11.10	11.1	10.5	10.6					
			Bottom	14.0	24.0	28.4	5.20	5.15	75.0	75.1	10.90	10.9	10.7	11.4					
05/12/09	1530-1545	20/Sunny	Surface	1.0	22.9	30.6	30.6	6.51	6.49	90.4	90.2	7.95	7.94	8.2	8.3	8.7			
			Middle	7.4	24.0	31.4	5.83	5.85	81.0	81.3	8.67	8.66	8.5	8.7					
			Bottom	13.8	24.1	31.4	5.60	5.62	77.8	78.1	9.05	9.07	9.2	9.1					
08/12/09	1730-1744	17/Drizzle	Surface	1.0	21.8	21.1	21.2	6.32	6.33	82.1	82.1	9.55	9.53	9.5	9.4	9.7			
			Middle	6.9	21.2	22.8	5.95	5.95	77.4	77.5	9.78	9.79	9.8	9.9					
			Bottom	12.8	21.5	23.5	5.52	5.53	71.8	71.9	9.98	9.98	10.0	9.9					
10/12/09	0800-0815	20/Sunny	Surface	1.0	21.1	29.9	29.9	6.17	6.16	87.6	87.4	7.88	7.87	8.2	8.3	9.1			
			Middle	7.4	23.2	31.1	5.88	5.87	83.4	83.2	8.97	8.96	9.5	9.4					
			Bottom	13.8	23.8	31.2	5.80	5.82	82.3	82.6	9.43	9.42	9.7	9.6					
12/12/09	0955-1010	22/Fine	Surface	1.0	23.1	28.1	28.1	5.71	5.75	78.9	78.9	9.19	9.19	8.8	8.9	9.3			
			Middle	7.5	22.8	28.4	5.60	5.60	78.0	78.0	9.20	9.20	9.5	9.5					
			Bottom	13.9	22.6	29.2	5.40	5.40	77.2	77.4	9.29	9.26	9.7	9.6					

Appendix C3

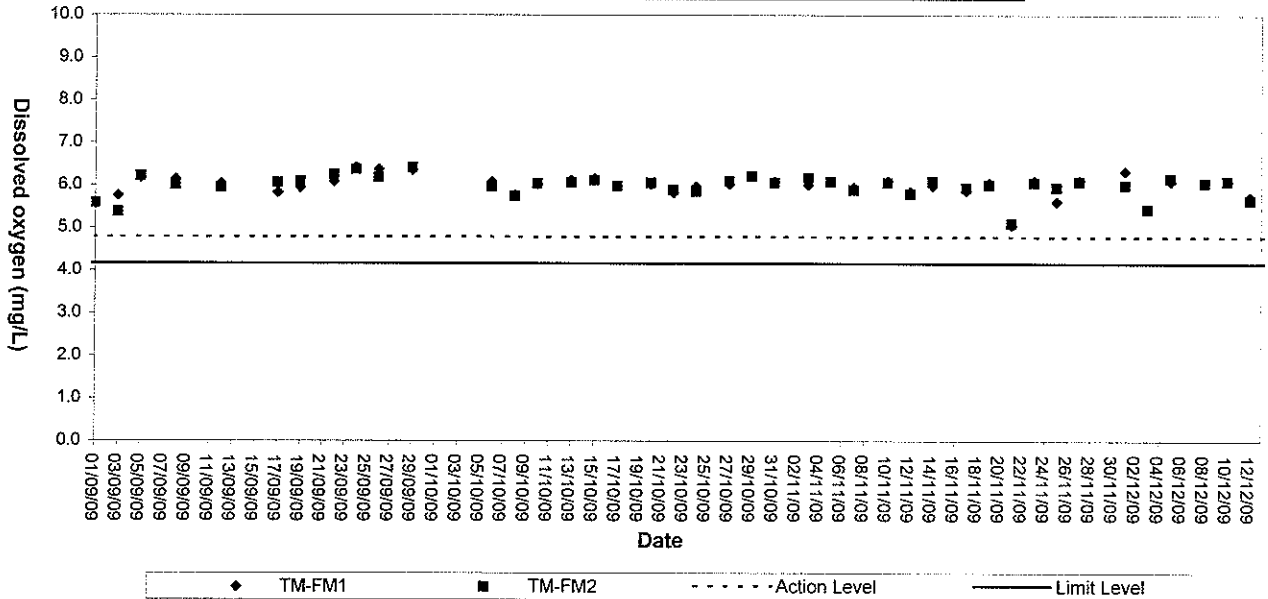
Graphical Plots of Impact Marine Water Quality Monitoring Data



