



CONTRACT NO: DC/2001/09

SAN TIN EASTERN MAIN DRAINAGE CHANNEL

ENVIRONMENTAL MONITORING & AUDIT
MONTHLY REPORT

- OCT 2006 -

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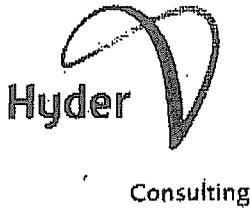
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14 November 2006

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**Your
 Ref:**

**Our
 Ref:** 987-07/E06-58059

For attention of: Mr. Raymond Dai

Dear Raymond

**Contract No. DC/2001/09
 San Tin Eastern Main Drainage Channel
 Monthly EM&A Report for October 2006**

I refer to the softcopy of the captioned report received on 13th November. We do not have further comment and we endorse the report.

Yours sincerely

**Dr Guiyi Li
 Project Manager
 HYDER CONSULTING LIMITED**

cc DSD – Gary Yip
 Hsin Chong – Keniel Kwong

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GL/TK





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EXECUTIVE SUMMARY

This is the Monthly Environmental Monitoring and Audit (EM&A) report for Oct 2006 under DSD Contract No.: DC/2001/09 – San Tin Eastern Main Drainage Channel. This report presents the environmental monitoring and auditing (EM&A) findings based on data and information recorded from the period 1st to 31st Oct 2006.

Construction Activities for the Reported Period

During this reporting period, the principal work activities include:

Location	Construction Works
Section 9	<ul style="list-style-type: none"> • Geotechnical Instrument Monitoring • Roadwork Construction • Landscape works • Construction of u-channel
Section 10	<ul style="list-style-type: none"> • Geotechnical Instrument Monitoring at Storage Pond • Wetland Landscaping • Construction of u-channel and chain link fence • Variation Order No. 134 - 3 rail parapet and security fence along Border Road

Air Quality Monitoring

Monitoring of 24-hr and 1-hr Total Suspended Particulates (TSP) was carried out on 5 and 13 occasions respectively at the monitoring stations AM1. There were no exceedances to the Action and Limit levels during the reported period.

Noise Monitoring

Monitoring of construction noise was carried out at the monitoring station NM1(A) on 4 occasions during day time and night time and 5 occasions during holidays. There was no exceedance reported during the reported period.

Water Quality Monitoring

Water quality monitoring was carried out at the monitoring station WM1, WM2 WM3 and WM4 on 1 occasion for reference purpose after agreed by EPD dated 24 October 2006. 1 limit level exceedance for DO and 2 level exceedances for SS were in this reporting period. All exceedances are confirmed to be irrelevant to the construction operations of contract DC/2001/09.

It should be noted that work has been confirmed to be fully completed in the vicinity of the monitoring locations and any exceedance(s) could very likely be due to the tidal interference from Shenzhen River and dead vegetation around the sampling locations.



Waste Management

During this reporting period, 26.52 ton inert C&D materials generated from works was disposed at Tuen Mun Area 38 in this reporting period. 3.89 ton general refuse was disposed at landfill and no chemical waste was collected by a licensed collector.

Complaints, Notifications of Summons and Successful Prosecutions

There was no complaints, notification of prosecutions or summons in this reporting period.

Site Inspections

4 site inspections were conducted jointly by the Environmental Team (ET), the Independent Environmental Checker (IEC), the Engineers and the Contractor in this reported period. Major observations, actions by the Contractor and outcome are summarized in the following table.

Date	Type	Observations	Action taken by Contractor	Outcome
5-Oct-06	Obs	The housekeeping condition at works area near site office needed to improve.	Arrange prompt waste disposal	Done
12-Oct-06	Obs	Border Road - Oil stain on bare ground was observed at Border Road. It was caused by plant maintenance works. The Contractor was reminded to remove the oil stain and carried out all equipments maintain works at bund area.	Arrange prompt clean-up and removal of chemical waste and implement preventive measures	Done
12-Oct-06	Obs	Works area near site office - Soil and mud deposit on public road from u-channel construction works was observed. Cleaning up action was required.	Arrange prompt clean-up and implement preventive measures	Done
20-Oct-06	Obs	Border Road - Soil and debris was observed deposited in gullies, cleaning up action is required. Moreover, gullies should be well covered to prevent soil and debris entering.	Arrange prompt clean-up and implement preventive measures	Done
26-Oct-06	-	No particular finding	-	-



Future Key Issues

The tentative works activities, predicted impacts and areas of environmental concern for the coming reporting month are summarized in the following table.

Location	Construction Works	Proposed Mitigation Measures
Section 9	<ul style="list-style-type: none">• Geotechnical Instrument Monitoring• Road Works Construction• Landscaping works	<ul style="list-style-type: none">• Vehicle leaving the site with dusty load should be wheel-washed• Cover idle stockpiles, level or arrange backfill promptly• Avoid concurrent noisy operation• Collect muddy water for sedimentation• Reuse dismantled timber• Dry and segregate C&D materials for disposal
Section 10	<ul style="list-style-type: none">• Geotechnical Instrument Monitoring at Storage Pond• Wetland Landscaping• Construction of chain link fence• Variation Order No. 134 - 3 rail parapet and security fence along Border Road	<ul style="list-style-type: none">• Vehicle leaving the site with dusty load should be wheel-washed• Avoid concurrent noisy operation• Collect muddy water for sedimentation• Reuse dismantled timber• Dry and segregate C&D materials for disposal

1 INTRODUCTION

1.1 SCOPE OF THE REPORT

Effective from 1 September 2005, Lam Environmental Services (LAM) has been appointed to work as the Environmental Team (ET) to implement the Environmental Monitoring and Audit (EM&A) programme for DSD Contract No. DC/2001/09 – San Tin Eastern Main Drainage Channel.

This report presents the environmental monitoring and auditing work carried out in accordance to the “*Main Drainage Channels and Poldered Village Protection Scheme for San Tin, NWNT: Environmental Impact Assessment Study, Environmental Monitoring and Audit Manual*” during the period 1st to 31st Oct 2006.

The following information relating to this project is documented in the EM&A Manual and, to avoid duplication, it is not presented in detail within the monthly report.

- Event-Action Plans;
- Full set of environmental mitigation measures and;
- Contracted environmental requirements.

1.2 STRUCTURE OF THE REPORT

Section 1 **Introduction** – details the scope and structure of the report.

Section 2 **Project Background** – summarizes background and scope of the project, site description, project organization and contact details of key personnel, construction programme and works undertaken during the reporting period.

Section 3 **Implementation Status** – summarizes the status of Environmental Permits / Licenses, implementation of environmental protection and pollution control / mitigation measures in an updated schedule for the reporting period.

Section 4 **Monitoring Requirements** – summarizes all monitoring parameters, monitoring methodology and equipment, monitoring locations, monitoring frequency and programmes.



- Section 5** ***Monitoring Results*** – summarizes the monitoring results obtained in the reporting period.
- Section 6** ***Compliance Audit*** – summarizes the auditing of monitoring results, all exceedances environmental parameters.
- Section 7** ***Site Inspection and Audit*** – summarizes the findings of weekly site inspections and independent audit undertaken within the reporting period, with a review of any relevant follow-up actions within the reporting period.
- Section 8** ***Complaints, Notification of Summons and Prosecution*** – summarizes the complaints, notification of summons and successful prosecution for breaches of environmental legislation and the actions taken within the reporting period.
- Section 9** ***Future Key Issues*** – summarizes the upcoming works and a forecast of the environmental impact and monitoring schedule for the next reporting period.
- Section 10** ***Conclusion***

2 PROJECT BACKGROUND

2.1 SCOPE OF THE PROJECT AND SITE DESCRIPTION

The construction works under contract no. DC/2001/09 mainly comprise the removal and disposal of contaminated materials, the construction of a reinforced concrete channel, footpaths, drainage works, roadworks, water and landscape works from the Castle Peak Road at San Tin to the Shenzhen River some 2.5km downstream.

The site layout plan is shown in [Figure 2.1](#).

2.2 PROJECT ORGANIZATION AND CONTACT PERSONNEL

Under the organization chart, Resident Engineer, Contractor, Independent Environmental Checker, Environmental Team are appointed to manage and control environmental issues for the construction phase of DC/2001/09. Overall responsibilities and duties of the team are found in the corresponding EM&A Manual. Key personnel and contact particulars are summarized in **Table 2.2**:

The organization chart for the EM&A programme is attached in [Appendix A](#).

Table 2.2 Contact Details of Key Personnel

Post	Name	Contact No.	Contact Fax	E-mail
Environmental Protection Officer	Ms. Pauline Choi	2835 1847	2591 0558	paulinechoi@epd.gov.hk
Engineer's Representative	Ir. C.L. Leung / Ir. Gary K.C. Yip	2574 7400	2827 8700	yipgary@dsd.gov.hk
Site Agent	Keniel Kong	2482 9587	2482 9113	KenielK@hcg.com.hk
Independent Environmental Checker (IEC)	Dr. Gui Yi Li	2911 2233	2805 5028	GuiYi.Li@hyderconsulting.com
Environmental Team Leader (ETL)	Raymond Dai	2975 3300	2897 5509	raymond dai@lamlab.com



2.3 CONSTRUCTION PROGRAMME AND WORKS

Construction activities carried out during this reporting period are summarized in **Table 2.3**:

Table 2.3 Construction Activities – Oct 2006

Location	Construction Works
Section 9	<ul style="list-style-type: none">• Geotechnical Instrument Monitoring• Roadwork Construction• Landscape works• Construction of u-channel
Section 10	<ul style="list-style-type: none">• Geotechnical Instrument Monitoring at Storage Pond• Wetland Landscaping• Construction of u-channel and chain link fence• Variation Order No. 134 - 3 rail parapet and security fence along Border Road

The master construction programme is given in [Figure 2.3](#).

3 **IMPLEMENTATION STATUS**

3.1 **STATUS OF REGULATORY COMPLIANCE**

A summary of the current status on licences and/or permits on environmental protection pertinent to the Project is shown in **Table 3.1**.

Table 3.1 Cumulative Summary of Valid Licences and Permits

Permits and/or Licences	Reference No.	Issued Date	Expiry Date	Status
Environmental Permit	EP-124/2002	28-03-2002	-	Issued
Registration of Waste Producer	WPN5113-542-H2913-22	24-01-2003	-	Issued
Notification of Works Under APCO	-	-	-	Notified
Effluent Discharge Licence	1S49/1	04-03-2003	31-03-2008	Issued
Effluent Discharge Licence for Septic Tank System	1S41N/1	20-03-2003	-	Issued
Construction Noise Permit	GW-RN0116-06	22-03-2006	21-09-2006	Issued

3.2 **IMPLEMENTATION OF POLLUTION CONTROL / MITIGATION MEASURES**

The contractor implemented various environmental mitigation measures as recommended in the EIA report and Environmental Monitoring Checklist prepared by Civil Engineering and Development Department. The implementation schedule is presented in [Appendix B](#).

4 MONITORING REQUIREMENTS

Locations of environmental monitoring stations are referred in [Figure 4.1](#).

4.1 AIR MONITORING

The project has 1 air monitoring station, namely AM1. Details of the air monitoring stations are summarized in **Table 4.1**.

Table 4.1 Air Quality Monitoring Stations

Station	HK Metric Grid (Easting / Northing)
AM1	826006E / 840543N

Monitoring Methodology

24-hour and 1-hour TSP measurements were performed in accordance to high volume sampling method as set out in Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50). The High Volume Sampler (HVS) used for TSP monitoring complied with the following given requirements:

- (a) a horizontal platform with appropriate support to secure the high volume sampler against gusty wind, should be provided;
- (b) no two high volume samplers should be placed less than 2m apart;
- (c) horizontal distance between the high volume samplers and an obstacle, such as buildings, must be at least twice the height of the obstacle protruding above the high volume samplers;
- (d) a minimum separation of 2m should be provided from walls, parapets, and penthouses for rooftop high volume samplers;
- (e) a minimum separation of 2m should be provided from any supporting structure measured horizontally;
- (f) there should not be any furnace or incinerator flues nearby;
- (g) there should be unrestricted airflow around the high volume samplers;
- (h) a minimum separation of 20m should be provided from the dripline;
- (i) any wire fence and gate employed to protect the high volume samplers should not cause any obstruction during monitoring.

All relevant data including elapsed time, meter reading for the start and finish of the sampler, identification and weight of the filter paper, and other special phenomena were recorded.



Monitoring Equipment and Calibration Details

Andersen GMW Model GS2310 HVSs were used to carry out the monitoring of 24-hour and 1-hour TSP. They are in compliance with the specifications listed in the EM&A Manual Brief as follows:

- (a) 0.6 – 1.7 m³/min (20-60 SCFM) adjustable flow range;
- (b) equipped with a timing / control device with 5 minutes accuracy over 24 hours operations;
- (c) installed with elapsed-time meter with 2 minutes accuracy over 24 hours operations;
- (d) capable of providing a minimum exposed area of 406 cm² (63 in²);
- (e) flow control accuracy: 2.5% deviation over 24-hr sampling period;
- (f) equipped with shelter to protect the filter and sampler;
- (g) incorporated with an electronic mass flow rate controller or other equivalent devices;
- (h) equipped with a flow recorder for continuous monitoring;
- (i) provided with peaked roof inlet, incorporated with manometer;
- (j) able to hold and seal the filter paper to the sampler housing at horizontal position;
- (k) easy to change filter; and
- (l) capable of operating continuously for 24-hr period.

The high volume samplers were calibrated upon installation. The orifice calibrator comprising pressure plates and a transfer standard is traceable to the internationally recognized standard.

Calibration certificates are presented in [Appendix C](#).



Laboratory Measurement

The laboratory measurements were carried out in the HOKLAS accredited laboratory at Chai Wan managed by Lam Environmental Services Ltd. with constant temperature and humidity control, and equipped with necessary measuring and conditioning instruments.

Clean filter papers of size 8"x10" with no pinholes were labeled before sampling. They were conditioned in a dessicator with less than 50% relative humidity for over 24 hours and pre-weighted before use for sampling.

After sampling, the filter papers loaded with dust were kept in a clean and tightly sealed plastic bag. The filter papers were then returned to the laboratory for reconditioning in the dessicator with less than 50% relative humidity followed by accurate weighing by an electronic balance regularly calibrated against a traceable standard, and can weigh to 0.1 mg.

For QA/QC procedures, all filters were equilibrated and weighed repeatedly until the difference of two consecutive results is less than 0.5 mg.

4.2 NOISE MONITORING

The project has two designated Noise Monitoring Stations, namely Tung Chan Wai (NM1) and the pumping station (NM2). Noise monitoring for the pumping station (NM2) shall only be carried out on two occasions, day 1 and day 60 of the commissioning stage. For NM1, due to distance from the works area to the village, and the expanse of container activities in between, a small residential dwelling at Yan Shau Wai slightly to the north of the Tung Chan Wai has been identified as being a more representative monitoring location, coded as NM1(A) for construction phase noise impact monitoring. Details of noise monitoring stations are summarized in **Table 4.2**.

Table 4.2 Noise Monitoring Stations

Station	HK Metric Grid (Easting / Northing)	Description	Measurement
NM1(A)	825982E / 840137N	Small residential house at Yan Shau Wai slightly to the north of the Tung Chan Wai	Façade

Monitoring Methodology

Monitoring was carried out in accordance to procedures recommended in the EM&A Manual for the monitoring of construction noise. Measurements shall be recorded to the nearest 0.1dB. Weather conditions, including a measurement of wind speed, should be recorded for the measurement. Where the steady wind speed exceeds 5 m/s, or gusts are above 10 m/s, or in the presence of fog or rain, measurements should be treated as invalid, and repeated in more appropriate conditions.

This noise meter was programmed to measure A-weighted equivalent continuous sound pressure level at 30-minute intervals. Acoustic information measured by the noise meter over 30-minute period were recorded. Additional supplementary acoustical data in terms of L₁₀ and L₉₀ were also recorded for reference and auditing.



Monitoring Equipment and Calibration Details.

The noise levels were determined using ONO SOKKI sound level meter model LA-5110. The meter complies with the International Electrotechnical Commission Publication (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications as referred to in the Technical Memorandum issued under the Noise Control Ordinance (NCO).

ONO SOKKI sound level calibrator model SC-2110 was used for the on-site calibration of the meter. This calibrator complies with the IEC Publication 942 (1988) Class1 and ANSI S1.40 – 1984. Noise measurements were only accepted to be valid if the calibration levels from before and after the measurement agree to within 1.0dB. The sound level meter and calibrator are calibrated annually by a laboratory.

Wind speeds were measured by a portable digital anemometer, Dwyer PWM1 with direction being determined with a compass.

Current calibration certificates are presented in [Appendix C](#).

4.3

WATER QUALITY MONITORING

The EM&A Manual for this project has proposed one upstream station (WM1), one down stream station (WM2) within the San Tin Eastern Main Drainage Channel and, one upstream station (WM4) and one downstream station (WM3) at the discharge point for the San Tin Drainage Channel, once completed, within the Shenzhen River to be monitored for water quality.

Monitoring Methodology

Surface water quality shall be monitored for the following parameters: Dissolved Oxygen (mg/L and % saturation), Temperature (°C), pH value, Turbidity (NTU), Water Depth (m), Suspended Solids (mg/L) and Ammoniacal Nitrogen (mg/L). As the depth of the designated monitoring locations is less than 1.5m, only one sample was taken from mid-depth of the water column. For in-situ parameters, three measurements at each station shall be taken. Suspended solids and ammoniacal nitrogen shall be determined in the laboratory. All the measurements were taken during the mid-ebb tide.

During monitoring works the following shall also be recorded:

- monitoring location;
- depth of water;
- time;
- weather conditions including ambient temperature;
- water temperature;
- any special phenomena or activities at the construction site.

As the depth of water being sampled was generally less than 50cm, the “grab sampling” technique was employed for the taking of water samples for the determination of suspended solids and ammoniacal nitrogen at all designated monitoring locations.

Monitoring Equipment

As the depth of water being sampled was generally less than 0.5m, a marked depth gauge was employed to determine water depth at all designated monitoring stations.

Routine in-situ water quality monitoring for temperature, pH, dissolved oxygen and turbidity is undertaken by the use of portable meters in the field using the instruments shown in **Table 4.3b**.

Table 4.3a *Field equipment for in-situ water quality monitoring*

Equipment	Manufacturer	Model	Range / Resolution	Calibration Requirements
Temperature	HACH	senION156	-5° – 45°C ± 0.3°C	1 year
Dissolved Oxygen (DO)			0 - 20.00 mg/l 0 - 200.0% ± 0.030 mg/l in 0-20 mg/l ± 0.3% air saturation	1 year
PH			0.00 – 14.00	1 year
Turbidimeter	HACH	2100P	0 – 1000 NTU	1 year

Laboratory Analysis

Samples were kept in high density polythene bottles, packed in ice and cooled to 4oC or below, without being frozen, for delivery to the laboratory as soon as possible after collection.

