


**Territory Development Department
NT EAST Development Office**

**Tseung Kwan O Development, Phase II
Contract No. TK57/02**

Grade Separated Interchange T1/P1/P2

**Environmental Monitoring and Audit
Quarterly Report (Version 1.0)**

March to May 2003

Certified By 
(Environmental Team Leader)

REMARKS:

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

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TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY.....	1
ENVIRONMENTAL MONITORING WORKS.....	1
ENVIRONMENTAL COMPLAINT AND PROSECUTION.....	2
ENVIRONMENTAL LICENSING AND PERMITTING.....	3
FUTURE KEY ISSUES.....	3
1. INTRODUCTION.....	4
2. PROJECT CHARACTERISTICS.....	5
PROJECT ORGANIZATION AND CONTACTS OF KEY MANAGEMENT.....	5
CONSTRUCTION PROGRAMME AND SYNOPSIS OF WORK.....	5
3. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS.....	6
MONITORING PARAMETERS AND MONITORING LOCATIONS.....	6
MONITORING METHODOLOGY AND CALIBRATION DETAILS.....	6
ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS).....	6
ENVIRONMENTAL MITIGATION MEASURES.....	6
4. MONITORING RESULTS.....	7
WEATHER CONDITIONS.....	7
AIR QUALITY.....	7
NOISE.....	7
5. AUDIT RESULTS.....	8
<i>IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES</i>	8
STATUS OF ENVIRONMENTAL LICENSING AND PERMITTING.....	8
ADVICE ON SOLID WASTE MANAGEMENT STATUS.....	8
6. NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS).....	9
SUMMARY OF EXCEEDANCES.....	9
REVIEW OF THE REASONS FOR AND THE IMPLICATIONS OF NON-COMPLIANCE.....	9
SUMMARY OF ACTIONS TAKEN.....	9
7. ENVIRONMENTAL COMPLAINTS.....	10
COMPLAINT LOG.....	10
COMPLAINT HANDLING PROCEDURE.....	11
8. NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS.....	12
9. COMMENTS, CONCLUSIONS AND RECOMMENDATIONS.....	12

LIST OF TABLES, FIGURES, AND APPENDICES

TABLES:

TABLE 2.1 SUMMARY OF WORKS UNDERTAKEN IN THE REPORTING MONTHS

FIGURES:

Figure 1 Layout of Work Site and Locations of Monitoring Stations

Figure 2 Project Organisation Chart

APPENDICES:

Appendix A	Contact Details of the Project Organisation
Appendix B	Construction Programme
Appendix C	Monitoring Requirements
Appendix D	Environmental Quality Performance (Action/Limit) Levels
Appendix E	Graphical Presentation of Air Quality Monitoring Results
Appendix F	Graphical Presentation of Noise Monitoring Results
Appendix G	Implementation Status of Environmental Mitigation Measures (EMIS)
Appendix H	Summary Status of Environmental Licences and Permits
Appendix I	Complaint Log
Appendix J	Summary of Exceedances

EXECUTIVE SUMMARY

This is the fourth Environmental Monitoring and Audit (EM&A) Quarterly Summary Report prepared by Cinotech Consultants Limited for the “Tseung Kwan O Development, Phase II – Grade Separated Interchange T1/P1/P2” (the Project). This summary report presents EM&A work performed in the period between 27th February 2003 and 26th May 2003.

The construction activities undertaken in the reporting quarter were:-

- Piles & substructure works
- Mobilization & work area set up for bored piles
- Site clearances works
- Drainage works
- Erection of steel frame of noise barrier type E
- Pile cap construction

Environmental Monitoring Works

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

Air Quality

1-hour TSP Monitoring

All 1-hour TSP monitoring was conducted as scheduled.

All 1-hour TSP results complied with the Action and Limit Levels (AL Levels) in the reporting quarter.

24-hour TSP Monitoring

All 24-hour TSP monitoring was conducted as scheduled.

All 24-hour TSP results complied with the Action and Limit Levels in the reporting quarter.

Construction Noise

All construction noise monitoring was conducted as scheduled except monitoring at stations N1, N5 and N7 was rescheduled from 5th March 2003 to 6th March 2003 due to rain.

Two action level exceedances of construction noise were recorded during the reporting quarter. One action level exceedance was raised on 8th March 2003 by a resident living at Chung Ming Court (monitoring station N7) complaining about construction noise on Sundays (complaint log ref.: 30308-1, refer to Section “Complaints and Prosecutions” for details). The other action level exceedance (complaint log ref.: 30422-1) was recorded on 22nd April 2003. A resident living near Po Shun Road complained about construction noise after 7:00pm (Refer to Section “Complaints and Prosecutions” for details).