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

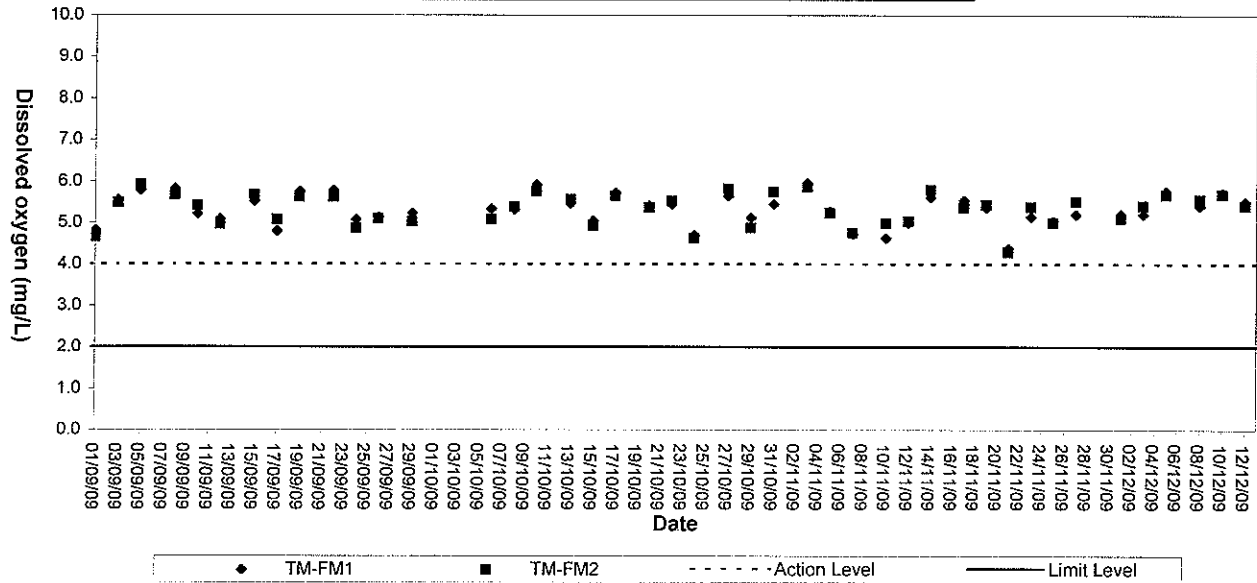


Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide

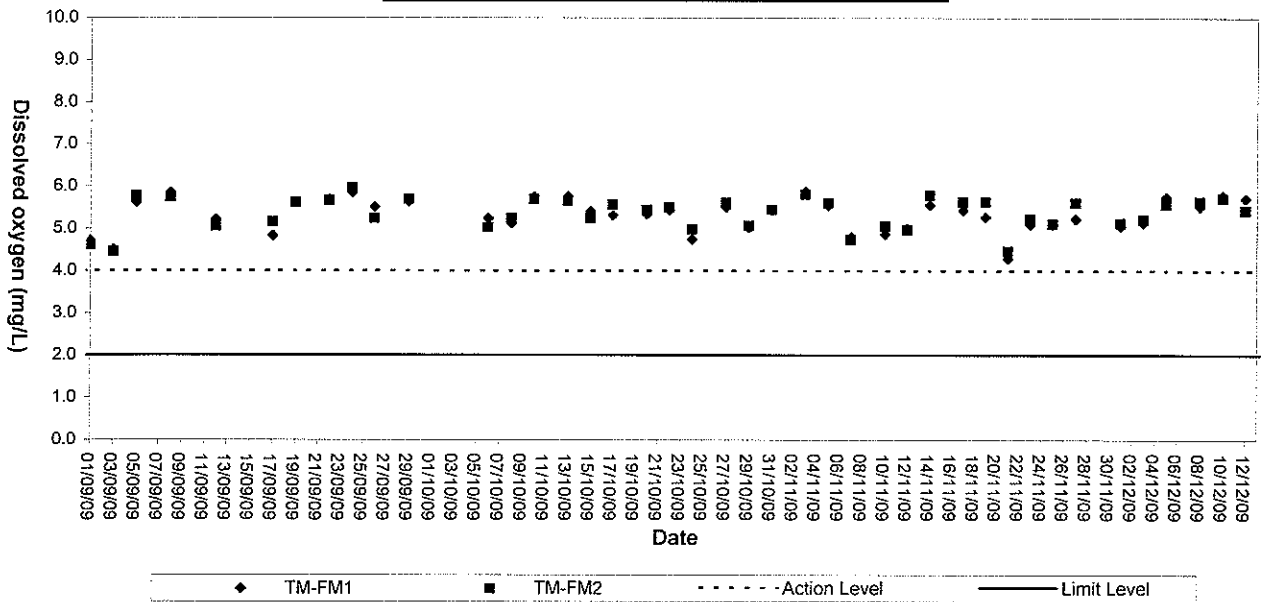




Dissolved Oxygen (Bottom) at Mid-Flood Tide

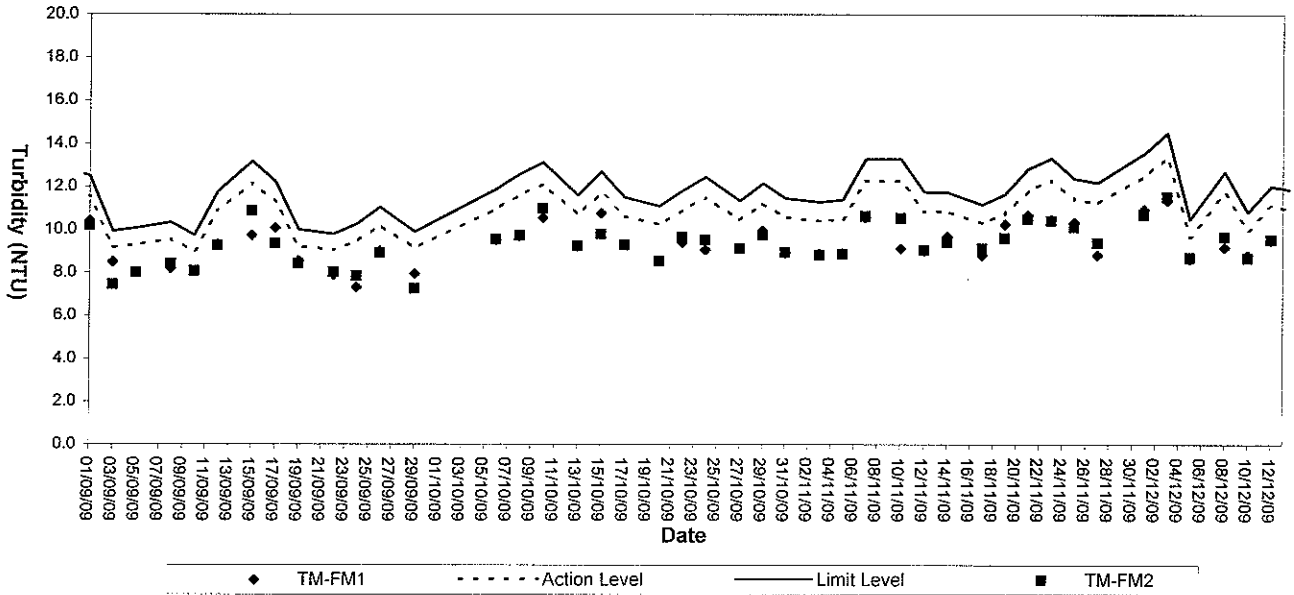


Dissolved Oxygen (Bottom) at Mid-Ebb Tide

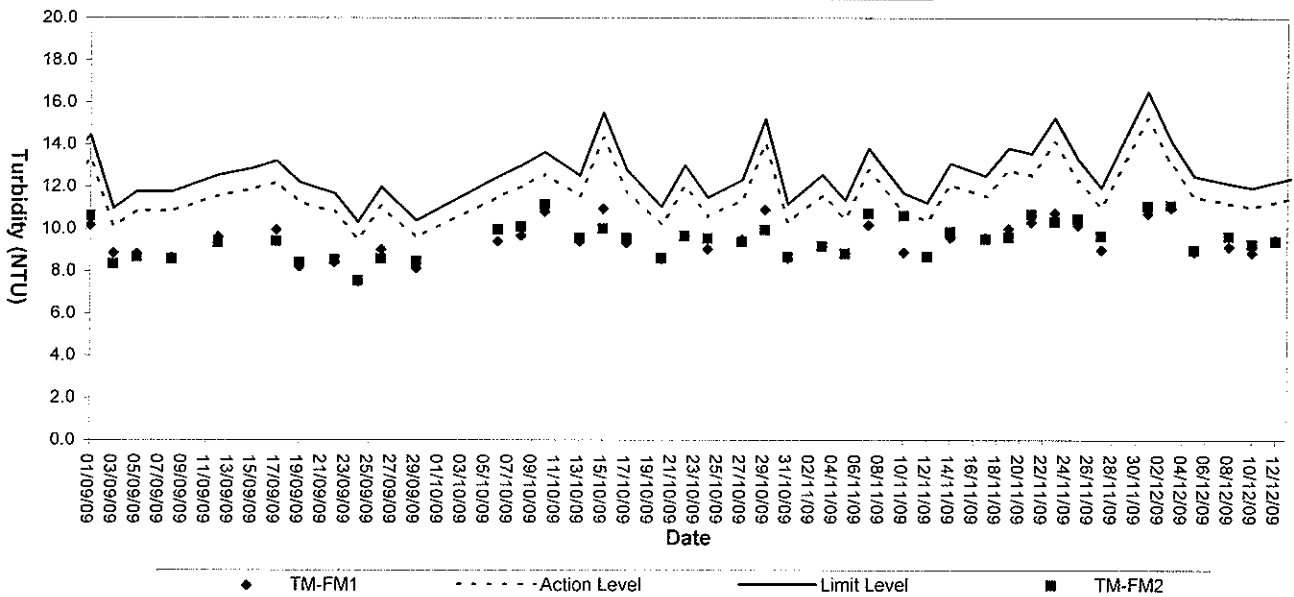




Turbidity (Depth-average) at Mid-Flood Tide

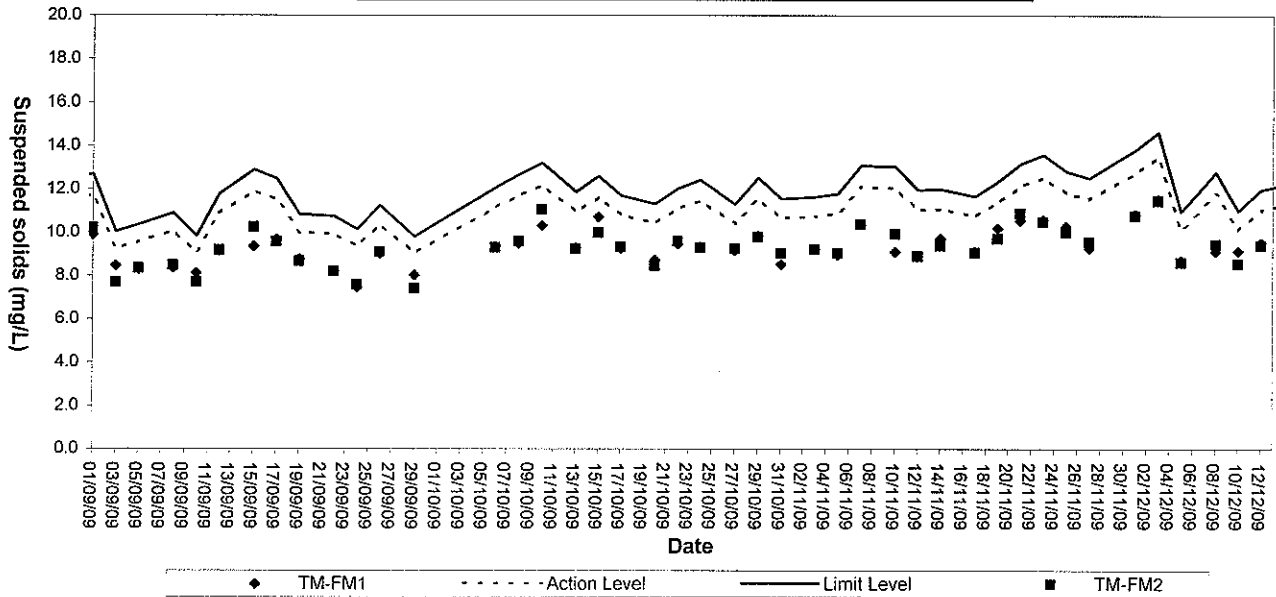


Turbidity (Depth-average) at Mid-Ebb Tide

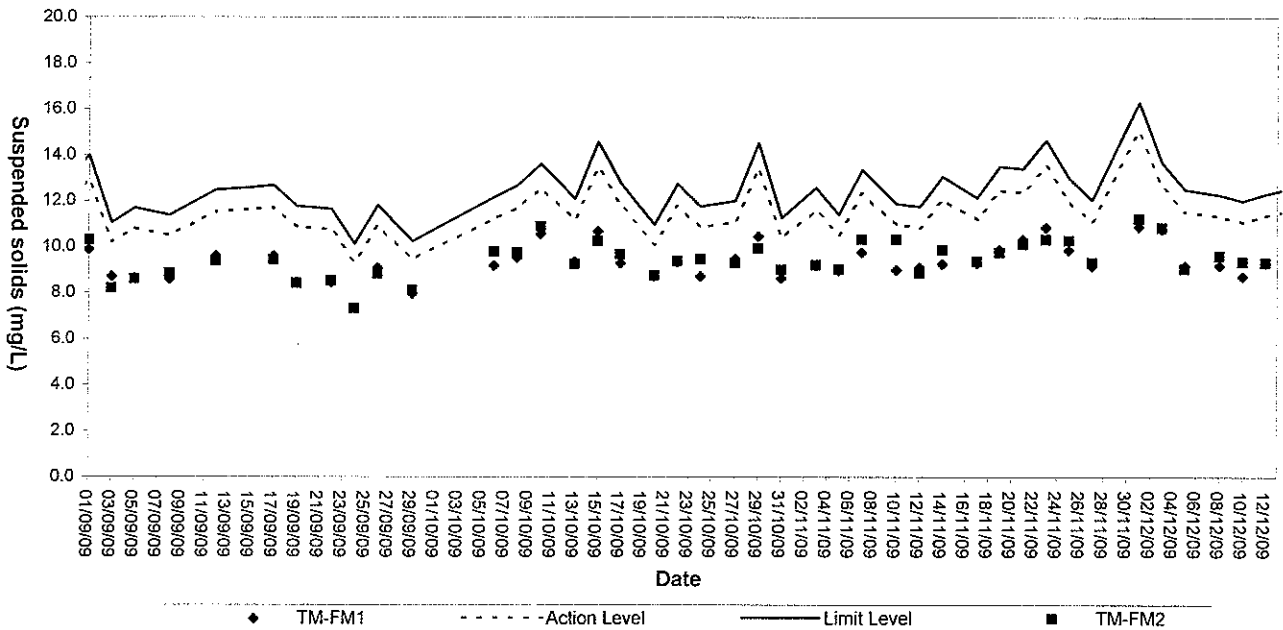




Suspended solids (Depth-average) at Mid-Flood Tide



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





Appendix D1

Calibration Certificates for Impact Noise Monitoring Equipments



Calibration Certificate

Certificate No. 91495

Page 1 of 4 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q90663

Date of receipt : 1-Apr-09

Item Tested

Description : Precision Integrating Sound Level Meter

Manufacturer : Rion

Model : NL-31

Serial No. : 00110024

Test Conditions

Date of Test : 15-Apr-09

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : Z01.

Test Results

All results were within the IEC 651 Type 1 & IEC 804 Type 1 specification.

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

Main Test equipment used:


Equipment No.	Description	Cert. No.	Due Date	Traceable to
S017A	Multi-Function Generator	86228	11-Dec-09	SCL-HKSAR
S024	Sound Level Calibrator	82926	16-Jul-09	NIM-PRC & SCL-HKSAR

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

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

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

Calibrated by :


P.F. Wong

Approved by :


for Dorothy Cheuk

Date: 16-Apr-09

This Certificate is issued by:

Hong Kong Calibration Ltd.

Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.

Tel: 2425 8801 Fax: 2425 8646



Calibration Certificate

Certificate No. 91495

Page 2 of 4 Pages

Results :

1. SPL Accuracy

UUT Setting			Applied Value (dB)	UUT Reading (dB)
Level Range (dB)	Weight	Response		
20 - 100	L _A	Fast	94.03	93.7
		Slow		93.7
	L _C	Fast		93.7
		L _p		Fast
30 - 120	L _A	Fast	94.03	93.6
		Slow		93.6
	L _C	Fast		93.6
	L _p	Fast		93.6
30 - 120	L _A	Fast	113.97	113.6
		Slow		113.6
	L _C	Fast		113.6
	L _p	Fast		113.6

IEC Type 1 Spec. : ± 0.7 dB

Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty : ± 0.01 dB



Calibration Certificate

Certificate No. 91495

Page 3 of 4 Pages

3. Linearity

3.1 Level Linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (Primary Indicator Range)
130	114.0	113.8	+0.2	± 0.7 dB
130	104.0	103.7	+0.1	
120	94.0	93.6 (Ref.)	--	
110	84.0	83.6	0.0	
100	74.0	73.6	0.0	
90	64.0	63.7	+0.1	
80	54.0	53.8	+0.2	

Uncertainty : ± 0.1 dB

3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	83.7	+0.1	± 0.4 dB
	94.0	93.6 (Ref.)	--	
	95.0	94.7	+0.1	± 0.2 dB
	104.0	103.6	0.0	± 0.3 dB
	105.0	104.6	0.0	± 1.0 dB

Uncertainty : ± 0.1 dB

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	-39.8	- 39.4 dB, ± 1.5 dB
63 Hz	-26.5	- 26.2 dB, ± 1.5 dB
125 Hz	-16.5	- 16.1 dB, ± 1 dB
250 Hz	-8.9	- 8.6 dB, ± 1 dB
500 Hz	-3.4	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref.)	0 dB, ± 1 dB
2 kHz	+1.5	+ 1.2 dB, ± 1 dB
4 kHz	+1.4	+ 1.0 dB, ± 1 dB
8 kHz	-0.8	- 1.1 dB, + 1.5 dB ~ - 3 dB
16 kHz	-6.4	- 6.6 dB, + 3 dB ~ ∞

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 91495

Page 4 of 4 Pages

5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	--
1/10	40.0	39.8	± 0.5 dB
1/10 ²	40.0	39.8	
1/10 ³	40.0	40.0	± 1.0 dB
1/10 ⁴	40.0	40.3	

Uncertainty : ± 0.1 dB

- Remark : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1 002 hPa.