All samples are returned to the laboratory at Chai Wan for the determination of SS and NH₃-N under a QA / QC scheme inclusive of blank, duplicate and spike recovery analysis under the requirement of HOKLAS. The laboratory test procedures conform to “Standard Methods for the Examination of Water and Wastewater” published by American Public Health Association (APHA) and are summarized in **Table 4.3c**.

Table 4.3b *Laboratory Test Procedures*

Parameter	Methodology	Method Ref.	Detection Limit
SS	Suction-filtration	APHA 2540D	2.0 mg/L
NH ₃ -N	Ammonia-Selective Electrode Method	APHA 4500-NH ₃ D	0.04 mg/L

4.4 **MONITORING PARAMETERS AND FREQUENCY**

Environmental monitoring programme has been scheduled according to the requirements stipulated in the Brief for EM&A produced for the Project summarized in **Tables 4.4**.

Table 4.4 Environmental Monitoring Parameters and Frequencies

Station(s)	Parameter	Frequency
AM1	24-hr TSP 1-hr TSP	Once in every 6 days Three times in every 6 days
NM1	L _{Aeq} (30 min), L ₉₀ & L ₁₀	Once a week between 0700-1900 hours on normal weekdays
	L _{Aeq} (5 min), L ₉₀ & L ₁₀	Once a week between 1900-2300 hours Once a week between 2300-0700 hours Once a week between 0700-1900 hours on holidays
WM1, WM2, WM3, WM4	Temperature, pH, DO, turbidity, SS, NH ₃ -N and water depth	Once per week

4.5 ENVIRONMENTAL QUALITY CRITERIA

Environmental quality criteria were determined prior to the commencement of the construction of the project for the purpose of impact monitoring. Various levels established based on the results of baseline monitoring stipulated in the EM&A manual are summarized in **Tables 4.5a, 4.5b and 4.5c** respectively.

Table 4.5a Action and Limit Levels for Air Quality Monitoring

Parameter	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
24-hr TSP	225	260
1-hr TSP	390	500

Table 4.5b Action and Limit Levels for Noise Monitoring

Time Period	Parameter	Action Level	Limit Level
Normal Working Hours: 0700-1900 hrs	$L_{Aeq}(30\text{min})$	When one documented complaint is received	75 dB(A)
Restricted Hours: Evenings: 1900-2300 hrs Sundays & Holidays: 0700-2300 hrs	$L_{Aeq}(5\text{min})$		70 dB(A)
Restricted Hours: 2300-0700 hrs	$L_{Aeq}(5\text{min})$		55 dB(A)

Table 4.5c Action and Limit Levels for Water Quality Monitoring

Parameter	Action Level	Limit Level
Dissolved Oxygen	0.59 (5%-ile of baseline data) for WM2 (downstream station)	0.55 (1%-ile of baseline data) for WM2 (downstream)
	0.46 (5%-ile of baseline data) for WM3 (downstream station mid-ebb tide)	0.39 (1%-ile of baseline data) for WM3 (downstream station mid-ebb tide)
Turbidity, SS, $\text{NH}_3\text{-N}$	120% of upstream control station at the same tide of same day	130% of upstream control station at the same tide of same day
pH	-	6-9

Note:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
2. For SS and Turbidity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. For pH, non-compliance of the water quality limits occurs when monitoring result is larger than pH value 9 or lower than pH value 6.

4.6 MONITORING PROGRAMME

Environmental monitoring programme for this reporting period was carried out in accordance with the required monitoring frequency. The actual completion of monitoring work during the reporting period is presented in **Tables 4.6**.

Table 4.6 Environmental Monitoring Programme – Oct 06

Oct 2006		Air Quality (24-hr TSP)	Air Quality (1-hr TSP)	Day-time Noise	Holiday / Non-day-time Noise	Water Quality (Temp, pH, DO, Turbid, SS, NH ₃ -N)
		AM1	AM1	NM1(A)	NM1(A)	WM1, WM2, WM3, WM4
1	Sun				X	
2	Mon					
3	Tue		X			
4	Wed		X		X	
5	Thu	X		X		
6	Fri					
7	Sat					
8	Sun				X	
9	Mon		X			
10	Tue					
11	Wed	X		X		
12	Thu		X			
13	Fri					
14	Sat					
15	Sun				X	
16	Mon					
17	Tue	X		X		
18	Wed		X			
19	Thu		X			
20	Fri		X			
21	Sat					
22	Sun				X	
23	Mon	X		X		
24	Tue		X			
25	Wed		X			
26	Thu					
27	Fri					X
28	Sat	X				
29	Sun				X	
30	Mon					
31	Tue		X			

Note:

- X: Monitoring visit conducted (refer to Section 5.3 regarding water sampling)
- Schedule is formulated and with consideration of statutory holidays (shaded in the table).



5 MONITORING RESULTS

5.1 AIR QUALITY MONITORING RESULTS

The air quality monitoring results of 24-hr TSP sampled in this reporting period are reviewed and summarized in **Tables 5.1**. Details of monitoring results can be referred in [Appendix D](#). Graphical trend is presented in [Figure 5.1a-b](#).

Table 5.1a Air Quality Monitoring (24-hr TSP) Results at AM1 – Oct 06

Date	24-hr TSP ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	No. of Exceedance
5/10/2006	171	225	260	0 (AL); 0 (LL)
11/10/2006	174	225	260	0 (AL); 0 (LL)
17/10/2006	147	225	260	0 (AL); 0 (LL)
23/10/2006	160	225	260	0 (AL); 0 (LL)
28/10/2006	167	225	260	0 (AL); 0 (LL)

Table 5.1b Air Quality Monitoring (1-hr TSP) Results at AM1 – Oct 06

Date	1-hr TSP ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)	No. of Exceedance
3/10/2006	188	390	500	0 (AL); 0 (LL)
3/10/2006	208	390	500	0 (AL); 0 (LL)
4/10/2006	210	390	500	0 (AL); 0 (LL)
9/10/2006	225	390	500	0 (AL); 0 (LL)
12/10/2006	159	390	500	0 (AL); 0 (LL)
12/10/2006	216	390	500	0 (AL); 0 (LL)
18/10/2006	156	390	500	0 (AL); 0 (LL)
19/10/2006	182	390	500	0 (AL); 0 (LL)
20/10/2006	234	390	500	0 (AL); 0 (LL)
24/10/2006	182	390	500	0 (AL); 0 (LL)
24/10/2006	169	390	500	0 (AL); 0 (LL)
25/10/2006	220	390	500	0 (AL); 0 (LL)
31/10/2006	192	390	500	0 (AL); 0 (LL)



5.2 NOISE MONITORING RESULTS

The noise monitoring results measured in this reporting period are reviewed and summarized in **Tables 5.2**. Details of monitoring results can be referred in [Appendix E](#). Graphical trend is presented in [Figure 5.2](#).

Table 5.2 Noise Monitoring Results at NM1(A) – Oct 06

Date	Time	L _{Aeq} , dB(A)	Limit Level dB(A) Normal Working Hours / Restricted Hours	No. of Exceedance
1/10/2006	9:11	48.9	75 / 70	0 (AL); 0 (LL)
5/10/2006	16:04	54.1	75 / 70	0 (AL); 0 (LL)
5/10/2006	19:23	47.9	75 / 70	0 (AL); 0 (LL)
8/10/2006	9:16	47.0	75 / 70	0 (AL); 0 (LL)
11/10/2006	16:02	56.5	75 / 70	0 (AL); 0 (LL)
11/10/2006	19:07	49.4	75 / 70	0 (AL); 0 (LL)
15/10/2006	14:52	48.4	75 / 70	0 (AL); 0 (LL)
17/10/2006	14:06	52.3	75 / 70	0 (AL); 0 (LL)
17/10/2006	19:04	48.3	75 / 70	0 (AL); 0 (LL)
22/10/2006	14:00	53.9	75 / 70	0 (AL); 0 (LL)
23/10/2006	14:17	53.1	75 / 70	0 (AL); 0 (LL)
23/10/2006	19:17	54.9	75 / 70	0 (AL); 0 (LL)
29/10/2006	10:10	48.3	75 / 70	0 (AL); 0 (LL)

Note:

1. Limit Level is 75 dB(A) for weekdays between 0700-1900 hrs: 75 dB(A).
2. Limit Level is 70 dB(A) for evenings between 1900-2300 hrs and Sundays & Holidays between 0700-2300 hrs.

5.3 WATER QUALITY MONITORING RESULTS

Due to shallow depth of the river and the occupation of dense vegetation around the vicinity of monitoring station, water samples could hardly be taken. As requested by EPD dated 24 October 2006, it was agreed that the nearest locations were identified for water quality monitoring for reference purpose.

Work has been confirmed to be fully completed in the vicinity of the monitoring locations and any exceedance(s) could very likely be due to the tidal interference from Shenzhen River and dead vegetation around the sampling locations.

Water quality monitoring results was measured and tested in this reporting period as summarized in **Tables 5.3**.

Table 5.3 Water Quality Monitoring Results – Oct 06

Parameters, units	WM2 Averaged (Range)	WM3 Averaged (Range)	Exceedance(s) (For reference purpose only)
pH	7.52	7.21	WM2: 0 (AL); 0 (LL) WM3: 0 (AL); 0 (LL)
DO, mg/L	0.32	1.42	WM2: 0 (AL); 1 (LL) WM3: 0 (AL); 0 (LL)
Turbidity, NTU	84.2	42.7	WM2: 0 (AL); 0 (LL) WM3: 0 (AL); 0 (LL)
SS, mg/L	110	56	WM2: 0 (AL); 1 (LL) WM3: 0 (AL); 1 (LL)
NH ₃ -N, mg/L	54	27	WM2: 0 (AL); 0 (LL) WM3: 0 (AL); 0 (LL)

5.4 WASTE MONITORING RESULTS

During this reporting period,

- 26.52 ton inert C&D material was disposed at public fills at Tuen Mun Area 38;
- No treated soil was disposed;
- 3.98 ton general refuse was disposed at landfills;
- No chemical waste was collected by a licensed collector.



6 COMPLIANCE AUDIT

Event and Action Plans are detailed in [Appendix G](#).

6.1 AIR QUALITY MONITORING

No exceedance for 24-hr and 1-hr TSP monitoring was recorded in this reporting period.

6.2 NOISE MONITORING

No exceedance to Limit Level was recorded in this reporting period.

6.3 WATER QUALITY MONITORING

1 limit level exceedance for DO and 2 level exceedances for SS were in this reporting period. All exceedances are confirmed to be irrelevant to the construction operations of contract DC/2001/09.



7 SITE INSPECTION AND AUDIT

Weekly joint inspection was undertaken by the IEC, the ETL, the Engineer and the Contractor. 4 inspections were carried out during this reporting period. The results of these inspections and outcomes are summarized in **Table 7**.

Table 7 Summary of Environmental Inspection – Oct 06

Date	Type	Observations	Action taken by Contractor	Outcome
5-Oct-06	Obs	The housekeeping condition at works area near site office needed to improve.	Arrange prompt waste disposal	Done
12-Oct-06	Obs	Border Road - Oil stain on bare ground was observed at Border Road. It was caused by plant maintenance works. The Contractor was reminded to remove the oil stain and carried out all equipments maintain works at bund area.	Arrange prompt clean-up and removal of chemical waste and implement preventive measures	Done
12-Oct-06	Obs	Works area near site office - Soil and mud deposit on public road from u-channel construction works was observed. Cleaning up action was required.	Arrange prompt clean-up and implement preventive measures	Done
20-Oct-06	Obs	Border Road - Soil and debris was observed deposited in gullies, cleaning up action is required. Moreover, gullies should be well covered to prevent soil and debris entering.	Arrange prompt clean-up and implement preventive measures	Done
26-Oct-06	-	No particular finding	-	-

NC: Non-conformity

Obs: Observation

8 COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTION

No complaint, inspection notice, notification of summons or prosecution was received in this reporting period. Cumulative complaint log, summaries of complaints, notification of summons and successful prosecutions are presented in **Table 8a**, **Table 8b** and **Table 8c** respectively.

Table 8a Environmental Complaints Log

Complaint Log No.	Date of Receipt	Received From and Received By	Nature of Complaint	Date Investigated	Outcome	Date of Reply
STEMDC 001	28-07-2003	EPD	Dead fish in the pond caused bad odour and potential mosquito breeding.	29-07-2003	No visible cause can be identified attributed to construction activities.	29-07-2003

Table 8b Cumulative Statistics on Complaints

Environmental Parameters	Cumulative No. Brought Forward	No. of Complaints This Month	Cumulative No. Project-to-Date
Air	-	-	-
Noise	-	-	-
Water	1	-	1
Waste	-	-	-
Total	1	-	1

Table 8c Cumulative Statistics on Successful Prosecutions

Environmental Parameters	Cumulative No. Brought Forward	No. of Successful Prosecutions this month (Offence Date)	Cumulative No. Project-to-Date
Air	2	-	2
Noise	-	-	-
Water	-	-	-
Waste	-	-	-
Total	2	-	2



9

FUTURE KEY ISSUES

The scheduled construction activities and the recommended mitigation measures for the coming month are listed in **Table 9**. The proposed monitoring schedule for the coming month is detailed in [Appendix H](#).

Table 9 Construction Activities and Recommended Mitigation Measures – Nov 2006

Location	Construction Works	Proposed Mitigation Measures
Section 9	<ul style="list-style-type: none"> • Geotechnical Instrument Monitoring • Road Works Construction • Landscaping works 	<ul style="list-style-type: none"> • Vehicle leaving the site with dusty load should be wheel-washed • Cover idle stockpiles, level or arrange backfill promptly • Avoid concurrent noisy operation • Collect muddy water for sedimentation • Reuse dismantled timber • Dry and segregate C&D materials for disposal
Section 10	<ul style="list-style-type: none"> • Geotechnical Instrument Monitoring at Storage Pond • Wetland Landscaping • Construction of chain link fence • Variation Order No. 134 - 3 rail parapet and security fence along Border Road 	<ul style="list-style-type: none"> • Vehicle leaving the site with dusty load should be wheel-washed • Avoid concurrent noisy operation • Collect muddy water for sedimentation • Reuse dismantled timber • Dry and segregate C&D materials for disposal



CONCLUSION

The EM&A programme was carried out in accordance with the EM&A Manual requirements, minor alterations to the programme proposed in the previous EM&A Report were made in response to changing circumstances.

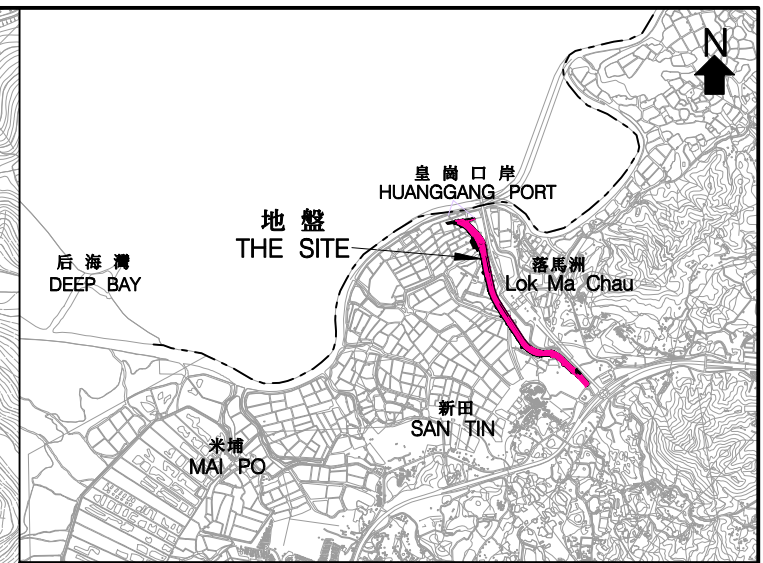
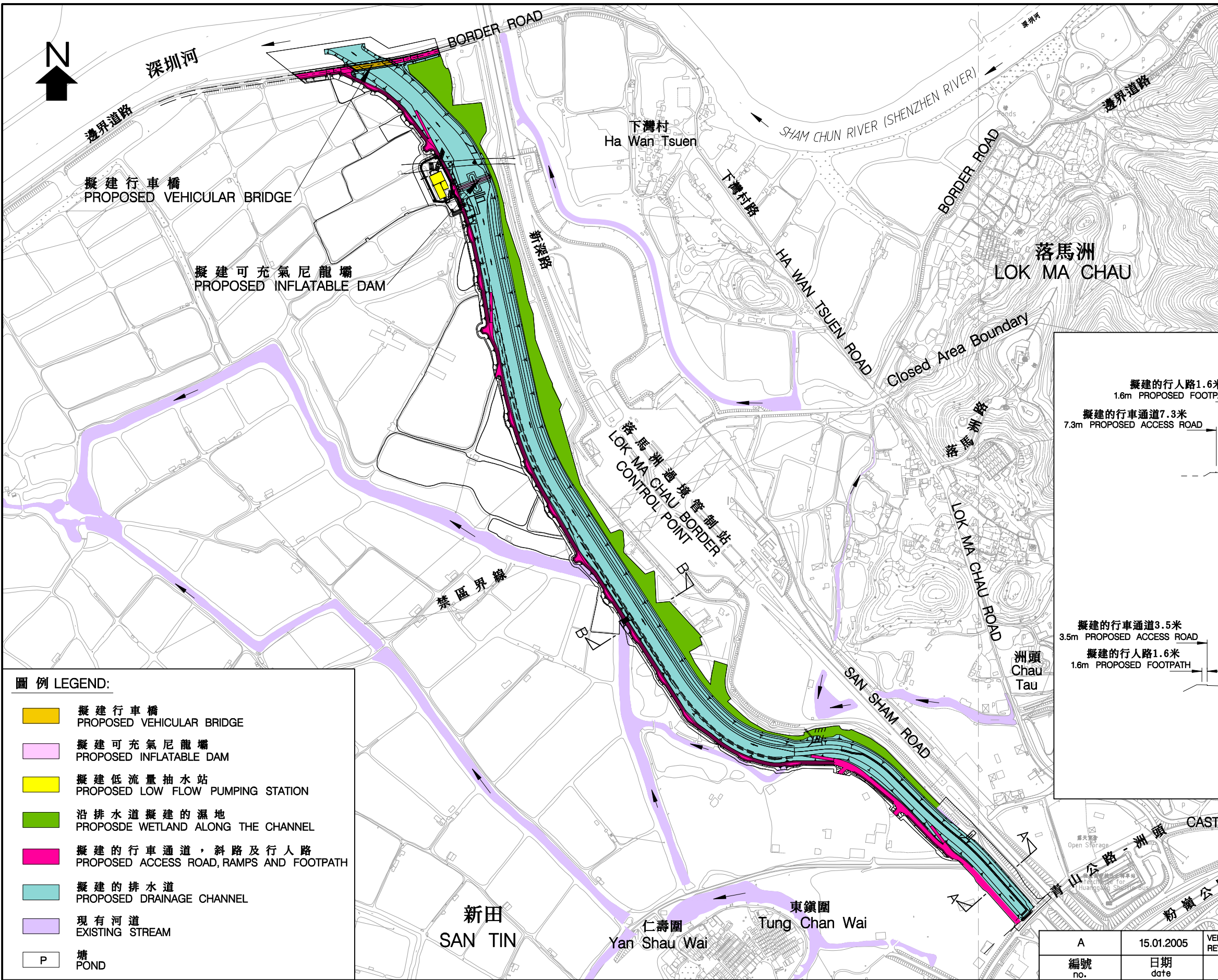
1 limit level exceedance for DO and 2 level exceedances for SS were in this reporting period. All exceedances are confirmed to be irrelevant to the construction operations of contract DC/2001/09. It should be noted that work has been confirmed to be fully completed in the vicinity of the monitoring locations and any exceedance(s) could very likely be due to the tidal interference from Shenzhen River and dead vegetation around the sampling locations.