Environmental Complaint and Prosecution

One environmental prosecution was received on 7th May 2003. The Food and Environmental Hygiene Department has taken out summons action against the Contractor for contravention of Section 27(3) of Public Health and Municipal Services Ordinance, Cap. 132 since breeding of larvae of mosquitoes were found in an accumulation of water in the site on 17th March 2003.

A total of 14 complaints have been received since the commencement of the Project. Following up the complaint concerning piling noise and construction noise after 7:00pm at Po Shun Road made by a resident of King Lam Estate on 24th February 2003 (complaint log ref.: 30224-1), the Contractor has proposed mitigation measures on 7th March 2003 as follows:

- Set up the latest start time for concreting for each pile. The calculation of the latest start time includes an hour buffer time and is based on the assumption that:
 - 19:00 is the completion time of the works
 - 50% concrete overbreak, which is the maximum from the past piles at Po Shun Road
 - extra 50% casing joint disconnection time
- Arrange back-up plants to ensure continuity of the concrete supply to the completion of the particular concrete pour of the day.

ET has submitted the investigation report for the complaint to the Engineer and EPD. In order to discuss the proposed mitigation measures and the way forward to ensure that works are conducted in accordance with the EP and the EM&A requirements and other environmental legislations, a meeting was held between EPD and other concerned parties on 1st April 2003.

Three new environmental complaints were received during the reporting month. One of the complaints was received by EPD on 8th March 2003 and was referred to the ET Leader on 24th March 2003 (complaint log ref: 30308-1). The complainant, a resident at Chung Ming Court, complained on Sundays' construction noise from construction site between King Lam Estate and Chung Ming Court. As ET was not informed for the construction works on Sundays, no noise monitoring was undertaken. Nevertheless, complaint investigation was carried out by ET. According to the Works Supervisor's Daily Reports on Sundays of February and March 2003 provided by the ER, there was no construction activity at the concerned location on Sundays of February and March 2003, but prescribed work was carried out on 9th March 2003 at Wan Po Road. The Contractor later confirmed that no prescribed work was carried out on that day. EPD subsequently requested the Contractor (via ET) to provide their daily records for the concerned days. The Contractor's record was submitted to EPD via ET by the end of the reporting period.

The other complaint is about construction dust (complaint log ref.: 30321-1). The complaint was received by EPD on 21st March 2003 and was referred to the ET Leader on 31st March 2003. Complaint investigation was carried out by ET. Since King Lam Estate and Chung Ming Court are not any of the designated air quality monitoring stations for the Project, there is no dust monitoring data for a quantitative complaint investigation. The complaint was therefore investigated qualitatively. ET carried out a regular site inspection on 21st March 2003 with observations that the works may have posted dust nuisance to the surrounding. On the other hand, based on the Contractor's explanation on the concerned subject, a site visit was made by the representatives of EPD, the ER and the Contractor on 21st March 2003. No obvious dust emission was identified during the site visit, yet the EPD's representatives reminded the Contractor to keep spraying water during hacking off concrete. Nevertheless, the Contractor indicated that they would prevent construction dust arising from their work by:

- Keep spraying water during hacking off concrete and

- Cover any stockpile of dusty material by tarpaulin sheets.

ET has submitted the investigation report for the complaint to the Engineer and EPD.

The last complaint (log ref.: 30422-1) received during the reporting quarter is concerning the construction noises from the construction site at Po Shun Road after 7:00 pm on 17th April 2003. In addition, the complainant said that he found muddy water leaking from the hoarding of the above site on both sides of the road. The complaint was received by EPD on 22nd April 2003 and was referred to the ET Leader on 24th April 2003. Complaint investigation was carried out by ET. Complaint investigation was carried out by ET as follows:

- Construction noises after 7:00 pm
According to the Works Supervisor's Daily Report on 17 April 2003 provided by the ER, there was construction activity at the concerned location after 7:00pm. The Contractor later indicated that the activities carried out after 7:00pm until 8:00pm on that day were only general cleaning and closure for TTA scheme. The mitigation measure proposed by the Contractor is:
 - Monitor sub-contactor in order that no overtime working is allowed.
- Muddy water discharge
Based on the ET's observation during the audit on 17 April 2003, the complaint appeared to be valid. The Contractor has proposed the following mitigation measures:
 - Patch up bottom of the site hoardings by cement sand so that any muddy water could not flow to the public area around site hoardings;
 - Carry out daily inspection to the conditions of site hoarding record the observations on the daily environmental checklist; in case muddy water discharge around the site hoardings was observed, it would be immediately rectified;
 - Monitor (by the site foreman for each area) all the sub-contractor so that no wastewater will be allowed to discharge through the site hoardings.