----- END -----



Calibration Certificate

Certificate No. 91496

Page 1 of 2 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q90663

Date of receipt : 1-Apr-09

Item Tested

Description : Acoustic Calibrator

Manufacturer : Castle

Model : GA607

Serial No. : 038641

Test Conditions

Date of Test : 15-Apr-09

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : F06, F20, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.

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

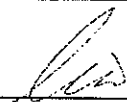
Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	83240	30-Jun-09	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	82926	16-Jul-09	NIM-PRC & SCL-HKSAR
S041	Universal Counter	84077	22-Aug-09	SCL-HKSAR
S206	Sound Level Meter	83964	13-Aug-09	SCL-HKSAR

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

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

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

Calibrated by : 

P.F. Wong

Approved by : 

Dorothy Cheuk

Date: 16-Apr-09

This Certificate is issued by:
Hong Kong Calibration Ltd.

Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

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Appendix D2

Impact Noise Monitoring Results



Day-time Noise Monitoring

Monitoring Location: TM-RN1 *

Date	Start Sampling Time (hh:mm)	Noise Level dB (A)			Wind Speed (m/s)	Weather Condition
		L _{eq(30min)}	L ₁₀	L ₉₀		
01/12/09	14:30	61.8	65.1	59.2	1.8	Sunny
03/12/09	15:00	55.3	56.2	54.2	0.4	Fine
09/12/09	13:15	61.4	64.2	59.2	2.2	Drizzle
10/12/09	09:40	56.7	59.0	52.1	1.1	Sunny

Remark: Since Lands Department did not approve us to enter their own area where the noise monitoring stations TM-N1 and TM-N2 located due to the security, noise monitoring was temporarily carried out at noise monitoring stations TM-RN1 and TM-RN2 (refer to the figure attached) in this reporting period.

Monitoring Location: TM-RN2 *

Date	Start Sampling Time (hh:mm)	Noise Level dB (A)			Wind Speed (m/s)	Weather Condition
		L _{eq(30min)}	L ₁₀	L ₉₀		
01/12/09	15:08	60.8	63.4	58.4	1.2	Sunny
03/12/09	15:32	58.3	59.1	57.6	0.3	Fine
09/12/09	13:52	60.2	63.6	58.1	1.8	Drizzle
10/12/09	13:00	55.4	58.6	50.5	0.9	Sunny

Remark: Since Lands Department did not approve us to enter their own area where the noise monitoring stations TM-N1 and TM-N2 located due to the security, noise monitoring was temporarily carried out at two noise monitoring stations TM-RN1 and TM-RN2 (refer to the figure attached) in this reporting period.

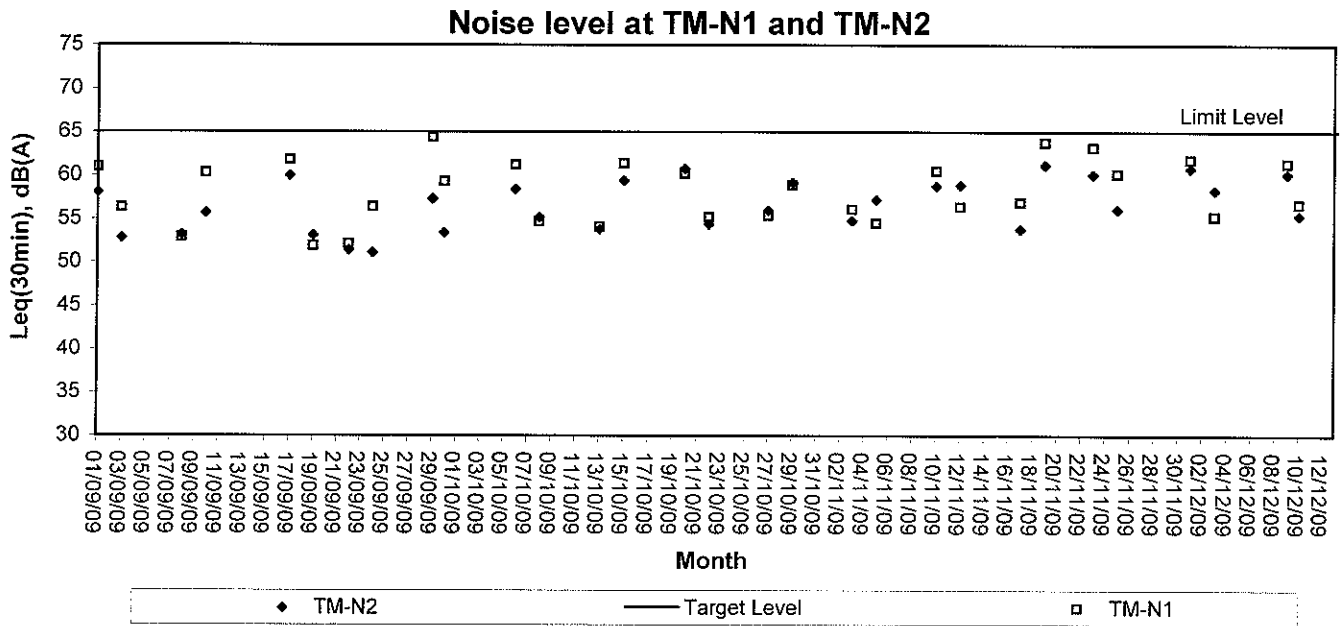


Appendix D3

Graphical Plots of Impact Noise Monitoring Data



Noise Monitoring (Day-time)





Appendix E

Weather Condition

Extract of Meteorological Observations for Tuen Mun Automatic Weather Station, December 2009

Date	Mean Pressure at M.S.L. (hPa)	Air Temperature			Mean Dew Point Temperature (deg C)	Relative Humidity		
		Max. (deg C)	Mean (deg C)	Min. (deg C)		Max. (%)	Mean (%)	Min. (%)
Dec 1	*****	23.6	18.3	14.2	9.9	75	59	39
Dec 2	*****	23.8	19.9	16.8	11.3	76	59	40
Dec 3	*****	21.1	17.4	14.7	5.9	60	47	34
Dec 4	*****	22.6	17.4	14.0	6.1	64	48	36
Dec 5	*****	21.7	16.9#	14.4	4.5#	67	46#	24
Dec 6	*****	22.3	18.7	15.1	8.9	65	54	39
Dec 7	*****	19.3	17.7	16.6	13.8	88	78	61
Dec 8	*****	20.1	18.1	17.3	15.5	89	85	76
Dec 9	*****	20.3	18.7	17.6	15.5	86	81	73
Dec 10	*****	24.8	20.0	17.7	15.5	85	76	52
Dec 11	*****	26.6	20.9	17.0	15.7	87	73	50
Dec 12	*****	22.7	20.6	18.2	15.7	82	73	63
Dec 13	*****	25.1	20.7	17.5	15.6	85	73	54
Dec 14	*****	22.7	19.8#	18.0	15.0#	87	74#	58
Dec 15	*****	21.5	19.3	15.0	15.1	88	77	69
Dec 16	*****	15.0	13.1	12.2	6.9	81	66	61
Dec 17	*****	13.2	11.5	10.0	5.6	81	67	57
Dec 18	*****	12.5	11.4	10.5	3.9	66	60	57
Dec 19	*****	15.7	12.6	10.5	2.9	59	52	42
Dec 20	*****	17.7	13.8	10.3	-2.4	44	33	19
Dec 21	*****	18.7	14.7	12.0	0.4	56	38	25
Dec 22	*****	21.3	17.0	13.8	8.2	68	57	41
Dec 23	*****	23.6	18.7	15.6	11.5	80	64	40
Dec 24	*****	26.1	20.3	16.3	15.2	89	74	50
Dec 25	*****	22.9	19.4	16.5	14.5	89	74	54
Dec 26	*****	20.6	18.1	15.9	11.6	72	66	59
Dec 27	*****	19.7	15.1	9.6	10.9	86	76	66
Dec 28	*****	13.1	11.2	8.8	5.2	81	67	55
Dec 29	*****	18.0	15.9	12.2	12.8	89	82	74
Dec 30	*****	18.0	16.3	15.1	14.0	90	86	78
Dec 31	*****	16.2	15.3	14.4	11.8	88	80	64
Mean	*****	20.3	17.0#	14.4	10.2#	78	66#	52
Maximum	*****	26.6	20.9#	18.2	15.7#	90	86#	78
Minimum	*****	12.5	11.2#	8.8	-2.4#	44	33#	19

Extract of Meteorological Observations for Tuen Mun Automatic Weather Station, December 2009

Date	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
Dec 1	0.0	020	7.3
Dec 2	0.0	020#	7.3#
Dec 3	0.0	030	12.2
Dec 4	0.0	020	7.0
Dec 5	0.0	030	8.2
Dec 6	0.0	020	8.8
Dec 7	7.0	020	5.7
Dec 8	6.0	020	8.1
Dec 9	0.0	030	8.6
Dec 10	0.0	020	5.8
Dec 11	0.0	160	7.3
Dec 12	0.0	160	9.2
Dec 13	0.0	030	4.3
Dec 14	0.0	360	7.5
Dec 15	6.0	170	8.9
Dec 16	0.0	030	14.1
Dec 17	0.0	030	11.2
Dec 18	0.0	030	13.7
Dec 19	0.0	030	11.0
Dec 20	0.0	030	11.7
Dec 21	0.0	030	9.0
Dec 22	0.0	170	6.3
Dec 23	0.0	170	6.4
Dec 24	0.0	180	4.9
Dec 25	0.0	030	5.1
Dec 26	0.0	140	9.1
Dec 27	2.5	160	13.8
Dec 28	2.0	030	9.5
Dec 29	8.5	210	7.7
Dec 30	9.0	030	5.0
Dec 31	0.0	030	7.3
Mean	-----	030#	8.4#
Total	41.0	---	-----
Maximum	9.0	---	14.1#
Minimum	0.0	---	4.3#

*** unavailable

missing (less than 24 hourly observations a day)

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected



Appendix F

Event-Action Plans

EVENT/ACTION PLAN FOR AIR QUALITY EXCEEDANCE

EVENT	ACTION			
	ET Leader	IC(E)	ER	Contractor
	ACTION LEVEL			
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Inform ER, IC(E) and Contractor 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET 2. Check contractor's working method 	<ol style="list-style-type: none"> 1. Notify Contractor 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practise 2. Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Inform IC(E) and Contractor 3. Repeat measurements to confirm finding 4. Increase monitoring frequency to daily 5. Discuss with IC(E) and Contractor on remedial actions 6. If exceedance continues, arrange meeting with IC(E) and ER. 7. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET 2. Check the Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Supervise implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify the Contractor 3. Ensure remedial measures properly implemented 	<ol style="list-style-type: none"> 1. Submit proposals for remedial actions to IC(E) within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if appropriate
	LIMIT LEVEL			
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Inform ER, Contractor and EPD 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 5. Assess the effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by the ET 2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Supervise implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify the Contractor 3. Ensure remedial measures properly implemented 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification 3. Implement the agreed proposals 4. Amend proposal if appropriate.