In summary, dust, noise and water quality mitigation measures and waste management practices are being reasonably implemented within the DC/2001/09 project in controlling the on-going construction activities.



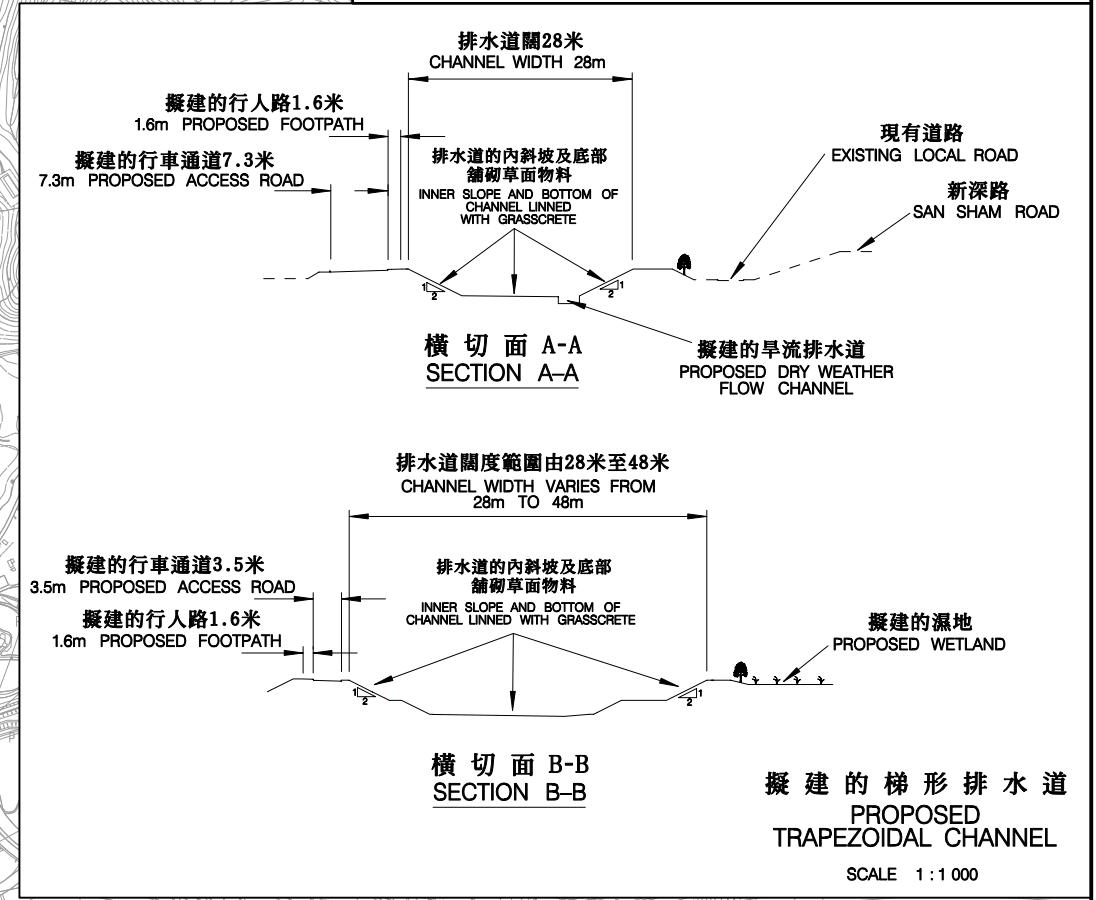
Figure 2.1

Location Plan



索引圖
KEY PLAN
比例 1:75 000
SCALE

- 圖例 LEGEND:**
- 擬建行車橋
PROPOSED VEHICULAR BRIDGE
 - 擬建可充氣尼龍壩
PROPOSED INFLATABLE DAM
 - 擬建低流量抽水站
PROPOSED LOW FLOW PUMPING STATION
 - 沿排水道擬建的濕地
PROPOSED WETLAND ALONG THE CHANNEL
 - 擬建的行車通道，斜路及行人路
PROPOSED ACCESS ROAD, RAMP AND FOOTPATH
 - 擬建的排水道
PROPOSED DRAINAGE CHANNEL
 - 現有河道
EXISTING STREAM
 - 塘
POND



編號 no.	日期 date	內容摘要 description	核對 checked	核准 approved
A	15.01.2005	VEHICULAR BRIDGE DELETED. SECTION DETAILS REVISED. ACCESS ROAD ALIGNMENT AMENDED.	SIGNED	SIGNED

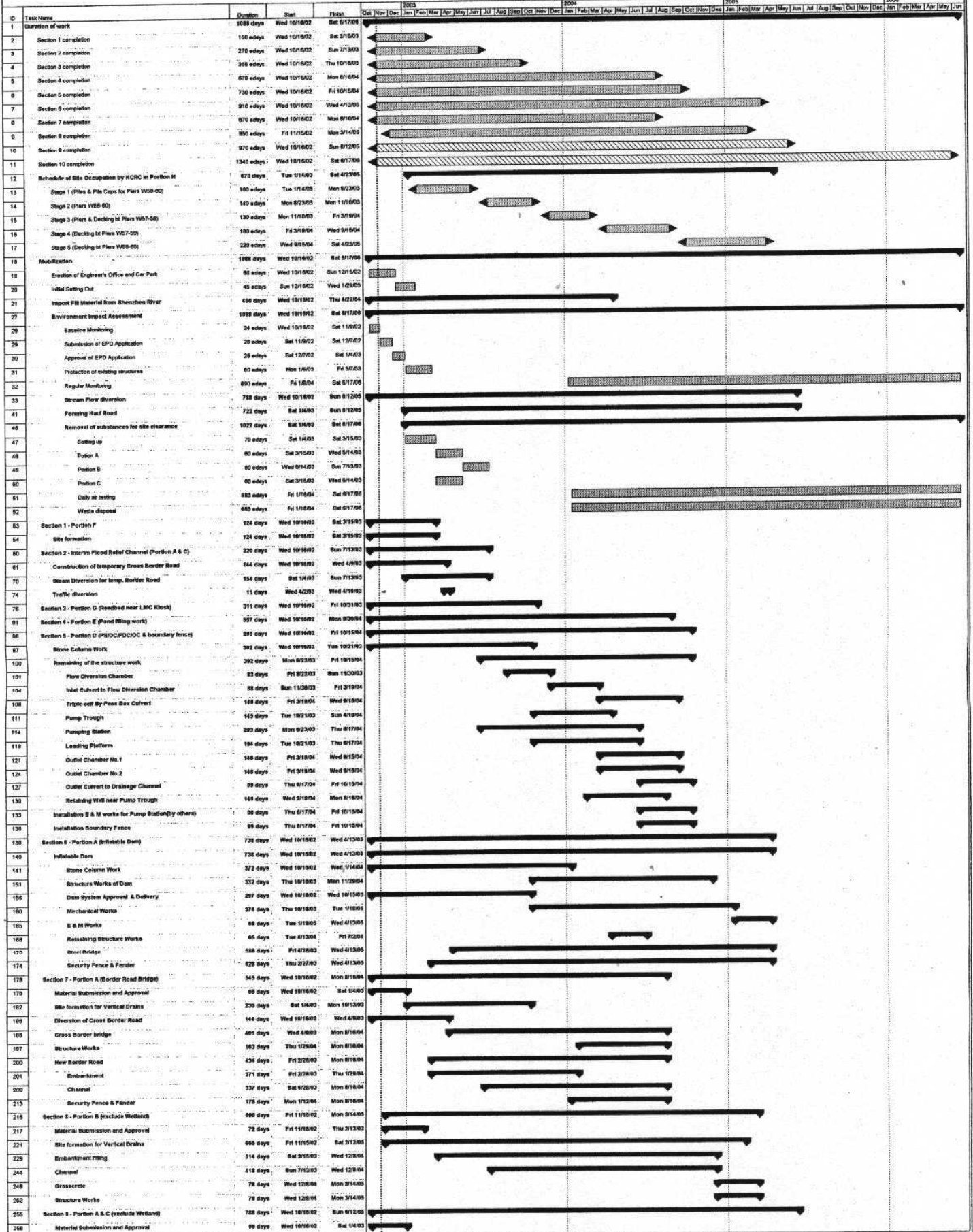
修訂 REVISION

圖則名稱 drawing title		繪圖 drawn	簽署 initial	日期 date	項目編號 item no.	辦事處 office
新田東面主要排水道 SAN TIN EASTERN MAIN DRAINAGE CHANNEL		C CHUN	SIGNED	18.07.2002	73CD	新界西及北拓展處 NEW TERRITORIES NORTH AND WEST DEVELOPMENT OFFICE 土木工程拓展署 CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
		核對 checked	簽署 initial	日期 date	比例 scale	
		C S KWOK	SIGNED	18.07.2002	1:7 500	
核准 approved	簽署 initial	日期 date	圖則編號 drawing no.			
					NTNZ 1145A	



Figure 2.3

Master Construction Programme



Prepared by: Elvis Kong
 Date: 17 Oct 2002
 Version: MP01

Task: Critical Task Progress: Rolled Up Task: Rolled Up Progress: Project Summary:

Task Progress: Milestone: Rolled Up Critical Task: Spk:

Critical Task: Summary: Rolled Up Milestone: External Tasks:

ID	Task Name	Duration	Start	Finish	2003												2004												2005												2006											
					Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
259	Site formation for Vertical Drains	66 days	Wed 11/12/02	Mon 2/3/03																																																
262	Ground Improvement	722 days	Sat 14/03	Sun 8/12/03																																																
267	Embankment Filling	673 days	Mon 3/3/03	Fri 17/06																																																
268	Stage I filling	172 days	Mon 2/3/03	Mon 8/1/03																																																
272	Stage II filling	148 days	Sat 2/2/04	Thu 8/2/04																																																
274	Stage III filling	80 days	Thu 8/2/04	Mon 1/3/04																																																
280	Stage IV excavation	48 days	Mon 1/8/04	Fri 17/06																																																
282	Channel	454 days	Mon 8/1/03	Mon 2/4/05																																																
286	Grasscrete	72 days	Mon 2/4/05	Sun 8/12/05																																																
289	Structure Works	626 days	Mon 8/1/03	Sun 6/12/05																																																
290	Retaining Wall	211 days	Wed 8/23/04	Sun 6/12/05																																																
298	Box Culvert	213 days	Mon 8/1/03	Sat 6/12/04																																																
300	Vehicular bridge near Castle Peak Road	447 days	Mon 10/2/03	Sun 6/12/05																																																
308	Section 10 - Remainder of Works	1688 days	Wed 10/16/02	Sat 6/17/06																																																
310	Material Submission and Approval	89 days	Wed 10/16/02	Sat 14/03																																																
313	Construction of Wetland	1622 days	Sat 14/03	Sat 6/17/06																																																
317	Drainage Pipe and Watermain Work	717 days	Sat 14/03	Mon 6/6/03																																																
330	UBSes Installation	148 days	Thu 4/7/03	Tue 18/4/05																																																
331	Portion A	86 days	Mon 8/6/05	Tue 18/4/05																																																
338	Portion B	88 days	Mon 8/6/05	Tue 18/4/05																																																
339	Portion C	109 days	Thu 4/7/05	Fri 8/2/03																																																
343	Remainder of the Works	48 days	Fri 8/2/03	Tue 18/4/05																																																
347	Roads and Paving work	207 days	Tue 18/4/05	Sat 6/17/06																																																
348	Portion A	168 days	Tue 18/4/05	Tue 5/2/06																																																
351	Portion B	87 days	Wed 2/1/06	Thu 6/1/06																																																
358	Portion C	189 days	Tue 18/4/05	Tue 5/2/06																																																
361	Railing & Traffic Signs	182 days	Tue 18/4/05	Thu 5/1/06																																																
368	Roadmarking Works	38 days	Tue 5/2/06	Sat 6/17/06																																																
371	Landscaping Works	207 days	Tue 18/4/05	Sat 6/17/06																																																
378	Completion of Works	0 days	Sat 6/17/06	Sat 6/17/06																																																

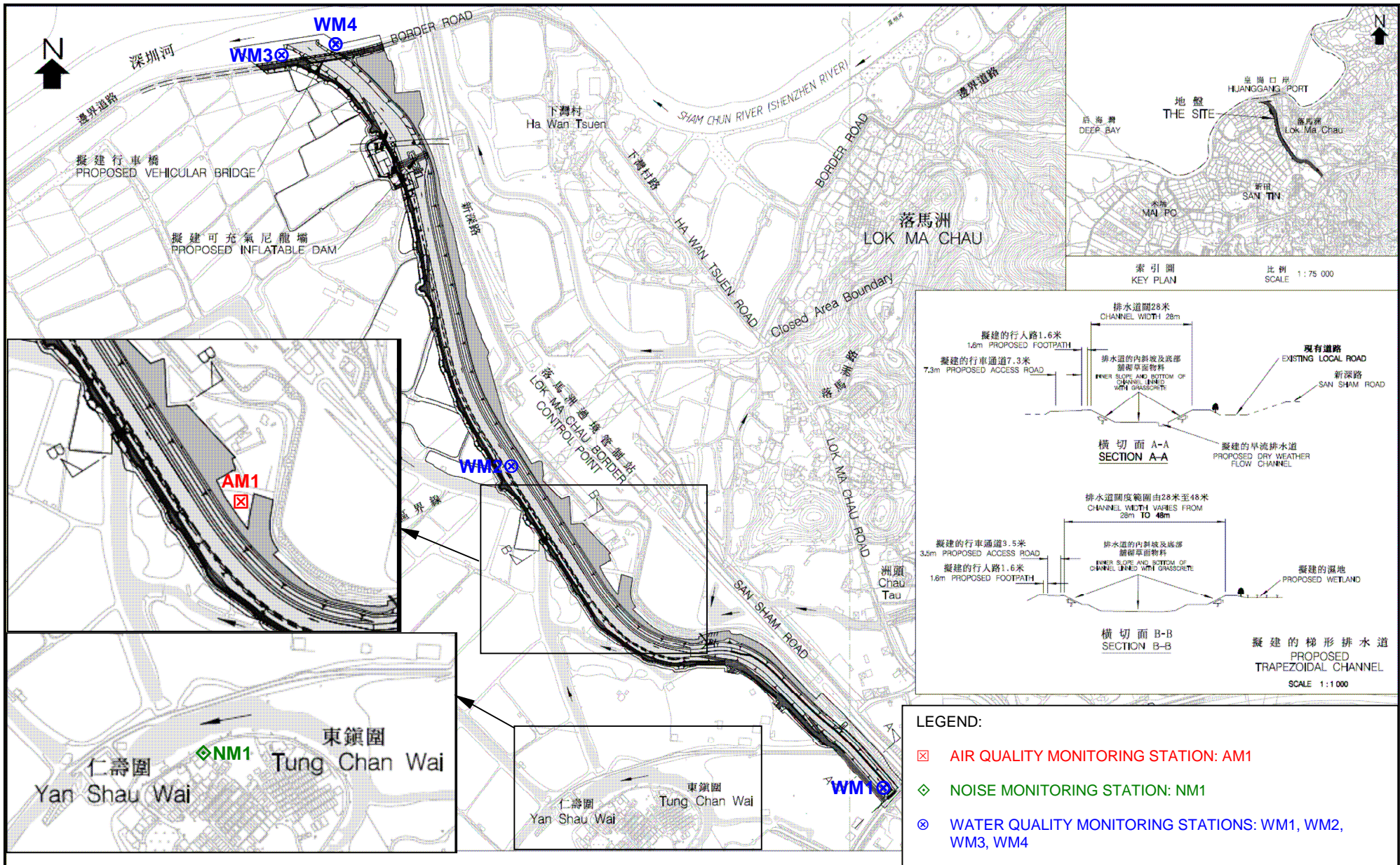
Prepared by: Elvix Kong
 Date: 17 Oct 2002
 Version: MP01

Task		Critical Task Progress		Rolled Up Task		Rolled Up Progress	Project Summary	
Task Progress		Milestone		Rolled Up Critical Task		Split		
Critical Task		Summary		Rolled Up Milestone		External Tests		



Figure 4.1

Layout of Environmental Monitoring Stations



Lam Environmental Services
Test Specialists and Environmental Analysts

FIGURE 4.1 LAYOUT OF ENVIRONMENTAL MONITORING STATIONS

REV. : A
DATE : 30 JUL 05
SCALE : N.T.S.