Environmental Licensing and Permitting

License/Permits granted to the Project include the Environmental Permit (EP) for the Project, construction noise permit, water discharge licenses and Waste Disposal (Chemical Waste) license.

Future Key Issues

Substructure works, Bridges A & C pier & abutment construction, noise barrier erection, drainage works and noise enclosure Type B & D will be the major construction site activities for the coming quarter. The anticipated environmental impact will be mainly on dust and noise due to earthworks.

1. INTRODUCTION

- 1.1 Cinotech Consultants Limited (hereinafter called the “ET”) was appointed by Territory Development Department (TDD) (hereinafter called the "Project Proponent") via Maunsell Consultants Asia Limited (hereinafter called the “Engineer/ Engineer’s Representative) to undertake the Environmental Monitoring and Audit (EM&A) works for the Project “Tseung Kwan O Development, Phase II – Grade Separated Interchange T1/P1/P2” (the Project).
- 1.2 In accordance with the EM&A Manual, environmental monitoring of air quality and noise, and environmental audits are required for the Projects.
- 1.3 The Project contains the works for upgrading the existing at-grade interchange at Roads T1/P1/P2 junction at Tseung Kwan O to a grade separated interchange, and to widen the section of Road P2 between Po Hong Road and Po Ning Road. Figure 1 shows the location and the site boundary of the Project. The works have been commenced under Contract No. TK 57/02 – “Grade Separated Interchange T1/P1/P2”
- 1.4 The Project is a designated project under the Environmental Impact Assessment Ordinance (Cap. 449) and an environmental impact assessment report titled “Tseung Kwan O Development Contract F – Grade Separated Interchange T1/P1/P2, Environmental Impact Assessment (EIA) Study” (Register No. AEIAR – 017/1999) has been approved and deposited with Environmental Protection Department (EPD). An Environmental Permit (EP) No. EP-073/2000/B has been issued by EPD for the construction and operation of the proposed works under the Project.
- 1.5 China Civil Engineering Construction Corporation (the Contractor) was appointed to carry the main works on the Project.
- 1.6 This report presents the monitoring results and observations, locations, equipment, period, methodology and QA/QC procedures of the required monitoring parameters, namely noise and dust levels and audit works for the Project between March 2003 and May 2003.

2. PROJECT CHARACTERISTICS

Project Organization and Contacts of Key Management

- 2.1 An organization structure and the line of communication were set up for the Project between the Project Proponent, Engineer Representative (ER), Independent Environmental Checker (IEC), the Contractor and Environmental Team (ET). The organization chart and contact details are shown in Appendix A and Figure 2.

Construction Programme and Synopsis of Work

- 2.2 The construction programme is presented in Appendix B. The site activities during the reporting period are summarized in Table 2.1.

Table 2.1 Summary of Works Undertaken in the Reporting Months

Item	Work Activity	2003		
		March	April	May
1.	Piles & substructure works	√	√	√
2.	Mobilization & work area set up	√	√	√
3.	Site clearances works	√	√	√
4.	Drainage work	√	√	√
5.	Erection of steel frame of noise barrier type E	√	√	√
6.	Pile cap construction	√	√	√

3. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters and Monitoring Locations

- 3.1 The EM&A Manual designates locations for the ET to monitor environmental impacts in terms of air quality and noise due to the Project. The Project area and monitoring locations are depicted in Figures 1. Appendix C gives details of monitoring requirements.

Monitoring Methodology and Calibration Details

- 3.2 Monitoring works/equipment were conducted/ calibrated regularly in accordance with the EM&A Manual. Copies of calibration certificates are attached in the appendices in the Monthly Reports.

Environmental Quality Performance Limits (Action and Limit Levels)

- 3.3 The environmental quality performance limits, i.e. Action and Limit Levels were derived from the baseline monitoring results. Should the measured environmental quality parameters exceed the Action/Limit Levels, the respective action plans would be implemented. The Action/Limit Levels for each environmental parameter are given in Appendix D.

