

PROJECT No.: TCS/00280/05

ISSUE No.: 1



**DRAINAGE SERVICES DEPARTMENT (DSD)**  
**CONTRACT NO. DC/2004/08**

**PENG CHAU SEWAGE TREATMENT WORKS UPGRADE**

**ENVIRONMENTAL MONITORING AND AUDIT (EM&A)**  
**MONTHLY EM&A REPORT**  
**MARCH 2006**

PREPARED FOR

Acciona-ATAL Joint Venture (AAJV)

Quality Index			
Date	Reference No.	Prepared by	Certified By
13 Apr 2008	TCS/00280/05/600/R0117	Ben Tam (Project Supervisor) 	Cliff Lam (Project ET Leader) 

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**BMT Asia Pacific Limited**

13 April 2006  
Our Ref: 0201/0204

By Post/email

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Hong Kong

For the attention of Mr. Alfred Chung/Mr. Stephen Ng

Dear Sirs,

**RE: EM&A MONTHLY REPORT - MARCH 2006**  
**Contract No. DC/2004/08 Upgrading of Peng Chau Sewage**  
**Treatment Works**

With reference to the final version of the EM&A monthly report for March 2006  
emailed by ET on 13<sup>th</sup> April 2006 (ET's ref.: TCS/00280/05/ECC/R0117 Issue  
1), we have no critical comments on the mentioned report.

Thank you for your kind attention and should you require any further  
information, please do not hesitate to contact the undersigned at 2241 9607.

Yours sincerely

Antony Wong  
Project Independent Environmental Checker  
RBR/arw

cc:  
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## Executive Summary

Acciona-ATAL Joint Venture (AAJV) has been awarded the DSD Contract DC/2004/08 (Project) for the Peng Chau Sewage Treatment Works Upgrade in May 2005. The Project requires an Environmental Monitoring & Audit (EM&A) program to be implemented by an Environmental Team (ET) throughout the contract period in compliance with the requirements as stated in the project Environmental Permit (EP-203/2004) and the Project EM&A manual.

Action-United Environmental Services and Consulting (AUES) has been commissioned by AAJV to be an independent environmental team (ET) to implement the EM&A program in compliance with the EP and the project EM&A Manual.

This report presents the results of the project EM&A program for the reporting month **March 2006** during the period from 26 February to 25 March 2006.

## EM&A Activities in this Reporting Month

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

- 1-Hr TSP Monitoring 18 Events
- 24-Hr TSP Monitoring 6 Events
- Noise Monitoring 6 Events
- Water Quality Monitoring 12 Monitoring Days
- Site Inspection Audit 5 Times

## Air Quality

Three limit-level exceedances for 1-Hr TSP monitoring were recorded on 6 March 2006. No dust source from the project area was observed at the time of monitoring. The ET considered that the exceedances are not likely to be due to the project.

No exceedance in 24-Hr TSP measurements was recorded in this reporting month.

## Construction Noise

No exceedance in construction noise measurements was recorded and no noise complaint was received in this reporting month.

## Water Quality

There were one limit and seven action level exceedances recorded in this reporting month. The limit level exceedance in Suspended Solids was recorded at W2 during ebb tide on 17 March 2006. For the action level exceedances, two exceedances in Suspended Solids were recorded on 27 February at W1 and W2 during ebb tide; other five exceedances in Ammonia were recorded at W2 on 27 February and 13 March during ebb tide; and 27 February, 1 & 13 March 2006 during flood tide.

Based on the site construction diary, there was no marine work carried out on those dates. The ammonia levels measured at the control stations were also high in values. The ET therefore considered that the exceedances were not due to the project

### Summary of Monitoring Exceedances

A summary of monitoring exceedances for air, noise and water quality monitoring is presented below:

Env. Quality	Parameters	Compliance %	Investigation & Corrective Actions
Air Quality	1-hour TSP	100	Not Required for Non Project-Related Exceedances
	24-hour TSP	100	Not Required for 100% Compliance
Noise	Leq (30min) Daytime	100	Not Required for 100% Compliance
Water Quality	Suspended Solids	100	Not Required for Non Project-Related Exceedances
	Turbidity	100	Not Required for 100% Compliance
	Dissolved Oxygen	100	Not Required for 100% Compliance
	Ammonia	100	Not Required for Non Project-Related Exceedances
	TIN	100	Not Required for 100% Compliance

### Environmental Complaints

No environmental complaint was received in this reporting month.