Figure 5.1a-b

Graphical Plot of 24-hr and 1-hr TSP Levels

Figure 5.1a - Graphical Plot of 24-hr TSP Levels at AM1

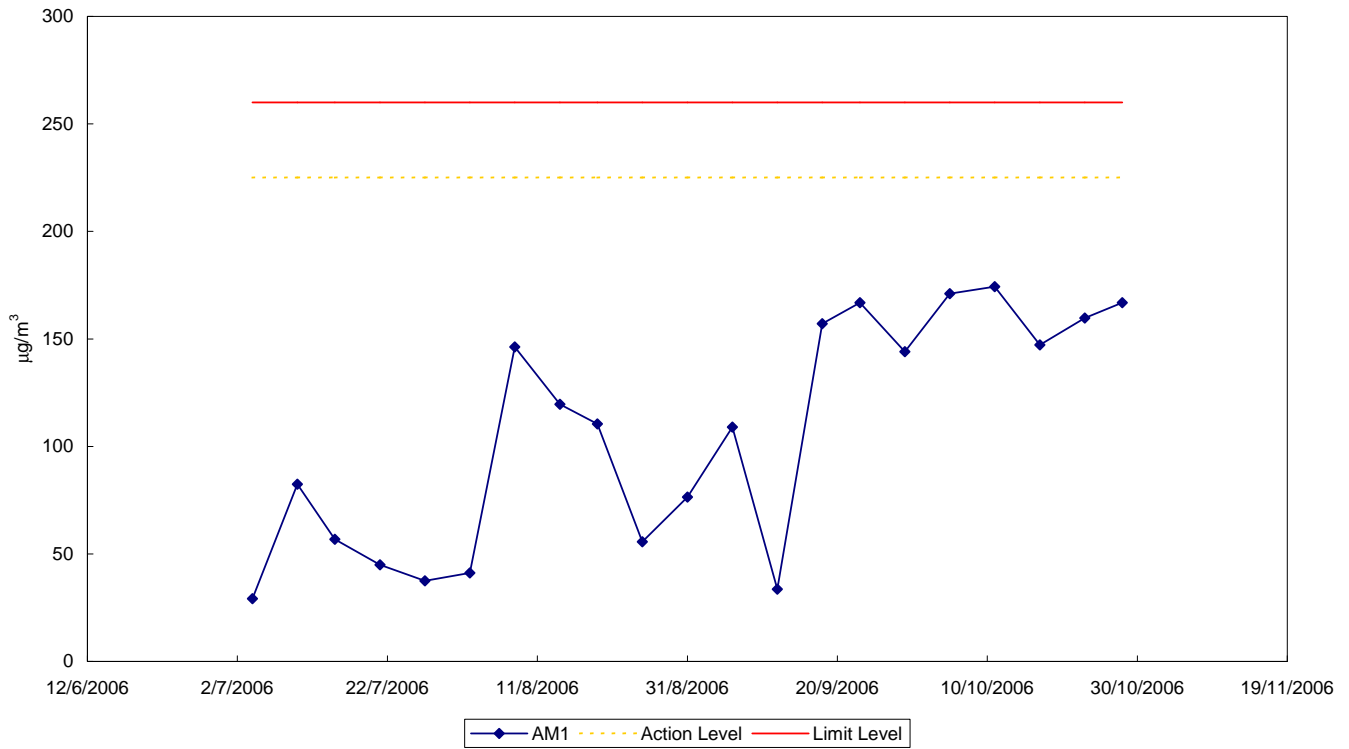


Figure 5.1b - Graphical Plot of 1-hr TSP Levels at AM1

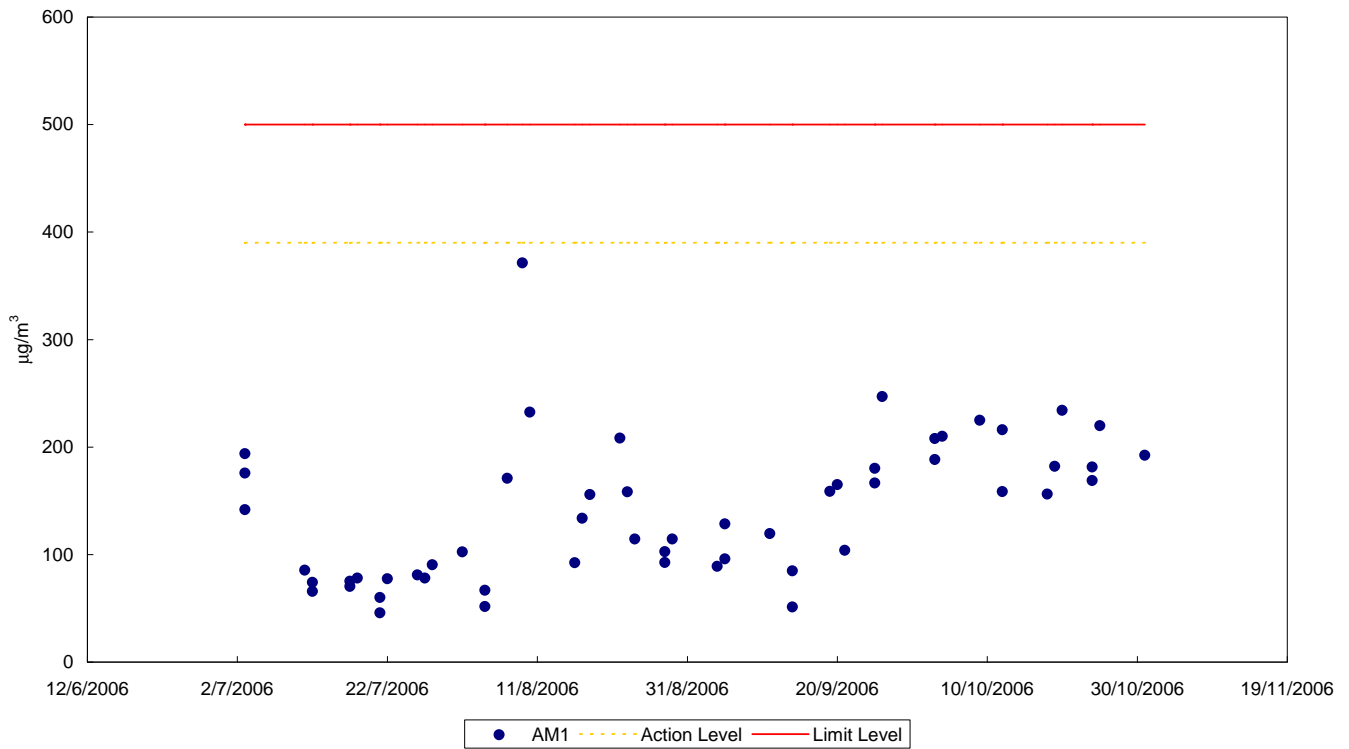




Figure 5.2

Graphical Plot of Noise Levels



Figure 5.3a-j

Graphical Plots of Water Quality

Figure 5.3a - Graphical Plot of Temperature

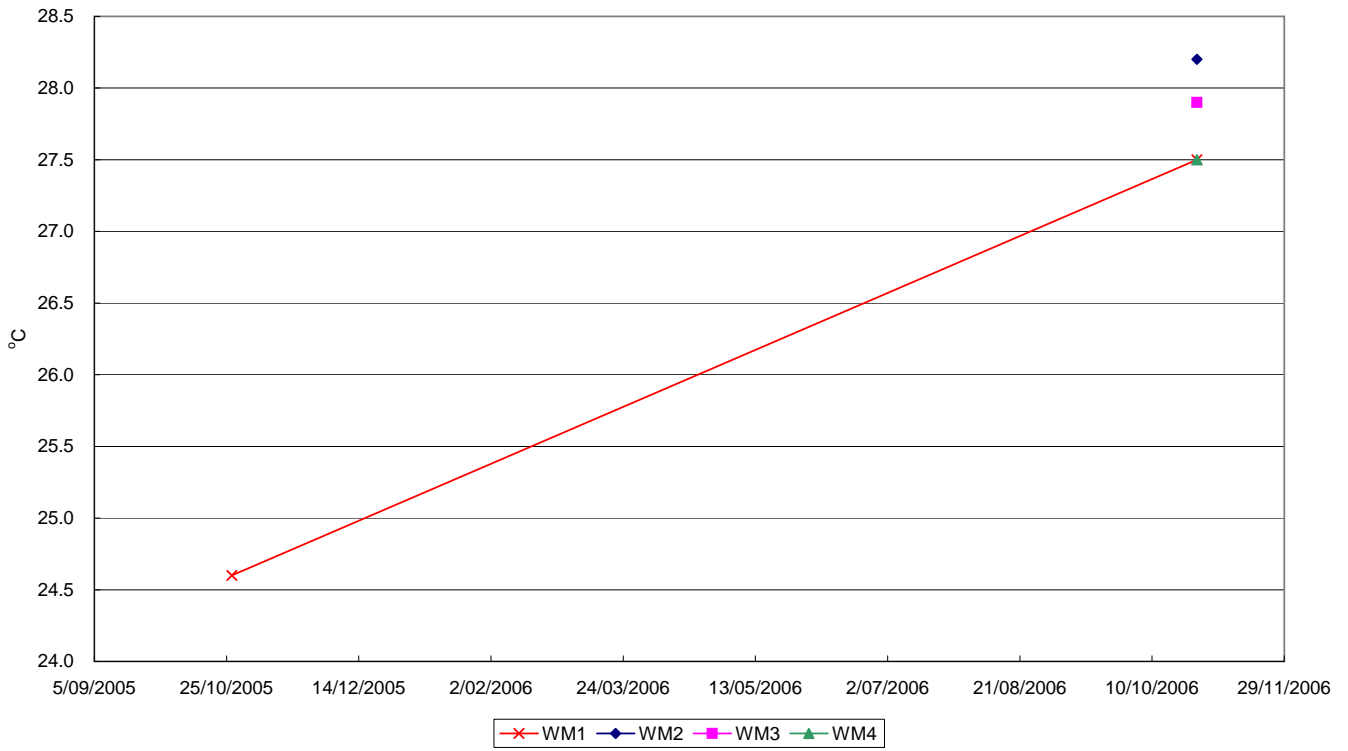


Figure 5.3b- Graphical Plot of pH

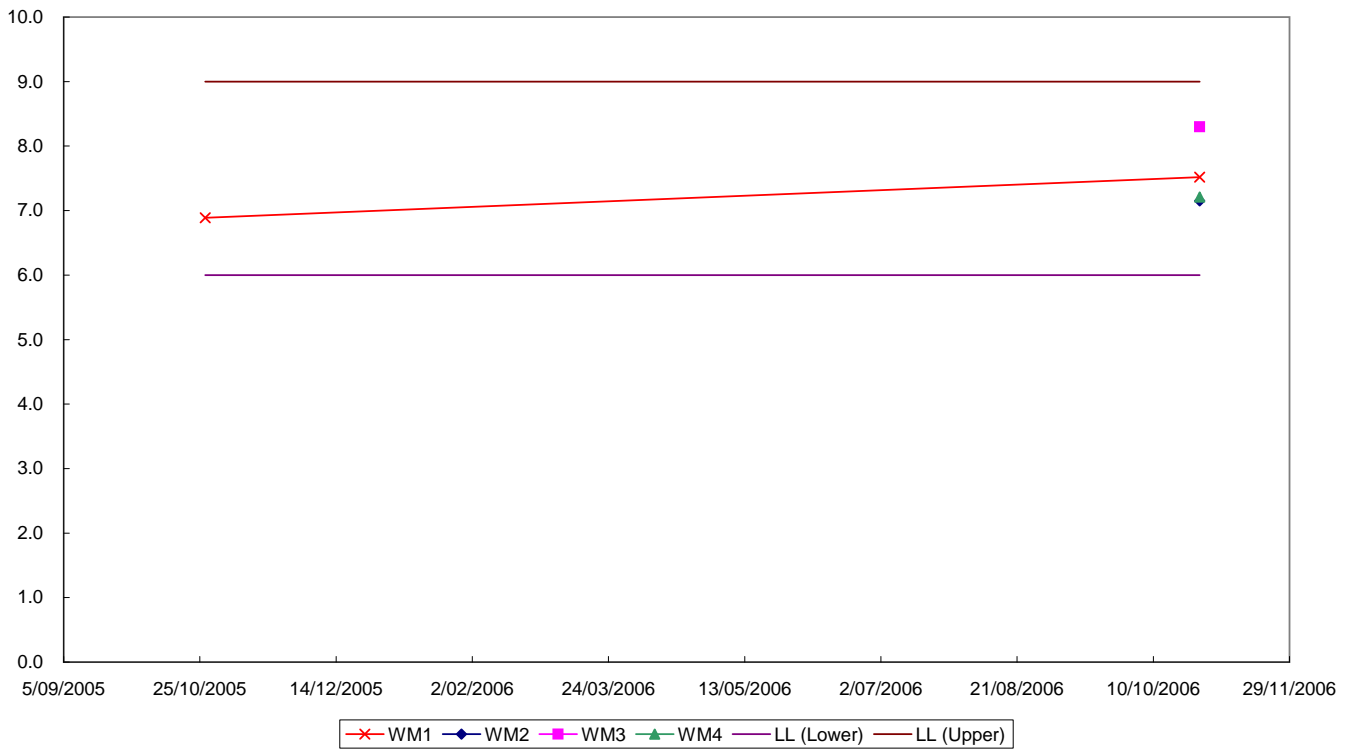


Figure 5.3c - Graphical Plot of Dissolved Oxygen for WM1 & WM2

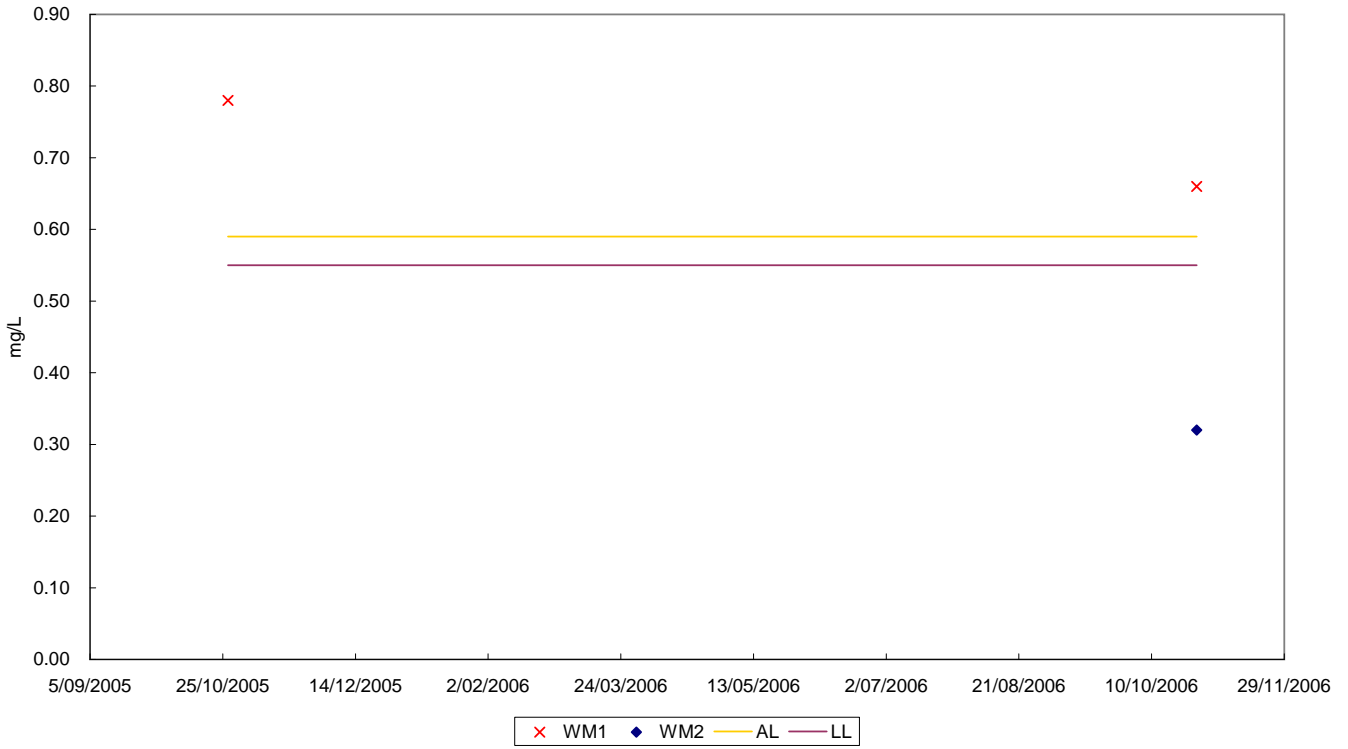