Environmental Mitigation Measures

- 3.4 Relevant mitigation measures as recommended in the project EIA report have been stipulated in the EM&A Manual for the Contractor to adopt. A list of mitigation measures is given in Appendix G.

4. MONITORING RESULTS

- 4.1 In the reporting quarter, monitoring at all designated monitoring stations were performed on scheduled.

Weather Conditions

- 4.2 The weather during monitoring sessions was mainly sunny or cloudy. The weather conditions for each individual monitoring session were presented in the field record sheets.

Air Quality

1-hour TSP

- 4.3 All 1-hour TSP monitoring results in the reporting quarter was all below the Action/Limit Levels. The graphical presentation of the monitoring results is provided in Appendix E.

24-hour TSP

- 4.4 All measured 24-hour TSP levels were below the Action/Limit Levels in the reporting period. The graphical presentation of the monitoring results is provided in Appendix E.

Noise

- 4.5 The graphical presentation of the monitoring results is provided in Appendix F. Two action level exceedances of construction noise were recorded during the reporting quarter. One action level exceedance was raised on 8th March 2003 by a resident living at Chung Ming Court (monitoring station N7) complaining about construction noise on Sundays (complaint log ref.: 30308-1, refer to Section 7 for details). The other action level exceedance (complaint log ref.: 30422-1) was recorded on 22nd April 2003. A resident living near Po Shun Road complaint about construction noise after 7:00pm (Refer to Section 7 for details).

5. AUDIT RESULTS

Implementation Status of Environmental Mitigation Measures

- 5.1 Piles and substructure works, drainage work, erection of steel frame of noise barriers were the main construction activities in the reporting quarter.

Summary of Site Audit Results

- 5.2 Excavated materials were observed dry occasionally. The Contractor was reminded to implement dust suppression measures more frequently.
- 5.3 The Contractor was recommended to avoid sandy water from overflowing/discharging into existing drainage system by using sand bags or other alternatives.
- 5.4 Accumulation of stagnant water was observed during site audit sessions. The Contractor was recommended to clean up the stand water to avoid mosquito breeding.
- 5.5 Some of the oil buckets were occasionally placed on bare ground. The Contractor was recommended to provide drip trays or alternatives for storage of oil buckets.
- 5.6 Lubricant oil dripping from machines was occasionally observed inside the site. The Contractor was recommended to provide drip trays or other alternatives to prevent oil leaking to the ground.
- 5.7 Rubbishes were accumulated at the site area. The Contractor was reminded to provide adequate rubbish bins within the site area and clear the refuse regularly.

Status of Environmental Licensing and Permitting

- 5.8 Environmental licenses and permits including Environmental Permit for the Project, construction noise permit, wastewater discharge licenses and Waste Disposal (Chemical Waste) license were in place and valid during the reporting quarter. A summary status of licenses and permits is given in Appendix H.

Advice on Solid Waste Management Status

- 5.9 The solid waste generated from the Project was mainly general refuse that was collected by a licensed collector on an as need basis.

6. NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS (ACTION AND LIMIT LEVELS)

Summary of Exceedances

- 6.1 All measured 1-hr TSP levels were below the Action/Limit Levels in the reporting period.
- 6.2 All measured 24-hour TSP levels were below the Action/Limit Levels in the reporting period.
- 6.3 Two action level exceedances of construction noise were recorded during the reporting quarter. One action level exceedance was raised on 8th March 2003 by a resident living at Chung Ming Court (monitoring station N7) complaining about construction noise on Sundays (complaint log ref.: 30308-1, refer to Section 7 for details). The other action level exceedance (complaint log ref.: 30422-1) was recorded on 22nd April 2003. A resident living near Po Shun Road complaint about construction noise after 7:00pm (Refer to Section 7 for details).

Review of the Reasons for and the Implications of Non-compliance

- 6.4 Refer to Section 7 for the details of the Action Level exceedances on construction noise.
- 6.5 The observations and recommendations made in each individual site audit session were attached in the monthly reports.

Summary of Actions Taken

- 6.6 In this reporting quarter, the following mitigation measures were implemented by the Contractor:
- Insecticide was added into the accumulation of water on daily basis to prevent mosquito breeding.
 - Groundwater pumped out was recycled via sediment tanks.
 - Crawler crane and bored piling machine have not been fully operated at the same time.
 - Acoustic sheds were provided for some plants.
 - Carry out daily inspection.

