

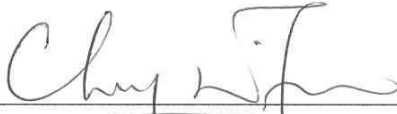
Sun Fook Kong (Civil) Ltd.

Contract No. DC/2002/06

**Construction of Yuen Long Bypass
Floodway**

**Environmental Monitoring and Audit
Monthly Report (Version 1)**

May 2003

Certified By	 (Environmental Team Leader)
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REMARKS:

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

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ABBREVIATION AND ACRONYM

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

EXECUTIVE SUMMARY

A) INTRODUCTION

This is the monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the project “Construction of Yuen Long Bypass Floodway” (the Project). The Project was commenced on 20th March 2003. This report documents the findings of EM&A Works conducted in May 2003 (28th of each month as the cut-off day).

The construction activities undertaken in the reporting month were:

- General Site Clearance;
- Provision of wheel washing facilities;
- Excavation works;
- Utility diversion;
- Transplanting of trees.

B) Environmental Monitoring Works

Environmental monitoring for the Project was performed regularly as stipulated in the Updated EM&A Manual and the results were checked and reviewed. Site audits were conducted once per month. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

B1 Air Quality

1-hour TSP Monitoring

All 1-hour TSP monitoring was conducted as scheduled.

In connection with last monthly report, one Action Level exceedance for 1-hour TSP was recorded at the dust monitoring station C on 28th April 2003. Repeated measurement was conducted in this reporting month on 30th April 2003 and 182.9 $\mu\text{g}/\text{m}^3$ was recorded which was below the Action Level (328 $\mu\text{g}/\text{m}^3$). The ET concluded that the exceedances might due to regional poor air quality.

24-hour TSP Monitoring

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

B2 Construction Noise

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

B3 Water Quality

All water quality monitoring was conducted as scheduled. For the subsequent site inspection, there was no site discharge at the locations of W2.1 and W2.2 in this reporting month and therefore no water quality sampling at these locations.

Water quality monitoring results of W1 are as follows:-

Average DO levels at the monitoring location W1 in this reporting month were ranged from 3.1 to 8.0 mg/L which were within the range of baseline monitoring results (2.2-9.4 mg/L).

Exceedance of Turbidity levels at monitoring location W1 were recorded on 30th April 2003 and 5th May 2003 exceeded the baseline level. However, both exceedances were considered owing to the background environment and not related to the construction activities under Contract No. DC/2002/06.

Temperature, pH and NH₄-N levels were within the compliance level.

C) Environmental Licensing and Permitting

License/Permits granted to the Project include the Further Environmental Permit (FEP), Variation of Environmental Permit (VEP) and Wastewater Discharge Licence. The FEP and Wastewater Discharge Licence for the Project were attached in *Appendix L* of the monthly EM&A report for March 2003. The VEP are attached in Appendix L of this monthly EM&A report.

D) Complaints and Prosecutions

No environmental complaint and prosecution was received during the reporting month.

E) Future Key Issues

Major construction site activities for the coming month are listed as below. The anticipated environmental impact will be mainly on dust and noise due to earthworks.

- Site clearance;
- Utility diversion;
- Earthwork;
- Demolition of existing wing walls; and
- Transplanting of trees.

Coming month will be a rainy season. Surface runoff will be anticipated as future key issue.