### Environmental Summon

No environmental summon was received in this reporting month.

### Future Key Issues

The potential environmental impact for this project generally include air quality, noise, water quality and construction waste. The contractor is to properly implement the required environmental mitigation measures as per the Implementation Schedule in the EM&A manual to ensure no significant adverse environmental impact arises from the construction works.

AAJV has been demonstrating sound environmental performance in running this project and has been awarded "The Best Construction Site Housekeeping Award" for the year of 2005.

## 1.0 INTRODUCTION

- 1.01 Acciona-ATAL Joint Venture (AAJV) has been awarded the DSD Contract DC/2004/08 (Project) for the upgrading of Peng Chau Sewage Treatment Works in May 2005. The Project requires an Environmental Monitoring & Audit (EM&A) program to be implemented by an Environmental Team (ET) throughout the contract period in compliance with the requirements as stated in the project Environmental Permit (EP-203/2004) and the project EM&A manual. The location of the project site is presented in **Appendix A**.
- 1.02 The works to be executed under the Project mainly comprise the following:
- Upgrade and reconstruct the existing Peng Chau Sewage Treatment Works (STW);
  - Construct an emergency overflow, storm tanks and submarine outfall;
  - Provide de-odourization facilities and associated sludge treatment facilities, and extend inlet pumping mains and construct an equalization tank;
  - Demolish the existing treatment facilities;
  - Construct sludge drying bed; and
  - Construct remaining works.
- 1.03 Action-United Environmental Services and Consulting (AUES) has been commissioned by AAJV to be the independent environmental team (ET) for implementation of the EM&A program in accordance with the requirements as set out in the EP and the project EM&A manual.
- 1.04 This report presents the results of the project EM&A program for the reporting month **March 2006** during the period from 26 February to 25 March 2006.

### Report Structure

- 1.05 The EM&A report is structured into the following sections:

<b>Section 1</b>	Introduction
<b>Section 2</b>	Project Organisation and Construction Progress
<b>Section 3</b>	Summary of Monitoring Requirements
<b>Section 4</b>	Monitoring Methodology
<b>Section 5</b>	Monitoring Results
<b>Section 6</b>	Waste Management
<b>Section 7</b>	Site Inspection
<b>Section 8</b>	Environmental Complaint and Non-Compliance
<b>Section 9</b>	Implementation Status of Mitigation Measures
<b>Section 10</b>	Impact Forecast and Monitoring Schedule
<b>Section 11</b>	Conclusions

## 2.0 PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

### 2.1 Project Organization and Management Structure

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

### 2.2 Construction Progress

A summary of the major construction activities undertaken in this reporting month is shown in **Table 2-1**.

**Table 2-1 Major Construction Activities in this Reporting Month**

Location	Description of Construction Activities
Portion P	• Excavation trench for pipe diversion
Portion Q	Nil
Portion R	<ul style="list-style-type: none"> <li>• Excavation and Rock Breaking and deliver to PCTF</li> <li>• Super-structure works at ESC</li> <li>• Erecting formwork, bar fixing for the wall of ESC</li> <li>• Concreting of the base slab of NSTC</li> <li>• Erecting formwork and bar fixing for NSTC</li> <li>• Pour Blinding Concrete for the NSTC</li> <li>• Sheet pile installation for construction of chlorine tank</li> </ul>
Area A	• Rectification work to RE site office
Area B	• Reinforcement bar bending for NSTC and ESC
Area C	Nil

### 2.3 Summary of Environmental Submissions

A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project in this reporting month is presented in **Table 2-2**.