7. ENVIRONMENTAL COMPLAINTS

Complaint Log

- 7.1 A total of 14 complaints have been received since the commencement of the Project. Appendix I summaries the complaints received since the Project commencement.
- 7.2 Following up the complaint concerning piling noise and construction noise after 7:00pm at Po Shun Road made by a resident of King Lam Estate on 24th February 2003 (complaint log ref.: 30224-1), the Contractor has proposed mitigation measures on 7th March 2003 as follows:
- Set up the latest start time for concreting for each pile. The calculation of the latest start time includes an hour buffer time and is based on the assumption that:
 - 19:00 is the completion time of the works
 - 50% concrete overbreak, which is the maximum from the past piles at Po Shun Road
 - extra 50% casing joint disconnection time
 - Arrange back-up plants to ensure continuity of the concrete supply to the completion of the particular concrete pour of the day.
- 7.3 ET has submitted the investigation report for the complaint to the Engineer and EPD. In order to discuss the proposed mitigation measures and the way forward to ensure that works are conducted in accordance with the EP and the EM&A requirements and other environmental legislations, a meeting was held between EPD and other concerned parties on 1st April 2003.
- 7.4 **Three new environmental complaints were received during the reporting month.** One of the complaints was received by EPD on 8th March 2003 and was referred to the ET Leader on 24th March 2003 (complaint log ref: 30308-1). The complainant, a resident at Chung Ming Court, complained on Sundays' construction noise from construction site between King Lam Estate and Chung Ming Court. As ET was not informed for the construction works on Sundays, no noise monitoring was undertaken. Nevertheless, complaint investigation was carried out by ET. According to the Works Supervisor's Daily Reports on Sundays of February and March 2003 provided by the ER, there was no construction activity at the concerned location on Sundays of February and March 2003, but prescribed work was carried out on 9th March 2003 at Wan Po Road. The Contractor later confirmed that no prescribed work was carried out on that day. EPD subsequently requested the Contractor (via ET) to provide their daily records for the concerned days. The Contractor's record was submitted to EPD via ET by the end of the reporting period.
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reminded the Contractor to keep spraying water during hacking off concrete. Nevertheless, the Contractor indicated that they would prevent construction dust arising from their work by:

- Keep spraying water during hacking off concrete and
- Cover any stockpile of dusty material by tarpaulin sheets.

ET has submitted the investigation report for the complaint to the Engineer and EPD.

7.6 The last complaint (log ref.: 30422-1) received during the reporting quarter is concerning the construction noises from the construction site at Po Shun Road after 7:00 pm on 17th April 2003. In addition, the complainant said that he found muddy water leaking from the hoarding of the above site on both sides of the road. The complaint was received by EPD on 22nd April 2003 and was referred to the ET Leader on 24th April 2003. Complaint investigation was carried out by ET. Complaint investigation was carried out by ET as follows:

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 - Monitor sub-contractor in order that no overtime working is allowed.
- Muddy water discharge
Based on the ET's observation during the audit on 17 April 2003, the complaint appeared to be valid. The Contractor has proposed the following mitigation measures:
 - Patch up bottom of the site hoardings by cement sand so that any muddy water could not flow to the public area around site hoardings;
 - Carry out daily inspection to the conditions of site hoarding record the observations on the daily environmental checklist; in case muddy water discharge around the site hoardings was observed, it would be immediately rectified;
 - Monitor (by the site foreman for each area) all the sub-contractor so that no wastewater will be allowed to discharge through the site hoardings.

Complaint Handling Procedure

7.7 All complaints have been handled in accordance with the EM&A Manual. The implementation status of the complaint handling procedure is summarized in Appendix I Complaint Log.

8. NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

- 8.1 One environmental prosecution was received on 7th May 2003. The Food and Environmental Hygiene Department has taken out summons action against the Contractor for contravention of Section 27(3) of Public Health and Municipal Services Ordinance, Cap. 132 since breeding of larvae of mosquitoes were found in an accumulation of water in the site on 17th March 2003.

9. COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

- 9.1 Piles and substructure works, drainage work, erection of steel frame of noise barriers were the main construction activities in the reporting quarter. No significant impact on air quality was identified.
- 9.2 The construction noise nuisance to the nearby sensitive receivers identified should be rectified. It is recommended that the Contractor of the Project should propose an effective system to ensure the Project works are carried out in full compliance with applicable statutory and contractual requirements, and to clarify the responsibilities of the Contractor's personnel on governing/controlling the sub-contractor works.