EVENT/ACTION PLAN FOR AIR QUALITY EXCEEDANCE

	ACTION			
EVENT	ET Leader	IC(E)	ER	Contractor
2. Exceedance for two or more consecutive samples	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Notify IC(E), ER, EPD and Contractor 3. Repeat measurement to confirm finding 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 IC(E) and ER to discuss the remedial actions to be taken 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring	1. Discuss amongst ER, ET and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. In consultation with the Contractor on agree with the Contractor on the remedial measures to be implemented 4. Ensure remedial measures are properly implemented 5. If exceedances 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 exceedances 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant activity of works as determined by the ER until the exceedance is abated

EVENT/ACTION PLAN FOR NOISE EXCEEDANCE

ACTION

EVENT	ET Leader	IC(E)	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify the IC(E) and the Contractor. Carry out investigation. 2. Report the results of investigation to the IC(E) and the Contractor. 3. Discuss with the Contractor and formulate remedial measures. 4. Increase monitoring frequency to check mitigation effectiveness 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET. 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IC(E). 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Notify the IC(E), the ER, the EPD and the 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 the IC(E), the ER and the EPD the causes & actions taken for the exceedances. 7. Assess effectiveness of Contractor's remedial actions and keep the IC(E), the EPD and the ER informed of the results 8. If exceedance due to the construction works stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Discuss amongst the ER, the ET Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedances continue, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedances is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the ER until the exceedances is abated.

EVENT AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE

Event	ACTION			IEC
	ET Leader	Contractor	ER	
<p>Action level being exceeded by one sampling day</p>	<ol style="list-style-type: none"> 1. Identify source(s) of impact; 2. Repeat in-situ measurement to confirm findings; 3. Notify Contractor in writing within 24 hours of identification of the exceedance 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with Contractor if exceedance is due to the construction works within 4 working days 8. Repeat measurement on next day of exceedance if exceedance is due to the construction works 	<ol style="list-style-type: none"> 1. Notify the ER and IEC in writing within 24 hours of identification of exceedance 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Submit investigation report to IEC and ER within 3 working days of the identification of an exceedance 5. Consider changes of working method if exceedance is due to the construction works 6. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER if exceedance is due to the construction works within 4 working days of identification of an exceedance 7. Implement the agreed mitigation measures within reasonable time scale 	<ol style="list-style-type: none"> 1. Notify EPD and other relevant governmental agencies in writing within 24 hours of the identification of the exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Require contractor to propose remedial measures for the analysed problem if related to the construction works 4. Ensure remedial measures are properly implemented 5. Assess the effectiveness of the mitigation measure 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ET, ER and Contractor on the mitigation measures 4. Review contractor's mitigation measures whenever necessary to ensure their effectiveness and advise the ER accordingly 5. Supervise the implementation of mitigation measures

EVENT AND ACTION PLAN FOR WATER QUALITY

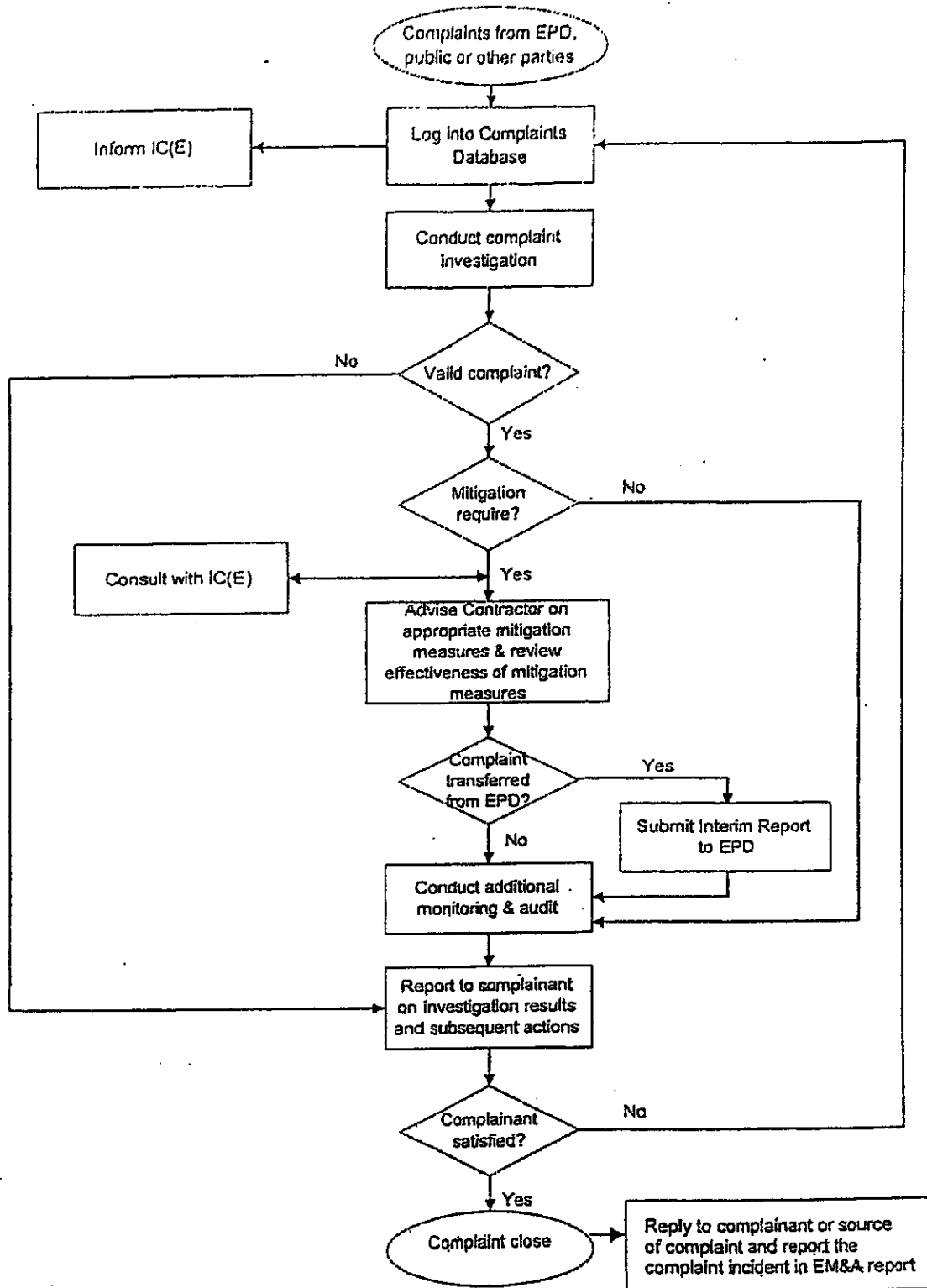
Event	ACTION			IEC
	ET Leader	Contractor	ER	
<p>Action level being exceeded by more than one consecutive sampling days</p>	<ol style="list-style-type: none"> 1. Identify source(s) of impact; 2. Repeat in-situ measurement to confirm findings 3. Notify Contractor in writing within 24 hours of identification 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with IEC and Contractor within 4 working of identification of an exceedance 8. Ensure mitigation measures are implemented; 9. Prepare to increase the monitoring frequency to daily; 10. Repeat measurement on next day of exceedance. 	<ol style="list-style-type: none"> 1. Notify IEC and ER in writing within 24 hours of identification of exceedance 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Submit the results of the investigation to IEC and ER within 3 working days of identification of an exceedance 6. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 4 working days of identification of an exceedance 7. Implement the agreed mitigation measures within reasonable time scale 	<ol style="list-style-type: none"> 1. Notify EPD and other relevant governmental agencies in writing within 24 hours of the identification of the exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Require contractor to propose remedial measures for the analysed problem if related to the construction works 4. Ensure remedial measures are properly implemented 5. Assess the effectiveness of the mitigation measure 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ET, ER and Contractor on the mitigation measures. 4. Review contractor's mitigation measures whenever necessary to ensure their effectiveness and advise the ER accordingly 5. Assess the effectiveness of the implemented mitigation measures.

EVENT AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE

Event	ACTION			IEC
	ET Leader	Contractor	ER	
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Notify Contractor in writing within 24 hours of identification of the exceedance 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with IEC, ER and Contractor within 4 working of identification of an exceedance 8. Ensure mitigation measures are implemented; 9. Increase the monitoring frequency to daily until no exceedance of Limit Level. 	<ol style="list-style-type: none"> 1. Notify IEC and ER in writing; within 24 hours of the identification of the exceedance 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Submit the results of the investigation to IEC and ER within 3 working days of the identification of an exceedance 6. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 4 working days of the identification of an exceedance 7. Implement the agreed mitigation measures within reasonable time scale 	<ol style="list-style-type: none"> 1. Notify EPD and other relevant governmental agencies in writing within 24 hours of identification of exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Ensure remedial measures are properly implemented 5. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ET, ER and Contractor on the mitigation proposals. 4. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 5. Assess the effectiveness of the implemented mitigation measures

EVENT AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE

Event	ACTION		
	ET Leader	Contractor	ER
Limit Level being exceeded by more than one consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Notify Contractor in writing within 24 hours of identification of the exceedance 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with IEC, ER and Contractor; 8. Ensure mitigation measures are implemented; 9. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days. 	<ol style="list-style-type: none"> 1. Notify ER and IEC in writing within 24 hours of the identification of the exceedance and Rectify unacceptable practice; 2. Check all plant and equipment; 3. Consider changes of working methods; 8. Submit the results of the investigation to IEC and ER within 3 working days of the identification of an exceedance 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 4 working days; 6. Implement the agreed mitigation measures within reasonable time scale 7. As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities. 	<ol style="list-style-type: none"> 1. Notify EPD and other relevant governmental agencies in writing within 24 hours of identification of exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 6. Ensure remedial measures are properly 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 marine work until no exceedance of Limit Level.
			IEC
			<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ER, ET and Contractor on the mitigation measures. 4. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 5. Assess the effectiveness of the implemented mitigation measures.



CEDD Contract No. CV/2005/01 Delivery of Reclamation Material to Mainland

Figure 5 Environmental Complaint Handling Procedure - Tuen Mun Area 38 Fill Bank

Scale : --

Date issued :
December 2006



東業德動測試顧問有限公司
ETS-TESTCONSULT LIMITED



Appendix G

Construction Programme

Project Activities at Tuen Mun Area 38 (December 2009 to March 2010)

Activity description	Original duration	Start	Finish
B1a Servicing	1127	01/12/06A	31/12/2009
Measurement System O&M for B1a	1124	01/12/06A	31/12/2009
B1b Servicing	1127	01/12/06A	31/12/2009
Measurement System O&M for B1b	1124	01/12/06A	31/12/2009
Surveillance System O&M for B1b	1124	01/12/06A	31/12/2009
B1c Servicing	1127	01/12/06A	31/12/2009
Measurement System O&M for B1c	1124	02/12/06A	31/12/2009
Sorting of Stockpiled Public fill	1127	01/12/06A	31/12/2009
Removal of Stockpiled Public Fill	1127	01/12/06A	31/12/2009
Disposal of unsuitable Material	1127	01/12/06A	31/12/2009
Compaction of Public Fill	1127	01/12/06A	31/12/2009
TM Tipping Halls Operation	1127	01/12/06A	31/12/2009
Record House B5 Servicing	1127	01/12/06A	31/12/2009
RE Secondary Office Servicing (B6)	1127	01/12/06A	31/12/2009
Servicing	1127	01/12/06A	31/12/2009



Appendix H

Weekly ET's Site Inspection Record



CEDD Contract No.: CV/2005/01
Delivery of Reclamation materials to Mainland - Tuen Mun Area 38 Fill Bank

Inspection Date : 3/12/09
 Time : 10:30
 Weather : Sunny / Fine / Cloudy / Overcast / Drizzle / Rain / Storm / Hazy
 Wind : Calm / Light / Breeze / Strong
 Temperature : 18°C
 Humidity : High / Moderate / Low

Inspected by	CEDD	Contractor / Sub-Contractor	ET
Signature:			
Name:	Lo Gailing	MR CK HO Hing-kun. K-H-kwock.	C.K. Li
Title	Low / pb	Site Superintendent. Officer. Site Agent	E.T.



Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Fugitive Dust Emission				
▪ Dust control / mitigation measures shall be provided to prevent dust nuisance.	✓			
▪ Water sprays shall be provided and used to dampen materials.	✓			
▪ All stockpile of aggregate or spoil should be enclosed or covered and water applied in dry or windy condition.	✓			
▪ Any vehicle with open load carrying area used for moving materials which has the potential to create dust shall have properly fitting side and tail boards. Material having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin.	✓			
▪ Unpaved areas should be watered regularly to avoid dust generation.	✓			
▪ The designated site main haul road shall be paved or regular watering.	✓			
▪ The haul road inside the site and public road around the site entrance should be kept clean and free from dust.	✓			
▪ Wheel washing facilities including high-pressure water jet shall be provided at the entrance of work site.	✓	✓		Item 1
▪ Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the fill bank.	✓			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	✓			
▪ Vehicle and equipment should be switched off while not in use.	✓			
▪ All plant and equipment should be well maintained e.g. without black smoke emission.	✓			
▪ Open burning should be prohibited.	✓			
Noise Impact				
▪ The approved method of working, equipment and sound-reducing measures (e.g. use of silenced type of equipment, etc.) shall be adapted.	✓			
▪ The constructions works should be scheduled to minimize noise nuisance.	✓			
▪ Only well maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	✓			
▪ Powered mechanical equipment (PME) should be covered or shielded by appropriate acoustic materials.	✓			
▪ Air compressors and hand held breakers should have noise labels.	✓			
▪ Compressors and generators should operate with door closed.	✓			
▪ Machines and plants that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	✓			
▪ Noisy equipment and mobile plant shall always be site away from NSRs.	✓			



Implementation Stages*		Remark
Water Quality		
Drainage system and the sand / silt removal facilities should be adequate and well maintained to prevent flooding and overflow, especially after rain storms.	✓	
The stormwater intercepting system shall be effective to collect of runoff and remove suspended solids before discharge.	✓	
Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	✓	
The material shall be properly covered to prevent washed away especially before rainstorm.	✓	
The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	✓	
Final slope surfaces, especially those facing to the north of the site shall be treated by compaction, followed by hydroseeding, vegetation planting or sealing with shotcrete, latex, vinyl, bitumen, or other suitable surface stabilizer approved by CEDD.	✓	
Existing and newly constructed Catchpits, sand and silt removal facilities and intercepting channels shall be maintained, and the deposited silt and grit shall be removed weekly and on a need basis especially at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	✓	
A wheel washing bay shall be provided at the site exit and wash-water shall have sand and silt settled out or removed before being discharged into storm drains.	✓	
The section of construction road between wheel washing bay and the public road shall be paved with concrete, bituminous materials or hardcores to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	✓	
Sewage from toilets shall be discharged in to a foul sewer, or chemical toilets shall be provided.	✓	
The chemical toilets (if use) shall be provided by a licensed contractor, who will be responsible for disposal and maintenance of these facilities.	✓	
Tipping halls enclosed with top and 3-side to prevent spillage of material into marine water.	✓	
The barges shall be in right size such that adequate clearance is maintained between the vessels and the seabed at all states of the tide to ensure the undue turbidity is not generated by turbulence from vessel movement or propeller wash.	✓	
All vessels used for transportation of fill material shall have tight fitting seals to their bottom openings to prevent leakage of material during transport.	✓	
Barges shall not be filled to a level which may cause the overflow of material during loading or transportation. Barge effluents shall be properly collected and treated before disposal.	✓	
Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	✓	
The work activities shall not cause any visible foam, oil, grease, scum, litter or other objectionable matters to be present on the water in the vicinity of the barging facilities.	✓	
A waste collection vessel shall be deployed to remove floating debris.	✓	
Landscape and Visual		
The maximum stockpiling height at the fill bank shall be limited to a maximum of +40mPD.	✓	
Surface of outer slopes of the Fill Bank shall preferably be hydroseeded.	✓	
Stockpile of public fill shall be removed in a sequence to allow the outer hydroseeded to be removed later than other portions as far as practicable.	✓	
Casuarina equisetifolia were planted as buffer tree along the northern perimeter of the Site. The height of Casuarina equisetifolia was maintained at least 3m above soil level.	✓	
Lighting shall be set to minimise night-time glare.	✓	



Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Waste Management				
Construction Waste Management				
<ul style="list-style-type: none"> ▪ Relevant licence / permits for disposal of construction waste or excavated materials available for inspection. ▪ Excavated material to be generated from construction works to be re-used on-site as far as practicable to reduce off-site disposal. ▪ Mud and debris should be removed from waterworks access roads and associated drainage systems. ▪ Provision of sufficient waste disposal points and regular collection for disposal. Appropriate measures should be employed to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. ▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. ▪ Prior to disposal of C&D waste, recyclable materials should be salvaged for reuse (such as wood and metal) and inert waste utilised as public fill to minimise the quantity of waste to be disposed of to landfill. ▪ In order to monitor the disposal of C&D material and solid wastes at public filling areas and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements. ▪ Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials. 	√			
Chemical Waste Management				
<ul style="list-style-type: none"> ▪ It is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes. ▪ After use, chemical wastes (e.g. cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. ▪ Spent chemicals should be stored and collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licensed facility in accordance with the Chemical Waste (General) Regulation. ▪ Chemical wastes should be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facility. ▪ Chemical wastes including waste oil should be stored properly in designated areas, e.g. chemical waste storage area. ▪ The designated chemical waste storage area should only be used for storing chemical wastes. ▪ The set-up of chemical waste storage area should <ul style="list-style-type: none"> ▪ Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition. ▪ Be enclosed on at least 3 sides and securely closed. ▪ Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest. ▪ Have adequate ventilation. ▪ Be covered to prevent rainfall entering (water collected within the bund must be tested and disposal as chemical waste if necessary). ▪ Be arranged so that incompatible materials are adequately separated. 	√			




Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
▪ Warning panels should be displayed at the waste storage area.	√			
▪ Waste storage area should be cleaned and maintained regularly.	√			
▪ Chemical waste should be transported by a registered chemical waste collector to a facility licensed to receive chemical waste.	√			
▪ All generators, fuel and oil storage should be within bundle areas.	√			
▪ Oil leakage from machinery, vehicle and plant should be prevented.	√			
▪ In the event of chemical waste / dangerous goods / chemicals spillage or leakage, the procedures as outlined in the Spillage Response Plan should be followed.	√			
▪ The dangerous goods / chemical spillage or leakage procedures (including equipments) should be in place.	√			
Good Site Practices				
▪ Nomination of approved personnel, such as site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.	√			
▪ Training of site personnel in proper waste management and chemical handling procedures should be provided.	√			
▪ Good site practices should be adopted to clean the rubbish and litter on a regular basis so as to prevent the rubbish and litter from dropping into the nearby environment.	√			
▪ Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	√			
▪ The Environmental Permit should be displaced conspicuously on site.	√			
▪ Construction noise permits should be posted at site entrance or available for site inspection.	√			
▪ Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	√		√	
▪ Chemical storage area provided with lock and located on sealed areas.	√			
▪ All chemicals should be placed at the banded area with adequate band capacity (>110% of largest tank).	√			
▪ Any unused chemicals or those with remaining functional capacity should be recycled.	√			
▪ Regular cleaning and maintenance programme for waste storage area, drainage systems, silt traps, sumps and oil interceptors.	√			
▪ To encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce.	√			
▪ A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be used, e.g. trip ticket system for chemical waste disposal. Quantities could be determined by weighing each load or other suitable methods.	√			
▪ A collection area should be provided where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should be banded and all the polluted surface run-off collected within this area should be diverted into wastewater treatment system.	√			

Summary of the Weekly Site Inspection:

Item	Details of defective works or observations	Proposed Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Target Completion Date
1	Mud and silt were found accumulated on the road near weight-bridge.	Clean up the accumulated mud and silt.	091203_001	Yes	10/12/09

Remark

Name	Title	Signature	Date
Linda Law	Senior Environmental Officer		03 December 2009

Photos

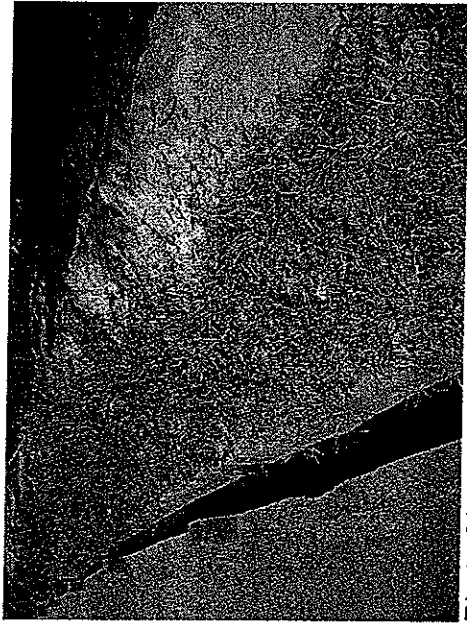


Photo 09123_001



CEDD Contract No.: CV/2005/01
Delivery of Reclamation materials to Mainland - Tuen Mun Area 38 Fill Bank

Inspection Date : 10/12/09

Time : 10:30

Weather : Sunny / Fine / Cloudy / Overcast / Drizzle / Rain / Storm / Hazy

Wind : Calm / Light Breeze / Strong

Temperature : 21 °C

Humidity : High / Moderate / Low

Inspected by	CEDD	Contractor / Sub-Contractor	ET
Signature:			
Name:	S. H. CHENG	Mr. W. M. CHAN	Mr. J. W. WAI
Title	AIOW / P6	Safety Supervisor	E.T.