**Table 2-2 Status of Environmental Licenses and Permits**

Item	Item Description	Permit Status
1	Environmental Permit No. : EP-203/2004	Issued at 30, Nov 2004
2	Air Pollution Control (Construction Dust)	Notified EPD on 17-Jun-05
3	Water Pollution Control (Discharge licence) EP890/W2/XE005	Valid to 30-Sep-10
4	Chemical Waste Producer Registration WPN:5213-976-N2449-01	Registration on 3-Jun-05
5	Exemption for site concrete batching plant licence	Issued at 21, Oct 2005
6	Exemption Account for Disposal of Construction Waste ( Account Number : 5000577)	Valid until 27-Sep-08
7	Construction Noise Permit (No. GW-RS0038-06)	Valid (2-Feb-06 to 1-Aug-06)

AAJV has been demonstrating sound environmental performance in running this project and has been awarded "The Best Construction Site Housekeeping Award" for the year of 2005.

### 3.0 SUMMARY OF IMPACT MONITORING REQUIREMENTS

- 3.01 Environmental monitoring and audit requirements are set out in the project EM&A manual. Air, marine water and construction noise have been identified to be the key environmental issues during the impact phase of the project.
- 3.02 A summary of the EM&A requirements for air quality, marine water quality and construction noise monitoring are shown in **Table 3-1**. The designated locations of the air quality, noise and marine water monitoring stations are shown in **Appendix C**.

**Table 3-1 Summary of EM&A Requirements**

Environmental Aspect	Monitoring Parameters
Air Quality	1-Hr TSP
	24-Hr TSP
Construction Noise	Leq 30min during normal working hours
	Supplementary L10 and L90 for reference.
Marine Water Quality	<ul style="list-style-type: none"> <li>• Dissolved Oxygen (DO);</li> <li>• Temperature;</li> <li>• Turbidity;</li> <li>• pH;</li> <li>• Salinity;</li> <li>• Suspended Solids (SS);</li> <li>• Ammonia Nitrogen; and</li> <li>• Total Inorganic Nitrogen.</li> </ul>

- 3.03 Air monitoring is carried out once every six days for 24-Hr TSP and 3 times every six days for 1-Hr TSP at one designated monitoring station.
- 3.04 Noise monitoring is conducted once every six days at one designated monitoring station. Measurements of Leq 30min shall be taken between 0700 and 1900 with supplementary L10 and L90 data collected.
- 3.05 Marine water monitoring is carried out 3 times every week at 4 designated monitoring stations (2 Control stations and 2 Impact stations) in the course of marine work.
- 3.06 The Impact monitoring program shall be conducted throughout the construction of the Project.
- 3.07 A summary of the Action/Limit (A/L) Levels for air quality, marine water quality and construction noise is shown in **Tables 3-2, 3-3 and 3-4**.

**Table 3-2 Action and Limit Levels for Air Quality**

Monitoring Location	Action Level ( $\mu\text{g}/\text{m}^3$ )		Limit Level ( $\mu\text{g}/\text{m}^3$ )	
	1-Hr TSP	24-Hr TSP	1-Hr TSP	24-Hr TSP
AN1	346	163	500	260

**Table 3-3 Action and Limit Levels for Construction Noise**

Parameter	Action Level in dB(A)	Limit Level in dB(A)
0700-1900 hrs on normal weekdays	When one or more documented complaints are received	75 dB(A)



Table 3-4 Action and Limit Levels for Marine Water Quality

Parameter		Action	Limit
DO mg/L	Surface & Mid-depth	4.1	3.9
	Bottom	3.3	2.0
Turbidity, NTU		6.2 or 120% of upstream control station's SS at the same tide of the same day.	7.5 or 130% of upstream control station's SS at the same tide of the same day.
SS, mg/L		17.6 or 120% of upstream control station's SS at the same tide of the same day.	20.2 or 130% of upstream control station's SS at the same tide of the same day.
NH3-N, mg/L		0.16	0.22
TIN, mg/L		0.91	0.94
E.Coli, cfu/100mL		374	610

3.08 An Event Action Plan for air, noise and water quality has been implemented for this project. Details of the Event Action Plan are presented in the First Impact EM&A report.

#### 4.0 IMPACT MONITORING METHDOLOGY

##### MONITORING LOCATIONS

- 4.01 There is one designated air and noise monitoring location and four (4) designated water monitoring stations. Their locations are shown in **Tables 4-1 and 4-2** and geographically in **Appendix C**.
- 4.02 Owing to the residents' refusal of providing access to the designated air and noise locations, an alternative air and noise monitoring station was proposed and was approved by EPD (Ref: (2) EP2/N9/F/93 IV) on 14 July 2005. The approved alternative air and noise station is located at the abutment (Portion P) within the site boundary next to the sensitive receiver Sea Crest Villa.