1. INTRODUCTION

Background

- 1.1 Serious flooding has occurred in and around Yuen Long Town at least seven times over the last fifteen years. Government studies including the Northwest New Territories (NWNT) Base Strategy Studies, TELADFLOCCOSS I and II and the NWNT Village Flood Protection Study have identified the major causes of flooding and recommended appropriate mitigation measures. The studies identified that the capacity of the Yuen Long Nullah drainage system was inadequate mainly due to rapid urban growth over the last 20 years which has reduced the flood plain storage capacity and increased runoff volumes. In addition Yuen Long town has been built at a relatively low level and the drainage design standards and methods used at the time were less rigorous than present design requirements. The studies recommended the construction of a Bypass Floodway as the most cost-effective option for providing additional drainage capacity to cater for present needs and to provide additional capacity for new development in the area to the south of Yuen Long.
- 1.2 The Yuen Long Bypass Floodway is therefore to be designed to divert part of the flows entering the Yuen Long Drainage system from the south of Yuen Long into the Kam Tin River Floodway, which is at present under construction, to reduce the risk of flooding in Yuen Long Town. The Project site is shown in *Figure 1.1*.
- 1.3 The Project works mainly comprise the construction and operation of a drainage channel (YLBF) from the south side of Yuen Long to the Kam Tin River. The Project works was scheduled to commence in March 2003.
- 1.4 According to the EIAO, this Project is a designated project. The Further Environmental Permit (FEP) No. FEP 01-075-2003 was issued on 6 February 2003 and Variation of Environmental Permit (EP-01/075/2003/A) was issued on 19 May 2003 for this project to the Sun Fook Kong (Civil) Limited (hereinafter called the “Contractor”) as Permit Holder. An Updated Environmental Monitoring and Audit Manual (Updated EM&A Manual) was prepared to fulfill requirement stipulated in the Particular Specification Clause 1.106(6).
- 1.5 Cinotech Consultants Limited was commissioned by Sun Fook Kong (Civil) Limited to provide professional services for “Contract No. DC/2002/06 – Environmental Team (ET) for Construction of the Yuen Long Bypass Floodway”. This Environmental Monitoring and Audit Report was prepared by Cinotech for the Project prior to the commencement of any construction activity for the Yuen Long Bypass Floodway in accordance with the Updated EM&A Manual.

Project Organizations

- 1.6 Different parties with different levels of involvement in the project organization include:
- Engineer or Engineer's Representative (E/ER) – Drainage Services Department (DSD)
 - Environmental Team (ET) – Cinotech Consultants Limited
 - Independent Environmental Checker (IEC) – CH2M-IDC Hong Kong Limited
 - Contractor – Sun Fook Kong (Civil) Ltd.
- 1.7 The responsibilities of respective parties are detailed in Section 1 of the Updated EM&A Manual and the project organization chart is presented in *Figure 1.2*.
- 1.8 The key contacts of the Project are shown in *Table 1.1*.

Table 1.1 Key Project Contacts

Party	Name	Role	Phone No.	Fax No.
DSD	Mr. Nelson IP	Engineer Representative	2594 7576	2827 8700
ET	Dr. Priscilla Choy	The ET Leader	2151 2083	3107 1388
	Mr. Kenneth Lam	Audit Team Leader	2151 2078	3107 1388
	Mr. Henry Leung	Monitoring Team Leader	9779 7340	3107 1388
IEC	Mr. David Yeung	Independent Environmental Checker	2507 2203	2507 2293
Contractor	Mr. Kelly Cheng	Senior Project Manager	2448 0130	2448 0260
	Ms. Alice Leung	Engineer	2448 0683	2448 0260

Construction Programme

1.9 The construction activities undertaken in the reporting month were:

- General Site Clearance;
- Provision of wheel washing facilities;
- Excavation works;
- Utility diversion; and
- Transplanting of trees.

Summary of EM&A Requirements

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

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

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

1.12 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely dust, water quality and noise levels and audit works for the Project in May 2003.

2. AIR QUALITY

Monitoring Requirements

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

Monitoring Locations

- 2.2 Three designated monitoring stations, A, B and C were selected for impact dust monitoring. Table 2.1 describes the air quality monitoring locations. *Figure 2.1* shows the locations of these stations.

Table 2.1 Locations for Air Quality Monitoring Station

Monitoring Stations	Description
A	Village house at No. 60, Kong Tau Tsuen
B	Small Traders New Village Public School Yuen Long
C	豪州嶺 1 號

Monitoring Equipment

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

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Qty.
HVS Sampler	Graseby GMW Model GS2310 High Volume TSP Sampler and associated equipment and shelter in accordance with the USA standard Title 40, code of Federal regulations, Chapter 1 (part 50), Appendix B	2
Calibrator	GMW 25	1

Monitoring Parameters, Frequency and Duration

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

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hr TSP	Three times / 6 days
24-hr TSP	Once / 6 days

Monitoring Methodology and QA/QC Procedure

1-hour and 24-hour TSP Monitoring

Instrumentation

- 2.5 High volume (HVS) samplers (Model GMWS-2310 Accu-Vol) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50) Appendix B. Moreover, the HVS also met all the requirements in section 2.3 of the EM&A Manual.