Environmental Checklist	Implementation Stages*		Remark
	Yes	No / N/A	
Fugitive Dust Emission			
▪ Dust control / mitigation measures shall be provided to prevent dust nuisance.	✓		
▪ Water sprays shall be provided and used to dampen materials.	✓		
▪ All stockpile of aggregate or spoil should be enclosed or covered and water applied in dry or windy condition.	✓		
▪ Any vehicle with open load carrying area used for moving materials which has the potential to create dust shall have properly fitting side and tail boards. Material having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin.	✓		
▪ Unpaved areas should be watered regularly to avoid dust generation.	✓		
▪ The designated site main haul road shall be paved or regular watering.	✓		
▪ The haul road inside the site and public road around the site entrance should be kept clean and free from dust.	✓		
▪ Wheel washing facilities including high-pressure water jet shall be provided at the entrance of work site.	✓		
▪ Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the fill bank.	✓		
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	✓		
▪ Vehicle and equipment should be switched off while not in use.	✓		
▪ All plant and equipment should be well maintained e.g. without black smoke emission.	✓		
▪ Open burning should be prohibited.	✓		
Noise Impact			
▪ The approved method of working, equipment and sound-reducing measures (e.g. use of silenced type of equipment, etc.) shall be adapted.	✓		
▪ The constructions works should be scheduled to minimize noise nuisance.	✓		
▪ Only well maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	✓		
▪ Powered mechanical equipment (PME) should be covered or shielded by appropriate acoustic materials.	✓		
▪ Air compressors and hand held breakers should have noise labels.	✓		
▪ Compressors and generators should operate with door closed.	✓		
▪ Machines and plants that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	✓		
▪ Noisy equipment and mobile plant shall always be site away from NSRs.	✓		



Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Water Quality				
Drainage system and the sand / silt removal facilities should be adequate and well maintained to prevent flooding and overflow, especially after rain storms.		✓		Item 1 and 3
The stormwater intercepting system shall be effective to collect of runoff and remove suspended solids before discharge.	✓			
Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	✓			Item 2
The material shall be properly covered to prevent washed away especially before rainstorm.	✓			
The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	✓			
Final slope surfaces, especially those facing to the north of the site shall be treated by compaction, followed by hydroseeding, vegetation planting or sealing with shotconcrete, latex, vinyl, bitumen, or other suitable surface stabilizer approved by CEDD.	✓			
Existing and newly constructed Catchpits, sand and silt removal facilities and intercepting channels shall be maintained, and the deposited silt and grit shall be removed weekly and on a need basis especially at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	✓			
A wheel washing bay shall be provided at the site exit and wash-water shall have sand and silt settled out or removed before being discharged into storm drains.	✓			
The section of construction road between wheel washing bay and the public road shall be paved with concrete, bituminous materials or hardcores to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	✓			
Sewage from toilets shall be discharged in to a foul sewer, or chemical toilets shall be provided.	✓			
The chemical toilets (if use) shall be provided by a licensed contractor, who will be responsible for disposal and maintenance of these facilities.	✓			
Tipping halls enclosed with top and 3-side to prevent spillage of material into marine water.	✓			
The barges shall be in right size such that adequate clearance is maintained between the vessels and the seabed at all states of the tide to ensure the undue turbidity is not generated by turbulence from vessel movement or propeller wash.	✓			
All vessels used for transportation of fill material shall have tight fitting seals to their bottom openings to prevent leakage of material during transport.	✓			
Barges shall not be filled to a level which may cause the overflow of material during loading or transportation. Barge effluents shall be properly collected and treated before disposal.	✓			
Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	✓			
The work activities shall not cause any visible foam, oil, grease, scum, litter or other objectionable matters to be present on the water in the vicinity of the barging facilities.	✓			
A waste collection vessel shall be deployed to remove floating debris.	✓			
Landscape and Visual				
The maximum stockpiling height at the fill bank shall be limited to a maximum of +40mPD.	✓			
Surface of outer slopes of the Fill Bank shall preferably be hydroseeded.	✓			
Stockpile of public fill shall be removed in a sequence to allow the outer hydroseeded to be removed later than other portions as far as practicable.	✓			
Casuarina equisetifolia were planted as buffer tree along the northern perimeter of the Site. The height of Casuarina equisetifolia was maintained at least 3m above soil level.	✓			
Lighting shall be set to minimise night-time glare.	✓			



Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Waste Management				
Construction Waste Management				
<ul style="list-style-type: none"> ▪ Relevant licence / permits for disposal of construction waste or excavated materials available for inspection. ▪ Excavated material to be generated from construction works to be re-used on-site as far as practicable to reduce off-site disposal. ▪ Mud and debris should be removed from waterworks access roads and associated drainage systems. ▪ Provision of sufficient waste disposal points and regular collection for disposal. Appropriate measures should be employed to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. ▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. ▪ Prior to disposal of C&D waste, recyclable materials should be salvaged for reuse (such as wood and metal) and inert waste utilised as public fill to minimise the quantity of waste to be disposed of to landfill. ▪ In order to monitor the disposal of C&D material and solid wastes at public filling areas and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements. ▪ Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials. 	√			
Chemical Waste Management				
<ul style="list-style-type: none"> ▪ It is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes. ▪ After use, chemical wastes (e.g. cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. ▪ Spent chemicals should be stored and collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licensed facility in accordance with the Chemical Waste (General) Regulation. ▪ Chemical wastes should be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facility. ▪ Chemical wastes including waste oil should be stored properly in designated areas, e.g. chemical waste storage area. ▪ The designated chemical waste storage area should only be used for storing chemical wastes. ▪ The set-up of chemical waste storage area should <ul style="list-style-type: none"> ▪ Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition. ▪ Be enclosed on at least 3 sides and securely closed. ▪ Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest. ▪ Have adequate ventilation. ▪ Be covered to prevent rainfall entering (water collected within the bund must be tested and disposal as chemical waste if necessary). ▪ Be arranged so that incompatible materials are adequately separated. 	√			



Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
• Warning panels should be displayed at the waste storage area.	√			
• Waste storage area should be cleaned and maintained regularly.	√			
• Chemical waste should be transported by a registered chemical waste collector to a facility licensed to receive chemical waste.	√			
• All generators, fuel and oil storage should be within bundle areas.	√			
• Oil leakage from machinery, vehicle and plant should be prevented.	√			
• In the event of chemical waste / dangerous goods / chemicals spillage or leakage, the procedures as outlined in the Spillage Response Plan should be followed.	√			
• The dangerous goods / chemical spillage or leakage procedures (including equipments) should be in place.	√			
Good Site Practices				
• Nomination of approved personnel, such as site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.	√			
• Training of site personnel in proper waste management and chemical handling procedures should be provided.	√			
• Good site practices should be adopted to clean the rubbish and litter on a regular basis so as to prevent the rubbish and litter from dropping into the nearby environment.	√			
• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	√			
• The Environmental Permit should be displaced conspicuously on site.	√			
• Construction noise permits should be posted at site entrance or available for site inspection.	√			
• Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	√		√	
• Chemical storage area provided with lock and located on sealed areas.	√			
• All chemicals should be placed at the banded area with adequate band capacity (>110% of largest tank).	√			
• Any unused chemicals or those with remaining functional capacity should be recycled.	√			
• Regular cleaning and maintenance programme for waste storage area, drainage systems, silt traps, sumps and oil interceptors.	√			
• To encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce.	√			
• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be used, e.g. trip ticket system for chemical waste disposal. Quantities could be determined by weighing each load or other suitable methods.	√			
• A collection area should be provided where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should be banded and all the polluted surface run-off collected within this area should be diverted into wastewater treatment system.	√			



Summary of the Weekly Site Inspection:

Item	Details of defective works or observations	Proposed Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Target Completion Date
1	Follow up action to the previous site inspection item 1 on 03/12/09, mud and silt were still found accumulated on the road near weight bridge.	Clean up the accumulated mud and silt.	091210_001	Yes	17/12/09
2	Unnecessary water was noted at checking point near weight bridge.	Clean up the unnecessary water.	091210_002	Yes	17/12/09
3	Mud and silt were found accumulated inside the drainage near work shop.	Clean up the accumulated mud and silt.	091210_003	Yes	17/12/09

Remark

Name	Title	Signature	Date
Linda Law	Senior Environmental Officer	<i>Linda Law</i>	10 December 2009



Photos



Photo 091210_001

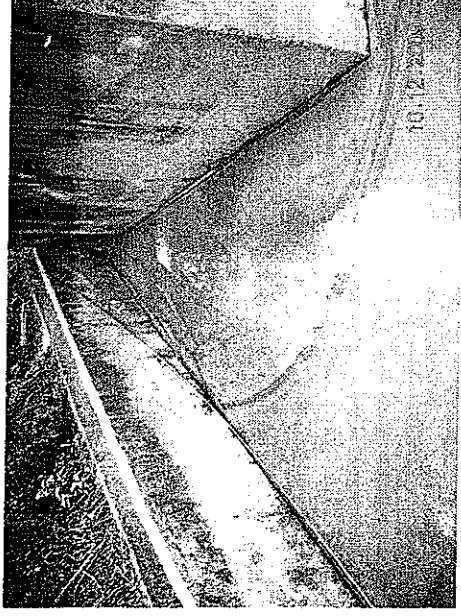


Photo 091210_002

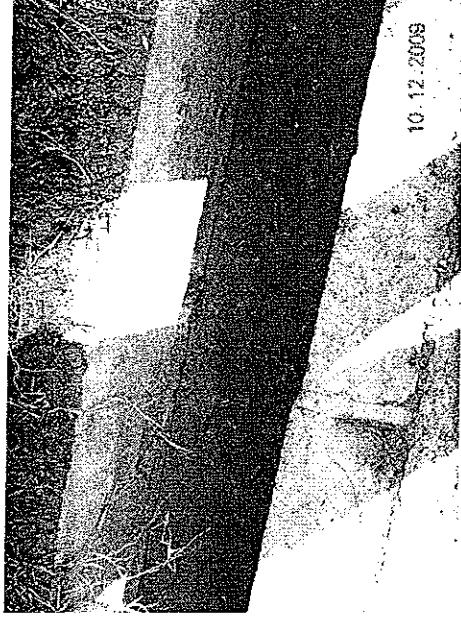


Photo 091210_003



Appendix I

Implementation Schedule of Mitigation Measures



Environmental Mitigation Implementation Schedule

Environmental Protection Measures	Location	Implementation Status		
		Implemented	Partially implemented	Not implemented
Air Quality				
<ul style="list-style-type: none"> ▪ Dust control / mitigation measures shall be provided to prevent dust nuisance. ▪ Water sprays shall be provided and used to dampen materials. ▪ All stockpile of aggregate or spoil should be enclosed or covered and water applied in dry or windy condition. ▪ Any vehicle with open load carrying area used for moving materials which has the potential to create dust shall have properly fitting side and tail boards. Material having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. ▪ Unpaved areas should be watered regularly to avoid dust generation. ▪ The designated site main haul road shall be paved or regular watering. ▪ The public road around the site entrance should be kept clean and free from dust. ▪ Wheel washing facilities including high-pressure water jet shall be provided at the entrance of work site. ▪ Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the fill bank. ▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water. ▪ Vehicle and equipment should be switched off while not in use. ▪ All plant and equipment should be well maintained e.g. without black smoke emission. ▪ Open burning should be prohibited. 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ 			
Noise Impact				
<ul style="list-style-type: none"> ▪ The approved method of working, equipment and sound-reducing measures (e.g. use of silenced type of equipment, etc.) shall be adapted. ▪ Only well maintained plant should be operated on-site and plant should be serviced regularly during the construction works. ▪ Powered mechanical equipment (PME) should be covered or shielded by appropriate acoustic materials. ▪ Air compressors and hand held breakers should have noise labels. ▪ Machines and plants that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum. ▪ Noisy equipment and mobile plant shall always be site away from NSRs. 	<ul style="list-style-type: none"> ✓ ✓ ✓ ✓ ✓ ✓ 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	

	Location	Implementation Status		
		Implemented	Partially implemented	Not implemented
Water Quality				
<ul style="list-style-type: none"> ▪ The existing / realigned intercepting channels and the sand / silt removal facilities shall be used and maintained. ▪ Temporary intercepting drains should be used at the stockpiling area to divert polluted stormwater to the intercepting channels. Earth bunds and sand bay barriers shall be used to assist the diversion of polluted stormwater to the intercepting channels. ▪ The stormwater intercepting system shall be effective to collect of runoff and remove suspended solids before discharge. ▪ The material shall be properly covered to prevent washed away especially before rainstorm. ▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water. ▪ Existing and newly constructed Catchpits, sand and silt removal facilities and intercepting channels shall be maintained, and the deposited silt and grit shall be removed weekly and on a need basis especially at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. ▪ A wheel washing bay shall be provided at the site exit and wash-water shall have sand and silt settled out or removed before being discharged into storm drains. ▪ The section of construction road between wheel washing bay and the public road shall be paved with concrete, bituminous materials or hardcores to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains. ▪ Sewage from toilets shall be discharged in to a foul sewer, or chemical toilets shall be provided. ▪ The chemical toilets (if use) shall be provided by a licensed contractor, who will be responsible for disposal and maintenance of these facilities. ▪ Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer. ▪ A waste collection vessel shall be deployed to remove floating debris. 		√		
Landscaping and Visual				
<ul style="list-style-type: none"> • The maximum stockpiling height at the fill bank shall be limited to a maximum of +40mPD. • Surface of outer slopes of the Fill Bank shall preferably be hydroseeded. • Stockpile of public fill shall be removed in a sequence to allow the outer hydroseeded to be removed later than other portions as far as practicable. • Casuarina equisetifolia were planted as buffer tree along the northern perimeter of the Site. The height of Casuarina equisetifolia was maintained at least 3m above soil level. • Lighting shall be set to minimise night-time glare. 				
Waste Management				
Construction Waste Management				
<ul style="list-style-type: none"> • Relevant licence / permits for disposal of construction waste or excavated materials available for inspection. • Excavated material to be generated from construction works to be re-used on-site as far as practicable to reduce off-site disposal. • Mud and debris should be removed from waterworks access roads and associated drainage systems. 				