**Table 4-1 Location of Air Quality and Noise Monitoring Station**

Station ID	Description
AN1	Abutment at Portion P next to Sea Crest Villa

**Table 4-2 Locations of Water Quality Monitoring Stations**

Station	Description	Easting	Northing
W1	Predicted Dredging Non-Impact Zone	821279.0	816452.1
W2	Live Coral Area	821573.2	816769.7
C1	Control Station	821919.0	817155.0
C2	Control Station	821443.2	816257.4

- 4.03 The installation of a wind monitoring station at the sensitive receivers or site offices was confirmed impractical. Use of meteorological data provided by the Peng Chau Station of the Hong Kong Observatory (HKO) has been adopted in this project since September 2005.

##### MONITORING FREQUENCY AND PERIOD

###### 1-Hr TSP Monitoring

- 4.04 All 1-Hr TSP monitoring was conducted at the EPD-approved alternative station three times every 6 days during the monitoring period from 26 February to 25 March 2006. A total of 18 monitoring events were carried out in this reporting month.

###### 24-Hr TSP Monitoring

- 4.05 All 24-Hr TSP monitoring was conducted at the EPD-approved alternative station once every six days during the monitoring period from 26 February to 25 March 2006. A total of 6 monitoring events were carried out in this reporting month.

###### Noise Monitoring

- 4.06 Impact noise monitoring was undertaken at the EPD-approved alternative station weekly monitoring period from 26 February to 25 March 2006. A total of 6 monitoring events were carried out in this reporting month.

**Marine Water Quality Monitoring**

4.07 The marine water quality monitoring was undertaken at the designated stations 3 days a week from 26 February to 25 March 2006, at mid ebb and mid flood tides. A total of 12 monitoring days were undertaken in this reporting month.

**MONITORING EQUIPMENT**

4.08 The monitoring equipment used by the ET in the EM&A program is presented in the following table:

**Table 4-3 Monitoring Equipment Used in EM&A Program**

Parameters	Monitoring Equipment	
Marine Quality	Dissolved Oxygen	YSI 550A
	Temperature	YSI 550A
	Turbidity	HACH 2100P
Air Quality	1-Hr TSP	Sibata LD-3
	24-Hr TSP	Tisch High Volume Sampler 515N
Noise	Leq30	B&K Type 2238
	On-site Calibration	B&K Type 4231

**24-Hr TSP Monitoring**

4.09 24-Hr TSP monitoring was carried out by a High volume sampler (HVS) in compliance with the project EM&A Manual. The HVS employed complied with the PS specifications including.

- Power supply of 220v/50 hz for 24-hour continuous operation;
- 0.6-1.7 m<sup>3</sup>/min (20-60 SCFM) adjustable flow rate;
- A 7-day mechanical timer for 24-hour operation;
- An elapsed time indicator with  $\pm 2$  minutes accuracy for 24-Hr operation;
- Minimum exposed area of 63 in<sup>2</sup>;
- Flow control accuracy of  $\pm 2.5\%$  deviation over 24-Hr operation;
- An anodized aluminum shelter to protect the filter and sampler;
- A motor speed-voltage control to control mass flow rate with accuracy of  $\pm 2.5\%$  deviation over 24-hr sampling period;
- Provision of a flow recorder for continuous monitoring;
- Provision of a peaked roof inlet;
- Incorporation with a manometer; and
- An 8"x10" stainless steel filter holder to hold, seal and easy to change the filter paper.

4.10 The filter papers used in 24-Hr TSP monitoring were of size 8"x10" and provided by a local HOKLAS-accredited laboratory, ALS Techichem Pty (HK) Limited (HOKLAS No. 66). The filters papers after measurements were returned to the laboratory for the required treatment and analysis.

**1-Hr TSP Monitoring**

4.11 Measurements of 1-Hr TSP monitoring were taken by a Sibata LD-3 Laser Dust Meter that is a portable and battery-operated laser photometer capable of performing real time 1-Hr TSP measurements. A comparison test with HVS was carried out prior to baseline monitoring in compliance with the EM&A requirements and a conversion factor for direct reading of the dust meter has been established.