Figure 5.3d - Graphical Plot of Dissolved Oxygen for WM3 & WM4

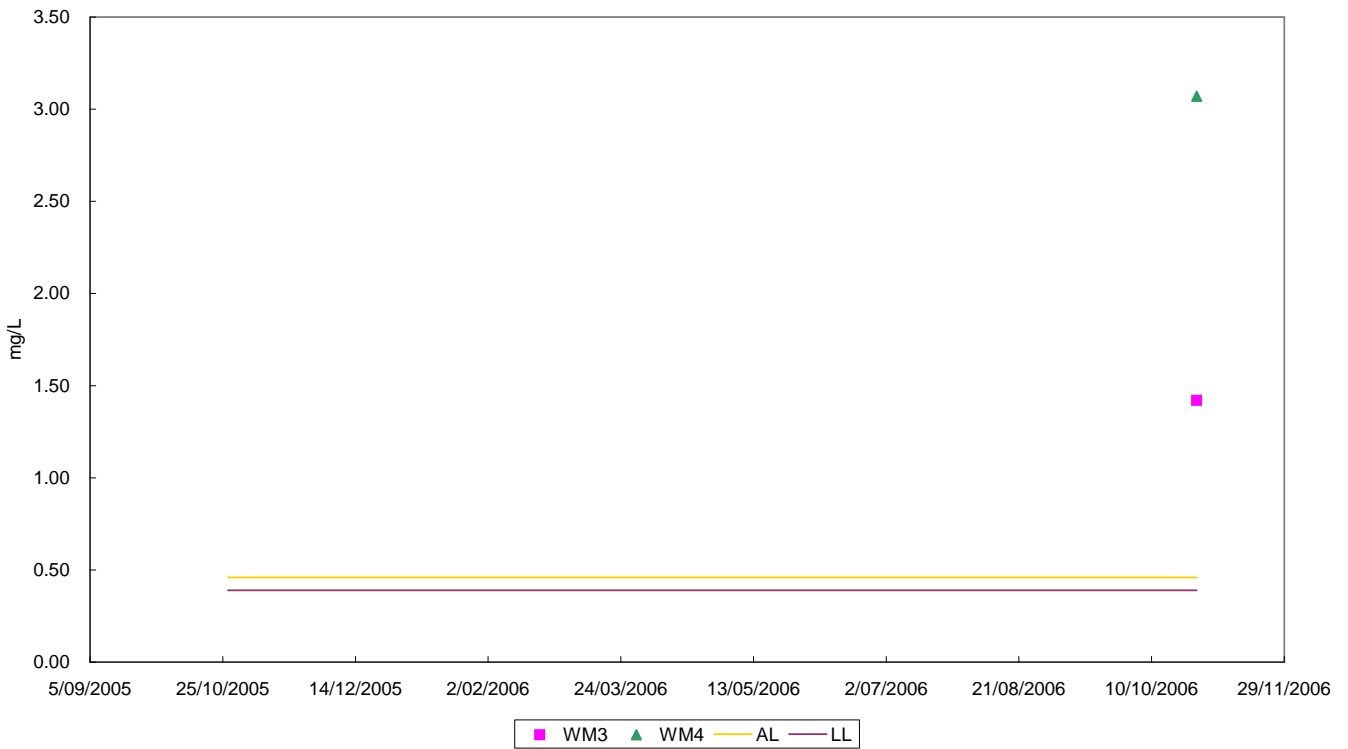


Figure 5.3e - Graphical Plot of Turbidity for WM1 & WM2

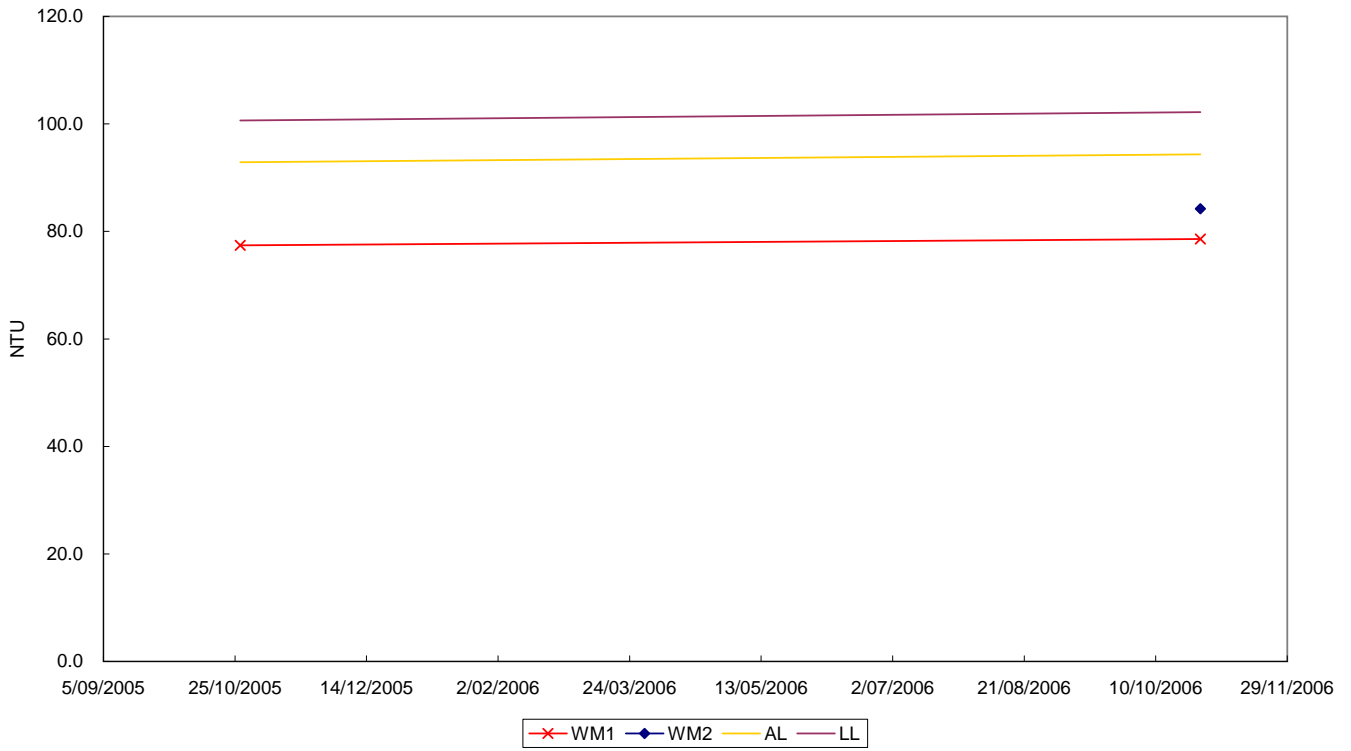


Figure 5.3f - Graphical Plot of Turbidity for WM3 & WM4

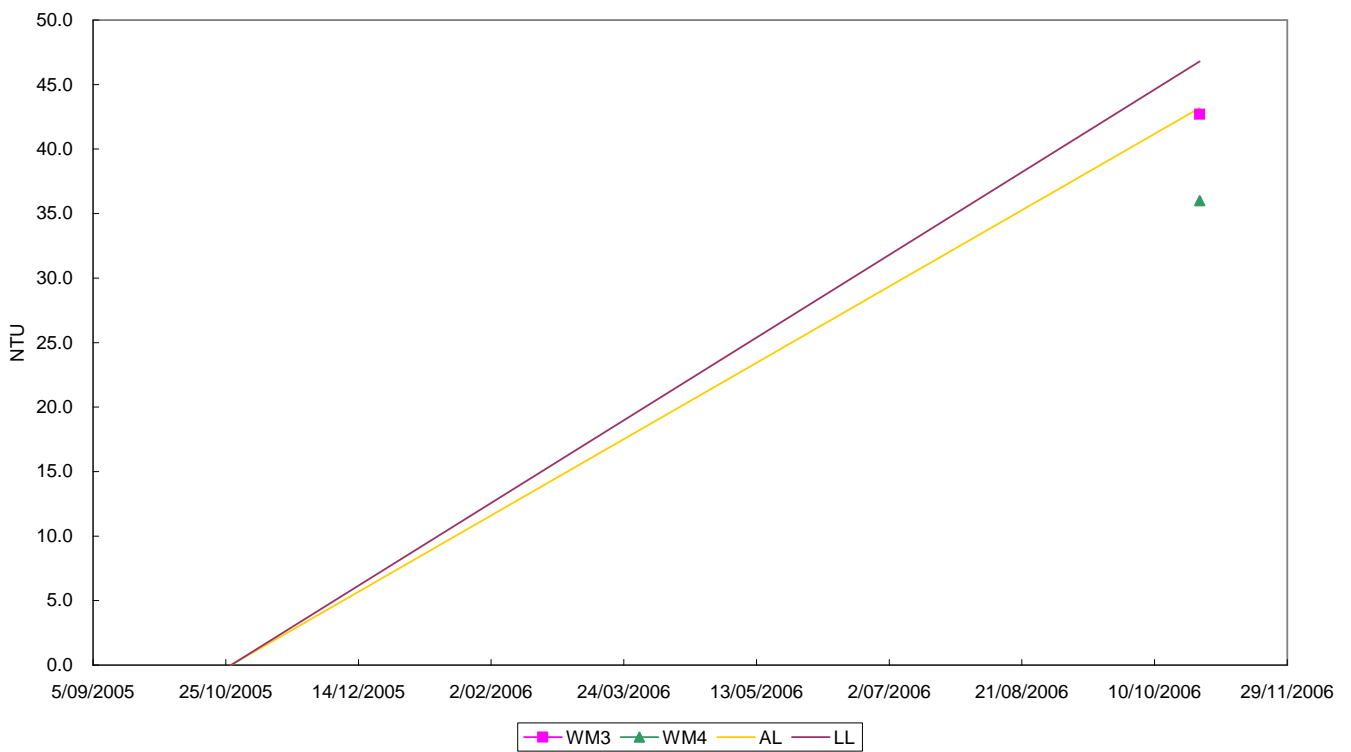


Figure 5.3g - Graphical Plot of Suspended Solids for WM1 & WM2

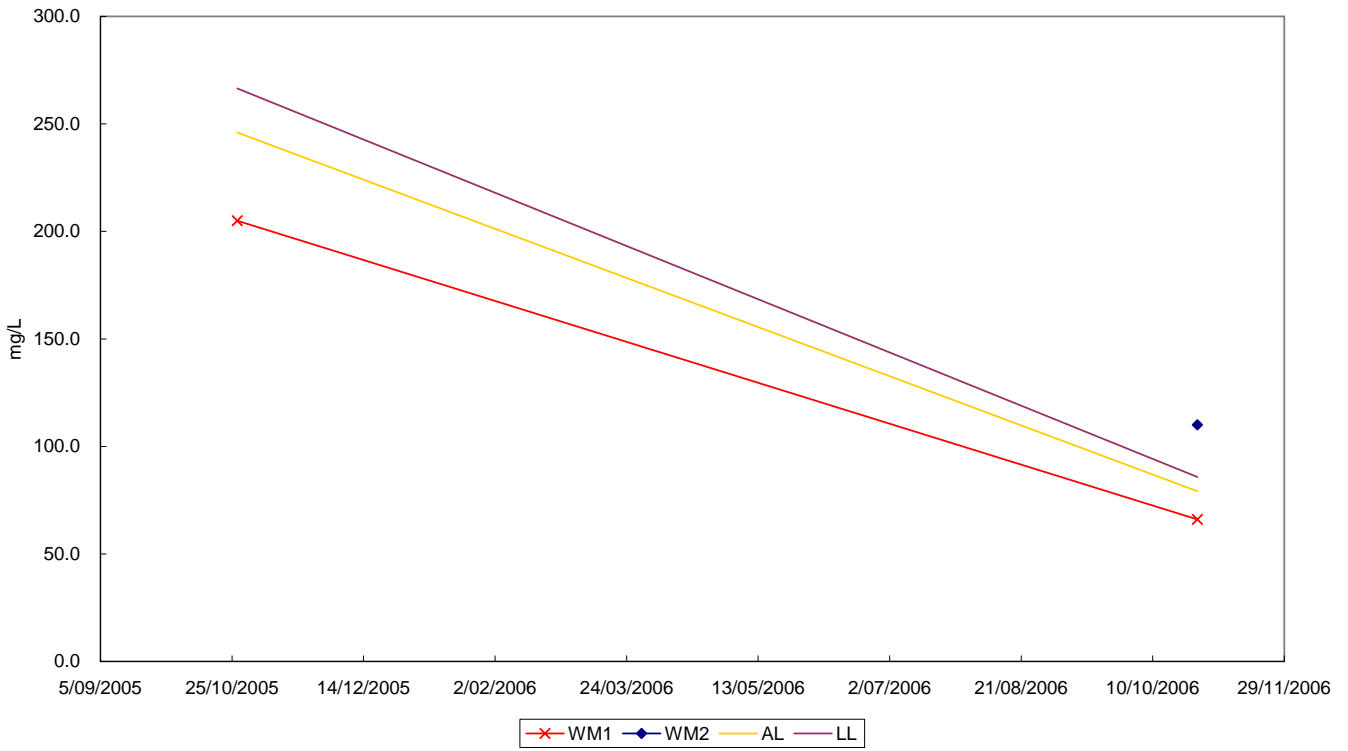


Figure 5.3h - Graphical Plot of Suspended Solids for WM3 & WM4

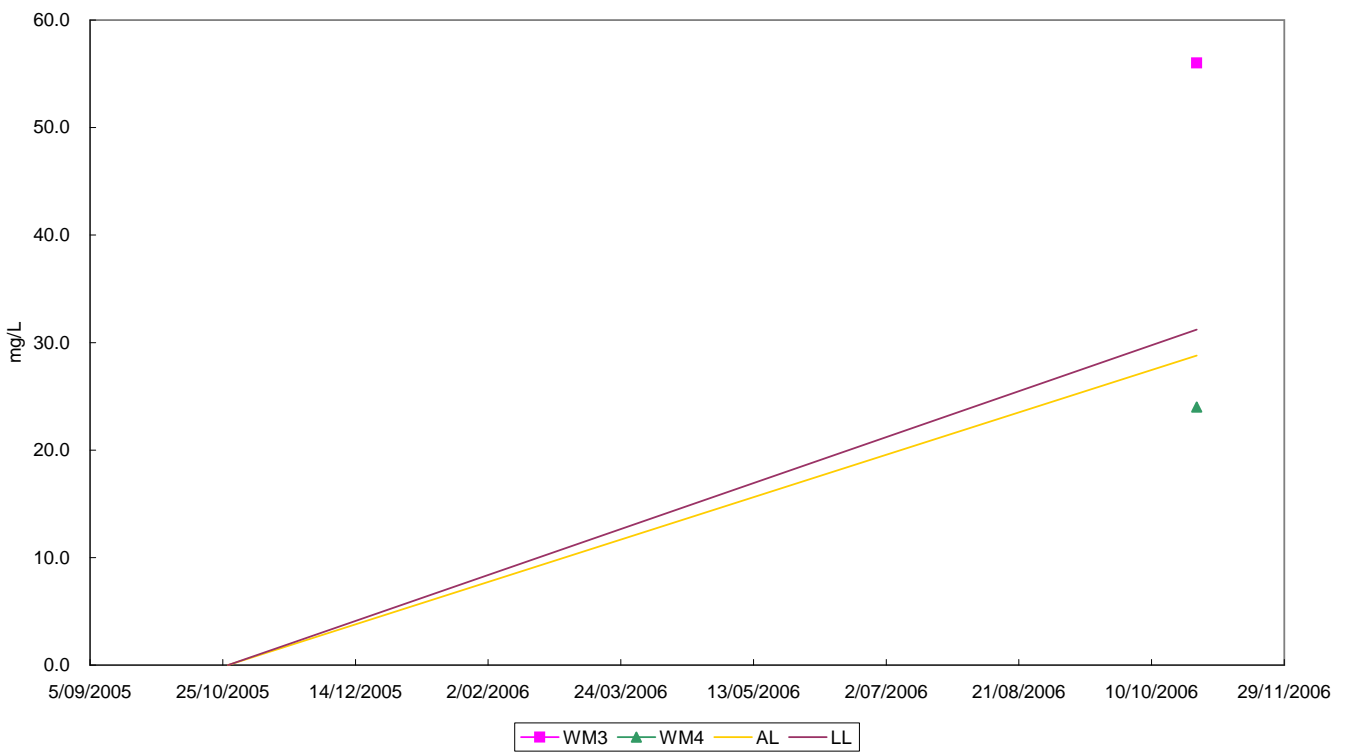


Figure 5.3i - Graphical Plot of Ammonical Nitrogen for WM1 & WM2

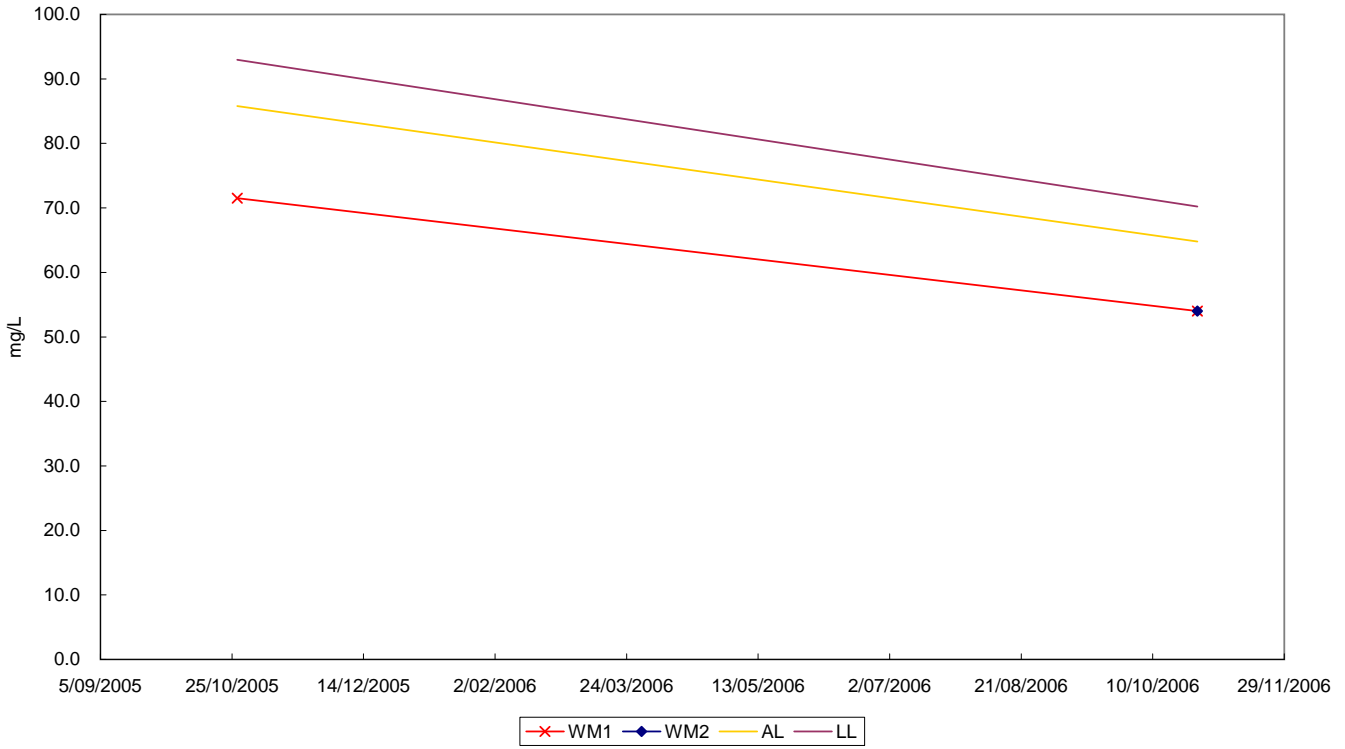
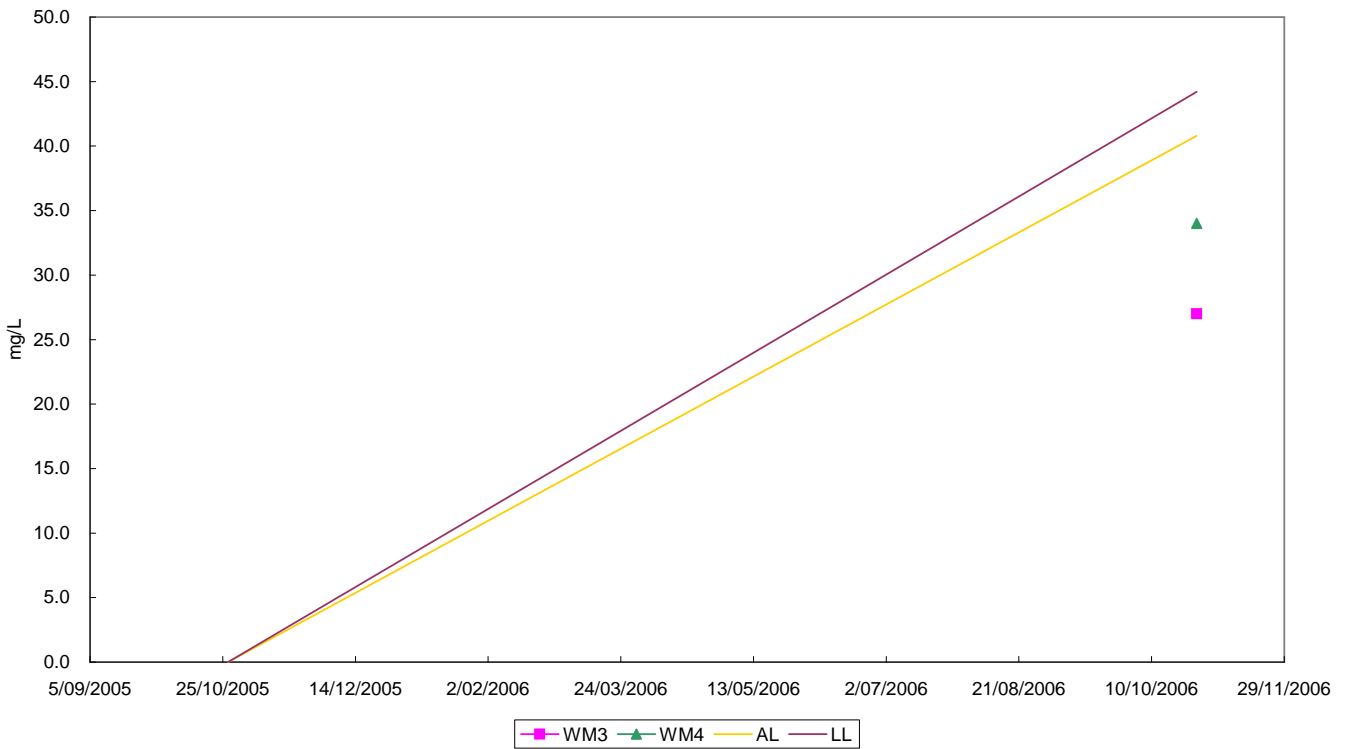