	Location	Implementation Status		
		Implemented	Partially implemented	Not implemented
Environmental Protection Measures				
<ul style="list-style-type: none"> • Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. • Prior to disposal of C&D waste, recyclable materials should be salvaged for reuse (such as wood and metal) and inert waste utilised as public fill to minimise the quantity of waste to be disposed of to landfill. • In order to monitor the disposal of C&D material and solid wastes at public filling areas and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements. ▪ Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials. 	All areas	√		
	All areas	√		
	All areas	√		
	All areas	√		
Chemical Waste Management				
<ul style="list-style-type: none"> • It is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes. • After use, chemical wastes (e.g. cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Spent chemicals should be stored and collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licensed facility in accordance with the Chemical Waste (General) Regulation. • Chemical wastes should be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facility. • Chemical wastes including waste oil should be stored properly in designated areas, e.g. chemical waste storage area. • The designated chemical waste storage area should only be used for storing chemical wastes. 	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
The set-up of chemical waste storage area should				
<ul style="list-style-type: none"> • Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition. • Be enclosed on at least 3 sides and securely closed. • Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest. • Have adequate ventilation. • Be covered to prevent rainfall entering (water collected within the bund must be tested and disposal as chemical waste if necessary). • Be arranged so that incompatible materials are adequately separated. • Warning panels should be displayed at the waste storage area. • Waste storage area should be cleaned and maintained regularly. • Chemical waste should be transported by a registered chemical waste collector to a facility licensed to receive chemical waste. 	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	Waste Storage Area	√		
	All areas	√		

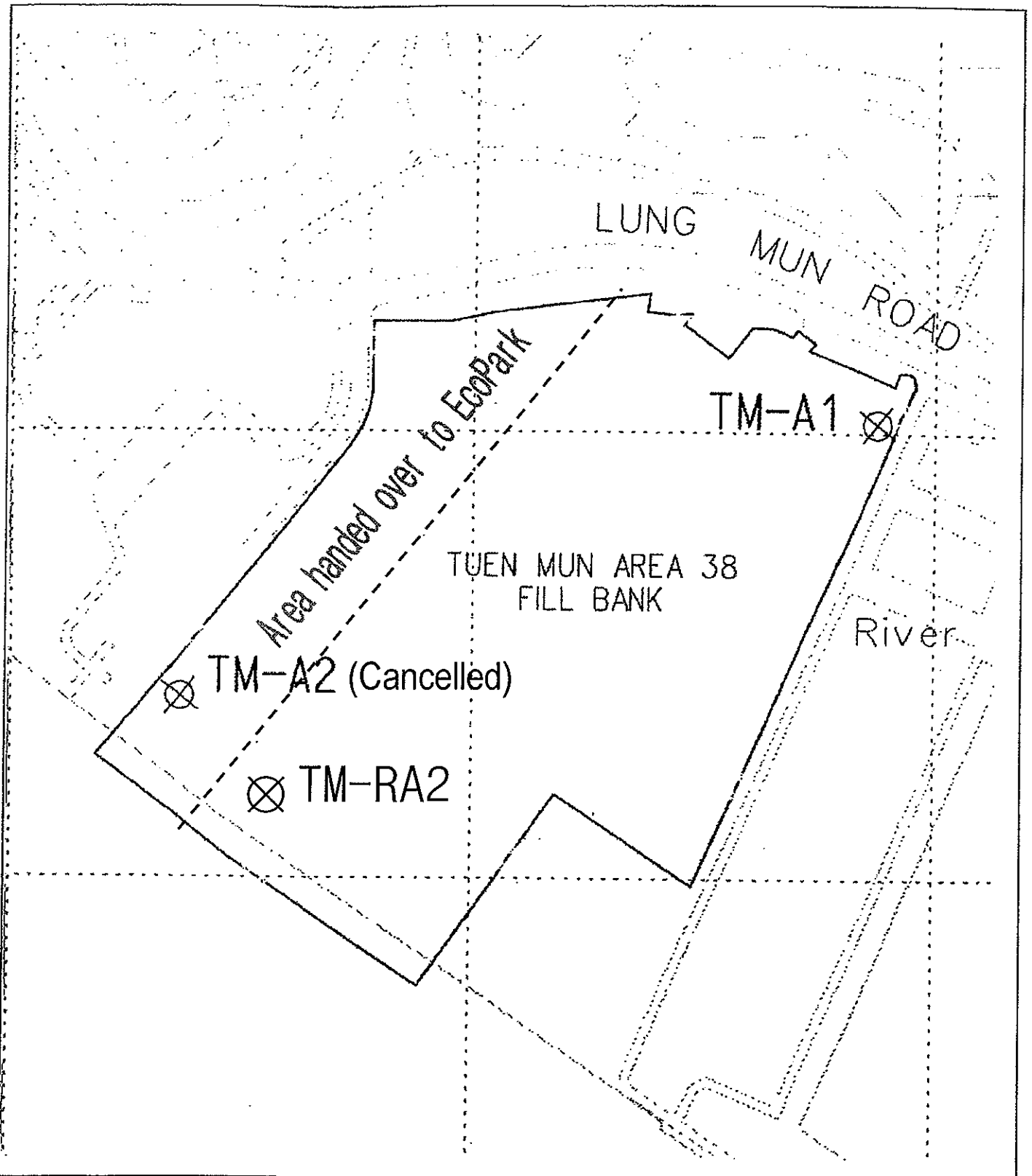


Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
• All generators, fuel and oil storage should be within bundle areas.	All areas	✓			
• Oil leakage from machinery, vehicle and plant should be prevented.	All areas	✓			
• In the event of chemical waste / dangerous goods / chemicals spillage or leakage, the procedures as outlined in the Spillage Response Plan should be followed.	All areas	✓			
• The dangerous goods / chemical spillage or leakage procedures (including equipments) should be in place.	All areas	✓			
Good Site Practices					
• Nomination of approved personnel, such as site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.	All areas	✓			
• Training of site personnel in proper waste management and chemical handling procedures should be provided.	All areas	✓			
• Good site practices should be adopted to clean the rubbish and litter on a regular basis so as to prevent the rubbish and litter from dropping into the nearby environment.	All areas	✓			
• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All areas	✓			
• The Environmental Permit should be displaced conspicuously on site.	Site Entrance	✓			
• Construction noise permits should be posted at site entrance or available for site inspection.	Site Entrance	✓			✓
• Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	All areas	✓			
• Chemical storage area provided with lock and located on sealed areas.	Chemical Storage Area	✓			
• All chemicals should be placed at the banded area with adequate band capacity (>110% of largest tank).	Chemical Storage Area	✓			
• Any unused chemicals or those with remaining functional capacity should be recycled.	All areas	✓			
• Regular cleaning and maintenance programme for waste storage area, drainage systems, silt traps, sumps and oil interceptors.	All areas	✓			
• To encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce.	All areas	✓			
• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be used, e.g. trip ticket system for chemical waste disposal. Quantities could be determined by weighing each load or other suitable methods.	All areas	✓			
• A collection area should be provided where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should be banded and all the polluted surface run-off collected within this area should be diverted into wastewater treatment system.	All areas	✓			
• Remove wastes in a timely manner.	All areas	✓			



Appendix J

Site General Layout plan



Contract No. CV/2005/01
 Delivery of Reclamation Material to Mainland

Figure 2 A
 Locations of Air Quality Monitoring Stations –
 Tuen Mun Area 38 Fill Bank



東業德勤測試顧問有限公司
 ETS-TESTCONSULT LIMITED



Appendix K

QA/QC Results of Laboratory Analysis



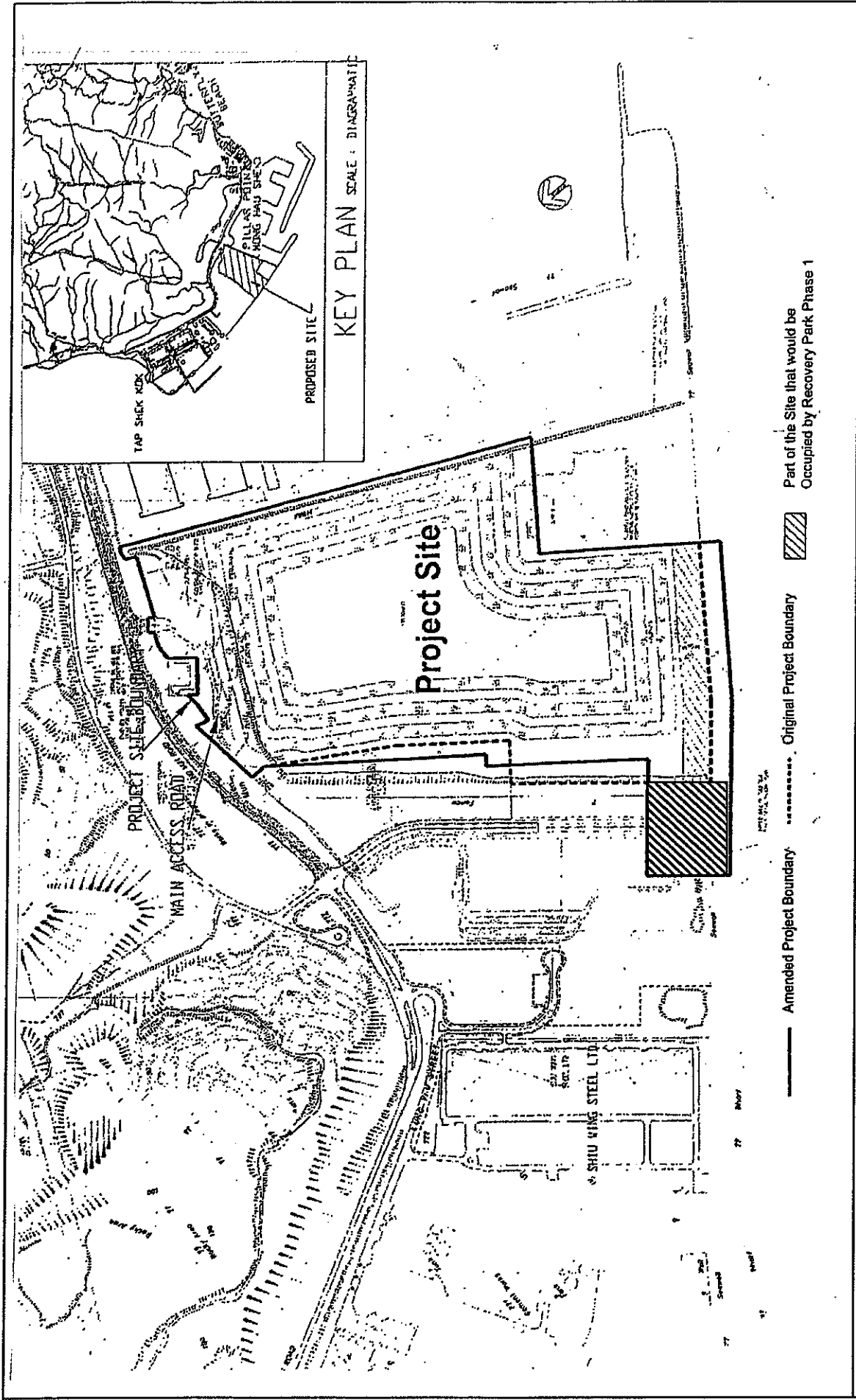
QA/QC Results of Laboratory Analysis of Total Suspended Solids