### WIND DATA MONITORING

- 4.12 The installation of a wind monitoring station at the sensitive receivers or site offices was confirmed impractical. The meteorological data for this project has been provided by the Hong Kong Observatory (HKO) Peng Chau Station upon IEC & EPD approval.

### Noise Monitoring

- 4.13 Noise measurements were taken in terms of the A-weighted equivalent sound pressure level (Leq) measured in decibels (dB). Supplementary statistical results such as L<sub>10</sub> and L<sub>90</sub> were also obtained for reference.
- 4.14 Hand-held sound level meters (B&K Model 2238) and associated acoustical calibrators in compliance with the International Electrotechnical Commission (IEC) Publication 651:1979 (Type 1) and 804:1985 (Type 1) specification were used for taking the baseline noise measurements.
- 4.15 Windshield was fitted in all measurements. All noise measurements were made with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq).
- 4.16 No noise measurement was made in the presence of fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s.

### Marine Water Quality Monitoring

- 4.17 The marine water quality monitoring was carried out in compliance with the project EM&A requirements. Monitored parameters include Dissolved Oxygen (DO), Temperature, Turbidity, Salinity, pH, Suspended Solids (SS) and Total Inorganic Nitrogen (TIN).
- 4.18 DO, temperature, turbidity, pH and salinity were measured in-situ whereas SS and TIN were determined in a HOKLAS accredited laboratory.
- 4.19 Marine water quality monitoring was conducted during mid-ebb and mid-flood at specified depths in compliance with the project EM&A Manual. Duplicate in-situ measurements were taken and duplicate samples were collected in accordance with HOKLAS requirements for QA/QC purposes.

### LABORATORY MEASUREMENT/ANALYSIS

- 4.20 Analyses of SS, TIN and ammonia nitrogen were carried out by a local HOKLAS- accredited laboratory, ALS Techichem Pty (HK) Limited (HOKLAS No. 66). The specified testing services provided by ALS as shown in Table 4-4 are accredited under the HOKLAS Scheme.

**Table 4-4 Analytical Methods applied to Marine Water Quality Samples**

Determinant	Standard Method	Detection Limit
Suspended solids (mg/L)	ALS Method EA-025	2.0 mg/L
Total Inorganic Nitrogen (mg/L)	ALS Method EK-055A	0.01 mg/L
Ammonia Nitrogen (mg/L)	ALS Method EK-055A	0.01 mg/L

#### EQUIPMENT CALIBRATION

- 4.21 Initial calibration of the HVS was performed upon installation and thereafter at bi-monthly intervals in accordance with the manufacturer's instruction using the NIST-certified standard calibrator. The calibration data are properly documented and the records are maintained by ET for future reference.
- 4.22 The 1-Hr TSP meter was calibrated by the supplier prior to purchase. Zero response of the equipment is checked before and after each monitoring event. A comparison test was carried out with a HVS. A conversion factor (K) of 4.0 was generated in accordance with the equipment manufacturer's instruction. The meter counts in minutes multiplied by the conversion factor will generate the equivalent dust concentration by HVS.
- 4.23 The sound level meters are calibrated using an acoustic calibrator prior to and after measurements. The meters are regularly calibrated in accordance with the manufacturer's instructions. Prior to and following each noise measurement, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements are considered valid only if the calibration levels before and after the noise measurement agree to within 1.0 dB.
- 4.24 All in-situ water monitoring instruments are checked, calibrated and certified by a HOKLAS accredited laboratory before use and subsequently re-calibrated at 3-monthly intervals. Responses of sensors and electrodes are checked with standard solutions before each use.
- 4.25 The calibration certificates of the monitoring equipment used during the impact monitoring program are attached in **Appendix D**.