Operating/Analytical Procedures

- 2.6 Operating/analytical procedures for the operation of HVS were as follows:
- A horizontal platform was provided with appropriate support to secure the samplers against gusty wind.
 - No two samplers were placed less than 2 meters apart.
 - The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
 - A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
 - A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
 - No furnaces or incineration flues were nearby.
 - Airflow around the sampler was unrestricted.
 - The sampler was more than 20 meters from the drip line.
 - Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.
- 2.7 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m³/min. and 1.4 m³/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40,

CFR Part 50.

- 2.8 For TSP sampling, fiberglass filters (G810) were used [Note: these filters have a collection efficiency of > 99% for particles of 0.3 mm diameter].
- 2.9 The power supply was checked to ensure the sampler worked properly.
- 2.10 On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.
- 2.11 The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- 2.12 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- 2.13 The shelter lid was closed and secured with the aluminum strip.
- 2.14 The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- 2.15 After sampling, the filter was removed and sent to the laboratory for weighing. The elapsed time was also recorded.
- 2.16 Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than $\pm 3^\circ\text{C}$; the relative humidity (RH) should be < 50% and not vary by more than $\pm 5\%$. A convenient working RH is 40%.

Maintenance/Calibration

- 2.17 The following maintenance/calibration was required for the HVS:
- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
 - High volume samplers were calibrated at bi-monthly intervals using GMW-25 Calibration Kit throughout all stages of the air quality monitoring.
- 2.18 The GMW-25 Calibration Kit was sent to supplier for checking and calibrate on yearly intervals.

Results and Observations

- 2.19 Dust monitoring was conducted as scheduled in the reporting period. The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in *Appendices D* and *E* respectively.
- 2.20 Wind data monitoring equipment has been installed in monitoring station B for logging wind speed and wind direction. These wind data for the reporting month is summarized in *Appendix G*.
- 2.21 Key dust monitoring findings and observations are provided as below.
- 2.22 The weather during the monitoring session was mainly sunny or cloudy. Weather conditions on the monitoring days are provided in *Appendices D* and *E*.

1-hour TSP Monitoring

- 2.23 In connection with previous EM&A monthly report, one Action Level exceedance was recorded at the designated location C on 28th April 2003 and the case was outstanding by the end of last reporting month. Repeated measurement was conducted on 30th April 2003 and 254.7 $\mu\text{g}/\text{m}^3$ was recorded which was lower than the Action Level. With reference to the trend of monitoring data at station B on the same date, there was also a rise of TSP value. The average value of API on 28th April 2003 was 49 (recorded at Yuen Long) with some time exceed 50 which was classified as “high”. Therefore, the exceedance on 28th April 2003 may due to regional poor air quality.
- 2.24 All monitoring data complied with the Action and Limit Levels. No exceedances was reported.
- 2.25 Major dust sources were observed to be from site formation activities, excavation works and traffic dust.

24-hour TSP Monitoring

- 2.26 All monitoring data were complied with the Action and Limit Levels. No exceedance was reported.
- 2.27 Major dust sources were observed to be from site formation activities, excavation works and traffic dust.

3. NOISE

Monitoring Requirements

- 3.1 Noise monitoring was conducted in accordance with the Updated EM&A Manuals. *Appendix A* shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

- 3.2 Noise monitoring was conducted at three designated monitoring stations, namely N1, N2 and N3, as summarized in Table 3.1. *Figure 3.1* shows the locations of these stations.

Table 3.1 Noise Monitoring Stations

Monitoring Stations	Description
N1	At ground level of Village house at No.49-50, Shung Ching San Tsuen
N2	At ground level of Village house at No.17 Chuk San Tsuen
N3	On roof of Small Traders New Village Public School besides the Pok Oi Hospital

Monitoring Equipment

- 3.3 Integrating Sound Level Meters were used for noise monitoring. They were Type 1 sound level meters capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (L_{eq}) and percentile sound pressure level (L_x). They comply with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1).
- 3.4 Table 3.2 summarizes the noise monitoring equipment model being used. Copies of calibration certificates are attached in *Appendix B*.