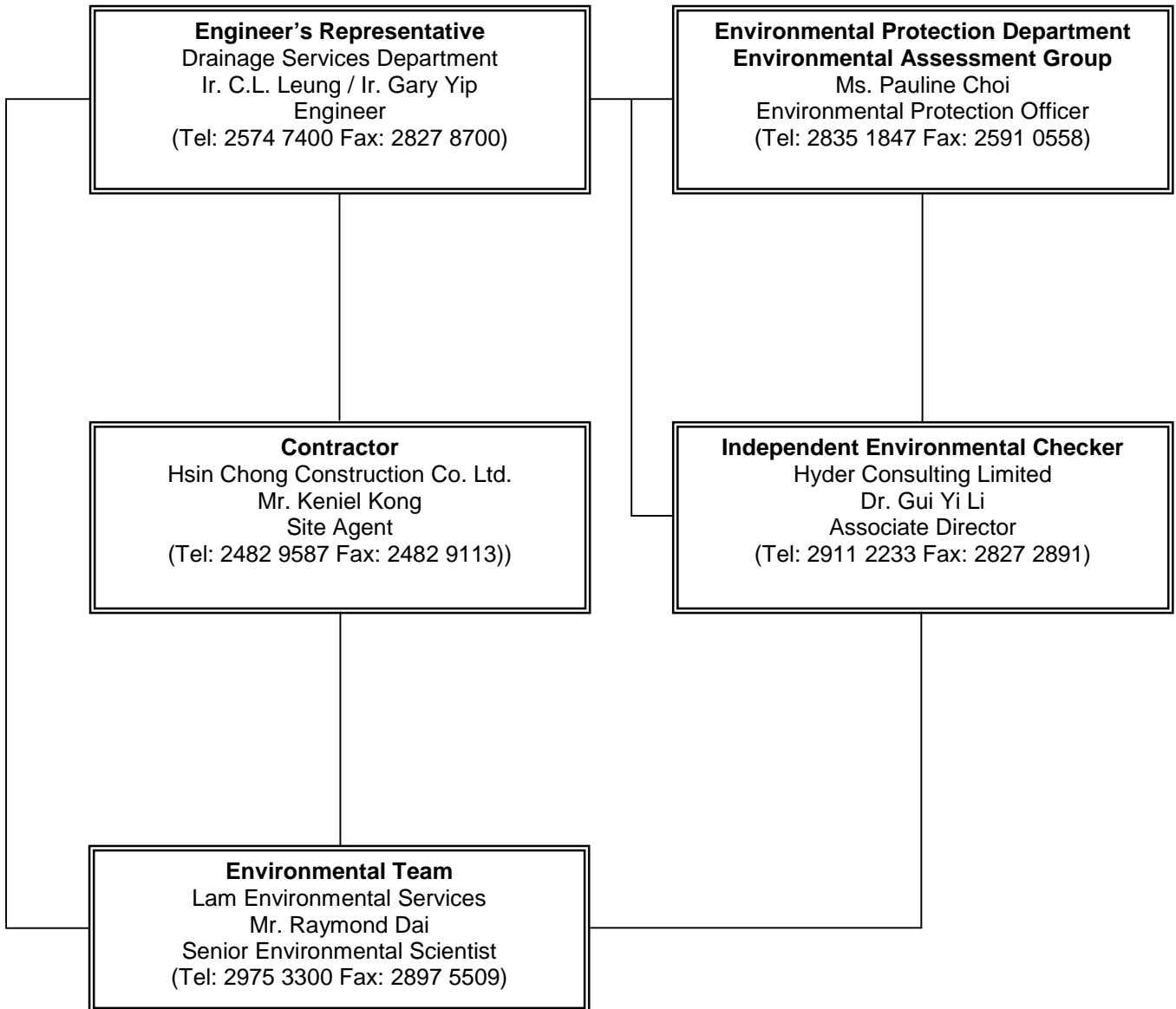
Figure 5.3j - Graphical Plot of Ammonical Nitrogen for WM3 & WM4





Appendix A

Organization Chart





Appendix B

Implementation Schedule of Mitigation Measures



Environmental Aspect	EIA Ref.	Operational Control	Responsible by	Implementation Period	Responsibility	Implementation Status
Dust	8.4.4.1	Vehicle washing facilities shall be provided at the exit point of the site;	Entrance/exit of site	All period during construction phase	Site Agent / Engineer	Implemented
	8.4.4.1	Any debris or materials shall be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and 3 sides;	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	8.4.4.1	Water spray or dust suppression chemical shall be provided during material handling and excavation;	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	8.4.4.1	The load on the vehicle shall be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
Odour	8.4.4.2	Any odorous dredged material shall be placed remote from air sensitive receivers;	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	8.4.4.2	Any odorous permitted stockpiled material shall be removed within 2 days of work to reduce the amount of time available for decomposition;	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	8.4.4.2	Any odorous permitted stockpiled material shall be covered with plastic tarpaulin sheets in the stockpile area.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
Monitoring	EM&A 2.7	The 24 hour TSP level monitored at the monitoring station shall be comply with the Limit level of 260 $\mu\text{g}/\text{m}^3$;	Whole site	All period during construction phase	ET Leader	Implemented
	EM&A 2.7	The hourly TSP level monitored at the monitoring station shall comply with the Limit level of 500 $\mu\text{g}/\text{m}^3$.	Whole site	All period during construction phase	ET Leader	Implemented
Construction Activities	7.4.4.2	Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the re-profiling works;	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	7.4.4.2	Plant and mobile plant (i.e. trucks) that may be in intermittent use shall be shut down between work periods or shall be throttled down to a minimum.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	7.4.4.2	Plant known to emit noise strongly in one direction, shall be orientated so that the noise is directed away from the NSRs;	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	7.4.4.2	Silencers or mufflers on construction equipment shall be utilised and shall be properly maintained during the re-profiling works;	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	7.4.4.2	Mobile plant shall be sited far away from the NSR's;	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	7.4.4.2	Material stockpiles and other structures shall be effectively utilised to screen noise from on-site construction activities; and	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	7.4.4.2	The Contractor shall select the models of PMEs that are quieter than the standard types given in GW-TM.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented



Environmental Aspect	EIA Ref.	Operational Control	Responsible by	Implementation Period	Responsibility	Implementation Status
Operation Activities	7.5.4.1	Considering sensitivity of the Deep Bay buffer zone area, it is recommended that a maximum noise of Leq(5min.) 75 dB(A) be achieved at 1m from the louver of the pumping station through good engineering design.	Pumping Station	Design and Operation Phases	DSD's Engineer	Not applicable to construction phase
Monitoring	EM&A 3	The baseline noise monitoring shall be carried out;	Monitoring location, NM1	Prior to commencement of construction	ET Leader	Implemented
		Construction noise monitoring shall be carried out;	Monitoring location, NM1	All period during construction phase	ET Leader	Implemented
		Operational noise shall be carried out 1m from the louvre of the pumping station during commissioning stage.	Monitoring location, NM2	Commissioning/operational phase	DSD's Engineer	Not applicable to construction phase
Construction Excavation of Sediment	4.4.4.3-4	If excavation on wet stream is not avoidable, the following shall be implemented: <ul style="list-style-type: none"> - Minimise disturbance to the stream bed while excavating; - Minimise leakage of excavating material during lifting; - Prevent loss of material during transport of excavated material; - Prevent discharge of excavated material except at approved locations; - To minimize the leakage and loss of sediments during excavation, tightly sealed closed grab excavators shall be employed in river sections where material to be handled is wet. 	Stream Channel	All period during stream channel excavation	Site Agent / Engineer	Implemented Implemented Implemented Implemented Implemented
Construction Works Timing	4.4.4.5	Excavation shall be undertaken during periods of low flow (dry season).	Stream Channel	All period stream channel excavation	Site Agent / Engineer	Implemented
Construction Runoff and Drainage	4.4.4.6-8	Exposed soil areas shall be minimized to reduce the potential for increased siltation, contamination of run-off and erosion. In addition, no site run-off shall enter fishponds. Construction run-off impacts associated with above ground construction activities shall be controlled through the use of appropriate mitigation measures which include:	All works area	All period during construction phase	Site Agent / Engineer	Implemented
	4.4.4.6-8	Temporary ditches shall be provided to facilitate run-off discharge into appropriate watercourses, via a silt retention pond.	All works area	All period during construction phase	Site Agent / Engineer	Improvement required
	4.4.4.6-8	The boundaries of earthworks shall marked and surrounded by dykes or embankments for flood protection.	All works area	All period during construction phase	Site Agent / Engineer	Implemented
	4.4.4.6-8	Open material storage stockpiles shall be covered with tarpaulin or similar fabric to prevent material washing away.	All works area	All period during construction phase	Site Agent / Engineer	Implemented



Environmental Aspect	EIA Ref.	Operational Control	Responsible by	Implementation Period	Responsibility	Implementation Status
Construction Excavation of Sediment	4.4.4.6-8	Exposed soil areas shall be minimized to reduce the potential for increased siltation and contamination of run-off.	All works area	All period during stream channel excavation	Site Agent / Engineer	Improvement required
		Earthwork final surfaces shall be well compacted and subsequent permanent work shall be immediately preformed.	All works area	All period during stream channel excavation	Site Agent / Engineer	Implemented
		The use of sediment traps.	All works area	All period during stream channel excavation	Site Agent / Engineer	Implemented
		The adequate maintenance of drainage systems to prevent flooding and overflow.	All works area	All period during stream channel excavation	Site Agent / Engineer	Implemented
		All temporary drainage pipes and culverts provided to facilitate run-off discharge shall be adequately designed to facilitate rapid discharge of storm flows. All sediment traps shall be regularly cleaned and maintained. The temporarily diverted drainage shall be reinstated to its original condition, when construction work is completed or the temporary diversion is no longer required.	All works area	All period during stream channel excavation	Site Agent / Engineer	Implemented
		Sand and silt in wash water from wheel washing facilities shall be settled out and removed before discharge into temporary drainage pipes or culverts. A section of the haul road between the wheel washing bay and the public road shall be paved with backfill to prevent wash water or other site run-off from entering the public road.	All works area	All period during stream channel excavation	Site Agent / Engineer	Improvement required
		Oil interceptors shall be provided in the drainage system downstream of any significant oil and grease sources. They shall be regularly maintained to prevent the release of oils and grease into the storm water drainage system after accidental spillage. The interceptor shall have a bypass to prevent flushing during heavy rain.	All works area	All period during stream channel excavation	Site Agent / Engineer	Implemented
General Construction Construction Runoff and Drainage	4.4.4.10	Debris and rubbish on site shall be collected, handled and disposed of properly.	All works area	All period during construction phase	Site Agent / Engineer	Improvement required
	4.4.4.11	All fuel tanks and storage areas shall be provided with locks and placed on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching the downstream.	All works area	All period during construction phase	Site Agent / Engineer	Improvement required



Environmental Aspect	EIA Ref.	Operational Control	Responsible by	Implementation Period	Responsibility	Implementation Status
Marine Disposal of Excavated Sediment	4.4.412	The decks of the marine dumping disposal barges and floating pontoons shall be kept tidy and free of oil or other substances or articles which might be accidentally or otherwise washed overboard.	Marine dumping route/area	All period during construction phase	Site Agent / Engineer	Marine dumping was completed.
	4.4.412	All off-site vessels and barges shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement of propeller wash.	Marine dumping route/area	All period during construction phase	Site Agent / Engineer	
	4.4.412	The works shall cause no visible foam, oil, grease, scum, litter or other objectionable matter to be present on the water at the loading berth or dumping grounds.	Marine dumping route/area	All period during construction phase	Site Agent / Engineer	
	4.4.412	Water tight trucks shall be used for transportation of marine disposal of excavated material.	Marine dumping route/area	All period during construction phase	Site Agent / Engineer	
	4.4.413	Additional provisions shall be required upon confirmation that marine sediments are contaminated. Location and depths of areas of contaminated marine sediments shall be indicated in the construction contract. The Contractor shall ensure that contaminated sediments are excavated, transported and placed in approved special dumping grounds in accordance with relevant Technical circulars.	Marine dumping grounds	All period during construction phase	Site Agent / Engineer	
	4.4.414	Transport of contaminated marine mud to the marine disposal grounds shall be by split barge of not less than 750m ³ capacity, well maintained and capable of rapid opening and discharge.	Marine dumping grounds	Marine dumping	Site Agent / Engineer	
	4.4.414	The material shall be placed in the pit by bottom dumping, at a location within the pit specified by the FMC.	Marine dumping grounds	Marine dumping	Site Agent / Engineer	
	4.4.414	Discharge shall be undertaken rapidly and the hoppers shall then immediately be closed, material adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge next returns to the disposal site.	Marine dumping grounds	Marine dumping	Site Agent / Engineer	
	4.4.414	The dumping vessel shall be stationary throughout the dumping operation.	Marine dumping grounds	Marine dumping	Site Agent / Engineer	
	4.4.414	The Contractor must be able to position the dumping vessel to an accuracy of ±10m.	Marine dumping grounds	All period during construction phase	Site Agent / Engineer	
4.4.414	Barge loading shall be monitored to ensure that loss of material does not take place during transportation.	Marine dumping grounds	All period during construction phase	Site Agent / Engineer		



Environmental Aspect	EIA Ref.	Operational Control	Responsible by	Implementation Period	Responsibility	Implementation Status
Marine Disposal of Excavated Sediment (cont'd)	4.4.414	Transport barges or vessels shall be equipped with automatic self monitoring devices as specified by the EPD.	Marine dumping grounds	All period during construction phase	Site Agent / Engineer	Marine dumping was completed
	4.4.414	The Contractor shall follow procedures as outlined in the Guidance Note for Dumping and Additional Conditions on Disposal of Contaminated Marine Mud at East Sha Chau Contaminated Mud Disposal.	Marine dumping grounds	All period during construction phase	Site Agent / Engineer	
Sewage Effluents	4.4.415	Construction work force sewage is expected to be handled by portable chemical toilets along the alignment if connection to a public sanitary sewer system is not feasible. Appropriate and adequate portable toilets shall be provided by licensed contractors who shall be responsible for appropriate disposal and maintenance of these facilities.	All works areas	All period during construction phase	Site Agent / Engineer	Implemented
Monitoring	EM&A 4.5	The baseline water quality monitoring shall be carried out.	Monitoring locations, WM1, WM2, WM3 and WM4.	Prior to commencement of construction	ET Leader	Complete
	EM&A 4.6	Construction phase water quality monitoring shall be carried out.	Monitoring locations, WM1 and WM2	All period during construction phase	ET Leader	Not applicable
General	5.4.5.2	Training and instruction shall be given to construction staff to increase awareness and draw attention to waste management issues and the need to minimize waste generation.	All works area	All period during construction phase	Site Agent / Engineer	Implemented
	5.4.5.2	The Contractor shall prepare an on-site management plan of the construction works which should take into account the recommended mitigation measures in the EIA report. Site specific factors such as the designation of areas of segregation and temporary storage of reusable and recyclable materials should be incorporated.	All works area	Before construction phase	Site Agent / Engineer	Implemented
Storage, Collection and Transportation of Waste	5.4.5.3	Wastes shall be handled and stored in a manner to ensure that they are held securely without loss or leakage.	All works areas	All period during construction phase	Site Agent / Engineer	Improvement required
		Licensed waste haulers shall be used and they shall only collect wastes prescribed by their permits.	Waste/refuse Storage areas	All period during construction phase	Site Agent / Engineer	Implemented
		Wastes shall be removed	Waste/refuse Storage areas	Daily during construction	Site Agent / Engineer	Implemented
		Waste storage areas shall be maintained and cleaned on a daily basis.	Waste/refuse Storage areas	All period during construction phase	Site Agent / Engineer	Implemented
		Windblown litter and dust during transportation shall be minimized by either covering trucks or transporting wastes in enclosed containers.	Waste handling trucks	After waste collection & before trucks leave the construction site	Site Agent / Engineer	Implemented



Environmental Aspect	EIA Ref.	Operational Control	Responsible by	Implementation Period	Responsibility	Implementation Status
Storage, Collection and Transportation of Waste (cont'd)	5.4.5.3	Obtain the necessary waste disposal permits from the appropriate authorities.	-	Before construction of the Eastern MDC	Site Agent / Engineer	Implemented
	5.4.5.3	Wastes shall be disposed of at licensed waste disposal facilities.	-	All period during construction phase	Site Agent / Engineer	Implemented
	5.4.5.3	Develop procedures such as ticketing system to facilitate tracking of loads, particularly for chemical waste, and to ensure that illegal disposal of wastes does not occur; and	-	All period during construction phase	Site Agent / Engineer & ET Leader	Implemented
	5.4.5.3	Maintain records of the quantities of wastes generated, recycled and disposed.	-	All period during construction phase	Site Agent / Engineer & ET Leader	Implemented
Construction and Demolition Waste	5.4.5.5	Careful design, planning and good site management shall be adopted to minimize over-ordering and generation of waste materials such as concrete, mortars and cement grouts.	All works areas	All period during construction phase	Site Agent / Engineer	Implemented
		The handling and disposal of bentonite slurries shall be undertaken in accordance with Practice Note for Professional Persons – Construction Site Drainage (ProPECC PN 1/94) on construction site drainage. Cover open stockpiles of construction and demolition materials, and temporarily exposed slopes by tarpaulin or similar fabric, particularly during rainy season.	All works areas	All period during construction phase	Site Agent / Engineer	No bentonite used in this stage
			All works areas	All period during construction phase	Site Agent / Engineer	Implemented
	5.4.5.9 and 5.4.5.6	Construction and demolition material shall be segregated to inert and non-inert parts. The inert portion shall be re-used at areas of reclamation or land formation, or to public filling area shall such a allocation is deemed necessary. The non-inert portion shall be disposed of to landfill.	All works areas	All period during construction phase	Site Agent / Engineer	Implemented
Chemical Waste	5.4.5.12	Chemical waste produced shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes.	Chemical waste arising points	All period during construction phase	Site Agent / Engineer	Implemented
	5.4.5.13	Containers used for the storage of chemical wastes shall be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450litres unless the specifications have been approved by EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Chemical Waste Regulation.	Chemical waste arising points	All period during construction phase	Site Agent / Engineer	Implemented
	5.4.5.14	The chemical waste storage area shall be clearly labeled and used solely for storage of chemical waste, enclosed on at least 3 sides; have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste stored in that area; have adequate ventilation; be covered to prevent rainfall entering; and be arranged so that incompatible materials are adequately separated. Disposal of chemical waste shall be via a licensed waste collector; and to a facility licensed to receive chemical waste; or to a reuser of waste.	Chemical waste arising points	All period during construction phase	Site Agent / Engineer	Implemented
			Chemical waste arising points	All period during construction phase	Site Agent / Engineer	Implemented