#### DATA MANAGEMENT AND DATA QA/QC CONTROL

- 4.26 The impact monitoring data are handled by the ET's systematic data recording and management, which complies with in-house certified (ISO 9001:2000) Quality Management System. Standard Field Data Sheets (FDS) are used in the impact monitoring program.
- 4.27 The monitoring data recorded in the equipment eg. 1-Hr TSP meters and noise meters are downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data are input into a computerized database properly maintained by the ET. The laboratory results are input directly into the computerized database and QA/QC checked by personnel other than those who input the data.
- 4.28 For monitoring activities require laboratory analysis, the local laboratory follows the QA/QC requirements as set out under the HOKLAS scheme for all laboratory testing.

## 5.0 IMPACT MONITORING RESULTS

5.01 The impact EM&A program was carried out by the ET in compliance with the project EM&A Manual during the period from 26 February to 25 March 2006 at the designated locations. The impact monitoring schedules are presented in **Appendix E** and the monitoring results are detailed in the following sub-sections.

### AIR QUALITY

5.02 The impact air quality monitoring data is summarized in **Tables 5-1**. Graphical plots of the 24-Hr TSP and 1-Hr TSP results are shown in **Appendix F** respectively.

**Table 5-1 Summary of 24-Hr and 1-Hr TSP Monitoring Results**

Date	24-Hr TSP (ug/m <sup>3</sup> )	1-Hr TSP (ug/m <sup>3</sup> )			
		Start Time	1 <sup>st</sup> TSP Measurement	2 <sup>nd</sup> TSP Measurement	3 <sup>rd</sup> TSP Measurement
1-Mar-06	34	09:59	118	108	112
6-Mar-06	39	10:17	<b>562</b>	<b>547</b>	<b>589</b>
10-Mar-06	82	10:17	341	328	162
15-Mar-06	154	09:54	158	154	141
20-Mar-06	89	09:53	209	202	191
24-Mar-06	62	10:01	92	86	53
<b>Action Level</b>	<b>163</b>	-	<b>346</b>		
<b>Limit Level</b>	<b>260</b>	-	<b>500</b>		

\* Exceedances are in bold.

Three limit-level exceedances for 1-Hr TSP monitoring were recorded on 6 March 2005. No dust source from the project area was observed at the time of monitoring. The ET considered that the exceedances are not likely to be due to the project.

No exceedance in 24-Hr TSP measurements was recorded in this reporting month.

5.03 The meteorological data during the monitoring period are summarized in **Appendix G**.

### NOISE

5.04 The impact noise monitoring results are summarized in **Table 5-2**. Graphical plots of the monitoring data are presented in **Appendix F**.

**Table 5-2 Summary of Noise Monitoring Results**

Date	Start Time	1st Leq5	2nd Leq5	3rd Leq5	4th Leq5	5th Leq5	6th Leq5	Leq30	Corrected* Leq30
1-Mar-06	09:59	61.0	63.7	60.3	67.3	64.6	67.4	64.9	67.9
6-Mar-06	10:20	64.7	58.1	59.8	56.6	62.3	60.5	61.2	64.2
10-Mar-06	10:14	59.8	61.8	55.3	49.3	52.5	53.6	57.4	60.4
15-Mar-06	09:54	58.5	59.5	59.3	55.3	53.9	52.6	57.3	60.3
20-Mar-06	09:53	71.3	71.5	72.2	72.8	70.9	70.2	71.6	74.6
24-Mar-06	09:59	57.3	59.4	56.8	55.7	56.2	53.0	56.8	59.8
<b>Limit Level</b>		-						-	<b>75</b>

\* A façade correction of +3 dB(A) has been added according to acoustical principles and EPD guidelines.

**MARINE WATER QUALITY**

5.05 The impact water monitoring results are presented in **Appendix H** and the graphical plots of are presented in **Appendix I**. **Table 5-3** presents the total number of exceedance for dissolved oxygen, turbidity, suspended solids and TIN at each sensitive receiver for the month.

**Table 5-3 Summary of Exceedances for Marine Water Quality**

Station	Exceedance Level	DO		Turbidity		SS		NH <sub>3</sub>		TIN	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
W1	Action	0	0	0	0	<b>1</b>	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0	0	0
W2	Action	0	0	0	0	<b>1</b>	0	<b>2</b>	<b>3</b>	0	0
	Limit	0	0	0	0	<b>1</b>	0	0	0	0	0
Total	Action	0	0	0	0	<b>2</b>	0	<b>2</b>	<b>3</b>	0	0
	Limit	0	0	0	0	<b>1</b>	0	0	0	0	0

\* Exceedances are in bold.