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Qty.
Integrating Sound Level Meter	B&K Model 2238	4
	Rion NL14	1
Calibrator	B&K 4231	2
Wind Speed Anemometer	Vane Anemometer, Model 451104	1

Monitoring Parameters, Frequency and Duration

- 3.5 Table 3.3 summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in *Appendix C*.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency	Measurement
N1	L ₁₀ (30 min.)dB(A) L ₉₀ (30 min.)dB(A) L _{eq} (30 min.)dB(A)	0700-1900 hrs. on normal weekdays	Once per week	Free field + 3dB correction
N2				Free field + 3dB correction
N3				Facade

Monitoring Methodology and QA/QC Procedures

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - frequency weighting : A
 - time weighting : Fast
 - time measurement : 30 minutes (0700 – 1900 hrs on normal weekdays)
5 minutes (0700-0700 hrs of next day on holidays)
5 minutes (1900-0700 hrs of next day on all other days)
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the Leq, L90 and L10 were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

- 3.6 The microphone head of the sound level meter and calibrator was cleaned with soft cloth regularly.
- 3.7 The sound level meters and calibrator were sent to laboratory for checking and calibrate on yearly intervals.

Results and Observations

- 3.8 Noise monitoring was performed at the designated locations during the daytime period (0700 to 1900) as scheduled in the reporting month. Results and graphical presentations are shown in *Appendix F*.
- 3.9 The weather during the monitoring sessions was mainly sunny or cloudy. Weather conditions are provided in *Appendix F*.
- 3.10 No Action & Limit Level exceedance was reported at the designated monitoring station in the reporting month. Major noise source identified for this designated station was the noise from another construction site (construction site of Pok Oi Hospital) and traffic noise.

4. WATER QUALITY

Monitoring Requirements

- 4.1 Water quality monitoring was conducted in accordance with the Updated EM&A Manual. Compliance Levels for the environmental monitoring works are shown in *Appendix A*.

Monitoring Equipment

- 4.2 Table 4.1 summarizes the equipment used in the water quality monitoring program. All the monitoring equipment complied with the specifications stipulated in the Updated EM&A Manual. Copies of the calibration certificates are attached in *Appendix B*.

Table 4.1 Water Quality Monitoring Equipment

Equipment	Model and Make	Qty.
Multi-parameter Water Quality System	YSI 6820	2
Monitoring Position Equipment	“Magellan” Handheld GPS Model GPS-320	1

Monitoring Parameters, Frequency and Duration

- 4.3 Table 4.2 summarizes the monitoring parameters, monitoring period and frequencies of water quality monitoring. The water quality monitoring schedule for the reporting period is shown in *Appendix C*.

Table 4.2 Water Quality Monitoring Parameters and Frequency

Monitoring Station	Parameters	Frequency
W1	DO, Turbidity, pH, NH ₄ -N and Temperature	Once per week during mid ebb
W 2.1 & W 2.2	Turbidity, DO, pH, Temperature	Once per week (during mid ebb at ultimate discharge)
	Oil and grease, SS	Once per month (during mid ebb at ultimate discharge)

Monitoring Locations

- 4.4 The Updated EM&A Manual specifies one water quality monitoring location for mixing zone of YLBF and Kam Tin River and other locations for all site discharges. Water quality monitoring. Table 4.3 describes the location of these monitoring stations. The locations are also shown on *Figure 4.1*.

Table 4.3 Location for Impact Water Quality Monitoring Stations

Monitoring Station	Coordinate
W1	823000.7E 834889.7N
W 2.1 ⁽¹⁾	To follow actual discharge location on site.
W 2.2 ⁽¹⁾	To follow actual discharge location on site.

Note: 1) Monitoring will be conducted according to the monitoring schedule and water sample will be taken for analysis if water discharge from the construction site was observed at locations W2.1 and W2.2.

Monitoring Methodology, Calibration Details and QA/QC Procedures

Operating/Analytical Procedures

- 4.5 At each measurement, two consecutive measurements of turbidity, pH and temperature were taken. The probes were retrieved out of the water after the first measurement and then re-deployed for the second measurement. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken.
- 4.6 For NH₄-N measurement, grab samples of mid-depth water were collected. Water samples of about 500 ml were collected and stored in polyethylene bottles. The sample bottles were packed into an ice-box at 4°C, and delivered to a HOKLAS Laboratory, WELLAB Limited, for the analysis of NH₄-N contents within 24 hours.