Environmental Aspect	EIA Ref.	Operational Control	Responsible by	Implementation Period	Responsibility	Implementation Status
General Refuse	5.4.5.17	General refuse on-site shall be stored in enclosed bins separate from construction and chemical wastes. A reputable waste collector shall be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily or every second day basis to minimize odour, pest and litter impacts. The burning of refuse on construction sites is prohibited by law.	All works areas	All period during construction phase	Site Agent / Engineer	Improvement required
	5.4.5.18	General refuse shall be largely by food service activities on site, so reusable rather than disposable dishware shall be used if feasible. Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated or easily accessible; separate, labeled bins for their deposit shall be provided if feasible.	All works areas	All period during construction phase	Site Agent / Engineer	Implemented
	5.4.5.19	Office wastes can be reduced through recycling if volumes are large enough to warrant collection. Participation in a local collection scheme shall be considered if one is available.	All works areas	All period during construction phase	Site Agent / Engineer	Implemented
Dust	5.4.5.20	Wetting the surface of the stockpiled soil with water in dry season unless during emergency; covering the stockpile soil with sheets; minimize disturbance of the stockpile soil; and enclosure of the stockpiling area.	All works areas	All period during construction phase	Site Agent / Engineer	Implemented
Water Quality	5.5.5.20	There shall be a separate surface water drainage system for the stockpiling area; silt traps shall be installed for surface water drainage system and the stockpile material shall be covered with tarpaulin during heavy rainstorm.	All works areas	All period during construction phase	Site Agent / Engineer	Implemented
Excavated Materials/ Contaminated Sediment	5.4.5.21	Sampling and analysis of the sediment to confirm the level of contamination is required prior to construction of the MDC. A sediment Quality Report shall be submitted to FMC and EPD for allocation of final disposal site and issuance of disposal permit. This is to ensure that specific disposal requirements and precautionary handling procedures can be determined; DSD to advise FMC on the quality and quantity of the contaminated sediment arising during the detailed design stage.	Proposed Sediment sampling points of MDC	Before construction phase	Site Agent / Engineer	Not required for the contractor
	5.4.5.21	The use of bulk earth-moving equipment to minimize the contact of contaminated material with construction workers.	All excavation/ Dredging area	During excavation/ Dredging of MDC	Site Agent / Engineer	Implemented
	5.4.5.21	Minimising exposure to any contaminated material by the wearing of protective gear such as gloves, providing adequate hygiene and washing facilities and preventing eating during excavation.	All excavation/ Dredging area	During excavation/ Dredging of MDC	Site Agent / Engineer	Implemented
	5.4.5.21	Any contaminated mud or sediment excavated shall not be allowed to stockpile on site and shall be immediately removed from site once excavated.	All excavation/ Dredging area	During excavation/ Dredging of MDC	Site Agent / Engineer	Implemented
	5.4.5.21	Excavated sediment shall be transported by water-tight trucks to potential marine barging points, then to sea going barges for transfer to designated marine disposal grounds.	All excavation/ Dredging area	During excavation/ Dredging of MDC	Site Agent / Engineer	Implemented



Environmental Aspect	EIA Ref.	Operational Control	Responsible by	Implementation Period	Responsibility	Implementation Status
Excavated Materials/ Contaminated Sediment (cont'd)	5.4.5.21	Permitted waste haulers shall be used to collect and transport contaminated sediments for disposal.	All excavation/ Dredging area	During excavation / dredging of MDC	Site Agent / Engineer	Implemented
	5.4.5.21	All vessels for marine transportation of excavated sediment shall be fitted with tight fitting seals to their bottom openings to prevent leakage of materials.	All excavation/ Dredging area	During excavation / dredging of MDC	Site Agent / Engineer	Implemented
	5.4.5.21	Loading of barges and hoppers shall be controlled to prevent splashing of excavated material to the surrounding water, and barges or hoppers shall under no circumstances to be filled to a level which shall cause the overflowing of materials or polluted water during loading or transportation.	All excavation/ Dredging area	During excavation / dredging of MDC	Site Agent / Engineer	Implemented
	5.4.5.21	The decks of any off-site barges (for disposal to marine dumping grounds) and floating pontoons shall be kept tidy and free of oil or any other substances or articles which might be accidentally or otherwise washed overboard.	All excavation/ Dredging area	During excavation / dredging of MDC	Site Agent / Engineer	Implemented
Habitat Mitigation	3.6.4.2	Isolate working area from remainder of TOAs and other temporarily affected ponds by constructing earth bund across ponds within the works boundary 50m from the west edge of the Eastern MDC. Do not drain pond area outside the 50M limit during bund construction, or refill them immediately following bund construction. Remove bunds, reinstate the 50m wide working area portion of the affected ponds upon completion of construction. Provide access for fish ponds affected by the project.	All other TOAs and all other fish ponds drained down for project construction at Eastern MDC works site	Design and construction stage	Site Agent / Engineer	Implemented
	3.6.4.5	Deletion from design of maintenance access road on eastern MDC embankment (already accomplished)	Eastern embankment of Eastern MDC	Already accomplished (design stage)	Site Agent / Engineer	Not required for contractor
	3.6.4.6	Design and construction of flood storage pond at San Tin Village: grasscrete sides at 1 in 2 slope, concrete bottom.	Flood storage pond, San Tin villages	Design and construction stage	DSD's Engineer	Not required for contractor
	3.6.4.6- 3.6.4.8	Management of flood storage pond at San Tin Villages: maintain water depth of 0.3m to 0.85m through pond design and pump operation except during maintenance or exceptional circumstances. Allow up to 150m of sediment to accumulate on bottom; Avoid dredging clear to the bottom; Allow vegetation to colonise banks; Cut back vegetation only on maintenance-need basis; Allow fish to colonise pond naturally.	Flood storage pond, San Tin villages	Throughout operational lifetime of pond	DSD's Engineer	Not required for contractor



Environmental Aspect	EIA Ref.	Operational Control	Responsible by	Implementation Period	Responsibility	Implementation Status
Habitat Mitigation (cont'd)	3.6.4.9	Maintenance of Tsing Lung Tsuen drainage channel: Do not cut back vegetation along sides of channel except as required for channel maintenance.	Channel outside San Tin villages polder	Throughout operational lifetime of pond	DSD's Engineer	Implemented
	3.6.4.10	Design and construction of tidal portion of Eastern MDC: Grasscrete sides at 1 in 2 slope; earthen bottom in channel.	Eastern MDC downstream of inflatable dam	Project design and construction phases	DSD's Engineer and TDD (design)	Completed
		Maintenance of tidal portion of Eastern MDC: Minimise cutting back of vegetation to lowest levels compatible with maintaining flood capacity. Minimise dredging of channel bottom in this zone to lowest levels compatible with maintaining flood capacity.	Eastern MDC downstream of inflatable dam	Throughout operational lifetime of channel	Site Agent / Engineer DSD's Engineer	Implemented
	3.6.4.11-3.6.4.12 Annex 3-J	Design, construction and management of constructed wetland area east of Eastern MDC: to provide wetland habitats useful to wildlife, with varied water depth, and planting of wetland vegetation and trees/bamboos; details as specified in Annex 3-J	Location shown in EIA Report Figure 3.6c, east of Eastern MDC and west of San-Sham Road	Construction of wetlands simultaneous with or immediately on completion of Eastern MDC construction. Management to begin upon completion of wetland construction and to continue throughout lifetime of channel.	DSD and TDD (design) Site Agent / Engineer (earthworks vegetation) DSD (maintenance of outlet pipes and flag valves) Lands Dept. (lands administration) AFD (vegetation management)	Implemented
3.6.4.13	Design of Eastern MDC upstream of inflatable dam: Grasscrete lining of channel except DWF channel; channel banks at 1 in 2 slope.	Eastern MDC Upstream of inflatable dam	Project design and construction phases	DSD and TDD (design) and Site Agent / Engineer (construction)	Completed	
	Hydroseeding of outer embankments of Eastern MDC. Plant stands of bamboos and trees at sites along Eastern MDC embankments as shown in Figure 3.6e; species and density as described in Annex 3-J. Replace any dead plantings during one-year establishment Period with species approved by TDD and AFD.	At sites along Eastern MDC as marked in Final EIA Report Figure 3.6e	Simultaneous with or immediately following completion of channel construction	DSD and TDD (design); Site Agent / Engineer (implementation Including establishment phase)	Completed	
Water quality	3.6.4.20-21	Water quality control measures: Implement and enforce water quality control measures outlined in implementation schedule for water section. Dredging of existing stream channel shall only be undertaken in dry season unless during emergency conditions.	On work site	During construction phase	Site Agent / Engineer	Implemented



Environmental Aspect	EIA Ref.	Operational Control	Responsible by	Implementation Period	Responsibility	Implementation Status
Wildlife Disturbance	3.6.4.22	Noise and disturbance control measures: Restrict movements of construction equipment and site workers to areas within the site boundary (including Temporary Works Areas) and approved entry/exit points under terms of contract; supervision by contractor. ET to brief site workers on the need to remain within the site and avoid disturbance to surrounding habitats. Tape off excavation areas. Implement and enforce measures recommended in Implementation Schedule item 5.	On works site	During construction phase	The Contractor and ET Leader	Implemented
Habitat Mitigation	3.6.5.2	Maintenance of Eastern MDC: Minimise dredging frequency and clearance of in-channel vegetation without compromising flood capacity of channel to unacceptable levels. Conduct dredging of existing stream channel only in dry season except under emergency conditions; follow relevant guidelines in the Water section of the Implementation Schedule during dredging. Operation of inflatable dam in Eastern MDC: Periodic review of dam operation in relation to ecological value of the Eastern MDC, as specified in EM&A Manual Section 6.2.1.	Eastern MDC Eastern MDC	Throughout operational lifetime of channel Throughout operational lifetime of channel	DSD's Engineer DSD and TDD/Appointed ecologist (first three years); to be determined thereafter	Implemented Not applicable in this stage
Habitat Mitigation – Monitoring	EM&A 6.2.2 Task 1	Monitoring of bird use of San Tin Villages flood storage pond methodology as per EM&A Manual.	San Tin Villages Flood storage pond (see Final EIA Report, Figure 3.6c for location)	4 times per year for first 3 years of pond operation	Appointed ecologist /TDD	Not applicable in this stage
General	6.4.3.1 6.6.1.1-7 Annex 6-A	Determine the potential extent of any land contamination by developing a current Contamination Assessment Plan (CAP) for sites to be investigated. This CAP will be prepared and approved by EPD prior to site investigation. Depending on the investigation requirements, a contamination assessment report (CAR) will be prepared after contamination investigation activities have concluded. Prepare the CAP for approval prior to the construction phase. Upon completion of subsequent CAR, discuss the results and data with EPD to determine the most appropriate course of action (which may or may not include mitigation works). Perform the typical site investigation activities as per the CAP presented in Annex 6-A 9 to be approved by EPD), and in accordance with applicable guidelines such as the ProPECC PN3/94 Guidance note.	Selected portions of site(s) which require specific contamination investigation Selected portions of site(s) which require specific contamination investigation Selected portions of site(s) which require specific contamination investigation	Prior to construction phase (as required) Prior to construction phase (as required); and prior to development as required. Prior to construction phase (as required)	DSD's Engineer DSD's Engineer DSD's Engineer	Not applicable to the contractor Not applicable to the contractor Not applicable to the contractor



Environmental Aspect	EIA Ref.	Operational Control	Responsible by	Implementation Period	Responsibility	Implementation Status
General (cont'd)	6.6.1.8	No soils shall be stockpiled. If this cannot be avoided, they shall be covered with tarpaulin to minimize the potential for run-off and prevent any pollution, especially during heavy rainstorms.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	6.6.1.8	Vehicles containing any contaminated materials shall be covered to limit potential dust emissions, or contaminated wastewater run-off during transportation or under wet conditions.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	6.6.1.8	All appropriate licenses and permits shall be obtained for working with contaminated material in accordance with appropriate regulations.	Whole site	Design phase	DSD's Engineer	Implemented
	6.6.1.8	All excavation activities in contaminated areas and the handling of contaminated groundwater shall be performed by the contractor and observed by and directed, as required, by the environmental specialist.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	6.6.1.8	Only licensed contractors shall be utilized for hauling the contaminated soil to the specified disposal location, and specific operational procedures shall be implemented for the activities.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	6.6.1.8	Liaison shall be maintained with EPD to ensure that all excavation activities have been performed to requirements.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	6.6.1.8	If the size of the excavation increases, engineering and other concerns may limit the depth or extent of excavation along the property boundaries, as required. Decisions on this matter shall be addressed by appropriate works contractor's engineering personnel and the environmental specialist as required, based on filed conditions.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	6.6.1.8	Procedures shall be developed to ensure that illegal disposal of wastes does not occur, and records of quantities of wastes Generated and disposed of shall be maintained.	Whole site	All period during construction phase	DSD's Engineer./ Site Agent / Engineer	Implemented
Health & Safety/ Contamination Exposure During Construction Works	6.4.3.2	No unauthorized persons shall be allowed into the work area, and necessary precautions shall be taken to prohibit unauthorized entry into the Site or works areas.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	6.4.3.2	Eating, drinking, smoking or any practice that increases the probability of hand to mouth transfer and ingestion of material is prohibited in any area designated as being contaminated.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	6.4.3.2	Food, beverages. Tobacco products, etc. are prohibited in any area designated as being contaminated. Adequate warning signs shall be posted to this effect.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented
	6.4.3.2	Hands must be thoroughly washed upon leaving the work area, and before eating, drinking or any other activities.	Whole site	All period during construction phase	Site Agent / Engineer	Implemented



Appendix C

Calibration Certificates for Monitoring Equipment



Calibration Data for High Volume Sampler (TSP Sampler)

Location : ST TSP Stock No. : EL453
 Calibration Date : 5-Sep-06 Certificate No. :
 Test Procedure : IC35 (Version 2.1) Calibration Due Date : 04-Dec-06

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T _a	304	Kelvin	Pressure, P _a
			1007 mmHg

Orifice Transfer Standard Information					
Equipment No.	EL286	Slope, m _c	2.04882	Intercept, b _c	-0.03708
Last Calibration Date	30-Jun-06	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	30-Jun-07				

Calibration of TSP						
Calibration Point	Manometer Reading			Q _{std} (m ³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC W(P _a /1013.3x298/T _a) ^{1/2} Y-axis
	(up)	(down)	(difference)			
1	6.6	6.6	13.2	1.7683	63	62.1810
2	5.2	5.2	10.4	1.5717	54	53.2980
3	4.0	4.0	8.0	1.3807	50	49.3500
4	2.5	2.5	5.0	1.0953	40	39.4800
5	1.6	1.6	3.2	0.8799	30	29.6100

By Linear Regression of Y on X

Slope, m = 35.0670 Intercept, b = -0.1768
 Correlation Coefficient* = 0.9947
 Calibration Accepted = Yes/No**

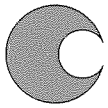
* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by : Derek Lo
 Signature :
 Date : 5-Sep-06

Checked by : Tim Wong
 Signature :
 Date : 5-Sep-06



Calibration Certificate

Certificate No. **62057**

Page **1** of **3** Pages

Customer : Lam Laboratories Ltd.

Address : 1412-1416 Honour Industrial Centre, 6 Sun Yip Street, Chaiwan, Hong Kong

Order No. : Q60708

Date of receipt : 13-May-06

Item Tested

Description : Precision Integrating Sound Level Meter (EL077)

Manufacturer : ONO SOKKI

Model : LA-5110

Serial No. : 72302293

Test Conditions

Date of Test : 19-May-06

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Calibration 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).

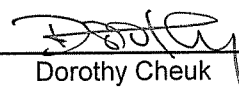
Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceable to</u>
S017	Function Generator	C051022	21-Mar-07	HKGSCS
S024	Calibrator	S41431	22-May-06	PRC-NIM

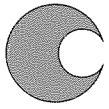
The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, 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: 19-May-06

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. 62057

Page 2 of 3 Pages

Results :

1. SPL Accuracy

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Level Range	Octave Filter	Frequency Weighting	Dynamic Characteristic		
40 – 100 dB	OFF	A	FAST	94.0	94.1
			SLOW		94.1
		C	FAST		94.0
60 – 120 dB	OFF	A	FAST	94.0	94.1
			SLOW		94.1
		C	FAST		94.0
60 – 120 dB	OFF	A	FAST	113.9	114.1
			SLOW		114.1
		C	FAST		114.1

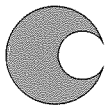
IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty : ± 0.2 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty : ± 0.01 dB



Calibration Certificate

Certificate No. 62057

Page 3 of 3 Pages

3. Frequency Weighting

3.1 A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	- 40.1	- 39.4 dB, ± 1.5 dB
63 Hz	- 26.4	- 26.2 dB, ± 1.5 dB
125 Hz	- 16.2	- 16.1 dB, ± 1 dB
250 Hz	- 8.7	- 8.6 dB, ± 1 dB
500 Hz	- 3.2	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref.)	0 dB, ± 1 dB
2 kHz	+ 1.3	+ 1.2 dB, ± 1 dB
4 kHz	+ 0.9	+ 1.0 dB, ± 1 dB
8 kHz	- 1.4	- 1.1 dB, + 1.5 dB ~ - 3 dB
16 kHz	- 7.7	- 6.6 dB, + 3 dB ~ - ∞

Uncertainty : ± 0.1 dB

4. 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	39.6	± 0.5 dB
1/10 ²	40.0	40.0	
1/10 ³	40.0	40.0	± 1.0 dB
1/10 ⁴	40.0	39.9	

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. Atmospheric Pressure : 1 000 hPa.

----- END -----

Calibration Certificate

Certificate No. **62058**

Page 1 of 2 Pages

Customer : Lam Laboratories Ltd.