5.06 There were one limit and seven action level exceedances recorded in this reporting month. The limit level exceedance in Suspended Solids was recorded at W2 during ebb tide on 17 March 2006. For the action level exceedances, two exceedances in Suspended Solids were recorded on 27 February at W1 and W2 during ebb tide; other five exceedances in Ammonia were recorded at W2 on 27 February and 13 March during ebb tide; and 27 February, 1 & 13 March 2006 during flood tide.

Based on the site construction dairy, there was no marine work carried out on those dates. The ammonia levels measured at the control stations were also high in values. The ET therefore considered that the exceedances were not due to the project

## 6.0 WASTE MANAGEMENT

A joint site audit with IEC was performed on 20 March 2006 in this reporting month. The results and findings for the audit are presented below.

### Records of Waste Quantities

All types of waste arising from the construction work are classified into the following:

- Excavated material;
- Construction & demolition (C&D) material;
- Chemical waste; and
- General refuse.

The quantities of waste for disposal in this reporting month are summarized in **Tables 6-1** and **6-2**. Whenever possible, materials were reused on-site as far as practicable.

**Table 6-1 Summary of Quantities of Waste for Disposal**

Type of Waste	Quantity	Disposal Location
Excavated Material (Spent lube oil) (Liters)	-	N/A
Empty Site Vehicle Batteries (Nos.)	-	N/A
Excavated material (Uncontaminated) (m <sup>3</sup> )	362.30	Peng Chau Transfer Facility
Broken Rock (m <sup>3</sup> )	679.49	Peng Chau Transfer Facility
Construction & Demolition Material (Inert) (tons)	2.57	Peng Chau Transfer Facility
Construction & Demolition Material (Non-Inert) (tons)	-	N/A
Asbestos C&D Materials (m <sup>3</sup> )	-	N/A
Chemical Waste (Liters)	-	N/A
Wastewater Collected for Off-site Treatment (m <sup>3</sup> )	-	N/A
General Refuse (tons)	-	Peng Chau Transfer Facility
Dredged Materials (m <sup>3</sup> )	-	N/A

**Table 6-2 Summary of Quantities of Recycling Materials**

Type of Waste	Quantity	Disposal Location
Recycled Metal (kg)	-	NA
Recycled Paper (kg)	-	NA
Recycled Plastic (kg)	-	NA

## 7.0 SITE INSPECTION

Representatives of the Engineer and the Contractor carried out joint site inspection every week to evaluate the site environmental performance. A monthly audit with representatives of RE, Contractor, IEC and ET was carried out on 20 March 2006. No non-compliance was noted and some observations were made on general site housekeeping.

The following presents the observations and recommendations made during the audit:

- The Contractor was reminded to provide impervious sheeting or spraying for the soil / rock stockpiles.
- No wastewater discharge was observed.
- As advised by AAJV, no truck would go outside the site boundary and the trucks would be well washed before running on the paved road on-site.
- The woodblocks erected along the southern boundary of the Site adjacent to the seafront should be repaired before rainy season.



## 8.0 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

### 8.1 Environmental Complaint and Prosecution

No environmental complaint was received in this reporting month. A statistical summary table of any complaint details is presented in **Table 8-1**.

No prosecution and summon was received in this reporting month.

**Table 8-1 Statistical Summary of Environmental Complaints**

Reporting Month	Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
August 2005	0	0	NA
September 2005	0	0	NA
October 2005	0	0	NA
November 2005	0	0	NA
December 2005	0	0	NA
January 2006	0	0	NA
February 2006	0	0	NA
March 2006	0	0	NA

## 9.0 IMPLEMENTATION STATUS OF MITIGATION MEASURES

AAJV has been implementing the required environmental mitigation measures according to the project Mitigation Implementation Schedule. The implementation schedule with mitigation measures is presented in the First Impact EM&A report.

A summary of environmental mitigation measures implemented by AAJV in this reporting month is presented as follows;

### Water Quality

- Drainage channels are provided to convey run-off into appropriate treatment facilities;
- Drainage systems are regularly and adequately maintained.