Maintenance and Calibration

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

Results and Observations

- 4.8 Water quality monitoring was conducted as scheduled in the reporting month. The monitoring data and graphical presentations of the monitoring results are shown in *Appendix H*.
- 4.9 No water discharge was observed at W2.1 and W2.2 during the reporting month and water quality sampling could not be undertaken.
- 4.10 Average DO levels at location W1 in the reporting month ranged from 3.1 to 8.0 mg/L which were within the range of baseline monitoring results (2.2-9.4 mg/L).
- 4.11 Average Turbidity level at monitoring location W1 recorded on 30th April 2003 exceeded the baseline level. The river water was observed to be brown in color and Floc was observed floating on the river from unknown source during the monitoring. Additional monitoring was taken 30m up-stream from the monitoring location and NTU value was higher than the value at W1. Besides, no water discharged from the site into Kam Tin River was observed. Therefore, the exceedance was considered not related to the construction activities under Contract No. DC/2002/06.
- 4.12 Average Turbidity level at monitoring location W1 recorded on 5th May 2003 exceeded the baseline level. Amber Rainstorm Warning Signal had been issued during the monitoring and the river water was brown in color. Furthermore, no waster discharged from the site into Kam Tin River was observed. Therefore, the exceedance was considered not related to the construction activities under Contract No. DC/2002/06.
- 4.13 Temperature, pH and NH₄-N levels at location W1 were within the compliance level.

5. ENVIRONMENTAL AUDIT

Site Audits

- 5.1 Site audits were carried out on monthly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.
- 5.2 Site audits were conducted on 23rd May 2003. The summaries of site audit are attached in *Appendix I*.

Review of Environmental Monitoring Procedures

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

Air Quality Monitoring

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

Noise Monitoring

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

Water Quality Monitoring

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

Status of Environmental Licensing and Permitting

5.4 All permits/licenses obtained are summarized in Table 5.1.

Table 5.1 Summary of Environmental Licensing and Permit Status

Permit No.	Valid Period		Section	Status
	From	To		
Further Environmental Permit				
FEP-01/075/2003	6/2/2003	N/A	A drainage channel of width less than 100m. The scope of the project includes construction of i) A main drainage channel from Yuen Long Main Nullah to Kam Tin Channel. The channel will have concrete lined bed with grasscrete sides; ii) An ancillary road system; iii) Association pumping facilities; and iii) Landscaping works.	Valid
Variation of Environmental Permit				
EP-01/075/2003/A	19/5/2003	N/A	Vary Condition 3.6 in Part C of the FEP-01/075/2003 and add Figure 5 to FEP-01/075/2003.	Valid
Wastewater Discharge Licence				
1U370/1	21/2/2003	N/A	Effluent arising from construction site	Valid

Status of Waste Management

- 5.1 The amounts of wastes generated by the activities of the project in May 2003 are shown in *Appendix M*.
- 5.2 Inert and non-inert C&D waste were produced in this reporting month. No violation was observed during site inspections.
- 5.3 The solid waste generated from the Project site office was mainly general refuse that was collected by a licensed collector on an as need basis.

Implementation Status of Environmental Mitigation Measures

- 5.5 During the site inspection in the month, the following observations and recommendations were made.

Water Quality

- 5.6 Water discharge at entrance/exit near Nam Sang Wai was diverted into pond for soak away. No water was observed to be discharged at monitoring location W1.
- 5.7 A wheel washing bay at entrance/exit CH 24+10 was observed under construction. There were totally 4 wheel washing bays employed at separate entrances/exits.
- 5.8 Chemical toilets at CH 37+00 and CH 16+50 were observed.
- 5.9 Sediment tanks with adequate capacity should be used. The contractor was reminded that overflow from tanks should be avoided.

Air Quality

- 5.10 The contractor was reminded that public road around entrance/exist at CH 16+50 should be clean and free from dust.
- 5.11 The contractor was reminded that site entrances/exists at CH 7+00 and CH 16+50 should be water sprayed more regularly.

Noise

- 5.12 Contractor was reminded to prevent all PMEs operated at the same time especially at the nearest residence working area.

Chemical and Waste Management

- 5.13 Contractor was reminded to remove demolished waste regularly preventing from accumulation.

Permit / Licenses

- 5.14 The contractor was reminded to display the EP conspicuously on the construction sites at all vehicular site entrances/exits or at a convenient location for public information at all time.