Sampling Date	QC Sample Analysis	Sample Duplicate		Sample Spike	
	% Recovery *	Sample ID	% Error #	Sample ID	% Recovery @
01/12/09	99.0	FC1-S	0.0	FM2-M	109.0
	105.8	FM2-B	0.0	EM1-S	96.4
	99.2	EM1-M	0.0	EC2-B	103.2
03/12/09	103.0	FC1-S	0.0	FM2-M	104.5
	97.1	FM2-B	0.0	EM1-S	100.0
	99.8	EM1-M	0.0	EC2-B	104.6
05/12/09	103.5	FC1-S	0.0	FM2-M	104.4
	98.5	FM2-B	0.0	FC2-B	95.1
	101.5	EM1-M	0.0	EC2-B	101.6
08/12/09	101.1	FC1-S	0.0	FM2-M	100.0
	101.6	FM2-B	0.0	EM1-S	103.0
	100.0	EM1-M	0.0	EC2-B	92.6
10/12/09	100.2	FC1-S	0.0	FM2-M	104.4
	94.1	FM2-B	0.0	EM1-S	93.8
	105.4	EM1-M	0.0	EC2-B	100.0
12/12/09	107.3	FC1-S	0.0	FM2-M	105.2
	93.0	FM2-B	0.0	EM1-S	100.0
	104.5	EM1-M	0.0	EC2-B	90.4

Note: (*) % Recovery of QC sample should be between 80% to 120%.
(#) % Error of Sample Duplicate should be between -10% to 10%.
(@) % Recovery of Sample Spike should be between 80% to 120%.



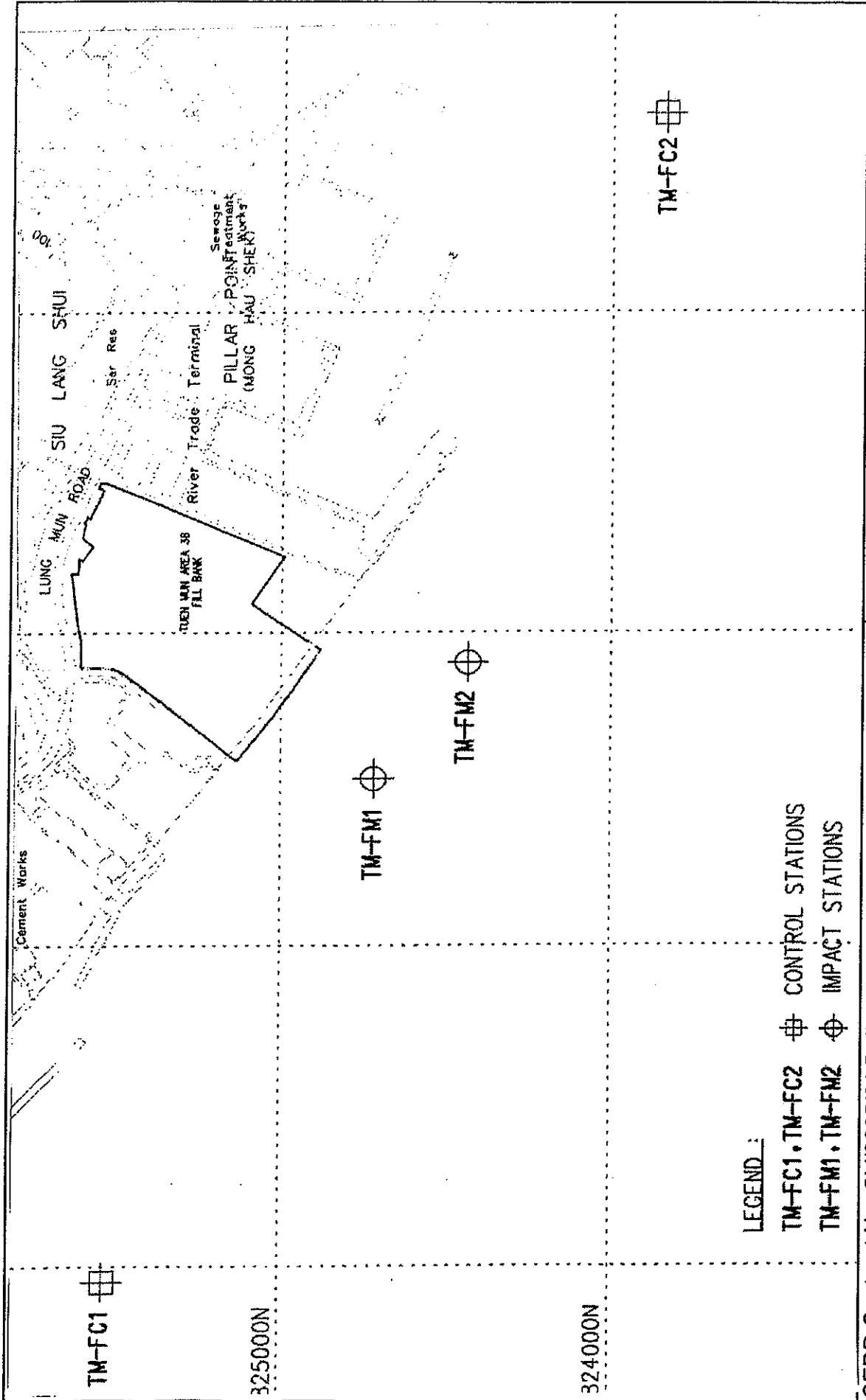
Figures



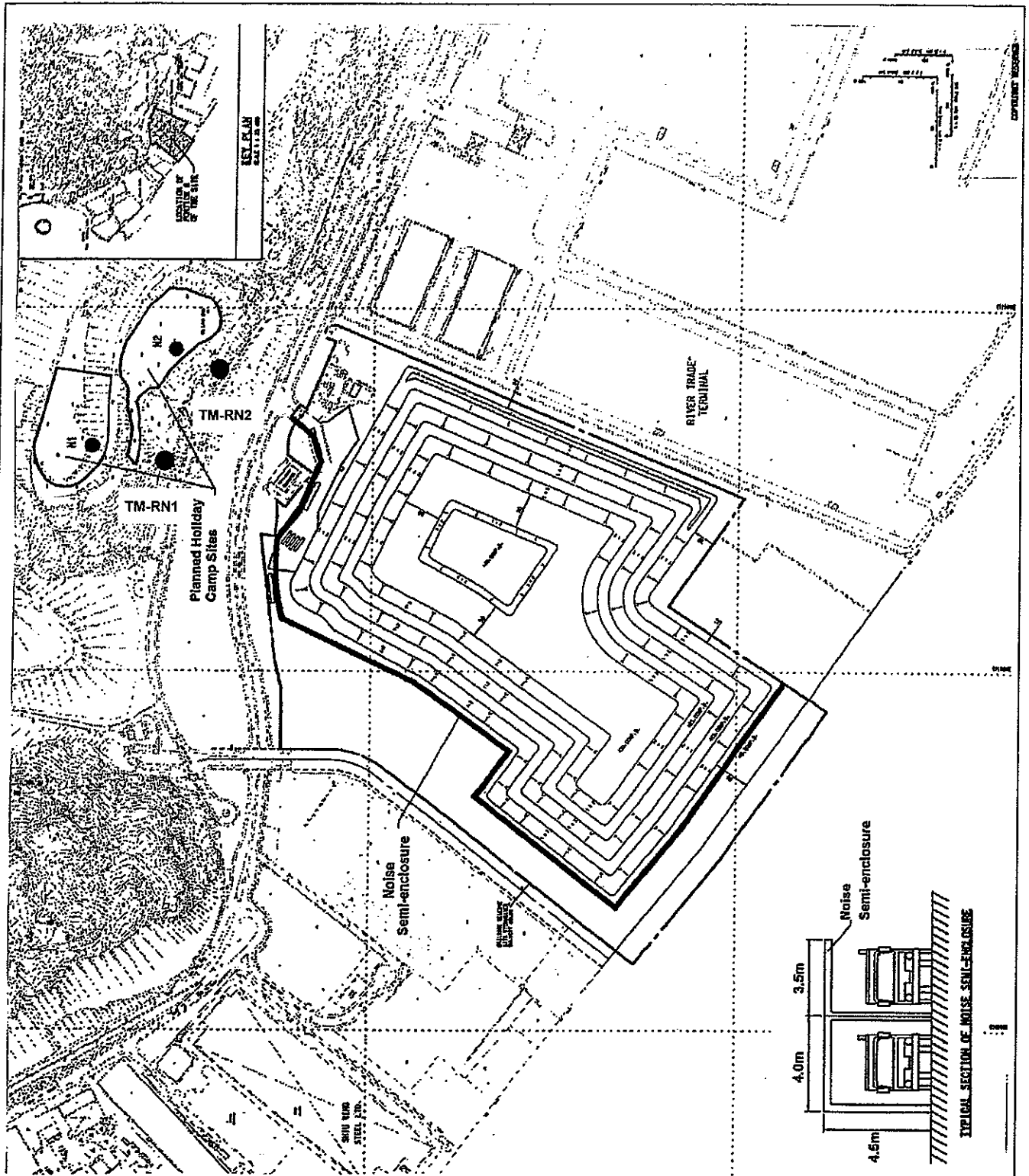
CEDD Contract No. CV/2005/01 Delivery of Reclamation Material to
 Mainland
 Figure 1 Site Layout Plan - Tuen Mun Area 38 Fill Bank

Scale : ---
 Date issued :
 December 2006

東業德動測試顧問有限公司
 ETS-TESTCONSULT LIMITED



CEDD Contract No. CV/2005/01 Delivery of Reclamation Material to Mainland		Scale : ---	東業德勤測試顧問有限公司 ETS-TESTCONSULT LIMITED
Figure 3 Locations of Water Quality Monitoring Stations - Tuen Mun Area 38 Fill Bank		Date issued : December 2006	



Contract No. CV/2005/01
 Delivery of Reclamation Material to Mainland

Figure 4
 Locations of Noise Quality Monitoring Stations –
 Tuen Mun Area 38 Fill Bank



東業德聯測試顧問有限公司
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