Address : 1412-1416 Honour Industrial Centre, 6 Sun Yip Street, Chaiwan, Hong Kong

Order No. : Q60708

Date of receipt : 13-May-06

Item Tested

Description : Sound Level Calibrator (EL078)

Manufacturer : ONO SOKKI

Model : SC-2110

Serial No. : 00393

Test Conditions

Date of Test : 19-May-06

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Calibration procedure : F21, Z02.

Test Results

All results were within the IEC 942 Class 2 specification.

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

Test equipment used:

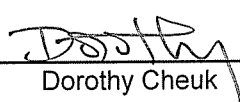
<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Due Date</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	53024	7-Jul-06	PRC-NIM
S024	Calibrator	S41431	22-May-06	PRC-NIM
S041	Universal Counter	53972	26-Aug-06	HKGSCL

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

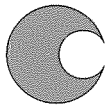
Calibrated by : 
P.F. Wong

Approved by : 
Dorothy Cheuk

Date: 19-May-06

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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Calibration Certificate

Certificate No. **62058**

Page 2 of 2 Pages

Results :

1. Level Accuracy (at 1 kHz)

UUT Nominal Value	Measured Value	IEC 942 Class 2 Spec.
94 dB	93.8 dB	± 0.5 dB

Uncertainty : ± 0.2 dB**2. Frequency Accuracy**

UUT Nominal Value	Measured Value	IEC 942 Class 2 Spec.
1 kHz	1.004 kHz	± 4 %

Uncertainty : ± 0.1 %**3. Level Stability : 0.0 dB**IEC 942 Class 2 Spec.: ± 0.2 dBUncertainty : ± 0.01 dB**4. Total Harmonic Distortion : < 0.3 %**IEC 942 Class 2 Spec. : < 3 %Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. The above measured values are the mean of 3 measurement.

4. Atmospheric Pressure : 1 000 hPa

----- END -----

**CALIBRATION OF BIOCHEMICAL OXYGEN DEMAND PROBE
(BY WINKLER TITRATION)**

Equipment No.: EN07

Calibration Temperature: 20 °C

Conducted by: Bm

Date: 1/11/2006

Checked by: Lida

Date: 4/11/2006

(1) Standardization of sodium thiosulphate (Na₂S₂O₃) solution

	Trial 1	Trial 2
Final Vol. of Na ₂ S ₂ O ₃ used, mL	39.6	39.6
Initial Vol. of Na ₂ S ₂ O ₃ used, mL	0.0	0.0
Vol. of Na ₂ S ₂ O ₃ consumed (O), mL	39.6	39.6
Normality of Na ₂ S ₂ O ₃ solution (N), N	0.02525	0.02525
Average normality of Na ₂ S ₂ O ₃ solution	0.02525	
Acceptance criteria, Deviation	Less than ± 0.001 N	

Calculation:

$$N = 1 / O$$

(2) Calibration of DO meter with distilled/deionised water

	Trial 1	Trial 2	Trial 3
Final Vol. of Na ₂ S ₂ O ₃ used, mL	7.9	7.9	7.9
Initial Vol. of Na ₂ S ₂ O ₃ used, mL	0.0	0.0	0.0
Vol. of Na ₂ S ₂ O ₃ used (V), mL	7.9	7.9	7.9
Dissolved oxygen, (DO) mg/L	7.98	7.98	7.98
Average of dissolved oxygen	7.98	7.98	7.98
DO determined by BOD probe	7.86	7.89	7.82
Acceptance criteria, Deviation	Less than +/- 0.3 mg DO/L		

Calculation:

$$DO \text{ (mg/L)} = \frac{V \times N \times 7999.7}{(300-2)}$$

0.025

Sample Vol. 200ml for analysis Page 1 of 2

(3) Calibration of salinity compensator [~~10 ppt~~ or 20 ppt]

	Trial 1	Trial 2	Trial 3
Final Vol. of Na ₂ S ₂ O ₃ used, mL	6.8	6.9	6.8
Initial Vol. of Na ₂ S ₂ O ₃ used, mL	0.0	0.0	0.0
Vol. of Na ₂ S ₂ O ₃ used (V), mL	6.8	6.9	6.8
Dissolved oxygen, (DO) mg/L	6.87	6.97	6.87
Average of dissolved oxygen	6.87	6.97	6.87
DO determined by BOD probe	6.88	6.82	6.84
Acceptance criteria, Deviation	Less than +/- 0.3 mg DO/L		

Calculation:

$$DO \text{ (mg/L)} = \frac{V \times N \times 7999.7}{(300-2) \times 0.025}$$

Sample Vol. 20ml for analysis.

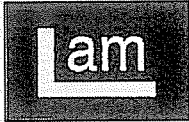
(4) Calibration of temperature compensator

	Trial 1	Trial 2
Temperature reading from BOD probe	23.6	23.8
Temperature reading from reference thermometer (CSI)	23.0	23.0
Acceptance criteria, Deviation	Less than +/- 1°C	

(5) Linearity Check of BOD probe

	Reading form BOD probe	Result from Winker Titration
First point (7 – 9 mg/L)	7.96	7.98
Second point (4 - 6 mg/L)	4.84	4.44
Third point (1 –3 mg/L)	1.86	1.92
Linearity, R	0.9999	
Acceptance Criteria, R	R > 0.996	

Record Sheet for Calibration of Electrical Conductivity DetectorItem Stock No.: EN07 Date of calibration: 1/11/2006Operator: [Signature] Signature: [Signature]Molarity of KCl solution used: 0.0010Conductivity of KCl solution used: 148.9Range of Conductivity Meter calibrated: 149.Molarity of KCl solution used: 0.0100Conductivity of KCl solution used: 1412Range of Conductivity Meter calibrated: 1410Molarity of KCl solution used: 0.1000Conductivity of KCl solution used: 12890Range of Conductivity Meter calibrated: 12700Molarity of KCl solution used: 1.0000Conductivity of KCl solution used: 111900Range of Conductivity Meter calibrated: 108000Certified By: [Signature]
Section ManagerDate: 4/11/2006



1412 Honour Ind. Centre
6 Sun Yip St. Chai Wan
Hong Kong

CERTIFICATE OF CALIBRATION
IN - HOUSE

Date Of Issue : _____ Serial No : IC 42b / /EL

Item Being Calibrated : **Turbidity Standards (Gelex)** Date Of Calibration : 1/11/2006
 Item Stock No : EN06 Operator : [Signature]
 Environment Temp. °C : 20.°C Procedure No Used : IC 42 (Revision No. 0)
 Primary Standards used 20, 100 and 800 NTU Formazin standards prepared fresh.
 Ref. Equip.used/ Stock No : _____

Gelex Standards	Turbidity of standard solution used (NTU)	Measured Value (NTU)	R ²	Requirement R ²
0 - 10 NTU	1	0.92	0.9998	> 0.996
	5	5.21		
	10	10.2		
10 - 100 NTU	20	20.3	0.9999	> 0.996
	50	49.2		
	80	79.4		
100 - 1000 NTU	100	102	0.9995	> 0.996
	400	416		
	800	789		

Comments : *The equipment and Gelex Standards complies / does not comply with the Manufacturer's recommendation.*

Input data checked by : [Signature] Certified by: [Signature]
 Operations/Manager



Appendix D

Air Quality Monitoring Results



Report on 1-hour TSP monitoring

Location: AM1 (Site Office)

Date	Sampling Time	Weather Condition	Filter Weight, g		Elapse Time, hr		Sampling Time, hr	Flow rate, std. m ³ /min	TSP Level, µg/m ³
			Initial	Final	Initial	Final			
3-Oct-06	10:10	cloudy	2.8288	2.8447	8593.87	8595.12	1.25	1.12	188
3-Oct-06	16:00	cloudy	2.8287	2.8461	8595.12	8596.36	1.24	1.12	208
4-Oct-06	8:15	cloudy	2.8115	2.8270	8596.36	8597.45	1.09	1.13	210
9-Oct-06	9:15	cloudy	2.8324	2.8494	8621.01	8622.08	1.07	1.18	225
12-Oct-06	9:10	sunny	2.8187	2.8320	8646.22	8647.40	1.18	1.18	159
12-Oct-06	14:00	sunny	2.8355	2.8527	8647.50	8648.62	1.12	1.18	216
18-Oct-06	11:05	cloudy	2.8482	2.8602	8673.30	8674.37	1.07	1.20	156
19-Oct-06	14:05	cloudy	2.8294	2.8439	8674.37	8675.50	1.13	1.17	182
20-Oct-06	13:30	sunny	2.8382	2.8577	8675.60	8676.73	1.13	1.23	234
24-Oct-06	11:30	sunny	2.8629	2.8772	8700.79	8701.88	1.09	1.20	182
24-Oct-06	14:00	sunny	2.8398	2.8536	8701.88	8703.01	1.13	1.21	169
25-Oct-06	8:25	cloudy	2.8659	2.8834	8703.01	8704.12	1.11	1.20	220
31-Oct-06	14:00	sunny	2.8676	2.8823	8728.49	8729.57	1.08	1.18	192

Report on 24-hour TSP monitoring

Location: AM1 (Site Office)

Date	Sampling Time	Weather Condition	Filter Weight, g		Elapse Time, hr		Sampling Time, hr	Flow rate, std. m ³ /min	TSP Level, µg/m ³
			Initial	Final	Initial	Final			
5-Oct-06	9:00	cloudy	2.8294	3.1078	8597.45	8621.01	23.56	1.15	171
11-Oct-06	9:00	sunny	2.8102	3.1077	8622.08	8646.22	24.14	1.18	174
17-Oct-06	9:00	sunny	2.8517	3.1032	8648.62	8672.72	24.10	1.18	147
23-Oct-06	9:00	sunny	2.8608	3.1317	8676.73	8700.79	24.06	1.18	160
28-Oct-06	9:00	sunny	2.8615	3.1563	8704.13	8728.49	24.36	1.21	167



Appendix E

Noise Monitoring Results

Report on Noise Monitoring

Location: NM1(A) (Yan Chau Wai)

Time Period: 0700-1900 hours on normal weekdays.

Date	Start Time	Wind Speed, m/s	Calibration before measurement, dB(A)	Calibration after measurement, dB(A)	Weather	Noise Sources	Noise Level, dB(A) (5 min)			Averaged Noise Levels L _{eq} (30 mins), dB(A)
							L ₉₀	L ₁₀	L _{eq}	
5-Oct-06	16:04	<5	94.0	93.9	sunny	Vehicle Noise at San Tin Road	51.5	55.4	53.8	54.1
							50.8	54.0	52.9	
							53.2	57.2	55.2	
							52.6	56.9	54.6	
							51.4	55.6	53.6	
							52.2	56.4	54.0	
11-Oct-06	16:02	<5	93.9	94.6	cloudy	Vehicle Noise at San Tin Road	54.3	58.4	56.4	56.5
							53.7	56.8	54.2	
							56.2	59.2	57.8	
							54.8	58.4	56.5	
							54.1	58.0	56.2	
							54.5	58.2	56.9	
17-Oct-06	14:06	<5	93.9	94	cloudy	Vehicle Noise at San Tin Road	50.2	55.8	53.7	52.3
							48.8	53.0	51.2	
							47.3	51.5	49.8	
							50.8	54.9	53.1	
							49.8	54.1	52.9	
							49.2	53.9	52.0	
23-Oct-06	14:17	<5	93.9	94	sunny	Vehicle Noise at San Tin Road	50.8	55.0	53.6	53.1
							49.8	53.4	51.9	
							50.4	54.1	52.8	
							50.2	55.0	53.9	
							49.8	54.7	53.5	
							49.4	54.2	52.9	

Time Period: 1900-2300 hours on normal weekdays (except general holidays).

Date	Start Time	Wind Speed, m/s	Calibration before measurement, dB(A)	Calibration after measurement, dB(A)	Weather	Noise Sources	Noise Level, dB(A) (5 min)			Averaged Noise Levels L _{eq} (5 mins), dB(A)
							L ₉₀	L ₁₀	L _{eq}	
5-Oct-06	19:23	<5	94	93.9	sunny	Vehicle Noise at San Tin Road	46.4	50.5	48.2	47.9
							46.8	49.3	47.9	
							46.7	49.2	47.5	
11-Oct-06	19:07	<5	93.8	94	sunny	Vehicle Noise at San Tin Road and noise from insects and birds	48.4	52.4	50.5	49.4
							47.2	49.8	48.4	
							47.5	50.4	48.9	
17-Oct-06	19:04	<5	94.1	94.2	cloudy	Vehicle Noise at San Tin Road	47.5	50.2	48.2	48.3
							46.5	49.5	47.8	
							47.9	50.2	48.9	
23-Oct-06	19:17	<5	94.1	94.0	sunny	Vehicle Noise at San Tin Road	52.0	57.8	54.7	54.9
							51.5	56.1	53.8	
							51.7	57.2	55.9	

Time Period: 0700-2100 hours on general holidays including Sunday

Date	Start Time	Wind Speed, m/s	Calibration before measurement, dB(A)	Calibration after measurement, dB(A)	Weather	Noise Sources	Noise Level, dB(A) (5 min)			Averaged Noise Levels L _{eq} (5 mins), dB(A)
							L ₉₀	L ₁₀	L _{eq}	
1-Oct-06	19:11	<5	93.9	94	sunny	Vehicle Noise at San Tin Road	47.2	50.4	48.0	48.9
							48.0	51.8	49.2	
							48.4	52.0	49.5	
8-Oct-06	9:16	<5	93.9	93.9	sunny	Vehicle Noise at San Tin Road	45.3	49.2	46.2	47.0
							46.3	48.4	47.5	
							46.0	48.3	47.1	
15-Oct-06	14:52	<5	93.9	94	sunny	Vehicle Noise at San Tin Road and noise from insects and birds	46.2	50.6	48.5	48.4
							46.5	49.8	47.2	
							47.2	51.4	49.2	
22-Oct-06	14:00	<5	93.9	94.0	sunny	Vehicle Noise at San Tin Road	50.8	54.7	52.4	53.9
							52.8	56.2	54.9	
							52.4	55.7	54.0	
29-Oct-06	10:10	<5	94.0	94.0	cloudy	Vehicle Noise at San Tin Road	43.7	49.4	48.2	48.3
							43.5	51.9	48.5	
							43.9	50.0	48.2	



Appendix F

Water Quality Monitoring Results

Report on Water Quality Monitoring

Date	Location	Time	Weather	Depth (m)	Salinity (mg/L)	Temperature (oC)	pH	DO (%)	DO (mg/L)	Turbidity (NTU)	Action / Limit	SS (mg/L)	Action / Limit	NH ₃ -N (mg/L)	Action / Limit
27-Oct-06	WM1	14:32	Cloudy	<0.5	<1	27.5	7.35	8.3	0.66	78.6	-	66	-	54.0	-
	WM2	14:45	Cloudy	<0.5	<1	28.2	7.52	4.1	0.32	84.2	94.3 / 102.2	110	79.2 / 85.8	54.0	64.8 / 70.2
	WM4	16:47	Cloudy	<0.5	<1	27.5	7.15	40.2	3.07	36.0	-	24	-	34.0	-
	WM3	16:32	Cloudy	<0.5	<1	27.9	7.21	12.9	1.42	42.7	43.2 / 46.8	56	28.8 / 31.2	27.0	40.8 / 44.2
	WM1										-		-		-
	WM2										#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!
	WM4										-		-		-
	WM3										#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!
	WM1										-		-		-
	WM2										#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!
	WM4										-		-		-
	WM3										#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!
	WM1										-		-		-
	WM2										#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!
	WM4										-		-		-
	WM3										#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!
	WM1										-		-		-
	WM2										#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!
	WM4										-		-		-
	WM3										#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!		#DIV/0! / #DIV/0!



Appendix G

Event and Action Plan

Event/Action Plan for Air Quality

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

Event/Action Plan for Construction Noise

EVENT	ACTION		
	ET Leader	IC(E)	ER Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IC(E) and Contractor 2. Carry out investigation 3. Report the results of investigation to the IC(E) and Contractor 4. Discuss with the Contractor and formulate remedial measures 5. 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 4. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented
Limit Level	<ol style="list-style-type: none"> 1. Notify IC(E), ER, EPD and Contractor 2. Identify source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Inform IC(E), ER and EPD the causes & actions taken for the exceedances 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated

Event and Action Plan for Water Quality

Event	ET Leader	IC(E)	ER	Contractor
Discharge standard being exceeded by one sampling day	<p>Repeat in-situ measurement to confirm findings; Identify source(s) of impact; Inform IC(E), Contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IC(E), ER and Contractor; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Limit level.</p>	<p>Discuss with ET and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly Assess the effectiveness of the implemented mitigation measures.</p>	<p>Discuss with IC(E), ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures.</p>	<p>Inform the Engineer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; consider changes of working methods; Discuss with ET , IC(E) and ER and propose mitigation measures to IC(E) and ER within 3 working days; Implement the agreed mitigation measures.</p>
Discharge standards being exceeded by more than one consecutive sampling days	<p>Repeat in-situ measurement to confirm findings; Identify source(s) of impact; Inform IC(E), Contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IC(E), ER and Contractor; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</p>	<p>Discuss with ET and Contractor on the mitigation measures Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly Assess the effectiveness of the implemented mitigation measures.</p>	<p>Discuss with IC(E), ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures; 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.</p>	<p>Inform the ER and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET , IC(E) and ER and propose mitigation measures to IC(E) and ER within 3 working days; Implement the agreed mitigation measures; As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities..</p>



Appendix H

Monitoring Schedule - Upcoming month

Construction of San Tin Eastern Main Drainage Channel
Environmental Monitoring Schedule
November 2006

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Noise ³			1	2	3 Noise ^{1,2} 1-hr TSPx3 24 hr TSP Water	4
Noise ³	5	6	7	8 Noise ^{1,2} 1-hr TSPx3 24 hr TSP Water	9	10
Noise ³	12	13	14	15 Noise ^{1,2} 1-hr TSPx3 24 hr TSP Water	16	17
Noise ³	19	20	21 Noise ^{1,2} 1-hr TSPx3 24 hr TSP Water	22	23	24
Noise ³	26 Noise ^{1,2} 1-hr TSPx3 24 hr TSP Water	27	28	29	30	

Notes:

1. Noise: daytime noise monitoring (once per week, 6 x 5 minutes)
2. Noise: restricted hours (1900-2300 normal weekdays) noise monitoring (once per week, 3 x 5 minutes).
3. Noise: restricted hours (0700-2100 holidays) noise monitoring (once per week, 3 x 5 minutes).
4. Water: water quality monitoring (once per week) at stations WM1 & WM3 (upstream) and WM2 and WM4 (downstream) at mid ebb tide.
5. 24-hr TSP (once in every 6 days) conducted at Site Office
6. 1-hr TSP (three times in every 6 days) conducted at Site Office.
7. Site inspection: once a week