Environmental Mitigation Implementation Schedule (EMIS)

- 5.15 According to the Environmental Permit and the Updated EM&A Manuals, the mitigation measures detailed in the documents are required to be implemented. A summary of the EMIS is presented in **Appendix J**.

Summary of Exceedances of the Environmental Quality Performance Limit

5.16 The summary of exceedances(s) is presented in *Appendix N*.

Implementation Status of Event Action Plans

5.17 The Event Action Plans for air quality, noise and water quality are presented in the Updated E&M Manual.

5.18 No exceedance of Action/Limit Levels for 1-hour TSP concentrations was reported in the month, No action was required to be carried out.

5.19 No exceedance of Action/Limit Levels for 24-hour TSP concentrations was reported in the month. No action was required to be carried out.

5.20 No exceedance of Action/Limit Levels for noise was reported. No action was required to be carried out.

5.21 Average Turbidity levels at monitoring location W1 recorded on 30th April 2003 and 5th May 2003 exceeded the baseline level. However, both exceedances were considered not related to the construction activities under Contract No. DC/2002/06. No action was required to be carried out.

Summary of Complaints and Prosecutions

5.22 No environmental complaint and prosecution related to the Project works was received during the reporting month.

6. FUTURE KEY ISSUES

Key Issues for the Coming Month

6.1 Key issues to be considered in the coming month include:

- Generation of dust from stockpiles, haul road and vehicles movement on-site.
- Noise from operation equipment and machinery on-site.
- Insufficient capacity of sedimentation tanks.
- Regular removal of demolished wastes.
- Regular removal of mud, sand and silt along drainage channel.
- Wastewater discharge from site.
- Storage of chemicals/fuel and chemical waste/waste oil on site.
- Surface runoff from site.

Monitoring Schedule for the Next Month

6.2 The tentative environmental monitoring schedule for the next month is shown in *Appendix C*.

Construction Program for the Next Month

6.3 The tentative construction program for the Project is provided in *Appendix K*.

7. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

7.1 The Project was commenced on 20th March 2003. Environmental monitoring works were performed in the reporting month and all monitoring results were checked and reviewed.

7.2 Environmental monitoring of air quality (1-hour TSP and 24-hour TSP) for the Project was performed as scheduled.

In connection with last monthly report, one Action Level exceedance for 1-hour TSP was recorded at the dust monitoring station C on 28th April 2003. Repeated measurement was conducted in this reporting month on 30th April 2003 and concluded that the exceedances might due to regional poor air quality.

No exceedance of Action and Limit Levels for 1-hour and 24-hour TSP was recorded in this reporting month.

7.3 Construction noise monitoring was performed as scheduled. Works. No exceedance of noise Limit Level was recorded in the reporting month.

7.4 Environmental monitoring of water quality for the Project was performed as scheduled.

Average DO levels at location W1 in the reporting month ranged from 3.1 to 8.0 mg/L which were within the range of baseline monitoring results (2.2-9.4 mg/L).

Average Turbidity levels at monitoring location W1 recorded on 30th April 2003 and 5th May 2003 exceeded the baseline level. However, both exceedances were considered owing to the background environment and not related to the construction activities under Contract No. DC/2002/06.

Temperature, pH and NH₄-N levels were within the compliance level.

7.5 No environmental complaint and prosecution was received during the reporting month.

Recommendations

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

Dust Impact

- To prohibit any open burning on site.
- To regularly maintain the machinery and vehicles on site.
- To implement dust suppression measures on all haul roads, stockpiles and dry surfaces.

Noise Impact

- To inspect the noise sources from inside and outside of the site.
- To space out noisy equipment and position as far away as possible from sensitive receivers.
- To liaise with schools and Examination Authority for examination times during contract period and liaise with Pok Oi Hospital on timing as well as duration of project. Noise shall be considered as an environmental constraint.

Water Impact

- To identify any wastewater discharges from site.
- To install sand traps or other means at discharge points.
- To regularly maintain the condition of u-channel and catch pits.
- To avoid stand water accumulation.
- To size and employ sedimentation tanks with sufficient capacity.

Waste/Chemical Management

- To check for any accumulation of waste materials or rubbish on site.

Permit / Licenses

- To display the EP conspicuously on the construction sites at all vehicular site entrances/exits or at a convenient location for public information at all time.