### Landscaping

- Tree protection measures are provided to existing trees;
- No tree is unnecessarily lopped or felled.

### Air Quality

- Vehicles are cleaned of mud and debris before leaving the site;
- Site vehicles are limited to within 15 km/hr;
- Public roads around the site entrance/exit have been kept clean and free from dust;
- No dark/black smoke emissions from site vehicles and generators;
- Provide dust suppression measures to reduce dust emission from stockpile.

### Noise

- Works and equipment are located to minimise noise nuisance from the nearest sensitive receiver;
- Idle equipment is either turned off or throttled down;
- Powered Mechanical Equipment are covered or shielded by appropriate acoustic materials.

### Waste and Chemical Management

- Waste is properly segregated into appropriate containers/areas;
- Excavated materials were reused where practicable.
- A chemical waste storage area is provided on site;

### General

- The site is kept tidy and clean.

## 10.0 IMPACT FORECAST

### 10.1 Key Issues for the Coming Month

Key issues to be considered in the coming month include:

- Implementation of dust suppression measures at all times;
- Potential marine water quality impact due to construction works near the seafront;
- Potential marine water quality impact due to rainy season (April to October) for avoiding untreated runoff discharging to the sea;
- Disposal of empty engine oil containers within site area;
- Ensure dust suppression measures are implemented properly;
- Sediment catch-pits and silt removal facilities should be regularly maintained;
- Management of chemical wastes;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures.

A 3-month rolling program is presented in **Appendix J**.

## 11.0 CONCLUSION

The EM&A program in March 2006 was undertaken in compliance with the EM&A manual for the Peng Chau Sewage Treatment Works Upgrade. A summary of environmental compliance for air, noise and water quality in this reporting month is presented as follows:

### Summary of Monitoring Exceedances

Env. Quality	Parameters	Compliance %	Investigation & Corrective Actions
Air Quality	1-hour TSP	100	Not Required for Non Project-Related Exceedances
	24-hour TSP	100	Not Required for 100% Compliance
Noise	Leq (30min) Daytime	100	Not Required for 100% Compliance
Water Quality	Suspended Solids	100	Not Required for Non Project-Related Exceedances
	Turbidity	100	Not Required for 100% Compliance
	Dissolved Oxygen	100	Not Required for 100% Compliance
	Ammonia	100	Not Required for Non Project-Related Exceedances
	TIN	100	Not Required for 100% Compliance

11.01 Three limit-level exceedances for 1-Hr TSP monitoring were recorded on 6 March 2006. The exceedances are not likely to be due to the project based on the fact that no dust source from the project area was observed at the time of monitoring. No exceedance in 24-Hr TSP measurements was recorded in this reporting month.

11.02 All noise levels measured at AN1 were below the Limit level and no complaint was received in this reporting month.

11.03 There were one limit and seven action level exceedances recorded in this reporting month. The limit level exceedance in Suspended Solids was recorded at W2 during ebb tide on 17 March 2006. For the action level exceedances, two exceedances in Suspended Solids were recorded on 27 February at W1 and W2 during ebb tide; other five exceedances in Ammonia were recorded at W2 on 27 February and 13 March during ebb tide; and 27 February, 1 & 13 March 2006 during flood tide.

Based on the site construction diary, there was no marine work carried out on those dates at this reporting month. For the ammonia levels measured at the control stations were also high in values. The ET therefore considered that the exceedances were not due to the project.

11.04 No environmental complaint or summon was received in this reporting month.

***Recommendations***

11.05 Based on the joint site inspection records on 20 March 2006, the following key recommendations are pertinent:

- The Contractor was reminded to provide impervious sheeting or spraying for the soil / rock stockpiles.
- No wastewater discharge was observed.
- As advised by AAJV, no truck would go outside the site boundary and the trucks would be well washed before running on the paved road on-site.
- The woodblocks erected along the southern boundary of the Site adjacent to the seafront should be repaired before rainy season.

The ET will continue to implement the EM&A program and audit the implementation of the environmental mitigation measures.

11.06 AAJV has been demonstrating sound environmental performance in running this project and has been awarded "The Best Construction Site Housekeeping Award" for the year of 2005.